

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

DAVID ALEJANDRO VARGAS TORRES

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA
ESCUELA DE CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA - ECBTI
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Diplomado de opción de grado presentado para optar el título de
INGENIERO ELECTRONICO

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2020

NOTA DE ACEPTACIÓN

Firma del Presidente del Jurado

Firma del Jurado

Firma del Jurado

BOGOTA, Noviembre de 2020

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En primer lugar le doy gracias a Dios por permitirme vivir el día a día y permitirme aprender con cada situación que afronto, por las oportunidades de crecimiento personal, profesional y educativo.

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GLOSARIO

CCNP: CCNP son las siglas de Cisco Certified Networking Professional. Lo que quiere decir un certificado de networking y telecomunicaciones. Esto quiere decir que ya no es un nivel básico sino un nivel profesional de asociado a Cisco, con esto se entiende que se tiene un mayor conocimiento sobre Cisco.

EIGRP: Protocolo de Enrutamiento de Puerta de enlace Interior Mejorado. Este es una versión mejorada del IGRP en el cual las propiedades de convergencia y la eficiencia operativa de este protocolo han mejorado significativamente. Es utilizado en redes TCP/IP y de interconexión de sistema abierto como un protocolo de enrutamiento del tipo vector distancia avanzado, propiedad de Cisco, que ofrece las mejores características de los algoritmos vector distancia y de estado de enlace.

Enrutamiento: cumple la función de buscar la mejor ruta para la transmisión y recepción de datos, para encontrar la mejor ruta se debe de tener en cuenta la tabla de enrutamiento, la métrica, la distancia, entre otros.

GNS3: es un simulador gráfico de red lanzado en 2008, que te permite diseñar topologías de red complejas y poner en marcha simulaciones sobre ellos, permitiendo la combinación de dispositivos tanto reales como virtuales.

Interfaz Loopback: es una interfaz virtual creada por software que representa al propio dispositivo independiente de la dirección IP que se le haya asignado, no existe físicamente en el equipo, pero realiza todas las funciones de una interfaz física. Se pueden crear tantas interfaces Loopback como sean requeridas.

Router: es un dispositivo que permite generar interconexiones de dispositivos que se encuentran bajo una misma red, su función es la de establecer una ruta determinada a un paquete de datos.

Packet tracer: es un programa de Cisco con el cual se pueden realizar simulaciones de redes y permite a estudiantes experimentar el comportamiento de una red y comprobar la manera correcta de generar conexiones y comunicaciones entre diferentes dispositivos.

Tabla de enrutamiento: Una tabla de enrutamiento es en la cual se encuentra toda la información necesaria para hacer que uno o varios paquetes de datos puedan viajar a través de la red utilizando el mejor camino. Con esto garantizar su llegada al destino de una manera eficiente. Dentro de las tablas se encuentran elementos como: destino de red, máscara de red, puerta de enlace, interfaz y métrica.

RESUMEN

A lo largo de este trabajo se da solución a los escenarios propuestos como actividad final del curso de diplomado CCNP de CISCO el cual lleva por nombre “DIPLOMADO DE PROFUNDIZACION CISCO CCNP SOLUCIÓN DE DOS ESCENARIOS PRESENTES EN ENTORNOS CORPORATIVOS BAJO EL USO DE TECNOLOGÍA CISCO”, para lograr este desarrollo se deben de aplicar los conocimientos adquiridos a lo largo del curso y se demostrará la solución del escenario 1 planteado, por medio del software GNS3 y del escenario 2 planteado, por medio del software Packet Tracer.

En el desarrollo de los escenarios se verán temas como configuración de routers y enrutamiento de acuerdo a lo solicitado, configuración de interfaces de acuerdo a una topología de red. También se tienen en cuenta conceptos para configuración de switches y el uso de diferentes tipo de switches implementándolos en una topología de red y llevando a cabo unas configuraciones determinadas.

Palabras clave: CCNP, Cisco, GNS3, routers, enrutamiento, interface, topología, conmutación, redes, electrónica.

ABSTRACT

Throughout this work, a solution is given to the scenarios proposed as the final activity of the CISCO CCNP diploma course, which is called "CISCO CCNP DEEPENING DIPLOMA SOLUTION OF TWO PRESENT SCENARIOS IN CORPORATE ENVIRONMENTS UNDER THE USE OF CISCO TECHNOLOGY" To achieve this development, the knowledge acquired throughout the course must be applied and the solution of scenario 1 proposed is demonstrated, by means of the GNS3 software and of scenario 2 proposed, by means of the Packet Tracer software.

In the development of the scenarios, topics such as router configuration and routing according to what is requested, interface configuration according to a network topology will be discussed. Concepts for switch configuration and the use of different types of switches are also taken into account by implementing them in a network topology and carrying out certain configurations.

Keywords: CCNP, Cisco, GNS3, routers, routing, interface, topology, Swiching, Networking, Electronics.

INTRODUCCIÓN

El curso de Cisco CCNP nos permite obtener conocimientos avanzados acerca del ruteo y configuración de redes de manera avanzada las cuales se pueden aplicar en organizaciones empresariales y de manera profesional, los cuales se aplican por medio de laboratorios prácticos en los que se debe dar solución a problemas que se encuentran frecuentemente en la vida real.

El presente trabajo tiene como fin desarrollar las actividades planteadas en los escenarios propuestos como actividad final del curso de diplomado CCNP de CISCO en la cual se debe dar solución a dos escenarios implementando topologías tanto de routers como de switches.

La solución al primer escenario planteado se realiza por medio del software GNS3, y la solución al segundo escenario planteado se realiza por medio del software Packet Tracer, se realiza la demostración de la solución de los escenarios planteados en los cuales se deben de realizar acciones específicas como lo son realizar las configuraciones iniciales y los protocolos de enrutamiento para los routers según una topología de red, crear interfaces Loopback y redistribuir las rutas EIGRP en OSPF. También se debe de realizar una topología de switches según el diagrama, configurar switch LACP y PagP, asignar nombre de dominio y contraseña, configuración de VLAN con nombre y rutas específicas. Esto verificarlo por medio de comandos como show vlan, show etherchannel, show vtp status.

DESARROLLO

PRIMER ESCENARIO

Teniendo en la cuenta la siguiente imagen:

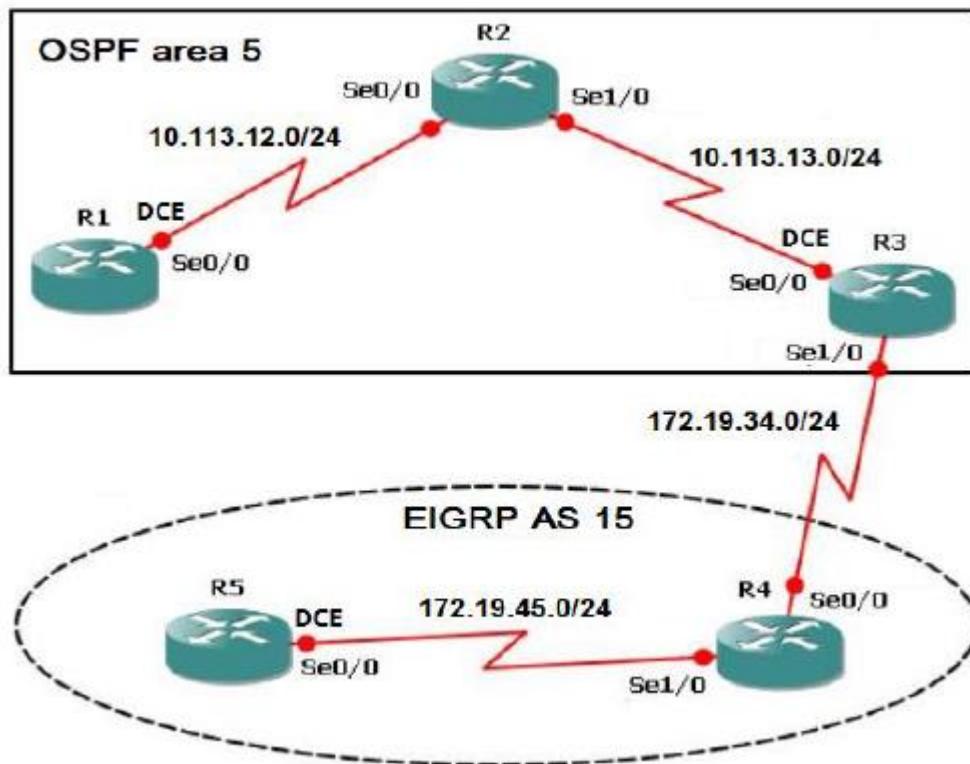


Figura 1. Primer escenario

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

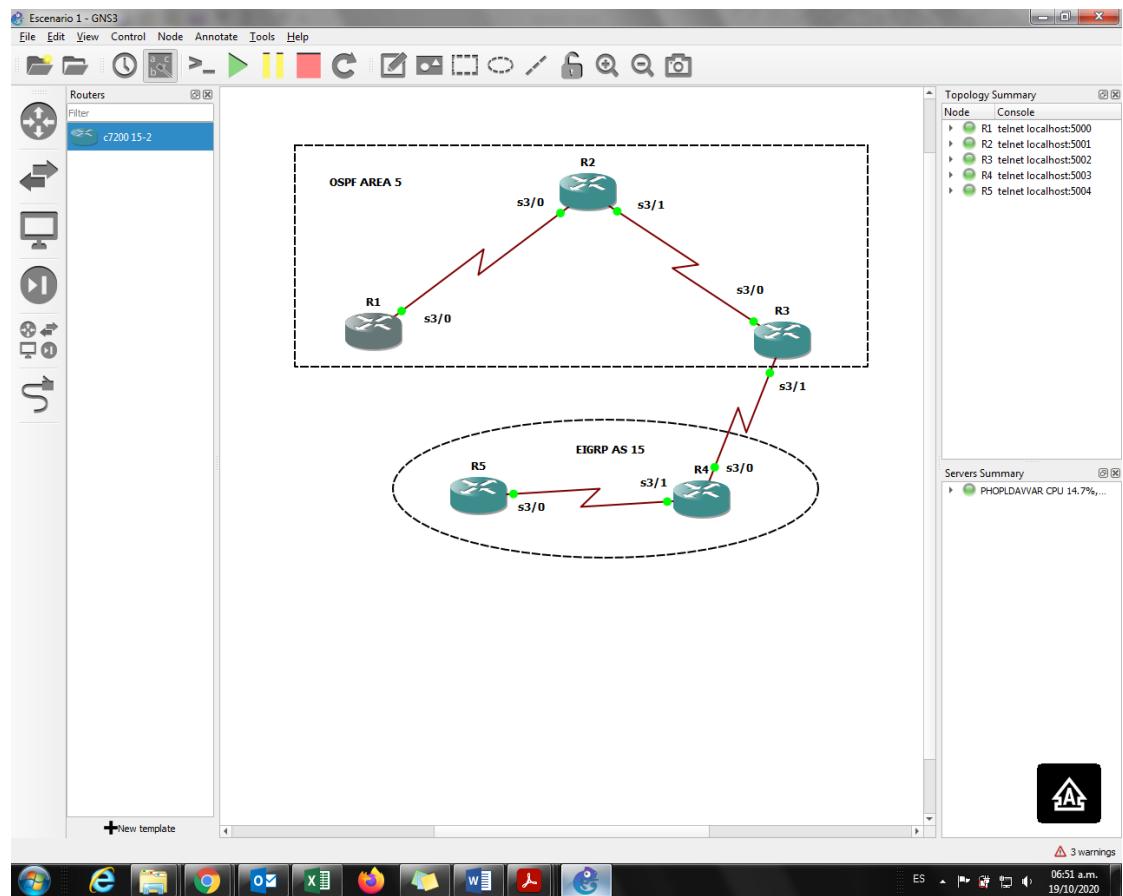


Figura 2. Desarrollo primer escenario en GNS3

Configuración R1

```
R1#enable
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#hostname R1
R1(config)#router ospf 1
R1(config-router)#network 10.113.12.0 255.255.255.0 area 5
R1(config-router)#exit
R1(config)#int s3/0
R1(config-if)# ip address 10.113.12.1 255.255.255.0
R1(config-if)#
R1(config-if)#
R1(config-if)#clock rate 128000
R1(config-if)#no shutdown
R1(config-if)#end
```

Configuración R2

```
R2#enable
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#hostname R2
R2(config)#router ospf 1
R2(config-router)#
*Oct 19 07:11:06.739: %OSPF-4-NORTRID: OSPF process 1 failed to
allocate unique router-id and cannot start
R2(config-router)#router-id 2.2.2.2
R2(config-router)#network 10.113.12.0 255.255.255.0 area 5
R2(config-router)#network 10.113.13.0 255.255.255.0 area 5
R2(config-router)#exit
R2(config)#int s3/0
R2(config-if)#ip address 10.113.12.2 255.255.255.0
R2(config-if)#
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#int s
*Oct 19 07:13:28.319: %LINK-3-UPDOWN: Interface Serial3/0, changed
state to up
R2(config)#int s3/1
R2(config-if)#
*Oct 19 07:13:29.331: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial3/0, changed state to up
R2(config-if)#
*Oct 19 07:13:41.231: %OSPF-5-ADJCHG: Process 1, Nbr 10.113.12.1 on
Serial3/0 from LOADING to FULL, Loading Done
R2(config-if)#ip address 10.113.13.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#end
```

Configuración R3

```
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)# no ip domain-lookup
R3(config)#int s3/0
R3#enable
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
```

```
R3(config)#hostname R3
R3(config)#router ospf 1
R3(config-router)#
*Oct 19 07:14:35.491: %OSPF-4-NORTRID: OSPF process 1 failed to
allocate unique router-id and cannot start
R3(config-router)#router-id 3.3.3.3
R3(config-router)#network 10.113.13.0 255.255.255.0 area 5
R3(config-router)#
R3(config-router)#exit
R3(config)#int s3/0
R3(config-if)#ip address 10.113.13.2 255.255.255.0
R3(config-if)#clock rate 128000
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#
*Oct 19 07:16:37.483: %LINK-3-UPDOWN: Interface Serial3/0, changed
state to up
R3(config)#
*Oct 19 07:16:38.491: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial3/0, changed state to up
R3(config)#int s3/1
R3(config-if)#
*Oct 19 07:16:43.799: %OSPF-5-ADJCHG: Process 1, Nbr 2.2.2.2 on
Serial3/0 from LOADING to FULL, Loading Done
R3(config-if)#ip address 172.19.34.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
*Oct 19 07:17:33.923: %LINK-3-UPDOWN: Interface Serial3/1, changed
state to up
R3(config-if)#end
R3#
*Oct 19 07:17:34.931: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial3/1, changed state to up
R3#
*Oct 19 07:17:35.915: %SYS-5-CONFIG_I: Configured from console by
console
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router eigrp 15
R3(config-router)#

```

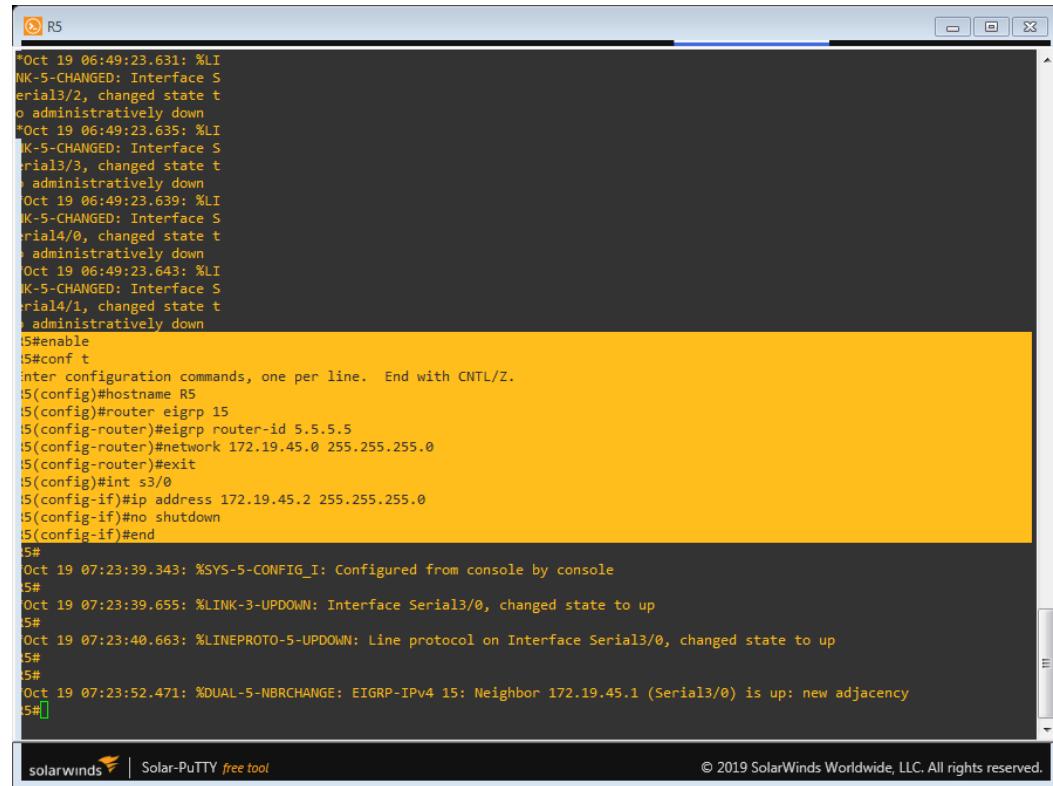
```
*Oct 19 07:18:00.575: %LINEPROTO-5-UPDOWN: Line protocol on  
Interface Serial3/1, changed state to down  
R3(config-router)#eigrp router-id 3.3.3.3  
R3(config-router)#network 172.19.34.0 255.255.255.0  
R3(config-router)#exit  
R3(config)#end
```

Configuración R4

```
R4#enable  
R4#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
R4(config)#hostname R4  
R4(config)#router eigrp 15  
R4(config-router)#eigrp router-id 4.4.4.4  
R4(config-router)#network 172.19.34.0 255.255.255.0  
R4(config-router)#network 172.19.45.0 255.255.255.0  
R4(config-router)#exit  
R4(config)#int s3/0  
R4(config-if)#ip address 172.19.34.2 255.255.255.0  
R4(config-if)#no shutdown  
R4(config-if)#exit  
*Oct 19 07:21:35.947: %LINK-3-UPDOWN: Interface Serial3/0, changed  
state to up  
R4(config)#  
*Oct 19 07:21:36.955: %LINEPROTO-5-UPDOWN: Line protocol on  
Interface Serial3/0, changed state to up  
R4(config)#int s3/1  
R4(config-if)#ip address 172.19.45. 255.255.255.0  
*Oct 19 07:21:46.887: %DUAL-5-NBRCHANGE: EIGRP-IPv4 15: Neighbor  
172.19.34.1 (Serial3/0) is up: new adjacency  
R4(config-if)#ip address 172.19.45.1 255.255.255.0  
R4(config-if)#no shutdown  
R4(config-if)#  
*Oct 19 07:22:05.799: %LINK-3-UPDOWN: Interface Serial3/1, changed  
state to up  
R4(config-if)#  
*Oct 19 07:22:06.807: %LINEPROTO-5-UPDOWN: Line protocol on  
Interface Serial3/1, changed state to up  
R4(config-if)#end
```

Configuración R5

```
R5#enable
R5#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#hostname R5
R5(config)#router eigrp 15
R5(config-router)#eigrp router-id 5.5.5.5
R5(config-router)#network 172.19.45.0 255.255.255.0
R5(config-router)#exit
R5(config)#int s3/0
R5(config-if)#ip address 172.19.45.2 255.255.255.0
R5(config-if)#no shutdown
R5(config-if)#end
```



The screenshot shows a Solar-PuTTY terminal window titled 'RS'. The terminal displays the configuration commands for router R5. The configuration includes setting the router ID to 5.5.5.5, defining the network 172.19.45.0/24, and enabling interface s3/0 with IP address 172.19.45.2 and no shutdown. The window also shows system logs and a message indicating a new adjacency was established with neighbor 172.19.45.1 via interface Serial3/0.

```
"Oct 19 06:49:23.631: %LI
NK-5-CHANGED: Interface S
erial3/2, changed state t
o administratively down
"Oct 19 06:49:23.635: %LI
NK-5-CHANGED: Interface S
erial3/3, changed state t
, administratively down
Oct 19 06:49:23.639: %LI
NK-5-CHANGED: Interface S
erial4/0, changed state t
, administratively down
Oct 19 06:49:23.643: %LI
NK-5-CHANGED: Interface S
erial4/1, changed state t
, administratively down
R5#enable
R5#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#hostname R5
R5(config)#router eigrp 15
R5(config-router)#eigrp router-id 5.5.5.5
R5(config-router)#network 172.19.45.0 255.255.255.0
R5(config-router)#exit
R5(config)#int s3/0
R5(config-if)#ip address 172.19.45.2 255.255.255.0
R5(config-if)#no shutdown
R5(config-if)#end
R5#
Oct 19 07:23:39.343: %SYS-5-CONFIG_I: Configured from console by console
R5#
Oct 19 07:23:39.655: %LINK-3-UPDOWN: Interface Serial3/0, changed state to up
R5#
Oct 19 07:23:40.663: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
R5#
Oct 19 07:23:52.471: %DUAL-5-NBRCHANGE: EIGRP-IPv4 15: Neighbor 172.19.45.1 (Serial3/0) is up: new adjacency
R5#
solarwinds | Solar-PuTTY free tool
© 2019 SolarWinds Worldwide, LLC. All rights reserved.
```

Figura 3. Configuración R5 en GNS3

2. Cree cuatro nuevas interfaces de Loopback en R1 utilizando la asignación de direcciones 10.1.0.0/22 y configure esas interfaces para participar en el área 5 de OSPF.

Cuatro Interfaces Loopback en R1	
Loopback 1	10.1.0.1/22
Loopback 2	10.1.4.1/22
Loopback 3	10.1.8.1/22
Loopback 4	10.1.12.1/22

Tabla 1. Interfaces Loopback R1

Configuración

```
R1#conf t
```

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

```
R1(config)#int loopback1
```

```
R1(config-if)#
```

*Oct 19 07:39:46.543: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

```
R1(config-if)#ip address 10.1.0.1 255.255.252.0
```

```
R1(config-if)#ip ospf 1
```

```
R1(config-if)#ip ospf 1 area 5
```

```
R1(config-if)#exit
```

```
R1(config)#int loopback2
```

```
R1(config-if)#
```

*Oct 19 07:42:59.647: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up

```
R1(config-if)#ip address 10.1.4.1 255.255.252.0
```

```
R1(config-if)#ip ospf 1 area 5
```

```
R1(config-if)#exit
```

```
R1(config)#int loopback3
```

```
R1(config-if)#ip address 10.1.4.1 255.255.252.0
```

*Oct 19 07:43:47.783: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up

```
R1(config-if)#ip address 10.1.8.1 255.255.252.0
```

```
R1(config-if)#ip ospf 1 area 5
```

```
R1(config-if)#exit
```

```
R1(config)#int loopback4
```

```
R1(config-if)#{}
```

*Oct 19 07:44:47.423: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state to up

```
R1(config-if)#ip address 10.1.12.1 255.255.252.0
```

```
R1(config-if)#{}
```

```
R1(config-if)#ip ospf 1 area 5
```

```
R1(config-if)#exit
```

```
R1(config)#end
```

The screenshot shows a Microsoft Word document titled "Informe de avance - Documento final - Word". The content of the document is as follows:

```
Minimum LSA interval 5 secs
Minimum LSA arrival 1000 msec
LSA aging time 3600 secs
Interface flood pacing timer 33 msecs
Retransmission pacing timer 66 msecs
Number of external LSA 0, Checksum Sum 0x00000000
Number of opaque link LSA 0, Checksum Sum 0x00000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Number of areas transit capable is 0
External flood list length 0
IETF NSF helper support enabled
Cisco NSF helper support enabled
Reference bandwidth unit is 100 mbps
Area 5
    Number of interfaces in this area is 5 (4 loopback)
    Area ranges are
        Number of areas 1, Checksum Sum 0x000E6A7
        Number of opaque link LSA 0, Checksum Sum 0x00000000
        Number of DCbitless LSA 0
        Number of interarea LSA 0
        Number of DoNotAge LSA 0
    Flood list length 0

R1#
R1#show ip ospf interface bri
Interface      PID   Area          IP Address/Mask   Cost  State  Nbrs F/C
Lo0            1     5             10.1.0.1/22       1     LOOP  0/0
Lo2            1     5             10.1.4.1/22       1     LOOP  0/0
Lo3            1     5             10.1.8.1/22       1     LOOP  0/0
Lo4            1     5             10.1.12.1/22      1     LOOP  0/0
Lo5/0          1     5             10.113.12.1/24    64    P2P   1/1

solarwinds | Solar-PuTTY free tool
```

The SolarWinds Solar-PuTTY terminal window shows the command "show ip ospf interface bri" and its output. The output lists five interfaces (Lo0, Lo2, Lo3, Lo4, Lo5/0) with their respective IP addresses, subnet masks, costs, states, and neighbor counts.

Figura 4. Comprobación configuración R1

- Cree cuatro nuevas interfaces de Loopback en R5 utilizando la asignación de direcciones 172.5.0.0/22 y configure esas interfaces para participar en el Sistema Autónomo EIGRP 15.

Cuatro Interfaces Loopback en R5	
Loopback 1	172.5.0.1/22
Loopback 2	172.5.4.1/22
Loopback 3	172.5.8.1/22
Loopback 4	172.5.12.1/22

Tabla 2. Interfaces Loopback en R5

Configuración

```
R5#conf t
```

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

```
R5(config)#int lo 1
```

```
R5(config-if)#
```

*Oct 19 08:07:19.439: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

```
R5(config-if)#
```

*Oct 19 08:07:19.503: %DUAL-5-NBRCHANGE: EIGRP-IPv4 15: Neighbor 172.19.45.1 (Serial3/0) is down: Interface PEER-TERMINATION received

*Oct 19 08:07:19.747: %DUAL-5-NBRCHANGE: EIGRP-IPv4 15: Neighbor 172.19.45.1 (Serial3/0) is up: new adjacency

```
R5(config-if)#ip address 172.5.0.1 255.255.252.0
```

```
R5(config-if)#exit
```

```
R5(config)#int lo 2
```

```
R5(config-if)#exit
```

*Oct 19 08:08:29.031: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up

R5(config-if)#ip address 172.5.4.1 255.255.252.0

R5(config-if)#exit

R5(config)#int lo 3

R5(config-if)#exit

*Oct 19 08:08:45.463: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up

R5(config-if)#ip address 172.5.8.1 255.255.252.0

R5(config-if)#exit

R5(config)#int lo 4

R5(config-if)#ip address 172.5.8.1 255.255.252.0

*Oct 19 08:08:54.603: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state to up

R5(config-if)#ip address 172.5.12.1 255.255.252.0

R5(config-if)#exit

R5#show ip interface brief | include up

Serial3/0	172.19.45.2	YES manual	up
Loopback1	172.5.0.1	YES manual	up
Loopback2	172.5.4.1	YES manual	up
Loopback3	172.5.8.1	YES manual	up
Loopback4	172.5.12.1	YES manual	up

The screenshot shows a terminal window titled 'R5' running on SolarWinds PuTTY. The session displays the following configuration commands:

```

Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#int loopback1
R5(config-if)#
Oct 16 13:20:14.551: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
R5(config-if)#ip add 172.5.0.1 255.255.255.0
R5(config-if)#no shu
R5(config-if)#int loopback2
R5(config-if)#
Oct 16 13:20:51.115: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up
R5(config-if)#ip add 172.5.4.1 255.255.255.0
R5(config-if)#no shu
R5(config-if)#int loopback3
R5(config-if)#
Oct 16 13:21:06.267: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up
R5(config-if)#ip add 172.5.8.1 255.255.255.0
R5(config-if)#no shu
R5(config-if)#int loopback4
R5(config-if)#no shu
Oct 16 13:21:19.375: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state to up
R5(config-if)#ip add 172.5.12.1 255.255.255.0
R5(config-if)#no shu
R5(config-if)#exit
R5(config)#
R5(config)#route eigrp 15
; Ambiguous command: "route eigrp 15"
R5(config)#route eigrp 15
; Ambiguous command: "route eigrp 15"
R5(config)#end
R5#show ip interface brief | include up
serial3/0      172.19.45.2    YES manual up          up
loopback1      172.5.0.1     YES manual up          up
loopback2      172.5.4.1     YES manual up          up
loopback3      172.5.8.1     YES manual up          up
loopback4      172.5.12.1    YES manual up          up
R5#
Oct 16 13:28:14.271: %SYS-5-CONFIG_I: Configured from console by console
R5#
R5#

```

The SolarWinds logo and 'SolarPuTTY free tool' are visible at the bottom left, and the copyright notice '© 2019 SolarWinds Worldwide, LLC. All rights reserved.' is at the bottom right.

Figura 5. Comprobación configuración R5

R5#conf t

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

R5(config)#router eigrp 15

R5(config-router)#no auto-summary

R5(config-router)#network 172.5.1.0 255.255.255.0

R5(config-router)#network 172.5.4.0 255.255.255.0

R5(config-router)#network 172.5.8.0 255.255.255.0

R5(config-router)#network 172.5.12.0 255.255.255.0

R5(config-router)#network 172.19.45.0 255.255.255.0

R5(config-router)#exit

R5(config)#end

R5#

*Oct 19 08:13:37.223: %SYS-5-CONFIG_I: Configured from console by console

R5#sh ip eigrp int

EIGRP-IPv4 Interfaces for AS(15)

Interface Routes		Xmit Queue		PeerQ	Mean	Pacing Time	Multicast
		Peers	Un/Reliable	Un/Reliable	SRTT	Un/Reliable	Flow Timer
Se3/0		1	0/0	0/0	256	0/15	1267
Lo2		0	0/0	0/0	0	0/0	0
Lo3		0	0/0	0/0	0	0/0	0
Lo4		0	0/0	0/0	0	0/0	0

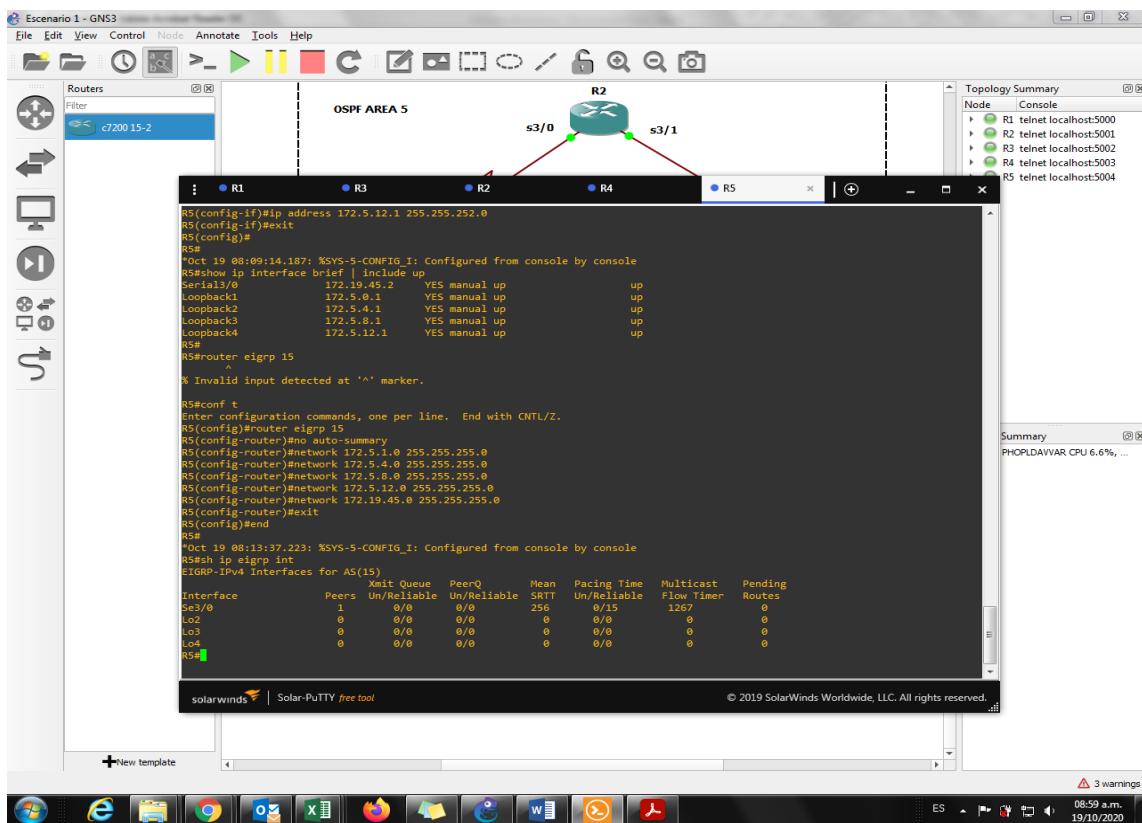


Figura 6. Comprobación configuración EIGRP R5

4. Analice la tabla de enrutamiento de R3 y verifique que R3 está aprendiendo las nuevas interfaces de Loopback mediante el comando show ip route.

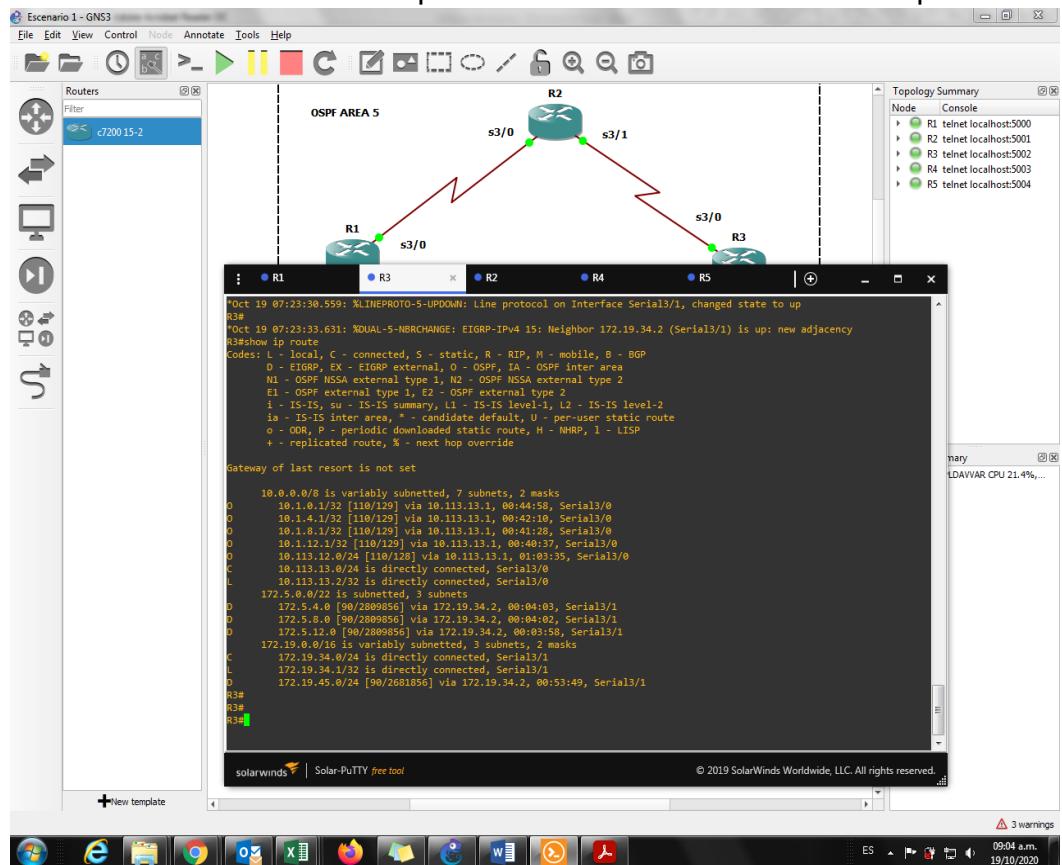


Figura 7. Show ip route en R3

```

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 7 subnets, 2 masks
O   10.1.0.1/32 [110/129] via 10.113.13.1, 00:44:58, Serial3/0
O   10.1.4.1/32 [110/129] via 10.113.13.1, 00:42:10, Serial3/0
O   10.1.8.1/32 [110/129] via 10.113.13.1, 00:41:28, Serial3/0
O   10.1.12.1/32 [110/129] via 10.113.13.1, 00:40:37, Serial3/0
O   10.113.12.0/24 [110/128] via 10.113.13.1, 01:03:35, Serial3/0
C   10.113.13.0/24 is directly connected, Serial3/0
L   10.113.13.2/32 is directly connected, Serial3/0
172.5.0.0/22 is subnetted, 3 subnets
D   172.5.4.0 [90/2809856] via 172.19.34.2, 00:04:03, Serial3/1
D   172.5.8.0 [90/2809856] via 172.19.34.2, 00:04:02, Serial3/1
D   172.5.12.0 [90/2809856] via 172.19.34.2, 00:03:58, Serial3/1
172.19.0.0/16 is variably subnetted, 3 subnets, 2 masks
C   172.19.34.0/24 is directly connected, Serial3/1
L   172.19.34.1/32 is directly connected, Serial3/1
D   172.19.45.0/24 [90/2681856] via 172.19.34.2, 00:53:49, Serial3/1

```

Figura 8. Aprendizaje Loopback en R3

5. Configure R3 para redistribuir las rutas EIGRP en OSPF usando el costo de 50000 y luego redistribuya las rutas OSPF en EIGRP usando un ancho de banda T1 y 20,000 microsegundos de retardo.

Para redistribuir las rutas EIGRP en OSPF se debe de tener en cuenta la siguiente formula:

$$\text{Formula Costo} = \frac{100000}{BW(Kbps)}$$

R3#conf t

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

R3(config)#router eigrp 15

R3(config-router)# redistribute ospf 1 metric 100000 20000 255 255 1500

R3(config-router)#exit

R3(config)#router ospf 1

R3(config-router)# redistribute eigrp 10 metric 50000 subnets

R3(config-router)#exit

R3(config)#end

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

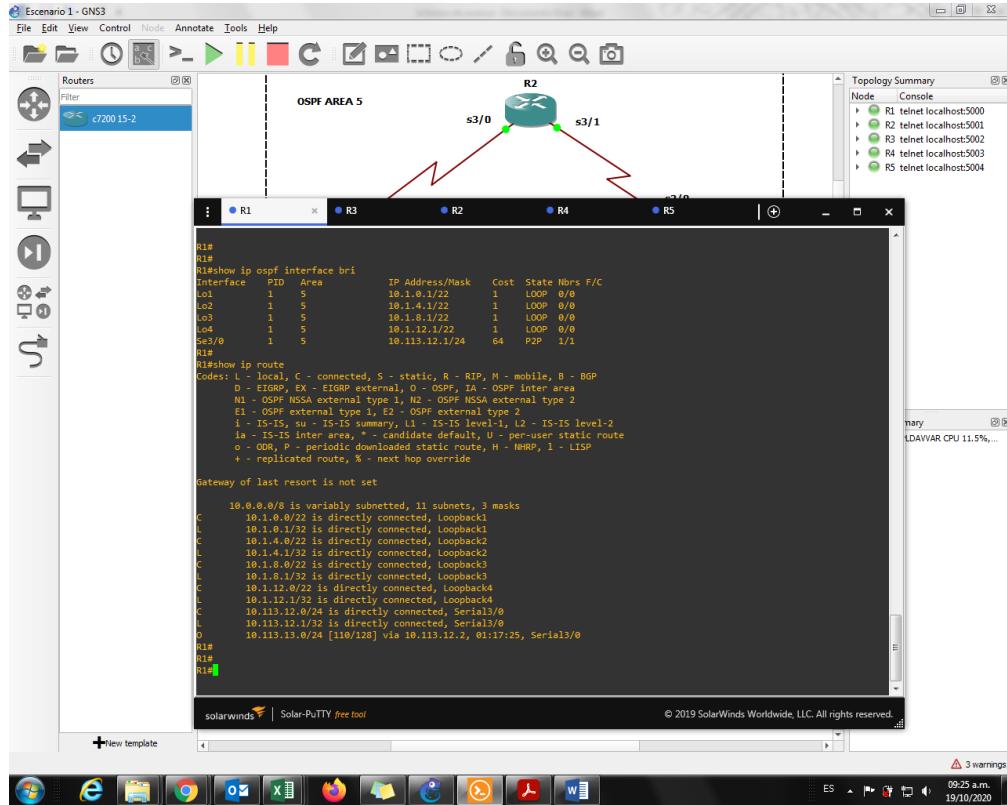


Figura 9. Show ip route en R1

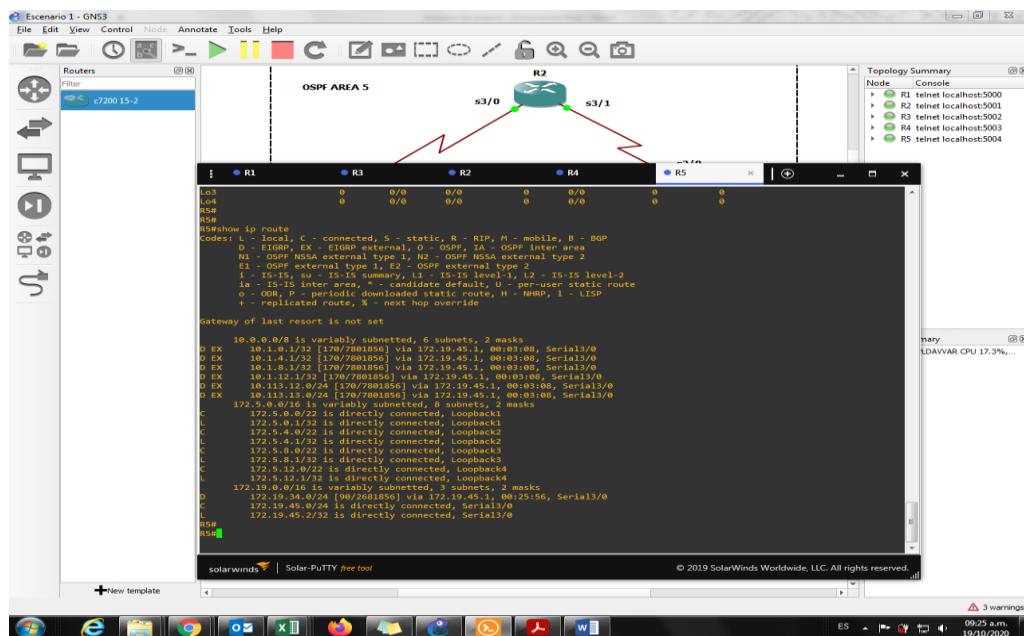


Figura 10. Show ip route en R5

DLS1

Switch>en

Switch#conf t

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

Switch(config)#int range F0/1-12

Switch(config-if-range)#shut

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

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

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

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

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

Switch(config-if-range)#

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

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

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

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

```
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to down

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

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

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

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

Switch(config-if-range)#ezxit
^
% Invalid input detected at '^' marker.
Switch(config-if-range)#exit
Switch(config)#hostname DLS1
DLS1(config)#
DLS1(config)#int range f0/11-12
DLS1(config-if-range)#channel-protocol lacp
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)#exit
DLS1(config)#interface port-channel 12
DLS1(config-if)#no sh
DLS1(config-if)#no sw
DLS1(config-if)#ip address 10.12.12.1 255.255.255.252
DLS1(config-if)#exit
```

DLS1(config)#

DLS2

Switch>en

Switch#conf t

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

Switch(config)#int range f0/1-12

Switch(config-if-range)#shut

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

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

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

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

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

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

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

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

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

Switch(config-if-range)#+

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

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

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

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

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

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

```
Switch(config-if-range)#exit
Switch(config)#hostname DLS2
DLS2(config)#
DLS2(config)#
DLS2(config)#interface port-channel 12
DLS2(config-if)#no sh
DLS2(config-if)#no sw
DLS2(config-if)#ip address 10.12.12.2 255.255.255.252
DLS2(config-if)#exit
DLS2(config)#int range f0/11-12
DLS2(config-if-range)#no sw
DLS2(config-if-range)#no sh
```

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

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

```
DLS2(config-if-range)#channel group 12 mode active
% Ambiguous command: "channel group 12 mode active"
DLS2(config-if-range)#
DLS2(config-if-range)#channel-protocol lacp
DLS2(config-if-range)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

SEGUNDO ESCENARIO

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

Topología de red

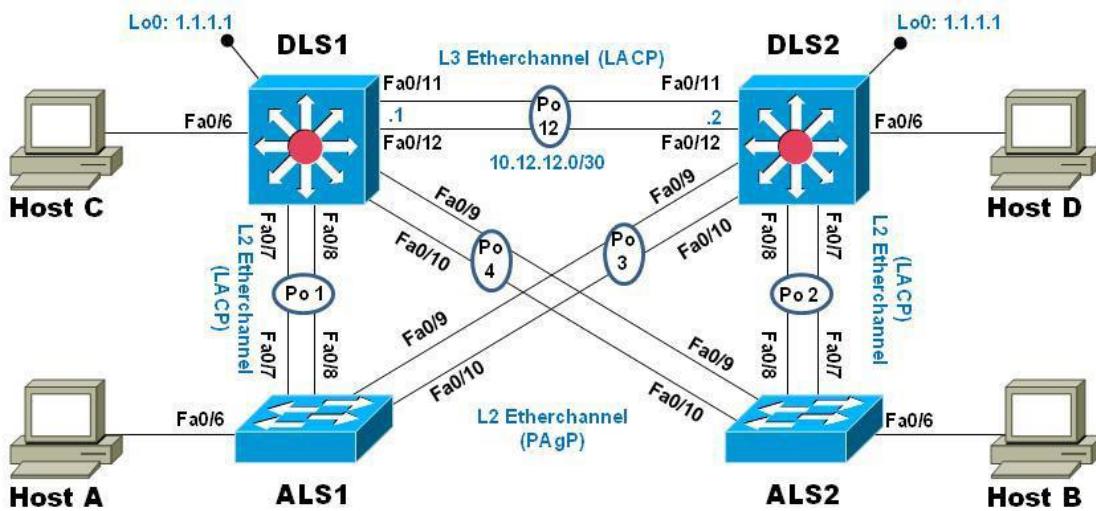


Figura 11. Topología de red escenario 2.

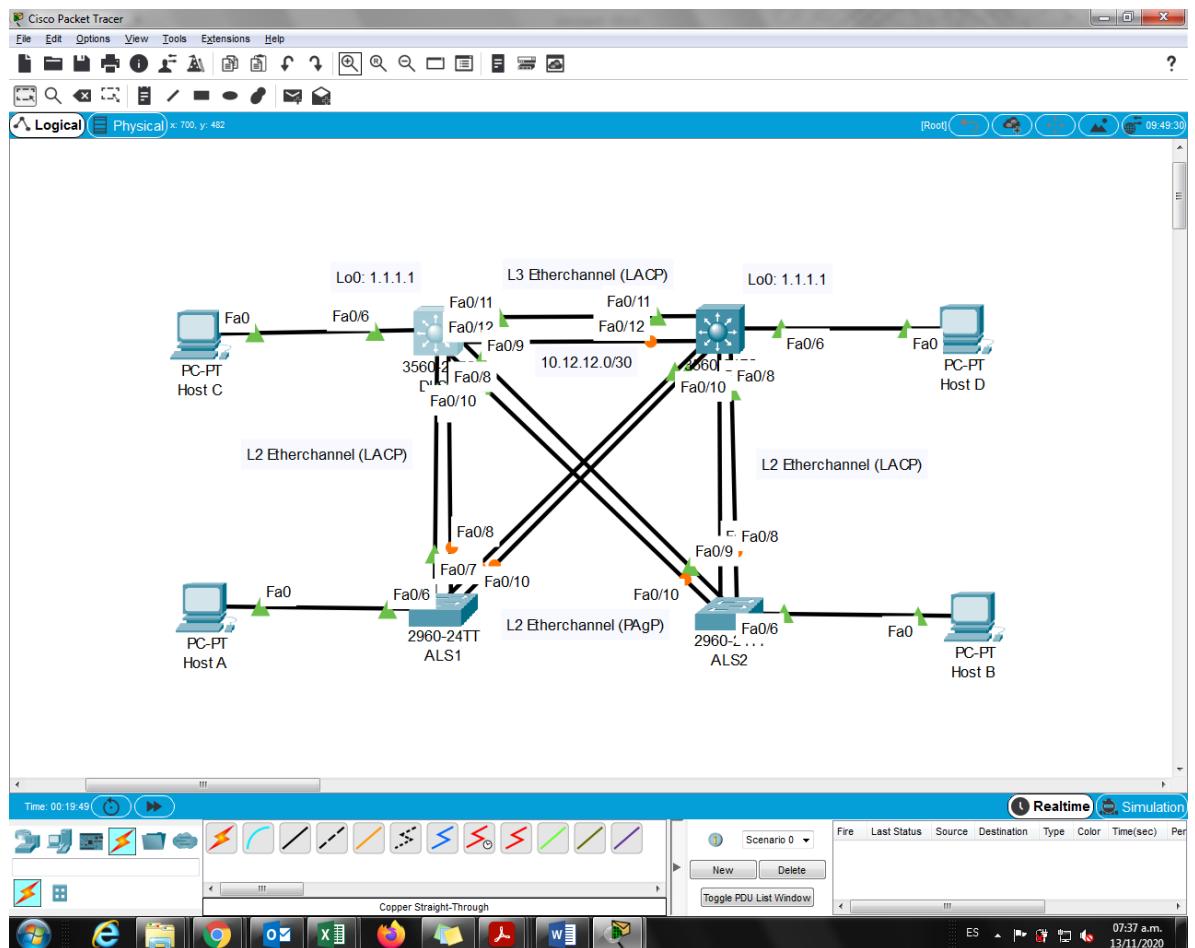


Figura 12. Topología escenario 2 packet tracer.

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

- Apagar todas las interfaces en cada switch.
- Asignar un nombre a cada switch acorde con el escenario establecido.

Configuración Switches

Switch>en

Switch#conf t

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

Switch(config)#int range F0/1-24

Switch(config-if-range)#Shut

```
Switch#conf t
```

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

```
Switch>en
```

```
Switch#conf t
```

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

```
Switch(config)#int range F0/1-24
```

```
Switch(config-if-range)#Shut
```

```
Switch#conf t
```

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

```
Switch(config)#hostname DLS2
```

```
Switch>en
```

```
Switch#conf t
```

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

```
Switch(config)#int range F0/1-24
```

```
Switch(config-if-range)#Shut
```

```
Switch#conf t
```

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

```
Switch(config)#hostname ALS1
```

```
ALS1(config)#
```

```
Switch>en
```

```
Switch#conf t
```

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

```
Switch(config)#int range F0/1-24
```

```
Switch(config-if-range)#Shut
```

```
Switch#conf t
```

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

```
Switch(config)#hostname ALS2
```

```
ALS2(config)#
```

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

Configuración DLS1

```
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int range F0/11-12
DLS1(config-if-range)#no switchport
DLS1(config-if-range)#channel-group 12 mode active
DLS1(config-if-range)#
Creating a port-channel interface Port-channel 12
DLS1(config-if-range)#no shut
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to down
DLS1(config-if-range)#

```

```
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int range F0/7-8
DLS1(config-if-range)#no switchport
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 shut

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS1(config-if-range)#

```

```
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int range F0/9-10
DLS1(config-if-range)#no switchport
DLS1(config-if-range)#channel-group 4 mode active
DLS1(config-if-range)#
Creating a port-channel interface Port-channel 4
DLS1(config-if-range)#no shut

```

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

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
DLS1(config-if-range)#

Configuración DLS2

```
DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int range f0/11-12
DLS2(config-if-range)#no switchport
DLS2(config-if-range)#channel-group 12 mode active
DLS2(config-if-range)#
Creating a port-channel interface Port-channel 12
DLS2(config-if-range)#no shut
```

```
DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int range f0/7-8
DLS2(config-if-range)#no switchport
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 shut
```

```
DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int range f0/9-10
DLS2(config-if-range)#channel-group 3 mode active
DLS2(config-if-range)#
Creating a port-channel interface Port-channel 3
DLS2(config-if-range)#no switchport
Command rejected (Port-channel): Either port is L2 and port-channel is L3, or vice-versa
Command rejected (Port-channel): Either port is L2 and port-channel is L3, or vice-versa
DLS2(config-if-range)#
DLS2(config-if-range)#no shut
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
DLS2(config-if-range)#

```

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

Configuración ALS1

```
ALS1>en
ALS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#int range f0/9-10
ALS1(config-if-range)#no switchport
% Incomplete command.
ALS1(config-if-range)#no switchport
% Incomplete command.
ALS1(config-if-range)#
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 shut
```

```
ALS1#
ALS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#int range f0/7-8
ALS1(config-if-range)#no switchport
% Incomplete command.
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 shut
```

Configuración ALS2

```
ALS2>en
ALS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int range f0/9-10
ALS2(config-if-range)#no switchport
% Incomplete command.
ALS2(config-if-range)#channel-group 4 mode desirable
ALS2(config-if-range)#
Creating a port-channel interface Port-channel 4
```

```
ALS2(config-if-range)#no shut
```

```
ALS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int range f0/7-8
ALS2(config-if-range)#no switchport
% Incomplete command.
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 shut
```

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 t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int port-channel 12
DLS1(config-if)#ip address 10.12.12.1 255.255.255.252
DLS1(config-if)#
```

```
DLS2>en
DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int port-channel 12
DLS2(config-if)#ip address 10.12.12.2 255.255.255.252
DLS2(config-if)#
```

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

```
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int range f0/7-8
DLS1(config-if-range)#no sw
DLS1(config-if-range)#channel-protocol lacp
DLS1(config-if-range)#channel-group 1 mode active
```

```
DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int range f0/7-8
DLS2(config-if-range)#no sw
DLS2(config-if-range)#channel-protocol lacp
DLS2(config-if-range)#channel-group 2 mode active
DLS2(config-if-range)#no shut
```

```
ALS1>en
ALS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#int range f0/7-8
ALS1(config-if-range)#no sw
% Incomplete command.
ALS1(config-if-range)#channel-protocol lacp
ALS1(config-if-range)#channel-group 1 mode active
ALS1(config-if-range)#no shut
```

```
ALS2>en
ALS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int range f0/7-8
ALS2(config-if-range)#no sw
% Incomplete command.
ALS2(config-if-range)#channel-protocol lacp
ALS2(config-if-range)#channel-group 2 mode active
ALS2(config-if-range)#no shut
```

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

```
DLS1>en
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int range f0/9-10
DLS1(config-if-range)#channel-protocol pagp
DLS1(config-if-range)#channel-group 1 mode desirable
DLS1(config-if-range)#
DLS1(config-if-range)#no shut
```

```
DLS2>en
DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int range f0/9-10
DLS2(config-if-range)#channel-protocol pagp
DLS2(config-if-range)#channel-group 2 mode desirable
DLS2(config-if-range)#no shut
```

```
ALS1>en
ALS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#int range f0/9-10
ALS1(config-if-range)#channel-protocol pagp
ALS1(config-if-range)#no shut
```

```
ALS2>en
ALS2# conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int range f0/9-10
ALS2(config-if-range)#channel-protocol pagp
ALS2(config-if-range)#channel-group 4 mode desirable
ALS2(config-if-range)#no shut
```

4) Todos los puertos troncales serán asignados a la VLAN 500 como la VLAN nativa.

```
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface Po1
DLS1(config-if)#switchport trunk native vlan 500
DLS1(config-if)#exit
DLS1(config)#interface Po4
DLS1(config-if)#switchport trunk native vlan 500
DLS1(config-if)#exit
DLS1(config)#end
```

```
DLS2>en
```

```
DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int Po2
DLS2(config-if)#switchport trunk native vlan 500
DLS2(config-if)#exit
DLS2(config)#int Po3
DLS2(config-if)#switchport trunk native vlan 500
DLS2(config-if)#end
```

```
ALS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#int Po1
ALS1(config-if)#switchport trunk native vlan 500
ALS1(config-if)#exit
ALS1(config)#int Po3
ALS1(config-if)#switchport trunk native vlan 500
ALS1(config-if)#end
```

```
ALS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int Po2
ALS2(config-if)#switchport trunk native vlan 500
ALS2(config-if)#exit
ALS2(config)#int Po4
ALS2(config-if)#switchport trunk native vlan 500
ALS2(config-if)#end
```

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

1) Utilizar el nombre de dominio CISCO con la contraseña ccnp321

```
DLS1>en
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vtp domain CISCO
DLS1(config)#vtp pass ccnp321
Setting device VLAN database password to ccnp321
DLS1(config)#end
```

```
ALS1>en
ALS1# conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
ALS1(config)#vtp pass ccnp321
Setting device VLAN database password to ccnp321
ALS1(config)#end
```

```
ALS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
ALS2(config)#vtp pass ccnp321
Setting device VLAN database password to ccnp321
ALS2(config)#end
```

2) Configurar DLS1 como servidor principal para las VLAN.

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

3) Configurar ALS1 y ALS2 como clientes VTP.

```
ALS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp mode client
Setting device to VTP CLIENT mode.
ALS1(config)#
```

```
ALS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vtp mode client
Setting device to VTP CLIENT mode.
ALS2(config)#
```

e. Configurar en el servidor principal las siguientes VLAN:

Número de VLAN	Nombre de VLAN	Número de VLAN	Nombre de VLAN
500	NATIVA	434	PROVEEDORES
12	ADMON	123	SEGUROS
234	CLIENTES	1010	VENTAS
1111	MULTIMEDIA	3456	PERSONAL

Tabla 3. Configuración de Vlan

```

DLS1>en
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vlan 500
DLS1(config-vlan)#name NATIVA
DLS1(config-vlan)#exit
DLS1(config)#vlan 12
DLS1(config-vlan)#name ADMON
DLS1(config-vlan)#exit
DLS1(config)#vlan 234
DLS1(config-vlan)#name CLIENTES
DLS1(config-vlan)#exit
DLS1(config)#vlan 1111
VLAN_CREATE_FAIL: Failed to create VLANs 1111 : extended VLAN(s) not
allowed in current VTP mode
DLS1(config)#vlan 111
DLS1(config-vlan)#name MULTIMEDIA
DLS1(config-vlan)#exit
DLS1(config)#vlan 434
DLS1(config-vlan)#name SEGUROS
DLS1(config-vlan)#vlan 101
DLS1(config-vlan)#name VENTAS
DLS1(config-vlan)#exit
DLS1(config)#vlan 345
DLS1(config-vlan)#name PERSONAL
DLS1(config-vlan)#exit
DLS1(config)#vlan 434
DLS1(config-vlan)#name PROVEEDORES
DLS1(config-vlan)#EXIT
DLS1(config)#VLAN 123

```

```
DLS1(config-vlan)#name SEGUROS
DLS1(config-vlan)#EXIT
DLS1(config)#
```

Número de VLAN	Nombre de VLAN	Número de VLAN	Nombre de VLAN
500	NATIVA	434	PROVEEDORES
12	ADMON	123	SEGUROS
234	CLIENTES	101	VENTAS
111	MULTIMEDIA	345	PERSONAL

Tabla 4. Nueva tabla de configuración de Vlan.

```
DLS1(config-vlan)#exit
DLS1(config)#vlan 234
DLS1(config-vlan)#name CLIENTES
DLS1(config-vlan)#exit
DLS1(config)#vlan 1111
VLAN CREATE _FAIL: Failed to create VLANs 1111 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#vlan 111
DLS1(config)#name MULTIMEDIA
DLS1(config)#exit
DLS1(config)#vlan 434
DLS1(config)#name SEGUROS
DLS1(config)#vlan 101
DLS1(config)#name VENTAS
DLS1(config)#exit
DLS1(config)#vlan 345
DLS1(config)#name PERSONAL
DLS1(config)#exit
DLS1(config)#vlan 434
DLS1(config)#NAME PROVEEDORES

* Invalid input detected at `*' marker.

DLS1(config-vlan)#NAME PROVEEDORES
DLS1(config-vlan)#vlan 123
DLS1(config-vlan)#EXIT
DLS1(config)#VLAN 123
DLS1(config-vlan)#name SEGUROS
DLS1(config-vlan)#EXIT
DLS1(config);
DLS1(config)#EXIT
DLS1
*SYS-5-CONFIG_I: Configured from console by console

DLS1#show VLAN
VLAN Name          Status    Ports
---- -----
1    default        active   Fa0/1, Fa0/2, Fa0/3, Fa0/4
                           Fa0/5, Fa0/6, 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   ADMON         active
101  VENTAS        active
111  MULTIMEDIA    active
123  SEGUROS       active
234  CLIENTES      active
500  NATIVA        active
434  PROVEEDORES   active
1002 fddi-default  active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default  active
VLAN Type SAID      MTU    Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
--More-- |
```

Figura 13. Comprobación configuración VLAN

f. En DLS1, suspender la VLAN 434.

DLS1# conf t

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

DLS1(config)#vlan 434

DLS1(config-vlan)#state suspend

^

% Invalid input detected at '^' marker.

DLS1(config-vlan)#exit

DLS1(config)#no vlan 434

DLS1(config)#exit

```
IOS Command Line Interface

-----
1   default           active    Fa0/1, Fa0/2, Fa0/3,
Fa0/4

Fa0/14

Fa0/17, Fa0/18

Fa0/21, Fa0/22

Gig0/1, Gig0/2
12   ADMON          active
101  VENTAS         active
111  MULTIMEDIA    active
123  SEGUROS        active
234  CLIENTES       active
345  PERSONAL       active
500  NATIVA         active
1002 fddi-default   active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default  active

VLAN Type  SAID      MTU    Parent RingNo BridgeNo Stp  BrdgMode
Trans1 Trans2
-----
--More--
```

Ctrl+F6 to exit CLI focus

Copy

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Figura 14. Comprobacion vlan 434 suspend en DLS1

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

DLS2>en

```
DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#vtp version 2
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS2(config)#vlan 500
DLS2(config-vlan)#name NATIVA
DLS2(config-vlan)#exit
DLS2(config)#vlan 12
DLS2(config-vlan)#name ADMON
DLS2(config-vlan)#exit
DLS2(config)#vlan 234
DLS2(config-vlan)#name CLIENTES
DLS2(config-vlan)#exit
DLS2(config)#vlan 111
DLS2(config-vlan)#name MULTIMEDIA
DLS2(config-vlan)#exit
DLS2(config)#vlan 434
DLS2(config-vlan)#name PROVEEDORES
DLS2(config-vlan)#exit
DLS2(config)#vlan 123
DLS2(config-vlan)#name SEGUROS
DLS2(config-vlan)#exit
DLS2(config)#vlan 101
DLS2(config-vlan)#name VENTAS
DLS2(config-vlan)#exit
DLS2(config)#vlan 345
DLS2(config-vlan)#name PERSONAL
DLS2(config-vlan)#exit
DLS2(config)#

```

h. Suspender VLAN 434 en DLS2.

```
DLS2(config)#vlan 434
DLS2(config-vlan)#state suspend
^
% Invalid input detected at '^' marker.
DLS2(config-vlan)#exit
DLS2(config)#no vlan 434
DLS2(config)#exit

```

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

```
DLS2(config)#vlan 567
```

```
DLS2(config-vlan)#name PRODUCCION
DLS2(config-vlan)#exit
```

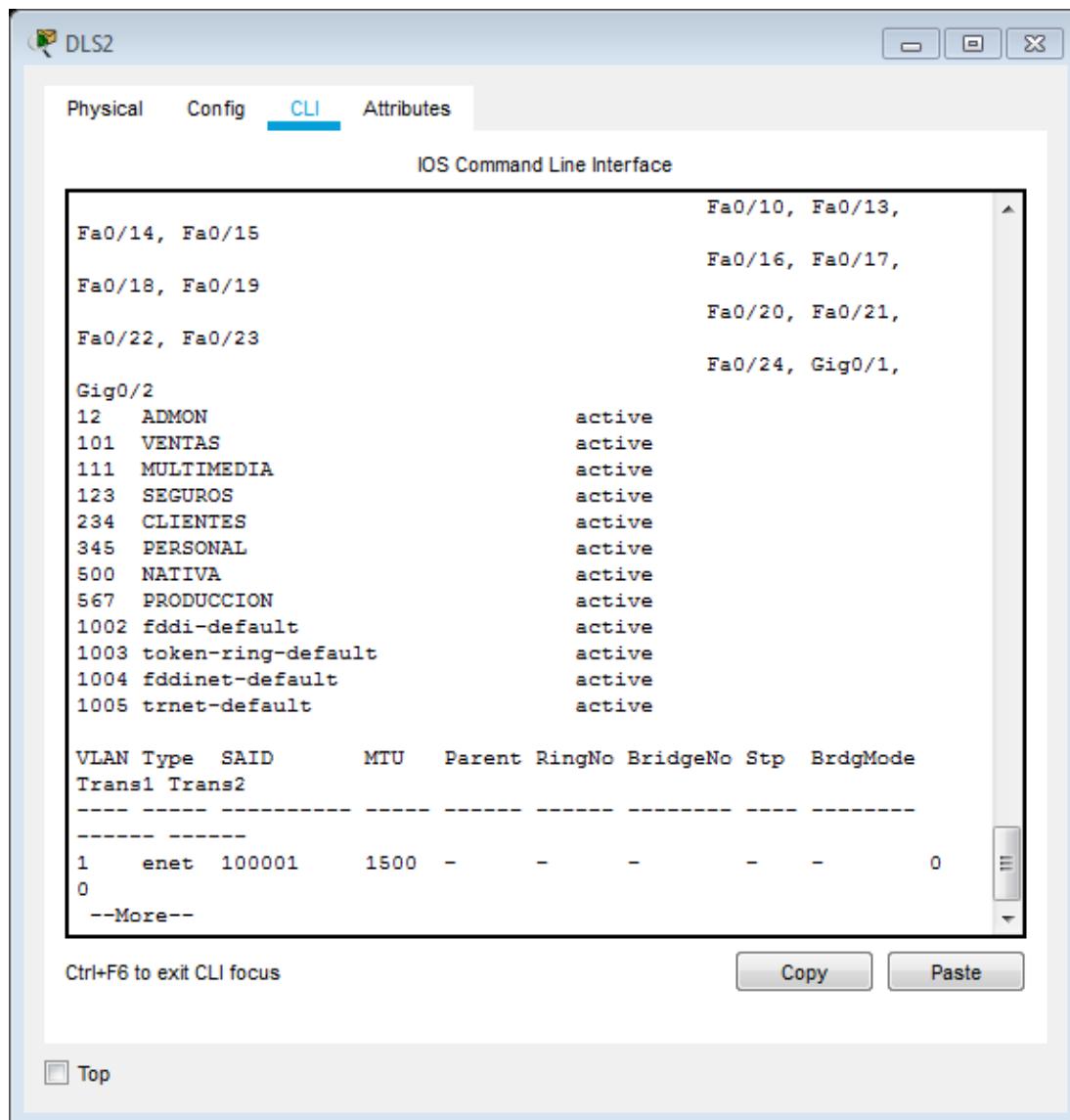


Figura 15. Comprobación puntos g, h, i

j. Configurar DLS1 como Spanning tree root para las VLAN 1, 12, 434, 500, 1010, 1111 y 3456 y como raíz secundaria para las VLAN 123 y 234.

DLS1>en

```
DLS1#conf t
```

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

```
DLS1(config)#spanning-tree vlan 1,12,434,500,101,111,345 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, 500, 1010, 1111 y 3456.

```
DLS2#conf t
```

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

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

```
DLS2(config)#spanning-tree vlan 1,12,434,500,101,111,345 root secondary
```

```
DLS2(config)#
```

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

```
DLS1#conf t
```

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

```
DLS1(config)#int range f0/7-12
```

```
DLS1(config-if-range)#switchport trunk allowed vlan 12,123,234,500,101,111,345
```

```
^
```

% Invalid input detected at '^' marker.

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

Nota: no se puede realizar la acción ya que no lo permite packet tracer

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		

Tabla 5. Configuración interfaces

```
DLS1#conf t
```

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

```
DLS1(config)#int f0/6
```

```
DLS1(config-if)#switchport access vlan 345
DLS1(config-if)#no shut
DLS1(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
DLS1(config-if)#exit
DLS1(config)#int f0/15
DLS1(config-if)#switchport access vlan 111
DLS1(config-if)#no shut

DLS2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int f0/6
DLS2(config-if)#switchport access vlan 12
DLS2(config-if)#switchport access vlan 101
DLS2(config-if)#no shut
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

DLS2(config-if)#exit
DLS2(config)#int f0/15
DLS2(config-if)#switchport access vlan 111
DLS2(config-if)#no shut
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
DLS2(config-if)#exit

DLS2(config)#int range f0/16-18
DLS2(config-if-range)#switchport access vlan 123
DLS2(config-if-range)#switchport access vlan 101
DLS2(config-if-range)#no shut

ALS1>en
ALS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#int f0/6
ALS1(config-if)#switchport access vlan 123
ALS1(config-if)#switchport access vlan 101
ALS1(config-if)#no shut
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

```
ALS1(config-if)#exit  
ALS1(config)#int f0/15  
ALS1(config-if)#switchport access vlan 111  
ALS1(config-if)#no shut
```

```
ALS2>en  
ALS2#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
ALS2(config)#int f0/6  
ALS2(config-if)#switchport access vlan 234  
ALS2(config-if)#no shut
```

```
ALS2(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-if)#exit  
ALS2(config)#int f0/15  
ALS2(config-if)#switchport access vlan 111  
ALS2(config-if)#no shut
```

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

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

DLS1

Physical Config **CLI** Attributes

IOS Command Line Interface

```

DLS1(config-if)#exit
DLS1(config)#int Fa0/15
DLS1(config-if)#switchport access vlan 111
DLS1(config-if)#no shut
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
DLS1(config-if)#
DLS1(config-if)#exit
DLS1(config)#
DLS1#
*SYS-5-CONFIG_I: Configured from console by console

DLS1#show vlan
VLAN Name          Status Ports
---- -----
1   default         active  Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                Fa0/5, Fa0/13, Fa0/14, Fa0/16
                                Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                Gig0/1, Gig0/2

12  AERON           active
101 VENTAS          active
111 MULTIMEDIA      active  Fa0/15
123 SEGUROS          active
234 CLIENTES         active
500 NATIVA          active
1002 fddi-default   active
1003 token-ring-default active
1004 fddiinet-default active
1005 trnet-default   active

VLAN Type SAID      MTU Parent RingNo BridgeNo Stp BridgMode Transl Trans2
---- -----
1   enet 100001 1500 -   -   -   -   0   0
12  enet 100012 1500 -   -   -   -   0   0
101 enet 100101 1500 -   -   -   -   0   0
111 enet 100111 1500 -   -   -   -   0   0
123 enet 100123 1500 -   -   -   -   0   0
234 enet 100234 1500 -   -   -   -   0   0
345 enet 100345 1500 -   -   -   -   0   0
500 enet 100500 1500 -   -   -   -   0   0
1002 fddi 101002 1500 -   -   -   -   0   0
1003 token-ring 101003 1500 -   -   -   -   0   0
1004 fddiinet 101004 1500 -   -   -   ieee - 0   0
1005 trnet 101005 1500 -   -   -   ibm - 0   0

VLAN Type SAID      MTU Parent RingNo BridgeNo Stp BridgMode Transl Trans2
---- -----
Remote SPAN VLANs

Primary Secondary Type      Ports
---- -----
DLS1#

```

Ctrl+F6 to ext CLI focus Copy Paste

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Figura 16. Show vlan en DLS1

DLS2

Physical Config **CLI** Attributes

IOS Command Line Interface

```

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to down
DLS2(config-if-range)#
DLS2(config-if-range)#
DLS2#
*SYS-5-CONFIG_I: Configured from console by console

DLS2#show vlan
VLAN Name          Status Ports
---- -----
1   default         active  Po0/5, Fa0/1, Fa0/2, Fa0/3,
                                Fa0/4, Fa0/5, Fa0/9, Fa0/10
                                Fa0/13, Fa0/14, Fa0/15, Fa0/20
                                Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                Gig0/1, Gig0/2

12  AERON           active  Fa0/6, Fa0/16, Fa0/17, Fa0/18
101 VENTAS          active
111 MULTIMEDIA      active  Fa0/15
123 SEGUROS          active
234 CLIENTES         active
500 NATIVA          active
847 PRODUCCION      active
1002 fddi-default   active
1003 token-ring-default active
1004 fddiinet-default active
1005 trnet-default   active

VLAN Type SAID      MTU Parent RingNo BridgeNo Stp BridgMode Transl Trans2
---- -----
1   enet 100001 1500 -   -   -   -   0   0
12  enet 100012 1500 -   -   -   -   0   0
101 enet 100101 1500 -   -   -   -   0   0
111 enet 100111 1500 -   -   -   -   0   0
123 enet 100123 1500 -   -   -   -   0   0
234 enet 100234 1500 -   -   -   -   0   0
345 enet 100345 1500 -   -   -   -   0   0
500 enet 100500 1500 -   -   -   -   0   0
1002 fddi 101002 1500 -   -   -   -   0   0
1003 token-ring 101003 1500 -   -   -   -   0   0
1004 fddiinet 101004 1500 -   -   -   ieee - 0   0
1005 trnet 101005 1500 -   -   -   ibm - 0   0

VLAN Type SAID      MTU Parent RingNo BridgeNo Stp BridgMode Transl Trans2
---- -----
Remote SPAN VLANs

Primary Secondary Type      Ports
---- -----
DLS2#

```

Ctrl+F6 to ext CLI focus Copy Paste

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11:59 a.m. 13/11/2020

Figura 17. Show Vlan en DLS2

Physical Config **CLI** Attributes

IOS Command Line Interface

```
AL51#  
AL51>conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
AL51(config)#int fa0/6  
AL51(config-if)#switchport access vlan 123  
AL51(config-if)#switchport access vlan 101  
AL51(config-if)#no shut  
  
AL51(config-if)#  
%LINK-6-CHANGED: Interface FastEthernet0/6, changed state to up  
  
%LINKPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to up  
  
AL51(config-if)#exit  
AL51(config)#int fa0/15  
AL51(config-if)#switchport access vlan 111  
AL51(config-if)#no shut  
  
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down  
AL51(config-if)#exit  
AL51(config)#end  
AL51#  
%SYS-6-CONFIG_I: Configured from console by console  
  
AL51#show vlan  
  
VLAN Name Status Ports  
---- -- -- --  
1 default active Po1, Po3, Fa0/1, Fa0/2  
Po3, Fa0/4, Fa0/5, Fa0/7  
Fa0/9, Fa0/10, Fa0/11,  
Fa0/12, Fa0/13, Fa0/14, Fa0/16  
Fa0/17, Fa0/18, Fa0/19, Fa0/20  
Fa0/21, Fa0/22, Fa0/23, Fa0/24  
Giq0/1, Giq0/2  
  
1002 fddi-default active  
1003 token-ring-default active  
1004 tokenring-default active  
1005 trnet-default active  
  
VLAN Type RAID MTU Parent BridgeID BridgeMng Rsp Bdp/Mode Transl Trans2  
---- -- -- -- -- -- -- -- -- -- -- --  
enet 100001 1500 - - - - - - 0 0  
1002 fddi 100002 1500 - - - - - - 0 0  
1003 token-ring 100003 1500 - - - - - - 0 0  
1004 tokenring 100004 1500 - - - ieee - - 0 0  
1005 trnet 100005 1500 - - - atm - - 0 0  
--More--  
  
Ctrl+P to exit CLI focus
```

Copy Paste

Top

12:01 p.m.
13/11/2020

Figura 18. Show Vlan en ALS1

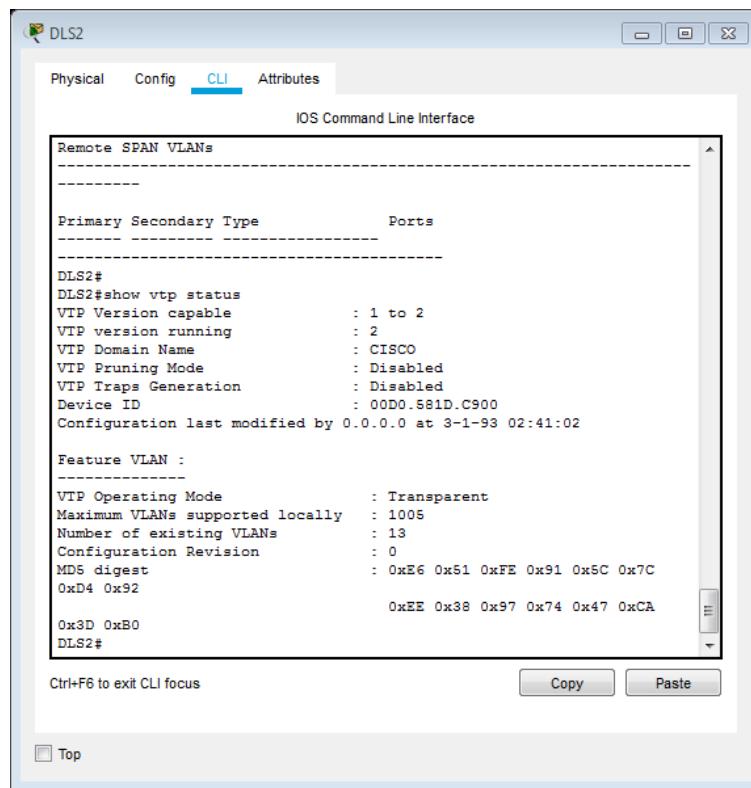
The screenshot shows the DLS1 CLI interface with the following content:

```
DLS1#show vtp status
VTP Version capable : 1 to 2
VTP version running : 2
VTP Domain Name : CISCO
VTP Pruning Mode : Disabled
VTP Traps Generation : Disabled
Device ID : 0010.1160.9BA0
Configuration last modified by 0.0.0.0 at 3-1-93 02:34:22
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 : 12
Configuration Revision : 18
MDS digest : 0x61 0xAE 0xF6 0x5F 0x81 0x7A
0xFF 0x30
0x51 0xCB
0xC1 0x2A 0xAE 0xF4 0xA4 0xC
DLS1#
```

At the bottom, there are buttons for "Copy" and "Paste".

Figura 19. Show VTP status en DLS1



The screenshot shows the DLS2 software interface with the 'CLI' tab selected. The main window displays the 'IOS Command Line Interface' with the following output:

```
DLS2#
DLS2#show vtp status
VTP Version capable          : 1 to 2
VTP version running          : 2
VTP Domain Name              : CISCO
VTP Pruning Mode             : Disabled
VTP Traps Generation         : Disabled
Device ID                    : 00D0.581D.C900
Configuration last modified by 0.0.0.0 at 3-1-93 02:41:02

Feature VLAN :
-----
VTP Operating Mode           : Transparent
Maximum VLANs supported locally : 1005
Number of existing VLANs      : 13
Configuration Revision        : 0
MD5 digest                   : 0xE6 0x51 0xFE 0x91 0x5C 0x7C
0xD4 0x92
0x3D 0xB0
DLS2#
```

At the bottom of the window, there are 'Copy' and 'Paste' buttons, and a checkbox labeled 'Top'.

Figura 20. Show VTP status en DLS2

```

DLS2#show ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
FastEthernet0/0    unassigned      YES  unset   up          up
FastEthernet0/1    unassigned      YES  unset   down        down
FastEthernet0/2    unassigned      YES  unset   up          up
FastEthernet0/3    unassigned      YES  unset   administratively down
FastEthernet0/4    unassigned      YES  unset   administratively down
FastEthernet0/5    unassigned      YES  unset   administratively down
FastEthernet0/6    unassigned      YES  unset   administratively down
FastEthernet0/7    unassigned      YES  unset   up          up
FastEthernet0/8    unassigned      YES  unset   up          up
FastEthernet0/9    unassigned      YES  unset   up          up
FastEthernet0/10   unassigned      YES  unset   up          up
FastEthernet0/11   unassigned      YES  unset   up          up
FastEthernet0/12   unassigned      YES  unset   up          up
FastEthernet0/13   unassigned      YES  unset   administratively down
FastEthernet0/14   unassigned      YES  unset   administratively down
FastEthernet0/15   unassigned      YES  unset   down        down
FastEthernet0/16   unassigned      YES  unset   down        down
FastEthernet0/17   unassigned      YES  unset   down        down
FastEthernet0/18   unassigned      YES  unset   down        down
FastEthernet0/19   unassigned      YES  unset   administratively down
FastEthernet0/20   unassigned      YES  unset   administratively down
FastEthernet0/21   unassigned      YES  unset   administratively down
FastEthernet0/22   unassigned      YES  unset   administratively down
FastEthernet0/23   unassigned      YES  unset   administratively down
FastEthernet0/24   unassigned      YES  unset   administratively down
GigabitEthernet0/0 unassigned      YES  unset   down        down
Vlan 1             unassigned      YES  unset   administratively down
DLS2#

```

Figura 21. Show ip interface brief en DLS2

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

```

DLS1#show etherchannel
               Channel-group listing:
-----
Group: 1
-----
Group state = L3
Ports: 2 Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol: LACP

Group: 4
-----
Group state = L3
Ports: 2 Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol: LACP

Group: 12
-----
Group state = L3
Ports: 2 Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol: LACP
DLS1#

```

Figura 22. Show etherchannel en DLS1

The screenshot shows a Windows application window titled "ALS1". The tab bar at the top has tabs for "Physical", "Config", "CLI" (which is selected), and "Attributes". Below the tabs is a title bar "IOS Command Line Interface". The main area contains the output of the "show etherchannel" command:

```
Number of existing VLANs      : 5
VTP Operating Mode           : Client
VTP Domain Name              : CISCO
VTP Pruning Mode             : Disabled
VTP V2 Mode                  : Disabled
VTP Traps Generation         : Disabled
MD5 digest                   : 0xBE 0xBB 0x1F 0x34 0xCE 0xF5 0xD1
0xF3
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
ALS1#
ALS1#show etherchannel
      Channel-group listing:
      -----
      Group: 1
      -----
      Group state = L2
      Ports: 2 Maxports = 16
      Port-channels: 1 Max Port-channels = 16
      Protocol: LACP

      Group: 3
      -----
      Group state = L2
      Ports: 2 Maxports = 8
      Port-channels: 1 Max Portchannels = 1
      Protocol: PAGP
ALS1#
```

At the bottom of the window, there are two buttons: "Copy" and "Paste". A checkbox labeled "Top" is located at the bottom left.

Figura 23. Show etherchannel en ALS1

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

DLS1#

Physical Config **CLI** Attributes

IOS Command Line Interface

```

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 : 12
Configuration Revision : 18
MD5 digest : 0x61 0xAE 0xF6 0x8F 0x81 0x7A 0xFF 0x30
              0xC1 0x2A 0xAE 0xF4 0xA4 0x0C 0x51 0xCB
DLS1#
DLS1#
DLS1#show etherchannel
  Channel-group listing:
  -----
  
```

Group: 1

Group state = L3
Ports: 2 Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol: LACP

Group: 4

Group state = L3
Ports: 2 Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol: LACP

Group: 12

Group state = L3
Ports: 2 Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol: LACP

DLS1#show spanning-tree
VLAN0345
 Spanning tree enabled protocol ieee
 Root ID Priority 24921
 Address 0000.0C90.5744
 This bridge is the root
 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

 Bridge ID Priority 24921 (priority 24976 sys-id-ext 345)
 Address 0000.0C90.5744
 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
 Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
Fa0/6 Desg FWD 19 128.6 P2p
DLS1#

Ctrl+F6 to exit CLI focus Copy Paste

DLS2#

Physical Config **CLI** Attributes

IOS Command Line Interface

```

FastEthernet0/14 unassigned YES unset administratively down down
FastEthernet0/15 unassigned YES unset down down
FastEthernet0/16 unassigned YES unset down down
FastEthernet0/17 unassigned YES unset down down
FastEthernet0/18 unassigned YES unset down down
FastEthernet0/19 unassigned YES unset administratively down down
FastEthernet0/20 unassigned YES unset administratively down down
FastEthernet0/21 unassigned YES unset down down
FastEthernet0/22 unassigned YES unset administratively down down
FastEthernet0/23 unassigned YES unset administratively down down
FastEthernet0/24 unassigned YES unset administratively down down
GigabitEthernet0/1 unassigned YES unset down down
GigabitEthernet0/2 unassigned YES unset down down
Vlan1 unassigned YES unset administratively down down
DLS2#
DLS2#
DLS2#show spanning-tree
  -----
  * Invalid input detected at '^' marker.

DLS2#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 28673
  Address 0030.F203.30B7
  This bridge is the root
  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 28673 (priority 28672 sys-id-ext 1)
  Address 0030.F203.30B7
  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
  Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
Fa0/9 Desg FWD 19 128.9 P2p
Fa0/10 Desg FWD 19 128.10 P2p

VLAN0101
  Spanning tree enabled protocol ieee
  Root ID Priority 28773
  Address 0030.F203.30B7
  This bridge is the root
  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 28773 (priority 28672 sys-id-ext 101)
  Address 0030.F203.30B7
  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
  Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
Fa0/6 Desg FWD 19 128.6 P2p
DLS2#
DLS2#
```

Ctrl+F6 to exit CLI focus Copy Paste

Figura 24. Show spanning-tree en DLS y DLS2

CONCLUSIONES

A lo largo del trabajo realizado se recordaron comandos utilizados en el desarrollo del curso de CCNP de Cisco para configurar routers y enrutarlos tanto para interfaces OSPF como EIGRP, también la creación de interfaces Loopback.

Los conocimientos que se han adquirido a lo largo del curso de CCNP de Cisco se aplican de manera correcta para el desarrollo del escenario 1, aplicando comandos como show ip route, show ip interface brief | include up. Los cuales nos permiten visualizar configuraciones anteriormente hechas.

El software GNS3 permite realizar simulaciones de enrutamientos de manera sencilla, desde la topología y creación de routers, hasta enrutamiento EIGRP y OSPF, este utiliza una interfaz rápida y fácil de manejar.

Gracias a las interfaces Loopback se pueden crear rutas alternas sin necesidad de tener más routers físicos, esto es de gran ayuda al momento de programar una topología ya que nos puede ahorrar una gran cantidad de recursos.

En la versión de Packet tracer utilizada (versión 7) es importante al momento de configurar las VLAN no pasar el número de VLAN que se tiene definido por defecto el cual es 1000, ya que si se pasa saldrá un error y no deja seguir con la configuración.

Para visualizar las configuraciones que le dan a los VLAN se utiliza el comando show vlan, el cual muestra el número, nombre, estatus y puerto actual en el cual se encuentran todos los vlan para el switch al que se le esté insertando el comando.

El comando show etherchannel se utiliza para visualizar que este configurado de manera correcta el etherchannel entre dos switches, en este se muestra información como grupo, estado de grupo, puertos y protocolo.

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