EVALUACIÓN – PRUEBA DE HABILIDADES PRÁCTICAS CCNP

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Tabla De Contenido

Introducción

El presente trabajo sustenta de manera escrita y gráfica el proceso que se ha realizado para implementar cada uno de los temas vistos durante el desarrollo del curso CCNP de Cisco, en equipos Router y Switches. Los casos presentados para Routing fue desarrollado en la plataforma GNS3 1.3.2 y el caso para Switching fue desarrollado en la plataforma Packet Tracer 7.2 que es la última versión que nos ofrece la plataforma Netacad.

Objetivos

General

Plantear una solución adecuada a cada uno de los escenarios de estudio propuestos, mostrando y aplicando los comandos precisos para ejecutar cada una de las configuraciones solicitadas de acuerdo a lo aprendido durante el desarrollo del curso.

Específicos:

- Investigar y analizar cada uno de los temas requeridos para dar solución alosescenarios propuestos en la guía de desarrollo de habilidades.
- Configurar cada uno de los equipos propuestos en la guía para la implementación de cada escenario.
- Conocer y aplicar los comandos precisos para construir los parámetros que cada protocolo requiere para su ejecución.
- Ejecutar pruebas de conectividad como de funcionalidad de cada uno de los equipos de la topología propuesta en cada escenario.

Evaluación – Prueba de habilidades prácticas CCNP

Descripción general de la prueba de habilidades

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

Para esta actividad, el estudiante dispone de cerca de dos semanas para realizar las tareas asignadas en cada uno de los tres (3) escenarios propuestos, acompañado de los respectivos procesos de documentación de la solución, correspondientes al registro de la configuración de cada uno de los dispositivos, la descripción detallada del paso a paso de cada una de las etapas realizadas durante su desarrollo, el registro de los procesos de verificación de conectividad mediante el uso de comandos **ping, traceroute, show ip route, entre otros.**

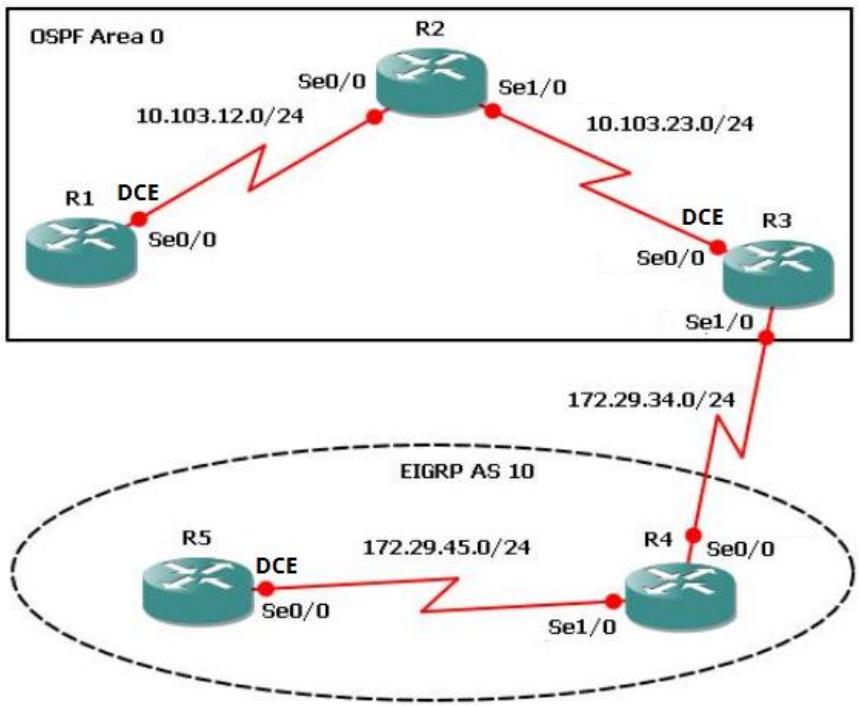
Teniendo en cuenta que la Prueba de habilidades está conformada por tres (3) escenarios, el estudiante deberá realizar el proceso de configuración de usando cualquiera de las siguientes herramientas:**Packet Tracer** o**GNS3**.

- Es muy importante mencionar que esta actividad es de carácter **INDIVIDUAL y OBLIGATORIA.**

- Toda evidencia de **copy-paste o plagio (de la web o de otros informes)** será penalizada con severidad.

Descripción de escenarios propuestos para la prueba de habilidades

Escenario 1



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.

Router 1

R1(config-if)#ip address 10.103.12.1 255.255.255.0

R1(config-if)#clock rate 128000

R1(config-if)#bandi

R1(config-if)#bandwidth 128

R1(config-if)#no shut

*Dec 6 09:40:07.923: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up

R1(config-if)#

*Dec 6 09:40:08.931: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

R1(config-if)#

R1(config)#router ospf 1

R1(config-router)#network 10.103.12.0 0.0.0.255 area 0

Router 2

R2(config)#interface serial 1/1

R2(config-if)#ip addr 10.103.23.1 255.255.255.0

R2(config-if)#no shut

*Dec 6 09:23:15.811: %LINK-3-UPDOWN: Interface Serial1/1, changed state to up

*Dec 6 09:23:16.823: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to up

R2(config-if)#interface serial 1/0

R2(config-if)#ip addr 10.103.12.2 255.255.255.0

*Dec 6 09:23:38.499: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to down

R2(config-if)#ip addr 10.103.12.1 255.255.255.0

R2(config-if)#no shu

R2(config)#router ospf 1

R2(config-router)#network 10.103.12.0 0.0.0.255 area 0

*Dec 6 10:06:20.203: %OSPF-5-ADJCHG: Process 1, Nbr 10.103.12.1 on Serial1/0 from LOADING to FULL, Loading Done

R2(config-router)#network 10.103.23.0 0.0.0.255 area 0

```
R1(config)#interface serial 1/1
R1(config-if)#ip addr 10.103.23.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#
R1(config-if)#
*Dec  6 09:23:15.811: %LINK-3-UPDOWN: Interface Serial1/1, changed state to up
R1(config-if)#
*Dec  6 09:23:16.823: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to up
R1(config-if)#interface serial 1/0
R1(config-if)#ip addr 10.103.12.1 255.255.255.0
*Dec  6 09:23:38.499: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to down
R1(config-if)#ip addr 10.103.12.1 255.255.255.0
R1(config-if)#no shu
```

Router 3

R3(config)#inter seri 1/1

R3(config-if)#ip addr 10.103.23.2 255.255.255.0

R3(config-if)#clock rate 128000

R3(config-if)#bandwi 128

R3(config-if)#no shut

*Dec 6 09:45:04.763: %LINK-3-UPDOWN: Interface Serial1/1, changed state to up

*Dec 6 09:45:05.771: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to up

R3(config-if)#interf serial 1/3

R3(config-if)#ip add 172.29.34.1 255.255.255.0

R3(config-if)#no shut

*Dec 6 09:46:24.959: %LINK-3-UPDOWN: Interface Serial1/3, changed state to up

*Dec 6 09:46:25.971: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/3, changed state to up

R3(config)#router ospf 1

R3(config-router)#network 10.103.23.0 0.0.0.255 area 0

*Dec 6 10:08:42.323: %OSPF-5-ADJCHG: Process 1, Nbr 10.103.23.1 on Serial1/1 from LOADING to FULL, Loading Done

R3(config-router)#network 172.29.34.0 0.0.0.255 area 0

```
R3(config)#inter seri 1/1
R3(config-if)#ip addr 10.103.23.2 255.255.255.0
R3(config-if)#clock rate 128000
R3(config-if)#bandwi 128
R3(config-if)#no shut
R3(config-if)#
*Dec  6 09:45:04.763: %LINK-3-UPDOWN: Interface Serial1/1, changed state to up
R3(config-if)#
*Dec  6 09:45:05.771: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to up
R3(config-if)#
R3(config-if)#interf serial 1/3
R3(config-if)#ip add 172.29.34.1 255.255.255.0
R3(config-if)#no shut
R3(config-if)#
*Dec  6 09:46:24.959: %LINK-3-UPDOWN: Interface Serial1/3, changed state to up
R3(config-if)#
*Dec  6 09:46:25.971: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/3, changed state to up
R3(config-if)#
*Dec  6 09:46:51.959: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/3, changed state to down
```

Router 4

R4(config)#inter serial 1/3

R4(config-if)#ip add 172.29.34.2 255.255.255.0

R4(config-if)#no shut

*Dec 6 09:49:58.439: %LINK-3-UPDOWN: Interface Serial1/3, changed state to up

*Dec 6 09:49:59.447: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/3, changed state to up

R4(config-if)#inter serial 1/0

R4(config-if)#ip add 172.29.45.2 255.255.255.0

R4(config-if)#no shut

*Dec 6 09:50:31.299: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up

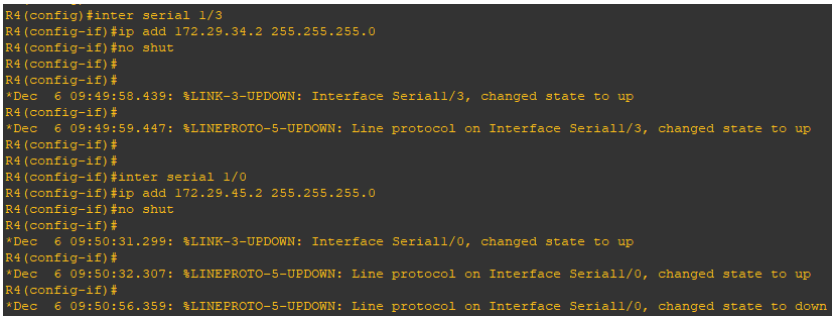
*Dec 6 09:50:32.307: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

R4(config)#router eigrp 10

R4(config-router)#network 172.29.34.0

R4(config-router)#auto-summary

R4(config-router)#network 172.29.45.0



Router 5

R5(config)#inter seri

R5(config)#inter serial 1/0

R5(config-if)#ip add 172.29.45.1 255.255.255.0

R5(config-if)#clock rate 128000

R5(config-if)#band 128

R5(config-if)#no shut

*Dec 6 09:58:02.799: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up

*Dec 6 09:58:03.807: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

R5(config-router)#network 172.29.45.0

R5(config-router)#auto

*Dec 6 10:29:08.027: %DUAL-5-NBRCHANGE: EIGRP-IPv4 10: Neighbor 172.29.45.2 (Serial1/0) is up: new adjacency

R5(config-router)#auto-summary

*Dec 6 10:29:10.403: %DUAL-5-NBRCHANGE: EIGRP-IPv4 10: Neighbor 172.29.45.2 (Serial1/0) is resync: summary co nfigured

```
R5(config)#inter seri
R5(config)#inter serial 1/0
R5(config-if)#ip add 172.29.45.1 255.255.255.0
R5(config-if)#clock rate 128000
R5(config-if)#band 128
R5(config-if)#no shut
R5(config-if)#
*Dec  6 09:58:02.799: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up
R5(config-if)#
*Dec  6 09:58:03.807: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
```

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 0 de OSPF.**

R1(config-if)#inter loop 0

R1(config-if)#ip address 10.1.0.1 255.255.255.0

R1(config-if)#no shu

R1(config-if)#inter loop 1

R1(config-if)#ip address 10.1.1.1 255.255.255.0

R1(config-if)#no shut

R1(config-if)#inter loop 2

R1(config-if)#ip address 10.1.2.1 255.255.255.0

R1(config-if)#no shut

R1(config-if)#inter loop 3

R1(config-if)#ip address 10.1.2.1 255.255.255.0

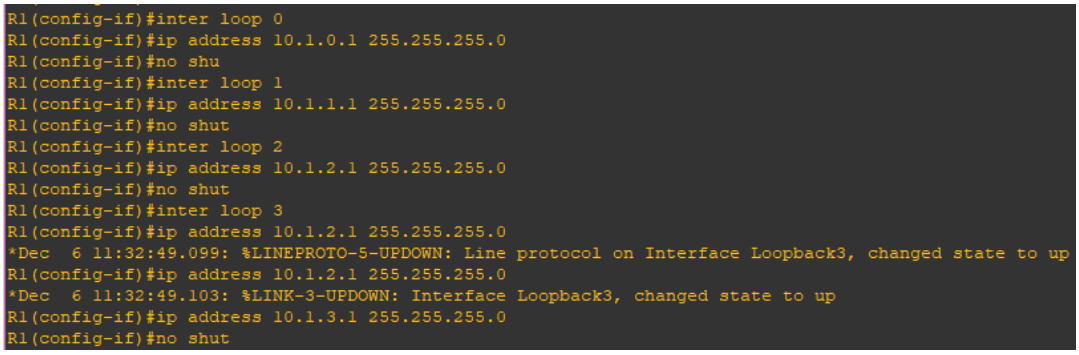
*Dec 6 11:32:49.099: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up

R1(config-if)#ip address 10.1.2.1 255.255.255.0

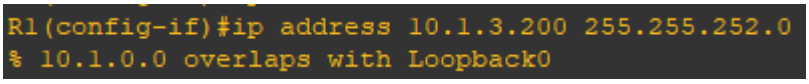
*Dec 6 11:32:49.103: %LINK-3-UPDOWN: Interface Loopback3, changed state to up

R1(config-if)#ip address 10.1.3.1 255.255.255.0

R1(config-if)#no shut



No podemos tener ip´s del mismo segmento en las interfaces del router ya que esto nos crea un overloops.



Por este motivo se toman otras ip´s para implementar las 3 loopbacks y como veremos se conocen en la tabla de enrutamiento.

3. **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 10.**

R5(config)#inter loopback 0

R5(config-if)#ip add 172.5.0.1 255.255.255.0

R5(config-if)#no shut

R5(config-if)#

R5(config-if)#inter loopback 1

R5(config-if)#ip add 172.5.1.1 255.255.255.0

R5(config-if)#no shut

R5(config-if)#

R5(config-if)#inter loopback 2

R5(config-if)#ip add 172.5.2.1 255.255.255.0

R5(config-if)#no shut

R5(config-if)#

R5(config-if)#inter loopback 3

R5(config-if)#ip add 172.5.3.1 255.255.255.0

R5(config-if)#no shut

*Dec 6 11:51:09.379: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

*Dec 6 11:51:09.787: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

*Dec 6 11:51:10.075: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up

*Dec 6 11:51:10.327: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up

R5(config-if)#no shut

```
R5(config)#inter loopback 0
R5(config-if)#ip add 172.5.0.1 255.255.255.0
R5(config-if)#no shut
R5(config-if)#
R5(config-if)#inter loopback 1
R5(config-if)#ip add 172.5.1.1 255.255.255.0
R5(config-if)#no shut
R5(config-if)#
R5(config-if)#inter loopback 2
R5(config-if)#ip add 172.5.2.1 255.255.255.0
R5(config-if)#no shut
R5(config-if)#
R5(config-if)#inter loopback 3
R5(config-if)#ip add 172.5.3.1 255.255.255.0
R5(config-if)#no shut
*Dec  6 11:51:09.379: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
*Dec  6 11:51:09.787: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
*Dec  6 11:51:10.075: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up
*Dec  6 11:51:10.327: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up
```

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

```
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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

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 [110/846] via 10.103.23.1, 00:03:12, Serial1/1
O        10.1.1.1/32 [110/846] via 10.103.23.1, 00:03:12, Serial1/1
O        10.1.2.1/32 [110/846] via 10.103.23.1, 00:03:12, Serial1/1
O        10.1.3.1/32 [110/846] via 10.103.23.1, 00:03:12, Serial1/1
O        10.103.12.0/24 [110/845] via 10.103.23.1, 01:17:54, Serial1/1
C        10.103.23.0/24 is directly connected, Serial1/1
L        10.103.23.2/32 is directly connected, Serial1/1
      172.29.0.0/16 is variably subnetted, 2 subnets, 2 masks
C        172.29.34.0/24 is directly connected, Serial1/3
L        172.29.34.1/32 is directly connected, Serial1/3
```

Como vemos en R3 nos muestra las Loopbacks que configuramos como vemos las aprende pro ospf, en el siguiente paso redistribuiremos las rutas del EIGRP para que nos muestre la información completa.

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.**

R3(config-router)#redistribute ospf 1 metric 128000 20000 255 255 1500

R3(config-router)#do wr

R3(config-router)#redistribute eigrp 10 metric 128000 subnets

R3(config-router)#

```
R3(config-router)#redistribute os
R3(config-router)#redistribute ospf 1 metric  128000 20000 255 255 1500
R3(config-router)#do wr
Building configuration...
[OK]
R3(config-router)#exi
```

```
R3(config-router)#$e eigrp 10  metric 128000 subnets
R3(config-router)#redistribute eigrp 10  metric 128000 subnets
```

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*.**

Router 1

```
R1(config-router)#do sh ip rou
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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 11 subnets, 2 masks
C        10.1.0.0/24 is directly connected, Loopback0
L        10.1.0.1/32 is directly connected, Loopback0
C        10.1.1.0/24 is directly connected, Loopback1
L        10.1.1.1/32 is directly connected, Loopback1
C        10.1.2.0/24 is directly connected, Loopback2
L        10.1.2.1/32 is directly connected, Loopback2
C        10.1.3.0/24 is directly connected, Loopback3
L        10.1.3.1/32 is directly connected, Loopback3
C        10.103.12.0/24 is directly connected, Serial1/0
L        10.103.12.1/32 is directly connected, Serial1/0
O        10.103.23.0/24 [110/845] via 10.103.12.2, 01:27:13, Serial1/0
O E2  172.5.0.0/16 [110/128000] via 10.103.12.2, 00:03:09, Serial1/0
      172.29.0.0/24 is subnetted, 2 subnets
O        172.29.34.0 [110/909] via 10.103.12.2, 00:41:25, Serial1/0
O E2     172.29.45.0 [110/128000] via 10.103.12.2, 00:03:09, Serial1/0
R1(config-router)#
```

Router 5

```
R5#sh ip rou
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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
D EX     10.1.0.1/32 [170/26144000] via 172.29.45.2, 00:12:14, Serial1/0
D EX     10.1.1.1/32 [170/26144000] via 172.29.45.2, 00:12:14, Serial1/0
D EX     10.1.2.1/32 [170/26144000] via 172.29.45.2, 00:12:14, Serial1/0
D EX     10.1.3.1/32 [170/26144000] via 172.29.45.2, 00:12:14, Serial1/0
D EX     10.103.12.0/24 [170/26144000] via 172.29.45.2, 00:12:14, Serial1/0
D        10.103.23.0/24 [90/21536000] via 172.29.45.2, 00:16:32, Serial1/0
      172.5.0.0/16 is variably subnetted, 9 subnets, 3 masks
D        172.5.0.0/16 is a summary, 00:33:21, Null0
C        172.5.0.0/24 is directly connected, Loopback0
L        172.5.0.1/32 is directly connected, Loopback0
C        172.5.1.0/24 is directly connected, Loopback1
L        172.5.1.1/32 is directly connected, Loopback1
C        172.5.2.0/24 is directly connected, Loopback2
L        172.5.2.1/32 is directly connected, Loopback2
C        172.5.3.0/24 is directly connected, Loopback3
L        172.5.3.1/32 is directly connected, Loopback3
      172.29.0.0/16 is variably subnetted, 4 subnets, 3 masks
D        172.29.0.0/16 is a summary, 00:33:21, Null0
D        172.29.34.0/24 [90/21024000] via 172.29.45.2, 01:05:23, Serial1/0
C        172.29.45.0/24 is directly connected, Serial1/0
L        172.29.45.1/32 is directly connected, Serial1/0
```

PING R5 a R1

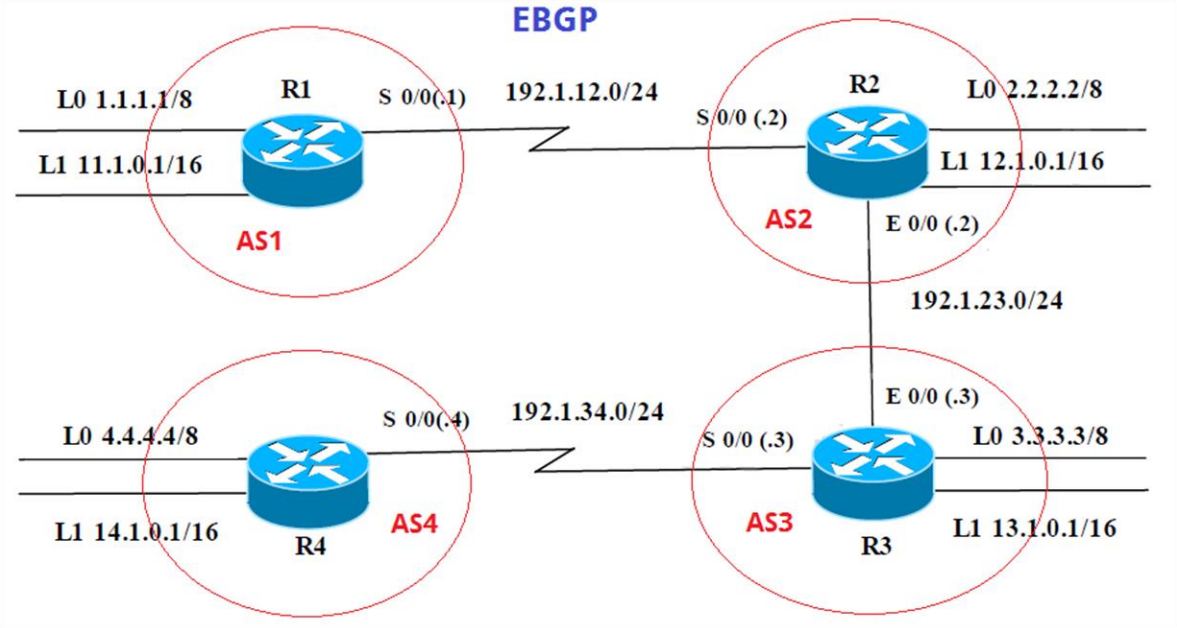
```
R5#ping 10.103.12.1 repeat 40
Type escape sequence to abort.
Sending 40, 100-byte ICMP Echos to 10.103.12.1, timeout is 2 seconds:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (40/40), round-trip min/avg/max = 144/333/452 ms
```

PING R1 a R5

```
R1#ping 172.29.45.1 repeat 30
Type escape sequence to abort.
Sending 30, 100-byte ICMP Echos to 172.29.45.1, timeout is 2 seconds:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (30/30), round-trip min/avg/max = 304/369/500 ms
```

Podemos observar que tenemos respuesta de extremo a extremo en donde en un router manejamos OSPF y en el otro EIGRP

Escenario 2



Información para configuración de los Routers

R1

Interfaz	Dirección IP	Máscara
Loopback 0	1.1.1.1	255.0.0.0
Loopback 1	11.1.0.1	255.255.0.0
S 0/0	192.1.12.1	255.255.255.0

R2

Interfaz	Dirección IP	Máscara
Loopback 0	2.2.2.2	255.0.0.0
Loopback 1	12.1.0.1	255.255.0.0
S 0/0	192.1.12.2	255.255.255.0
E 0/0	192.1.23.2	255.255.255.0

R3

Interfaz	Dirección IP	Máscara
Loopback 0	3.3.3.3	255.0.0.0
Loopback 1	13.1.0.1	255.255.0.0
E 0/0	192.1.23.3	255.255.255.0
S 0/0	192.1.34.3	255.255.255.0

R4

Interfaz	Dirección IP	Máscara
Loopback 0	4.4.4.4	255.0.0.0
Loopback 1	14.1.0.1	255.255.0.0
S 0/0	192.1.34.4	255.255.255.0

Router 1

R1#config ter

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

R1(config)#

R1(config)#inter se 1/0

R1(config-if)#ip add 192.1.12.1 255.255.255.0

R1(config-if)#no shut

R1(config-if)#exit

R1(config)#inter loop 1

R1(config-if)#ip add 11.1.0.1 255.255.0.0

R1(config-if)#no shut

*Dec 6 15:39:51.399: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

R1(config-if)#no shut

*Dec 6 15:39:52.775: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up

R1(config-if)#no shut

*Dec 6 15:39:53.783: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

R1(config-if)#no shut

R1(config-if)#

*Dec 6 15:40:23.171: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to down

R1(config-if)#inter loopb 0

R1(config-if)#ip add 1.1.1.1 255.0.0.0

R1(config-if)#no shut

*Dec 6 15:40:52.343: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

R1(config-if)#no shut

R1#

*Dec 6 15:41:42.555: %SYS-5-CONFIG_I: Configured from console by console

Router 2

R2(config)#inter serial 1/0

R2(config-if)#ip add 192.1.12.2 255.255.255.0

R2(config-if)#no shut

R2(config-if)#exit

R2(config)#inter loopb 0

R2(config-if)#ip add 2.2.2.2 255.0.0.0

R2(config-if)#no shut

R2(config-if)#inter loopb 1

R2(config-if)#ip add 12.1.0.1 255.255.0.0

R2(config-if)#no shut

R2(config-if)#exit

R2(config)#inter eth 2/0

R2(config-if)#ip add

R2(config-if)#ip address 192.1.23.2 255.255.255.0

R2(config-if)#no shut

R2(config-if)#exit

*Dec 6 15:43:27.131: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

*Dec 6 15:43:27.579: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

R2(config-if)#exit

*Dec 6 15:43:28.899: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up

*Dec 6 15:43:29.911: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

R2(config-if)#exit

R2(config)#

*Dec 6 15:43:30.219: %LINK-3-UPDOWN: Interface Ethernet2/0, changed state to up

*Dec 6 15:43:31.219: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/0, changed state to up

Router 3

R3(config)#inter serial 1/0

R3(config-if)#ip add 192.1.34.3 255.255.255.0

R3(config-if)#no shut

R3(config-if)#exit

R3(config)#inter loopb 0

R3(config-if)#ip add 3.3.3.3 255.0.0.0

R3(config-if)#no shut

R3(config-if)#inter loopb 1

R3(config-if)#ip add 13.1.0.1 255.255.0.0

R3(config-if)#no shut

R3(config-if)#exit

R3(config)#inter eth 2/0

R3(config-if)#ip add

R3(config-if)#ip address 192.1.23.3 255.255.255.0

R3(config-if)#no shut

R3(config-if)#exit

*Dec 6 15:46:49.455: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

*Dec 6 15:46:49.899: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

R3(config-if)#exit

*Dec 6 15:46:51.219: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up

*Dec 6 15:46:52.227: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

R3(config-if)#exit

*Dec 6 15:46:52.543: %LINK-3-UPDOWN: Interface Ethernet2/0, changed state to up

*Dec 6 15:46:53.543: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/0, changed state to up

R3(config-if)#exit

Router 4

R4(config)#inter se 1/0

R4(config-if)#ip add 192.1.34.4 255.255.255.0

R4(config-if)#no shut

R4(config-if)#exit

R4(config)#inter loopb 0

R4(config-if)#ip add 4.4.4.4 255.0.0.0

R4(config-if)#no shut

R4(config-if)#inter loop 1

R4(config-if)#ip add 14.1.0.1 255.255.0.0

R4(config-if)#no shut

*Dec 6 15:49:42.967: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

*Dec 6 15:49:43.411: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

R4(config-if)#no shut

*Dec 6 15:49:44.727: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up

*Dec 6 15:49:45.727: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

R4(config-if)#no shut

R4(config-if)#ex

1. Configure una relación de vecino BGP entre R1 y R2. R1 debe estar en AS1 y R2 debe estar en AS2. Anuncie las direcciones de Loopback en BGP. Codifique los ID para los routers BGP como 11.11.11.11 para R1 y como 22.22.22.22 para R2. Presente el paso a con los comandos utilizados y la salida del comando show ip route.

Router 1

R1(config)#router bgp 1

R1(config-router)#network 192.1.12.0 mask 255.255.255.0

R1(config-router)#network 1.0.0.0 mask 255.0.0.0

R1(config-router)#network 11.1.0.0 mask 255.255.0.0

R1(config-router)#bgp router-id 11.11.11.11

R1(config-router)#neighbor 192.1.12.2 remote-as 2

R1(config-router)#

*Dec 7 10:09:03.635: %BGP-5-ADJCHANGE: neighbor 192.1.12.2 Up

Show Ip Route

```
R1(config-router)#do 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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        1.0.0.0/8 is directly connected, Loopback0
L        1.1.1.1/32 is directly connected, Loopback0
B     2.0.0.0/8 [20/0] via 192.1.12.2, 00:01:51
      11.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        11.1.0.0/16 is directly connected, Loopback1
L        11.1.0.1/32 is directly connected, Loopback1
      12.0.0.0/16 is subnetted, 1 subnets
B        12.1.0.0 [20/0] via 192.1.12.2, 00:01:51
      192.1.12.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.1.12.0/24 is directly connected, Serial1/0
L        192.1.12.1/32 is directly connected, Serial1/0
B     192.1.23.0/24 [20/0] via 192.1.12.2, 00:01:51
```

Router 2

R2(config)#router bgp 2

R2(config-router)#network 192.1.12.0 mask 255.255.255.0

R2(config-router)#network 192.1.23.0 mask 255.255.255.0

R2(config-router)#network 2.0.0.0 mask 255.0.0.0

R2(config-router)#network 12.1.0.0 mask 255.255.0.0

R2(config-router)#bgp router-id 22.22.22.22

R2(config-router)#neighbor 192.1.12.1 remote-as 1

*Dec 7 10:09:04.343: %BGP-5-ADJCHANGE: neighbor 192.1.12.1 Up

Show Ip Route

```
R2(config-router)#do 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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

B     1.0.0.0/8 [20/0] via 192.1.12.1, 00:02:52
      2.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        2.0.0.0/8 is directly connected, Loopback0
L        2.2.2.2/32 is directly connected, Loopback0
      11.0.0.0/16 is subnetted, 1 subnets
B        11.1.0.0 [20/0] via 192.1.12.1, 00:02:52
      12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        12.1.0.0/16 is directly connected, Loopback1
L        12.1.0.1/32 is directly connected, Loopback1
      192.1.12.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.1.12.0/24 is directly connected, Serial1/0
L        192.1.12.2/32 is directly connected, Serial1/0
      192.1.23.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.1.23.0/24 is directly connected, Ethernet2/0
L        192.1.23.2/32 is directly connected, Ethernet2/0
```

2. Configure una relación de vecino BGP entre R2 y R3. R2 ya debería estar configurado en AS2 y R3 debería estar en AS3. Anuncie las direcciones de Loopback de R3 en BGP. Codifique el ID del router R3 como 33.33.33.33. Presente el paso a con los comandos utilizados y la salida del comando show ip route.

Router 2

R2(config-router)#neighbor 192.1.23.3 remote-as 3

***Dec 7 10:20:37.607: %BGP-5-ADJCHANGE: neighbor 192.1.23.3 Up**

Router 3

R3(config)#router bgp 3

R3(config-router)#network 192.1.23.0 mask 255.255.255.0

R3(config-router)#network 3.0.0.0 mask 255.0.0.0

R3(config-router)#network 113.1.0.0 mask 255.255.0.0

R3(config-router)##network 192.1.34.0 mask 255.255.255.0

R3(config-router)#bgp router

R3(config-router)#bgp router-id 33.33.33.33

R3(config-router)#neighbor 192.1.23.2 remote-as 2

*Dec 7 10:20:47.451: %BGP-5-ADJCHANGE: neighbor 192.1.23.2 Up

R3(config-router)#

Show Ip Route

```
R3(config-router)#do 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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

B     1.0.0.0/8 [20/0] via 192.1.23.2, 00:01:47
B     2.0.0.0/8 [20/0] via 192.1.23.2, 00:01:47
      3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        3.0.0.0/8 is directly connected, Loopback0
L        3.3.3.3/32 is directly connected, Loopback0
      11.0.0.0/16 is subnetted, 1 subnets
B        11.1.0.0 [20/0] via 192.1.23.2, 00:01:47
      12.0.0.0/16 is subnetted, 1 subnets
B        12.1.0.0 [20/0] via 192.1.23.2, 00:01:47
      13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        13.1.0.0/16 is directly connected, Loopback1
L        13.1.0.1/32 is directly connected, Loopback1
B     192.1.12.0/24 [20/0] via 192.1.23.2, 00:01:47
      192.1.23.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.1.23.0/24 is directly connected, Ethernet2/0
L        192.1.23.3/32 is directly connected, Ethernet2/0
```

3. Configure una relación de vecino BGP entre R3 y R4. R3 ya debería estar configurado en AS3 y R4 debería estar en AS4. Anuncie las direcciones de Loopback de R4 en BGP. Codifique el ID del router R4 como 44.44.44.44. Establezca las relaciones de vecino con base en las direcciones de Loopback 0. Cree rutas estáticas para alcanzar la Loopback 0 del otro router. No anuncie la Loopback 0 en BGP. Anuncie la red Loopback de R4 en BGP. Presente el paso a con los comandos utilizados y la salida del comando show ip route.

Router 3

R3(config-router)#neighbor 192.1.34.4 remote-as 4

*Dec 7 10:38:52.239: %BGP-5-ADJCHANGE: neighbor 192.1.34.4 Up

Router 4

R4(config)#router bgp 4

R4(config-router)#network 192.1.34.0 mask 255.255.255.0

R4(config-router)#network 4.0.0.0 mask 255.0.0.0

R4(config-router)#network 14.1.0.0 mask 255.255.0.0

R4(config-router)#neighbor 192.1.34.3 remote

R4(config-router)#neighbor 192.1.34.3 remote-as 3

*Dec 7 10:38:42.535: %BGP-5-ADJCHANGE: neighbor 192.1.34.3 Up

R4(config-router)#bgp router-id 44.44.44.44

R4(config-router)#neighbor 192.1.34.3 update-source Loopback0

R4(config)#ip route 3.0.0.0 255.0.0.0 192.1.34.3

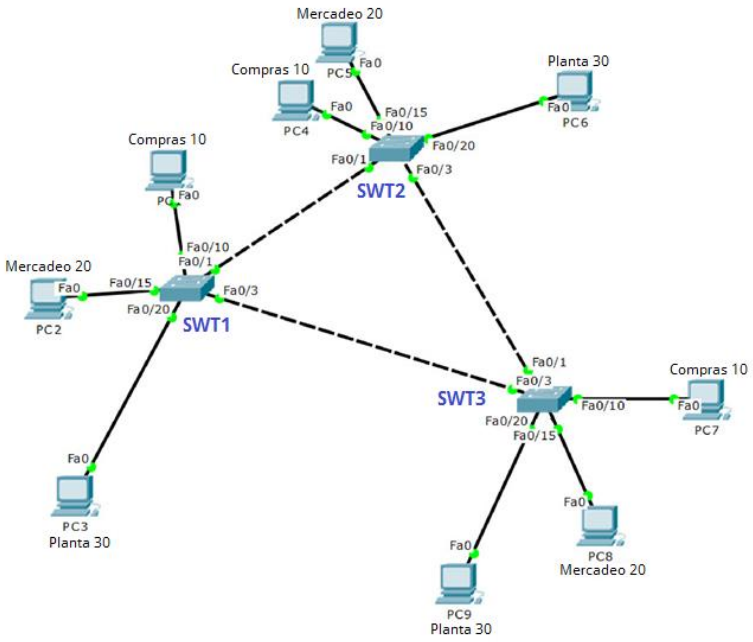
Show Ip Route

```
R4#show ip route
*Dec  7 10:52:13.575: %SYS-5-CONFIG_I: Configured from console by console
R4#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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

B     1.0.0.0/8 [20/0] via 192.1.34.3, 00:11:09
B     2.0.0.0/8 [20/0] via 192.1.34.3, 00:11:09
S     3.0.0.0/8 [1/0] via 192.1.34.3
      4.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        4.0.0.0/8 is directly connected, Loopback0
L        4.4.4.4/32 is directly connected, Loopback0
      11.0.0.0/16 is subnetted, 1 subnets
B        11.1.0.0 [20/0] via 192.1.34.3, 00:11:09
      12.0.0.0/16 is subnetted, 1 subnets
B        12.1.0.0 [20/0] via 192.1.34.3, 00:11:09
      14.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        14.1.0.0/16 is directly connected, Loopback1
L        14.1.0.1/32 is directly connected, Loopback1
B     192.1.12.0/24 [20/0] via 192.1.34.3, 00:11:09
B     192.1.23.0/24 [20/0] via 192.1.34.3, 00:11:09
      192.1.34.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.1.34.0/24 is directly connected, Serial1/0
L        192.1.34.4/32 is directly connected, Serial1/0
```

Escenario 3



A. Configurar VTP

1. Todos los switches se configurarán para usar VTP para las actualizaciones de VLAN. El switch SWT2 se configurará como el servidor. Los switches SWT1 y SWT3 se configurarán como clientes. Los switches estarán en el dominio VPT llamado CCNP y usando la contraseña cisco.

SW 1

Switch(config)#vtp mode server

Device mode already VTP SERVER.

Switch(config)#vtp domain CCNP

Changing VTP domain name from NULL to CCNP

Switch(config)#vtp password cisco

Setting device VLAN database password to cisco

SW 2

Switch(config)#vtp mode server

Device mode already VTP SERVER.

Switch(config)#vtp domain CCNP

Changing VTP domain name from NULL to CCNP

Switch(config)#VTP PAS

Switch(config)#vtp apss

Switch(config)#vtp pass

Switch(config)#vtp password cisco

Setting device VLAN database password to cisco

SW 1

Switch(config)#vtp domain CCNP

Changing VTP domain name from NULL to CCNP

Switch(config)#vtp mode client

Setting device to VTP CLIENT mode.

Switch(config)#vtp password cisco

Setting device VLAN database password to cisco

SW 3

Switch(config)#vtp domain CCNP

Changing VTP domain name from NULL to CCNP

Switch(config)#vtp mode client

Setting device to VTP CLIENT mode.

Switch(config)#vtp password cisco

Setting device VLAN database password to cisco

2. Verifique las configuraciones mediante el comando show vtp status.

SW 2 SERVER

```
SW2(config)#do show vtp status
VTP Version                     : 2
Configuration Revision          : 0
Maximum VLANs supported locally : 255
Number of existing VLANs        : 5
VTP Operating Mode              : Server
VTP Domain Name                 : CCNP
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0xDA 0xBF 0x42 0x0D 0x90 0xBC 0xBE
0x41
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
Local updater ID is 0.0.0.0 (no valid interface found)
SW2(config)#
```

SW 1 CLIENTE

```
SW1(config)#DO SH VTP STATUS
VTP Version                     : 2
Configuration Revision          : 0
Maximum VLANs supported locally : 255
Number of existing VLANs        : 5
VTP Operating Mode              : Client
VTP Domain Name                 : CCNP
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0xDA 0xBF 0x42 0x0D 0x90 0xBC 0xBE
0x41
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
```

SW 3 CLIENTE

```
SW3(config)#DO SH VTP STATUS
VTP Version                     : 2
Configuration Revision          : 0
Maximum VLANs supported locally : 255
Number of existing VLANs        : 5
VTP Operating Mode              : Client
VTP Domain Name                 : CCNP
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0xDA 0xBF 0x42 0x0D 0x90 0xBC 0xBE
0x41
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
```

B. Configurar DTP (Dynamic Trunking Protocol)

1. Configure un enlace troncal ("trunk") dinámico entre SWT1 y SWT2. Debido a que el modo por defecto es dynamic auto, solo un lado del enlace debe configurarse como dynamic desirable.

Switch(config)#interface fastEthernet 0/1

Switch(config-if)#switchport mode dynamic desirable

Switch(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch(config-if)#

2. Verifique el enlace "trunk" entre SWT1 y SWT2 usando el comando show interfaces trunk.

SW 2

```
SW2(config-if)#do sh int trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/1       auto         n-802.1q       trunking      1

Port        Vlans allowed on trunk
Fa0/1       1-1005

Port        Vlans allowed and active in management domain
Fa0/1       1

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       1
```

SW 1

```
Switch(config-if)#do show inter trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/1       desirable    n-802.1q       trunking      1

Port        Vlans allowed on trunk
Fa0/1       1-1005

Port        Vlans allowed and active in management domain
Fa0/1       1

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       1
```

3. Entre SWT1 y SWT3 configure un enlace "trunk" estático utilizando el comando switchport mode trunk en la interfaz F0/3 de SWT1.

Switch(config)#interface fastEthernet 0/3

Switch(config-if)#switchport mode trunk

Switch(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

Switch(config-if)#

4. Verifique el enlace "trunk" el comando show interfaces trunk en SWT1.

```
Switch#show interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/1       desirable    n-802.1q       trunking      1
Fa0/3       on           802.1q         trunking      1

Port        Vlans allowed on trunk
Fa0/1       1-1005
Fa0/3       1-1005

Port        Vlans allowed and active in management domain
Fa0/1       1
Fa0/3       1

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       1
Fa0/3       1
```

5. Configure un enlace "trunk" permanente entre SWT2 y SWT3.

SW2(config-if)#inter fas 0/3

SW2(config-if)#switchport mode trunk

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

```
SW2(config-if)#do sh int trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/1       auto         n-802.1q       trunking      1
Fa0/3       on           802.1q         trunking      1

Port        Vlans allowed on trunk
Fa0/1       1-1005
Fa0/3       1-1005

Port        Vlans allowed and active in management domain
Fa0/1       1
Fa0/3       1

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       1
Fa0/3       none
```

C. Agregar VLANs y asignar puertos.

1. En STW1 agregue la VLAN 10. En STW2 agregue las VLANS Compras (10), Mercadeo (20), Planta (30) y Admon (99)

En la primera parte de este punto nos solicitan que crear una vlan en el SW1 pero no es posible ya que no es el sw server.

SW 1

Switch(config)#vlan 10

VTP VLAN configuration not allowed when device is in CLIENT mode.

Switch(config)#

SW 2

SW2(config-vlan)#vlan 20

SW2(config-vlan)#nam

SW2(config-vlan)#name Mercadeo

SW2(config-vlan)#vlan 30

SW2(config-vlan)#name Planta

SW2(config-vlan)#vlan 99

SW2(config-vlan)#name Admon

2. Verifique que las VLANs han sido agregadas correctamente.

```
SW2(config-vlan)#do sh vlan

VLAN Name                                Status    Ports
---- ----------------------------------- --------- -------------------------------
1    default                             active    Fa0/2, 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   Compras                             active
20   Mercadeo                            active
30   Planta                              active
99   Admon                               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
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
30   enet  100030     1500  -      -      -        -    -        0      0
99   enet  100099     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
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------

Remote SPAN VLANs
------------------------------------------------------------------------------
```

3. Asocie los puertos a las VLAN y configure las direcciones IP de acuerdo con la siguiente tabla.

Interfaz	VLAN	Direcciones IP de los PCs
F0/10	VLAN 10	190.108.10.X / 24
F0/15	VLAN 20	190.108.20.X /24
F0/20	VLAN 30	190.108.30.X /24

4. Configure el puerto F0/10 en modo de acceso para SWT1, SWT2 y SWT3 y asígnelo a la VLAN 10.

SW 1

Switch(config)#interface fastEthernet 0/10

Switch(config-if)#switchport mode access

Switch(config-if)#switchport access vlan 10

SW 2

SW2(config)#interface fastEthernet 0/10

SW2(config-if)#switchport mode access

SW2(config-if)#switchport access vlan 10

SW 3

SW3(config)#interface fastEthernet 0/10

SW3(config-if)#switchport mode access

SW3(config-if)#switchport access vlan 10

5. Repita el procedimiento para los puertos F0/15 y F0/20 en SWT1, SWT2 y SWT3. Asigne las VLANs y las direcciones IP de los PCs de acuerdo con la tabla de arriba.

SW 1

Switch(config)#interface fastEthernet 0/15

Switch(config-if)#switchport mode acces

Switch(config-if)#switchport access vlan 20

Switch(config-if)#inter fas 0/20

Switch(config-if)#switchport mode access

Switch(config-if)#switchport access vlan 30

SW 2

SW2(config)#interface fastEthernet 0/15

SW2(config-if)#switchport mode access

SW2(config-if)#switchport access vlan 20

SW2(config-if)#inter fas 0/20

SW2(config-if)#switchport mode acc

SW2(config-if)#switchport mode access

SW2(config-if)#switchport access vlan 30

SW 3

SW3(config)#inter fastEthernet 0/15

SW3(config-if)#switchport mode acc

SW3(config-if)#switchport access vlan 20

SW3(config-if)#inter fas 0/20

SW3(config-if)#switchport mode access

SW3(config-if)#switchport access vlan 30

SW 1

```
Switch(config-if)#do sh vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/2, Fa0/4, Fa0/5, Fa0/6
                                                 Fa0/7, Fa0/8, Fa0/9, Fa0/11
                                                 Fa0/12, Fa0/13, Fa0/14, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/21
                                                 Fa0/22, Fa0/23, Fa0/24, Gig0/1
                                                 Gig0/2
10   Compras                           active    Fa0/10
20   Mercadeo                          active    Fa0/15
30   Planta                            active    Fa0/20
99   Admon                             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
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
30   enet  100030     1500  -      -      -        -    -        0      0
99   enet  100099     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
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
```

SW 2

```
SW2(config-if)#do sh vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/2, Fa0/4, Fa0/5, Fa0/6
                                                 Fa0/7, Fa0/8, Fa0/9, Fa0/11
                                                 Fa0/12, Fa0/13, Fa0/14, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/21
                                                 Fa0/22, Fa0/23, Fa0/24, Gig0/1
                                                 Gig0/2
10   Compras                           active    Fa0/10
20   Mercadeo                          active    Fa0/15
30   Planta                            active    Fa0/20
99   Admon                             active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

SW 3

```
SW3(config-if)#DO SH VLAN

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/2, Fa0/4, Fa0/5, Fa0/6
                                                 Fa0/7, Fa0/8, Fa0/9, Fa0/11
                                                 Fa0/12, Fa0/13, Fa0/14, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/21
                                                 Fa0/22, Fa0/23, Fa0/24, Gig0/1
                                                 Gig0/2
10   Compras                           active    Fa0/10
20   Mercadeo                          active    Fa0/15
30   Planta                            active    Fa0/20
99   Admon                             active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

D. Configurar las direcciones IP en los Switches.

1. En cada uno de los Switches asigne una dirección IP al SVI (Switch Virtual Interface) para VLAN 99 de acuerdo con la siguiente tabla de direccionamiento y active la interfaz.

SW 1

Switch(config)#interface vlan 99

%LINK-5-CHANGED: Interface Vlan99, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan99, changed state to up

Switch(config-if)#ip address 190.108.99.1 255.255.255.0

Switch(config-if)#no shutdown

SW 2

SW2(config)#interface vlan 99

%LINK-5-CHANGED: Interface Vlan99, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan99, changed state to up

SW2(config-if)#ip address 190.108.99.2 255.255.255.0

SW2(config-if)#no shutdown

SW 3

SW3(config)#interface vlan 99

%LINK-5-CHANGED: Interface Vlan99, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan99, changed state to up

SW3(config-if)#ip address 190.108.99.3 255.255.255.0

SW3(config-if)#no shut

E. Verificar la conectividad Extremo a Extremo

1. Ejecute un Ping desde cada PC a los demás. Explique por qué el ping tuvo o no tuvo éxito.

El ping tiene éxito en las vlan como se observa en la gráfica, esto es porque están en el túnel 10 y se pueden ver en los sw, pero al intentar verse entre las demás vlan, falta un equipo de capa 3 que nos ayude a hacer esto.

```
Packet Tracer PC Command Line 1.0
C:\>ping 190.108.10.4

Pinging 190.108.10.4 with 32 bytes of data:

Reply from 190.108.10.4: bytes=32 time=31ms TTL=128
Reply from 190.108.10.4: bytes=32 time<1ms TTL=128
Reply from 190.108.10.4: bytes=32 time<1ms TTL=128
Reply from 190.108.10.4: bytes=32 time=1ms TTL=128

Ping statistics for 190.108.10.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 31ms, Average = 8ms

C:\>
C:\>ping 190.108.20.4

Pinging 190.108.20.4 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 190.108.20.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 190.108.30.4

Pinging 190.108.30.4 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 190.108.30.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>ping 190.108.10.3

Pinging 190.108.10.3 with 32 bytes of data:

Reply from 190.108.10.3: bytes=32 time<1ms TTL=128
Reply from 190.108.10.3: bytes=32 time<1ms TTL=128
Reply from 190.108.10.3: bytes=32 time=1ms TTL=128
Reply from 190.108.10.3: bytes=32 time<1ms TTL=128

Ping statistics for 190.108.10.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 190.108.20.3

Pinging 190.108.20.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 190.108.20.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 190.108.30.3

Pinging 190.108.30.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 190.108.30.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>ping 190.108.10.2

Pinging 190.108.10.2 with 32 bytes of data:

Reply from 190.108.10.2: bytes=32 time=64ms TTL=128
Reply from 190.108.10.2: bytes=32 time=4ms TTL=128
Reply from 190.108.10.2: bytes=32 time<1ms TTL=128
Reply from 190.108.10.2: bytes=32 time=14ms TTL=128

Ping statistics for 190.108.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 64ms, Average = 20ms

C:\>ping 190.108.20.2

Pinging 190.108.20.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 190.108.20.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
C:\>ping 190.108.30.2

Pinging 190.108.30.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 190.108.30.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

2. Ejecute un Ping desde cada Switch a los demás. Explique por qué el ping tuvo o no tuvo éxito.

El ping es exitoso ya que tenemos vtp configurado y hay un sw que es servidor y los demás son clientes, este sincroniza basándose en los mensajes de vtp que recibe por los enlaces troncales.

SW1

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	Switch0	Switch 2	ICMP		0.000	N	0	(edit)
	Successful	Switch0	Switch3	ICMP		0.000	N	1	(edit)

SW 2

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	Switc...	Switch0	ICMP		0.000	N	0	(edit)
	Successful	Switc...	Switch3	ICMP		0.000	N	1	(edit)

SW 3

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	Switch3	Switch 2	ICMP		0.000	N	0	(edit)
	Successful	Switch3	Switch0	ICMP		0.000	N	1	(edit)

3. Ejecute un Ping desde cada Switch a cada PC. Explique por qué el ping tuvo o no tuvo éxito.

No es exitoso el ping ya que no tenemos un protocolo de enrutamiento que nos ayude a conocer las rutas.

SW1

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switch0	PC0	ICMP		0.000	N	0	(edit)
	Failed	Switch0	PC1	ICMP		0.000	N	1	(edit)
	Failed	Switch0	PC2	ICMP		0.000	N	2	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switch0	PC3	ICMP		0.000	N	0	(edit)
	Failed	Switch0	PC4	ICMP		0.000	N	1	(edit)
	Failed	Switch0	PC5	ICMP		0.000	N	2	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switch0	PC6	ICMP		0.000	N	0	(edit)
	Failed	Switch0	PC7	ICMP		0.000	N	1	(edit)
	Failed	Switch0	PC8	ICMP		0.000	N	2	(edit)

SW 2

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switc...	PC0	ICMP		0.000	N	0	(edit)
	Failed	Switc...	PC1	ICMP		0.000	N	1	(edit)
	Failed	Switc...	PC2	ICMP		0.000	N	2	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switc...	PC3	ICMP		0.000	N	0	(edit)
	Failed	Switc...	PC5	ICMP		0.000	N	1	(edit)
	Failed	Switc...	PC4	ICMP		0.000	N	2	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switc...	PC6	ICMP		0.000	N	0	(edit)
	Failed	Switc...	PC7	ICMP		0.000	N	1	(edit)
	Failed	Switc...	PC8	ICMP		0.000	N	2	(edit)

SW 3

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switch3	PC6	ICMP		0.000	N	0	(edit)
	Failed	Switch3	PC7	ICMP		0.000	N	1	(edit)
	Failed	Switch3	PC8	ICMP		0.000	N	2	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switch3	PC5	ICMP		0.000	N	0	(edit)
	Failed	Switch3	PC4	ICMP		0.000	N	1	(edit)
	Failed	Switch3	PC3	ICMP		0.000	N	2	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Switch3	PC0	ICMP		0.000	N	0	(edit)
	Failed	Switch3	PC1	ICMP		0.000	N	1	(edit)
	Failed	Switch3	PC2	ICMP		0.000	N	2	(edit)

Conclusiones

Posteriormente de ejecutar cada una de las configuraciones necesarias para cada escenario, podemos concluir lo siguiente:

Se debe tener en cuenta los componentes de la red a elegir como lo es la versión del IOS y de los equipos según el escenario planteado, esto debido a que no todos tienen las mismas funcionalidades ni permiten algunos comandos como en el caso de Packet Tracer.

Es obligatorio conocer la estructura del Software para poder aplicar los comandos correctos y requeridos para configurar los parámetros necesarios en los escenarios propuestos.

Cuando iniciamos a construir las topologías propuestas debemos escoger el mejor Software en este caso gns3 ya que packet tracer no soporta la mayoría de comandos utilizados tanto en Switching como en Routing, esto para el correcto desarrollo de la guía y su comprensión.

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