SOLUCIÓN DE ESTUDIOS DE CASO BAJO EL USO DE TECNOLOGÍA CISCO

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DIPLOMADO DE PROFUNDIZACIÓN CISCO CCNP-208014_6

BUCARAMANGA

2018

PRUEBA DE HABILIDADES PRACTICAS CCNP

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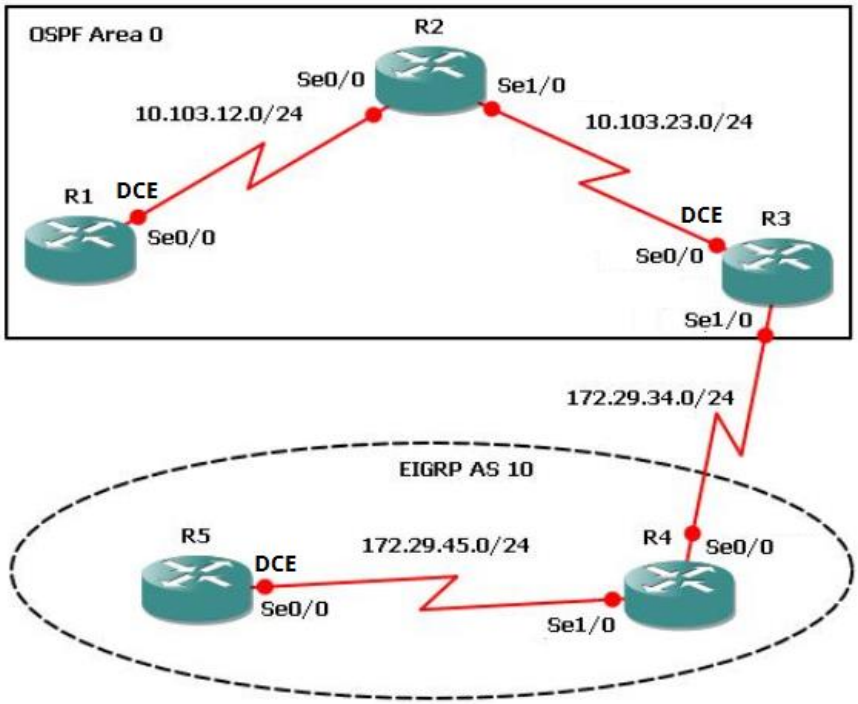
INTRODUCCIÓN

En este trabajo se desarrollan los conceptos y temáticas descritos durante el curso para ser puestos en práctica durante el diplomado de profundización cisco, para ello tenemos tres propuestas representadas en escenarios, donde se aplica el direccionamiento, protocolos de enrutamiento OSPF, EIGRP 10, interfaces, vlans, se configuran relaciones de vecinos BGP, VTP y DTP; actividades desarrolladas en packet tracer.

Se realizara verificación de conectividad mediante pruebas con el uso de los comandos ping, traceroute, show ip route, show run para vericicar la configuración completa y detallada de los switch y router cisco implementado en los escenarios.

DESARROLLO DE LA ACTIVIDAD

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.

Configuración del Router 1.

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#line con 0

Router(config-line)#logging synchronous
Router(config-line)#exec-timeout 0 0
Router(config-line)#exit
Router(config)#interface loopback 1

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

Router(config-if)#interface serial 0/0/1
Router(config-if)#ip address 10.103.12.2 255.255.255.0
Router(config-if)#clock rate 128000
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

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

Router#
Router(config)#router ospf 1
Router(config-router)#router-id 1.1.1.1
Router(config-router)#network 10.1.0.0 0.0.3.255 area 0
Router(config-router)#network 10.103.12.0 0.0.0.255 area 0
Router#

%SYS-5-CONFIG_I: Configured from console by console

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Router#Router#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
Router#

Configuración del Router 2.

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#line con 0
Router(config-line)#logging synchronous
Router(config-line)#exec-timeout 0 0
Router(config-line)#exit
Router(config)#interface loopback 2

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up

Router(config-if)#interface serial 0/0/0

Router(config-if)#ip address 10.103.12.1 255.255.255.0
Router(config-if)#no shut

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

Router(config-if)#interface serial 0/0/1
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router(config-if)#interface serial 0/0/1
Router(config-if)#ip address 10.103.23.2 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Router(config-if)#exit
Router(config)#exit
Router#
Router(config)#router ospf 1
Router(config-router)#router-id 2.2.2.2
Router(config-router)#network 10.103.12.0 0.0.0.255 area 0
Router(config-router)#network 10.103.23.0 0.0.0.255 area 0
Router#

%SYS-5-CONFIG_I: Configured from console by console

Router#copy

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Router#copy ru st

Destination filename [startup-config]?

Building configuration...

[OK]

Router#

Configuración del Router 3.

Router>enable

Router#configure terminal

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

Router(config)#no ip domain-lookup

Router(config)#line con 0

Router(config-line)#logging synchronous

Router(config-line)#exec-timeout 0 0

Router(config-line)#exit

Router(config)#interface lookback 3

^

% Invalid input detected at '^' marker.

Router(config)#interface loopback 3

Router(config-if)#

%LINK-5-CHANGED: Interface Loopback3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up

Router(config-if)#interface serial 0/0/0

Router(config-if)#ip address 10.103.23.1 255.255.255.0
Router(config-if)#clock rate 128000
Router(config-if)#no shutdown

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

Router(config-if)#exit
Router(config)#int
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router(config)#interface loopback 3
Router(config-if)#interface serial 0/0/1
Router(config-if)#ip address 172.29.34.2 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Router(config-if)#exit
Router(config)#exit
Router#
Router#
Router(config)#router ospf 1
Router(config-router)#router-id 3.3.3.3
Router(config-router)#network 10.103.23.0 0.0.0.255 area 0
Router#

%SYS-5-CONFIG_I: Configured from console by console

Router#copy ru
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Router#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
Router#

Configuración del Router 4.

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#line con 0
Router(config-line)#logging synchronous
Router(config-line)#exec-timeout 0 0
Router(config-line)#exit
Router(config)#interface loopback 4

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state to up

Router(config-if)#interface serial 0/0/0

Router(config-if)#ip address 172.29.34.1 255.255.255.0
Router(config-if)#no shut

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

Router(config-if)#interface serial 0/0/
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
1
Router(config-if)#interface serial 0/0/1
Router(config-if)#ip address 172.29.45.2 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

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

Router#copy ru st
Destination filename [startup-config]?
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Destination filename [startup-config]?
Building configuration...
[OK]

Router#

Configuración del Router 5.

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#line con 0
Router(config-line)#logging synchronous
Router(config-line)#exec-timeout 0 0
Router(config-line)#exit
Router(config)#interface loopback 5

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up

Router(config-if)#interface serial 0/0/0
Router(config-if)#ip address 172.29.45.1 255.255.255.0
Router(config-if)#clock rate 128000
Router(config-if)#no shut

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

Router(config-if)#exit
Router(config)#exit

Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
Router#

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.

Cuatro Interfaces Loopback en R1	
Loopback11	10.1.0.1/22
Loopback12	10.1.4.1/22
Loopback13	10.1.8.1/22
Loopback14	10.1.12.1/22

Se realiza la configuración Router 1

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface loopback11

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback11, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback11, changed state to up

Router(config-if)#ip address 10.1.0.1 255.255.252.0
Router(config-if)#exit
Router(config)#interface loopback12

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback12, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback12, changed state to up

Router(config-if)#ip address 10.1.4.1 255.255.252.0
Router(config-if)#exit
Router(config)#interface loopback13

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback13, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback13, changed state to up

Router(config-if)#ip address 10.1.8.1 255.255.252.0
Router(config-if)#exit
Router(config)#interface loopback14

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback14, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback14, changed state to up

Router(config-if)#ip address 10.1.12.1 255.255.252.0
Router(config-if)#exit
Router(config)#router ospf 1
Router(config-router)#router-id 1.1.1.1
Router(config-router)#network 10.1.0.0 0.0.3.255 area 0
Router(config-router)#network 10.103.12.0
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 10.103.12.0 0.0.0.255 area 0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
Router#

Router#
Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface loopback11
Router(config-if)#ip ospf network point-to-point
Router(config-if)#exit
Router(config)#interface loopback12
Router(config-if)#ip ospf network point-to-point
Router(config-if)#exit
Router(config)#interface loopback13
Router(config-if)#ip ospf network point-to-point
Router(config-if)#exit
Router(config)#interface loopback14
Router(config-if)#ip ospf network point-to-point
Router(config-if)#exit
Router(config)#exit
Router#

%SYS-5-CONFIG_I: Configured from console by console

Router#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
Router#

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.

Cuatro Interfaces Loopback en R5	
Loopback51	172.5.0.1
Loopback52	172.5.4.1
Loopback53	172.5.8.1
Loopback54	172.5.12.1

Configuración Router 5.

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface loopback51

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback51, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback51, changed state to up

Router(config-if)#ip address 172.5.0.1 255.255.252.0
Router(config-if)#exit
Router(config)#interface loopback52

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback52, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback52, changed state to up

Router(config-if)#ip address 172.5.4.1 255.255.252.0

Router(config-if)#exit
Router(config)#interface loopback53

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback53, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback53, changed state to up

Router(config-if)#ip address 172.5.8.1 255.255.252.0
Router(config-if)#exit
Router(config)#interface loopback54

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback54, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback54, changed state to up

Router(config-if)#ip address 172.5.12.1 255.255.252.0
Router(config-if)#exit
Router(config)#
Router(config)#route eigrp 10
Router(config-router)#auto-summary
Router(config-router)#network 172.5.0.0 0.0.3.255
Router(config-router)#network 172.29.45.0 0.0.0.255
Router#

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.

```
C        10.103.23.0/24 is directly connected, Serial0/0/0
     172.29.0.0/24 is subnetted, 1 subnets
C       172.29.34.0 is directly connected, Serial0/0/1

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

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
O       10.1.0.0/22 [110/129] via 10.103.23.2, 00:04:43, Serial0/0/0
O       10.103.12.0/24 [110/128] via 10.103.23.2, 00:04:43,
Serial0/0/0
C       10.103.23.0/24 is directly connected, Serial0/0/0
     172.29.0.0/24 is subnetted, 1 subnets
C       172.29.34.0 is directly connected, Serial0/0/1

Router#
```

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.

Router>enable

Router#configure terminal

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

Router(config)#router ospf 10

Router(config-router)#redistribute eigrp 10 subnets

Router(config-router)#exit

Router(config)#router ospf 1

Router(config-router)#redistribute eigrp 10

% Only classful networks will be redistributed

Router(config-router)#redistribute eigrp 10 subnets

Router(config-router)#exit

Router(config)#router eigrp 10

Router(config-router)#redistribute ospf 1 metric 1544 100 255 1 1500

Router(config-router)#exit

Router(config)#exit

```
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
O 10.1.0.0/22 [110/129] via 10.103.23.2, 00:08:56, Serial0/0/0
O 10.103.12.0/24 [110/128] via 10.103.23.2, 00:08:56, Serial0/0/0
C 10.103.23.0/24 is directly connected, Serial0/0/0
172.29.0.0/24 is subnetted, 1 subnets
C 172.29.34.0 is directly connected, Serial0/0/1

Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 172.29.34.0 0.0.0.255 area 0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
```

```
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
O 10.1.0.0/22 [110/129] via 10.103.23.2, 00:10:57, Serial0/0/0
O 10.103.12.0/24 [110/128] via 10.103.23.2, 00:10:57, Serial0/0/0
C 10.103.23.0/24 is directly connected, Serial0/0/0
172.29.0.0/24 is subnetted, 1 subnets
C 172.29.34.0 is directly connected, Serial0/0/1

Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#redistribute eigrp 10 subnets
Router(config-router)#log-adjacency-changes
Router(config-router)#redistribute eigrp 7 subnets
Router(config-router)#network 172.29.45.0 area 0
^
% Invalid input detected at '^' marker.
Router(config-router)#network 172.29.45.0 0.0.0.255 area 0
Router(config-router)#exit
Router(config)#router eigrp 10
Router(config-router)#redistribute ospf 1 metric 50000 200 255 1 1500
Router(config-router)#auto-summary
```

Router(config-router)#exit

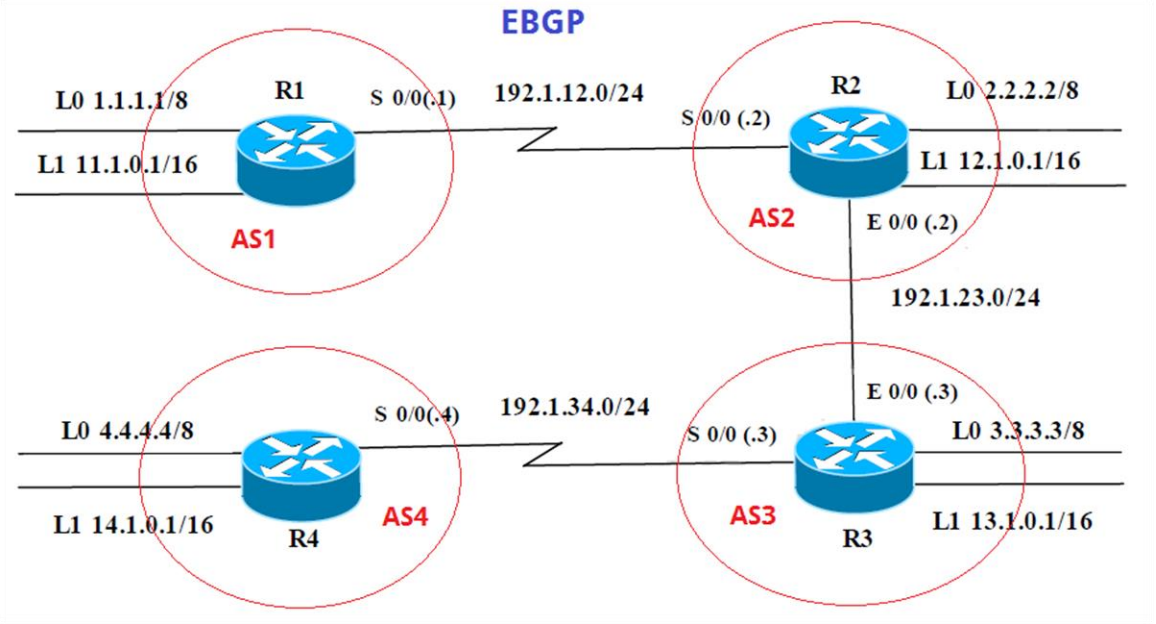
Router(config)#

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

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
C       10.1.0.0/22 is directly connected, Loopback11
C       10.1.4.0/22 is directly connected, Loopback12
C       10.1.8.0/22 is directly connected, Loopback13
C       10.1.12.0/22 is directly connected, Loopback14
C       10.103.12.0/24 is directly connected, Serial0/0/1
O       10.103.23.0/24 [110/128] via 10.103.12.1, 00:24:06,
Serial0/0/1
     172.29.0.0/24 is subnetted, 1 subnets
O       172.29.34.0 [110/192] via 10.103.12.1, 00:11:32, Serial0/0/1

Router#
```

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

Gateway of last resort is not set

     172.5.0.0/16 is variably subnetted, 5 subnets, 2 masks
D       172.5.0.0/16 is a summary, 01:56:39, Null0
C       172.5.4.0/22 is directly connected, Loopback52
C       172.5.8.0/22 is directly connected, Loopback53
C       172.5.12.0/22 is directly connected, Loopback54
C       172.5.16.0/22 is directly connected, Loopback51
     172.29.0.0/16 is variably subnetted, 3 subnets, 2 masks
D       172.29.0.0/16 is a summary, 01:56:39, Null0
D       172.29.34.0/24 [90/41024000] via 172.29.45.2, 00:09:41,
Serial0/0/0
C       172.29.45.0/24 is directly connected, Serial0/0/0

Router#
```

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

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.

```
AS1#enable
AS1#configure term
Enter configuration commands, one per line.  End with CNTL/Z.
AS1(config)#router bgp 1
AS1(config-router)#exit
AS1(config)#no router bgp 1
AS1(config)#router bgp 1
AS1(config-router)#bgp router-id 11.11.11.11
AS1(config-router)#neighbor 192.1.12.2 remote-as 2
AS1(config-router)#network 1.1.1.1 mask 255.0.0.0
AS1(config-router)#network 11.1.0.1 mask 255.255.0.0
AS1(config-router)#exit
AS1(config)#exit
```

AS1#

```
AS1>enable
AS1#show ip bgp
BGP table version is 6, local router ID is 11.11.11.11
Status codes: s suppressed, d damped, h history, * valid, > best, i
- internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 1.0.0.0/8         0.0.0.0                  0      0 32768 i
*                    192.1.12.2               0      0      0 2 i
*> 11.1.0.0/16       0.0.0.0                  0      0 32768 i

AS1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter
area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type
2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    1.0.0.0/8 is directly connected, Loopback0
     11.0.0.0/16 is subnetted, 1 subnets
C       11.1.0.0 is directly connected, Loopback1
C    192.1.12.0/24 is directly connected, Serial0/0/0

AS1#
```

AS2>enable

AS2#config term

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

AS2(config)#router bgp 2

AS2(config-router)#bgp router-id 22.22.22.22

AS2(config-router)#neighbor 192.1.12.1 remote-as 1

AS2(config-router)#neighbor 192.1.34.3 remote-as 3

AS2(config-router)#neighbor 192.1.23.3 remote-as 3

AS2(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.12.1 Up

AS2(config-router)#network 1.1.1.0

AS2(config-router)#network 11.1.0.0

AS2(config-router)#exit

AS2(config)#exit

AS2#

%SYS-5-CONFIG_I: Configured from console by console

```
inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

B     1.0.0.0/8 [20/0] via 192.1.12.1, 00:00:00
C     2.0.0.0/8 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, 00:00:00
      12.0.0.0/16 is subnetted, 1 subnets
C        12.1.0.0 is directly connected, Loopback1
C     192.1.12.0/24 is directly connected, Serial0/0/0
C     192.1.23.0/24 is directly connected, FastEthernet0/0

AS2#show ip bgp
BGP table version is 6, local router ID is 22.22.22.22
Status codes: s suppressed, d damped, h history, * valid, > best, i
- internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 1.0.0.0/8         0.0.0.0                  0      0      0 2 i
*>                   192.1.12.1               0      0      0 1 i
*> 11.1.0.0/16       192.1.12.1               0      0      0 1 i

AS2#
```

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.

AS3>enable

AS3#config term

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

AS3(config)#router bgp 3

AS3(config-router)#neighbor 192.1.12.2 remote-as 2

AS3(config-router)#neighbor 192.1.23.2 remote-as 2

AS3#%BGP-5-ADJCHANGE: neighbor 192.1.23.2 Up

AS3(config-router)#neighbor 192.1.34.4 remote-as 4

AS3(config-router)#network 4.4.4.4 mask 255.0.0.0

AS3(config-router)#network 14.1.0.1 mask 255.255.0.0

AS3(config-router)#network 2.2.2.2 mask 255.0.0.0

AS3(config-router)#network 12.1.0.1 mask 255.255.0.0

AS3(config-router)#network 3.3.3.3 mask 255.0.0.0

AS3(config-router)#network 13.1.0.1 mask 255.255.0.0

AS3(config-router)#exit

```
AS3#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter
area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type
2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

B     1.0.0.0/8 [20/0] via 192.1.23.2, 00:00:00
C     3.0.0.0/8 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, 00:00:00
      13.0.0.0/16 is subnetted, 1 subnets
C        13.1.0.0 is directly connected, Loopback1
C     192.1.23.0/24 is directly connected, FastEthernet0/0
C     192.1.34.0/24 is directly connected, Serial0/0/0

AS3#show ip bgp
BGP table version is 6, local router ID is 13.1.0.1
Status codes: s suppressed, d damped, h history, * valid, > best, i
- internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 1.0.0.0/8        192.1.23.2               0      0      0 2 i
*> 3.0.0.0/8        0.0.0.0                  0      0 32768 i
*> 11.1.0.0/16      192.1.23.2               0      0      0 2 1 i
*> 13.1.0.0/16      0.0.0.0                  0      0 32768 i
*  192.1.23.0/24    192.1.23.2               0      0      0 2 i

AS3#
```

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.

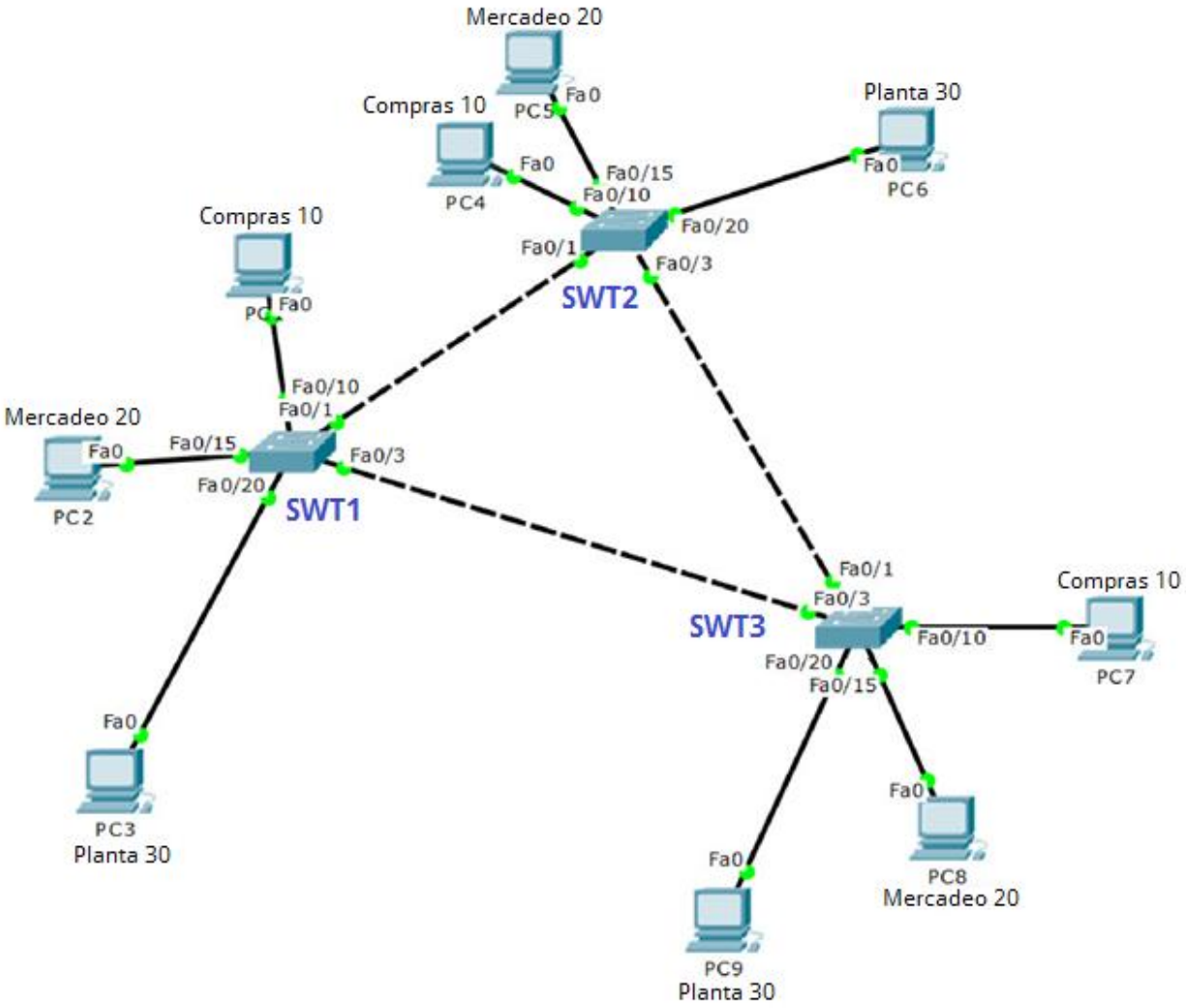
Establezca las relaciones de vecino con base en las direcciones de Loopback 0. Cree rutas estáticas para alcanzar la Loopback 0 del otro router. No anuncie la Loopback 0 en BGP. Anuncie la red Loopback de R4 en BGP. Presente el paso a con los comandos utilizados y la salida del comando show ip route.

```
AS4>enable
AS4#config term
Enter configuration commands, one per line.  End with CNTL/Z.
AS4(config)#router bgp 4
AS4(config-router)#neighbor 192.1.34.3 remote-as 3
AS4(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.34.3 Up

AS4(config-router)#neighbor 192.1.23.3 remote-as 3
AS4(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.23.3 Up

AS4(config-router)#neighbor 192.1.23.2 remote-as 2
AS4(config-router)#neighbor 192.1.12.2 remote-as 2
AS4(config-router)#neighbor 192.1.12.1 remote-as 1
AS4(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.34.3 Up

AS4(config-router)#network 3.3.3.3 mask 255.0.0.0
AS4(config-router)#network 13.1.0.1 mask 255.255.0.0
AS4(config-router)#network 12.1.0.1 mask 255.255.0.0
AS4(config-router)#network 2.2.2.2 mask 255.0.0.0
AS4(config-router)#network 11.1.0.1 mask 255.255.0.0
AS4(config-router)#network 4.4.4.4 mask 255.0.0.0
AS4(config-router)#network 14.1.0.1 mask 255.255.0.0
AS4(config-router)#exit
AS4(config)#exit
AS4#
```

%SYS-5-CONFIG_I: Configured from console by console

```
AS4>enable
AS4#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter
area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type
2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    4.0.0.0/8 is directly connected, Loopback0
     14.0.0.0/16 is subnetted, 1 subnets
C       14.1.0.0 is directly connected, Loopback1
C    192.1.34.0/24 is directly connected, Serial0/0/0

AS4#show ip bgp
BGP table version is 11, local router ID is 14.1.0.1
Status codes: s suppressed, d damped, h history, * valid, > best, i
- internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 4.0.0.0/8         0.0.0.0                  0      0 32768 i
*                    192.1.34.3               0      0      0 3 i
*> 14.1.0.0/16       0.0.0.0                  0      0 32768 i
*                    192.1.34.3               0      0      0 3 i

AS4#
```

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.

Switch>enable

Switch#config terminal

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

```
Switch(config)#hostname SWT1
SWT1(config)#vtp domain CCNP
Changing VTP domain name from NULL to CCNP
SWT1(config)#vtp version 2
SWT1(config)#vtp mode client
Setting device to VTP CLIENT mode.
SWT1(config)#vtp password cisco
Setting device VLAN database password to cisco
SWT1(config)#

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SWT3
SWT3(config)#vtp domain CCNP
Changing VTP domain name from NULL to CCNP
SWT3(config)#vtp version 2
SWT3(config)#vtp mode client
Setting device to VTP CLIENT mode.
SWT3(config)#vtp password cisco
Setting device VLAN database password to cisco
SWT3(config)#

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SWT2
SWT2(config)#vtp domain CCNP
Changing VTP domain name from NULL to CCNP
SWT2(config)#vtp version 2
```

SWT2(config)#vtp mode server

Device mode already VTP SERVER.

SWT2(config)#vtp password cisco

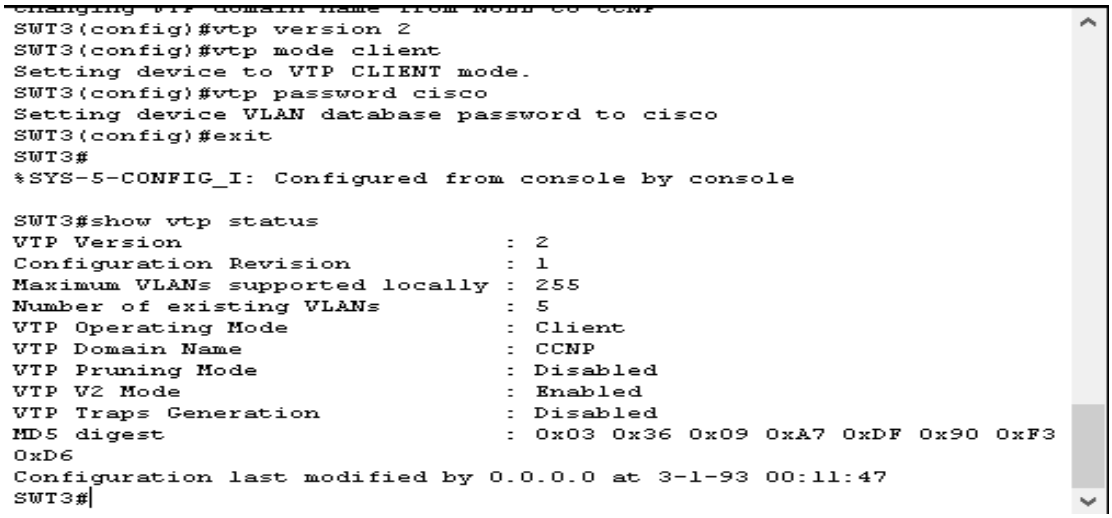
Setting device VLAN database password to cisco

SWT2(config)#

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

```
SWT1(config)#vtp version 2
SWT1(config)#vtp mode client
Setting device to VTP CLIENT mode.
SWT1(config)#vtp password cisco
Setting device VLAN database password to cisco
SWT1(config)#exit
SWT1#
%SYS-5-CONFIG_I: Configured from console by console

SWT1#show vtp status
VTP Version                     : 2
Configuration Revision          : 1
Maximum VLANs supported locally : 255
Number of existing VLANs        : 5
VTP Operating Mode              : Client
VTP Domain Name                 : CCNP
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Enabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0x09 0x98 0xE3 0x1B 0x58 0xE3 0x69
0x64
Configuration last modified by 0.0.0.0 at 3-1-93 00:09:45
SWT1#
```

```
SWT2(config)#vtp mode server
Device mode already VTP SERVER.
SWT2(config)#vtp password cisco
Setting device VLAN database password to cisco
SWT2(config)#exit
SWT2#
%SYS-5-CONFIG_I: Configured from console by console

SWT2#show vtp status
VTP Version                     : 2
Configuration Revision          : 1
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                     : Enabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0x0B 0x55 0x88 0xF6 0xE6 0x09 0x7A
0xBB
Configuration last modified by 0.0.0.0 at 3-1-93 00:12:53
Local updater ID is 0.0.0.0 (no valid interface found)
SWT2#
```



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.

SWT1>enable

SWT1#conf term

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

SWT1(config)#interface fa

SWT1(config)#interface fastEthernet 0/1

SWT1(config-if)#switchport mode dynamic desirable

SWT1(config-if)#

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

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

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

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

```
changed state to down

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

SWT1(config-if)#end
SWT1#
%SYS-5-CONFIG_I: Configured from console by console

SWT1#show interface 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

SWT1#
```

```
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Enabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0x39 0xF4 0xC4 0x6E 0x60 0xD3 0x5B
0xE8
Configuration last modified by 0.0.0.0 at 3-1-93 00:01:31
Local updater ID is 0.0.0.0 (no valid interface found)
SWT2#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to down

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

SWT2#show interface 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

SWT2#
```

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

SWT1>enable

SWT1#configure terminal

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

SWT1(config)#interface fa

SWT1(config)#interface fastEthernet 0/3

SWT1(config-if)#switchport mode trunk

SWT1(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

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

```
changed state to up

SWT1(config-if)#end
SWT1#
%SYS-5-CONFIG_I: Configured from console by console

SWT1#show interface 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       none

SWT1#
```

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

SWT2>enable
SWT2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#interface fa
SWT2(config)#interface fastEthernet 0/3
SWT2(config-if)#switchport mode trunk

SWT2(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

SWT2(config-if)#exit
SWT2(config)#

SWT3>enable
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

SWT3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#interface fa
SWT3(config)#interface fastEthernet 0/1
SWT3(config-if)#switchport mode trunk
SWT3(config-if)#exit

SWT3(config)#end

SWT3#

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 STW1

SWT1>enable

SWT1#configure terminal

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

SWT1(config)#vlan 10

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

SWT1(config)#

En STW2

SWT2>enable

SWT2#configure terminal

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

SWT2(config)#vlan 10

SWT2(config-vlan)#name Compras

SWT2(config-vlan)#vlan 20

SWT2(config-vlan)#name Mercadeo

SWT2(config-vlan)#vlan 30

SWT2(config-vlan)#name Planta

SWT2(config-vlan)#vlan 99

SWT2(config-vlan)#name Admon

SWT2(config-vlan)#exit

SWT2(config)#

2. Verifique que las VLANs han sido agregadas correctamente.

En SWT1: No se pude crear la vlan 10 ya que en el switch 1 tiene un vtp en modo cliente, lo que no permite crear la Vlan.

En SWT2:

```
SWT2#show 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
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
Transl Trans2
---- ----- ----------- ----- ------ ------ -------- ---- --------
------ ------
1    enet  100001      1500  -      -      -        -    -         0
0
10   enet  100010      1500  -      -      -        -    -         0
```

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

X = número de cada PC particular

En SWT1.

SWT1>enable

SWT1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#interface vlan 10
SWT1(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up

SWT1(config-if)#ip address 190.108.10.1 255.255.255.0
SWT1(config-if)#exit
SWT1(config)#interface vlan 20
SWT1(config-if)#
%LINK-5-CHANGED: Interface Vlan20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed state to up

SWT1(config-if)#ip address 190.108.20.1 255.255.255.0
SWT1(config-if)#exit
SWT1(config)#interface vlan 30
SWT1(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up

SWT1(config-if)#ip address 190.108.30.1 255.255.255.0
SWT1(config-if)#exit

En SWT2.

SWT2>enable
SWT2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#interface vlan 10
SWT2(config-if)#ip address 190.108.10.2 255.255.255.0
SWT2(config-if)#exit
SWT2(config)#interface vlan 20
SWT2(config-if)#ip address 190.108.20.2 255.255.255.0
SWT2(config-if)#exit
SWT2(config)#interface vlan 30
SWT2(config-if)#ip address 190.108.30.2 255.255.255.0
SWT2(config-if)#exit

En SWT3

SWT3>enable
SWT3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#interface vlan 10
SWT3(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up

SWT3(config-if)#ip address 190.108.10.3 255.255.255.0
SWT3(config-if)#exit
SWT3(config)#interface vlan 20
SWT3(config-if)#

%LINK-5-CHANGED: Interface Vlan20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed state to up

SWT3(config-if)#ip address 190.108.20.3 255.255.255.0
SWT3(config-if)#exit
SWT3(config)#interface vlan 30
SWT3(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up
SWT3(config-if)#ip address 190.108.30.3 255.255.255.0
SWT3(config-if)#exit

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

En SWT1.

SWT1>enable
SWT1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#interface fa
SWT1(config)#interface fastEthernet 0/10
SWT1(config-if)#switchport mode access
SWT1(config-if)#switchport access vlan 10
SWT1(config-if)#exit
SWT1(config)#exit
SWT1#
%SYS-5-CONFIG_I: Configured from console by console

En SWT2.

SWT2(config)#interface fa
SWT2(config)#interface fastEthernet 0/10
SWT2(config-if)#switchport mode access
SWT2(config-if)#switchport access vlan 10
SWT2(config-if)#exit
SWT2(config)#
SWT2#

En SWT3.

SWT3>enable
SWT3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z..
SWT3(config)#interface fa
SWT3(config)#interface fastEthernet 0/10
SWT3(config-if)#switchport mode access
SWT3(config-if)#switchport access vlan 10
SWT3(config-if)#exit
SWT3(config)#exit
SWT3#
%SYS-5-CONFIG_I: Configured from console by console
SWT3#

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.

En SWT1.

SWT1>enable
SWT1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#interface fa
SWT1(config)#interface fastEthernet 0/15
SWT1(config-if)#switchport mode access
SWT1(config-if)#switchport access vlan 20
SWT1(config-if)#exit
SWT1(config)#interface fa
SWT1(config)#interface fastEthernet 0/20
SWT1(config-if)#switchport mode access
SWT1(config-if)#switchport access vlan 30
SWT1(config-if)#exit
SWT1(config)#exit
SWT1#
%SYS-5-CONFIG_I: Configured from console by console

En SWT2

SWT2>enable
SWT2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#interface fa
SWT2(config)#interface fastEthernet 0/15
SWT2(config-if)#switchport mode access
SWT2(config-if)#switchport access vlan 20
SWT2(config-if)#no shut

SWT2(config-if)#exit
SWT2(config)#interface fa
SWT2(config)#interface fastEthernet 0/20
SWT2(config-if)#switchport mode access
SWT2(config-if)#switchport access vlan 30
SWT2(config-if)#end
SWT2#
%SYS-5-CONFIG_I: Configured from console by console

En SWT3

SWT3>enable
SWT3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#interface fa
SWT3(config)#interface fastEthernet 0/15
SWT3(config-if)#switchport mode access
SWT3(config-if)#switchport access vlan 20
SWT3(config-if)#exit
SWT3(config)#interface fa
SWT3(config)#interface fastEthernet 0/20
SWT3(config-if)#switchport mode access
SWT3(config-if)#switchport access vlan 30
SWT3(config-if)#exit
SWT3(config)#exit
SWT3#
%SYS-5-CONFIG_I: Configured from console by console

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.

Equipo	Interfaz	Dirección IP	Máscara
SWT1	VLAN 99	190.108.99.1	255.255.255.0
SWT2	VLAN 99	190.108.99.2	255.255.255.0
SWT3	VLAN 99	190.108.99.3	255.255.255.0

En SWT1.

SWT1>enable
SWT1#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#interface vlan99
SWT1(config-if)#
%LINK-5-CHANGED: Interface Vlan99, changed state to up

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

SWT1(config-if)#ip address 190.108.99.1 255.255.255.0
SWT1(config-if)#exit
SWT1(config)#

En SWT2.

SWT2>enable

SWT2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#interface vlan 99
SWT2(config-if)#
%LINK-5-CHANGED: Interface Vlan99, changed state to up

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

SWT2(config-if)#ip address 190.108.99.2 255.255.255.0
SWT2(config-if)#exit

En SWT3.

SWT3>enable
SWT3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#interface vlan 99
SWT3(config-if)#
%LINK-5-CHANGED: Interface Vlan99, changed state to up

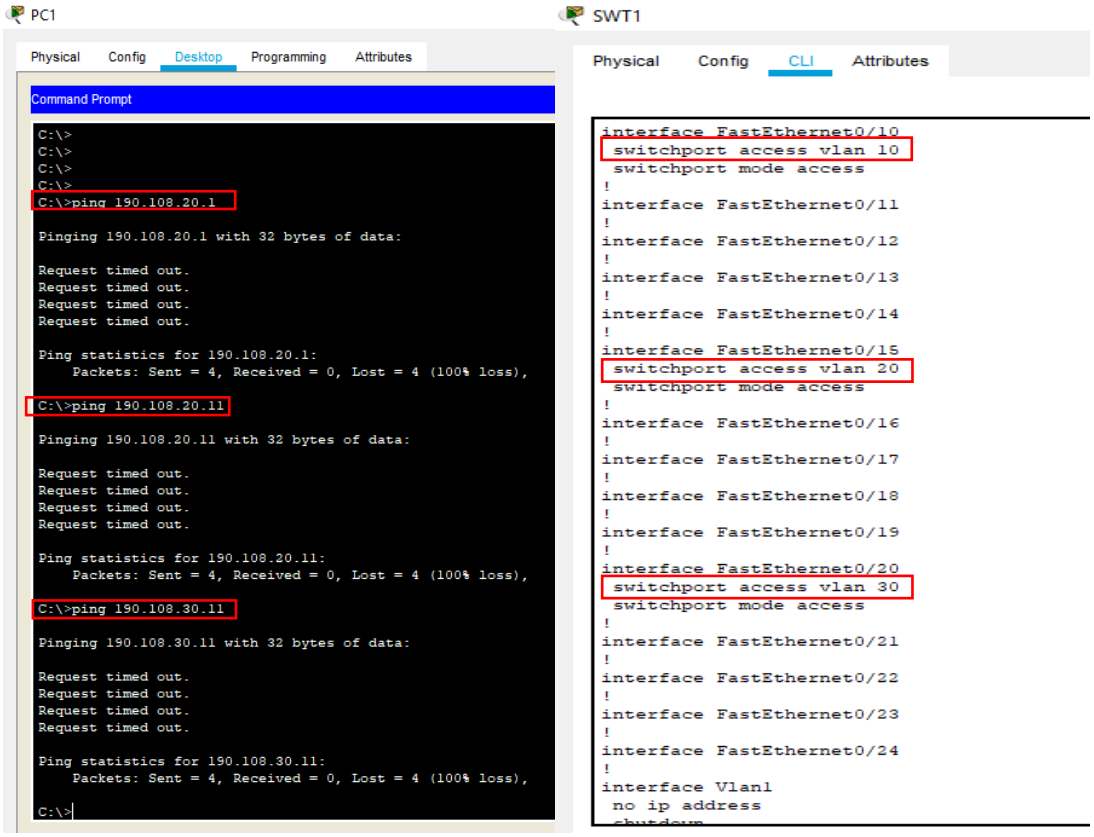
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan99, changed state to up

SWT3(config-if)#ip address 190.108.99.3 255.255.255.0
SWT3(config-if)#exit
SWT3(config)#end
SWT3#
%SYS-5-CONFIG_I: Configured from console by console
SWT3#

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.

SOLUCIÓN: El ping entre cada una de las PC es correcto solo si hacen parte de la misma Vlan, de lo contrario el ping es incorrecto como en este caso se evidencia.



PC7

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 190.108.20.22

Pinging 190.108.20.22 with 32 bytes of data:

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

Ping statistics for 190.108.20.22:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 190.108.30.22

Pinging 190.108.30.22 with 32 bytes of data:

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

Ping statistics for 190.108.30.22:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

SWT2

Physical Config CLI Attributes

```
interface FastEthernet0/9
!
interface FastEthernet0/10
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
 switchport access vlan 30
 switchport mode access
!
```

PC6

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 190.108.20.33

Pinging 190.108.20.33 with 32 bytes of data:

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

Ping statistics for 190.108.20.33:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 190.108.30.33

Pinging 190.108.30.33 with 32 bytes of data:

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

Ping statistics for 190.108.30.33:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

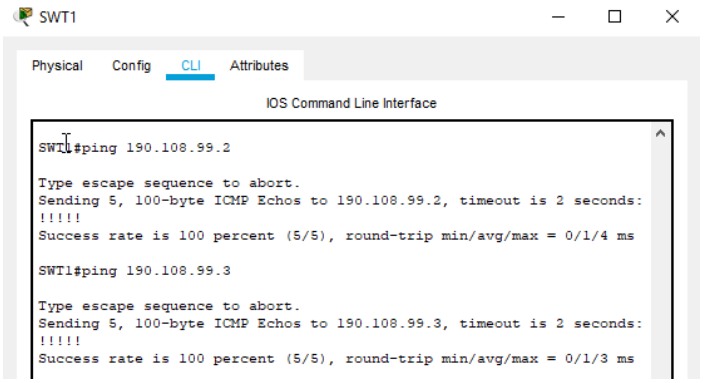
SWT3

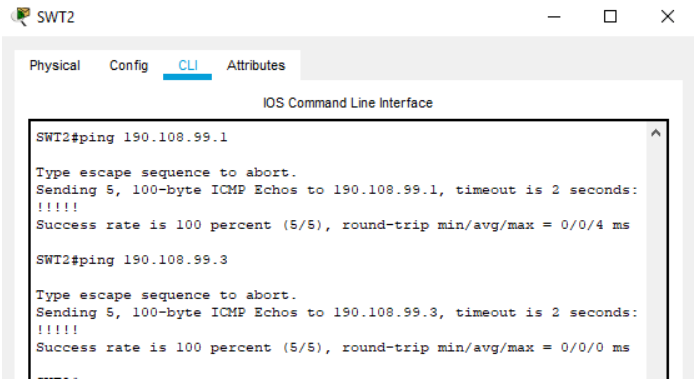
Physical Config CLI Attributes

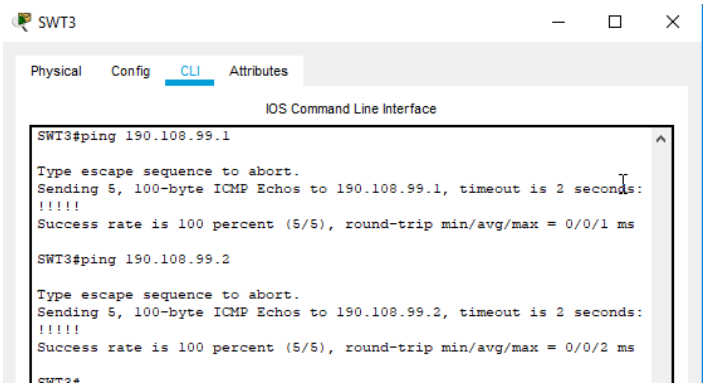
```
!
interface FastEthernet0/9
!
interface FastEthernet0/10
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
 switchport access vlan 30
 switchport mode access
!
```

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

SOLUCIÓN: Al ejecutar un ping de cada ping a los demás, el resultado es exitoso, debido a que se reconoce el direccionamiento de la Vlan 99, entonces, al realizar un ping desde un switch a la Vlan 99 de otro switch, el pingo es exitoso. A continuación se evidencia:

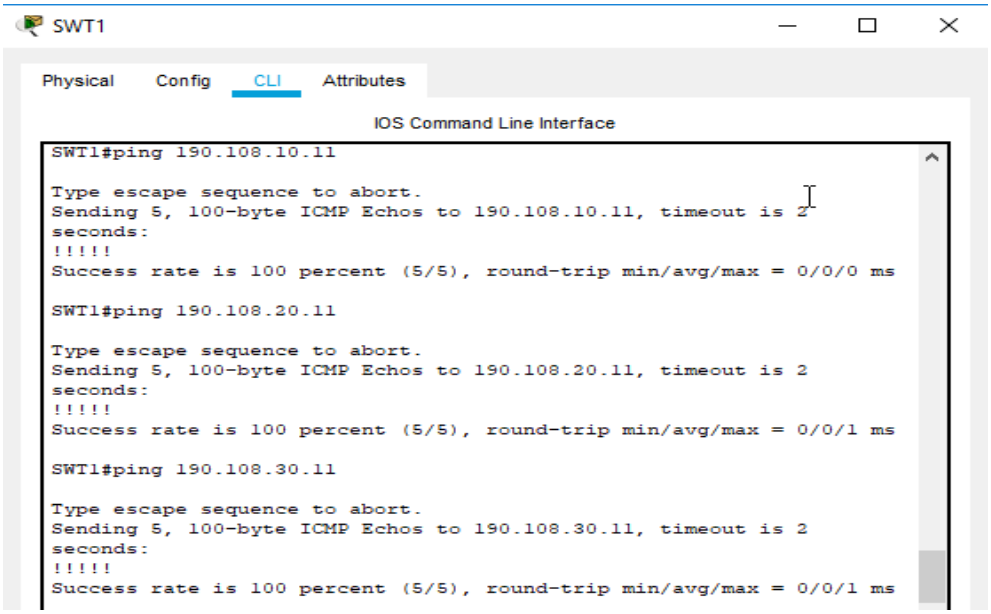


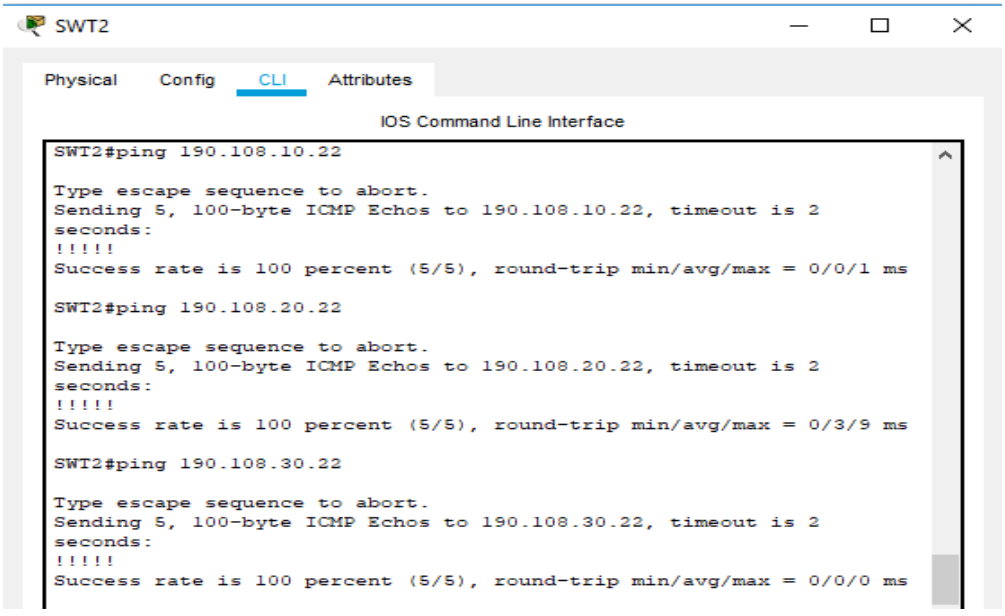


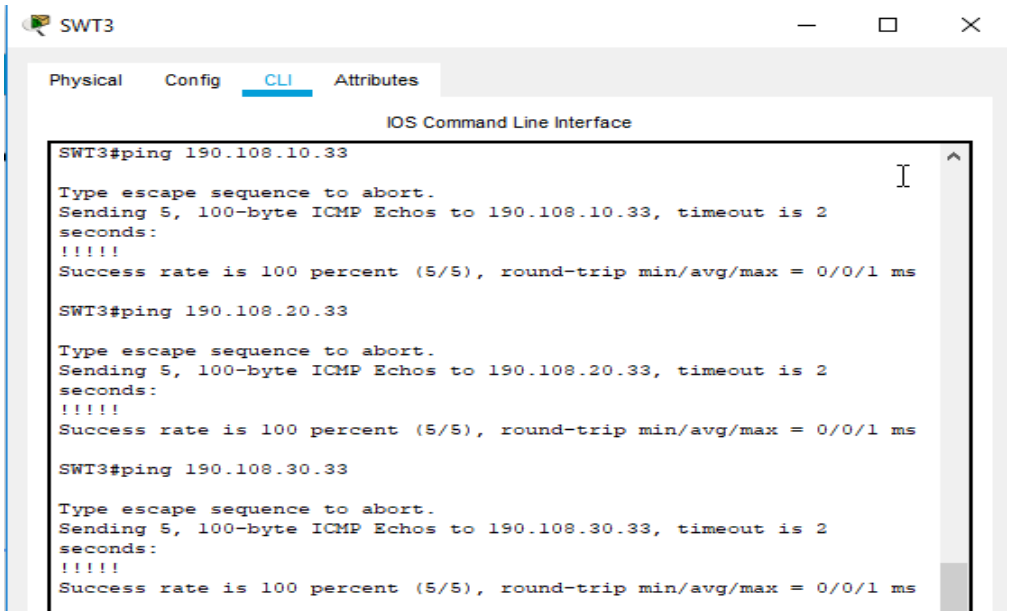


3. Ejecute un Ping desde cada Switch a cada PC. Explique por qué el ping tuvo o no tuvo éxito.

SOLUCIÓN. El ping es correcto dado a que los switches reconocen los direccionamientos de las vlan asociadas y de esta forma se encarga de redirigir el enrutamiento a los equipos conectados dentro de su red.






SWT3
Physical
Config
CLI
Attributes
IOS Command Line Interface
SWT3#ping 190.108.10.33
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.10.33, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms
SWT3#ping 190.108.20.33
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.20.33, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms
SWT3#ping 190.108.30.33
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.30.33, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

CONCLUSIONES

Por medio de este trabajo se permite comprender como se puede implementar y configurar una red que este soportada por VLANs con el uso de los protocolos VTP y STP, donde se pueda diseñar las plantillas de configuración para su uso en múltiples dispositivos, configurar troncales y vlan usando el protocolo VTP, los EtherChannel Link en red de switch’s interconectados, entro otros usos.

El desarrollo de este trabajo permite reforzar los demás conocimientos adquiridos a través de la realización de los laboratorios durante el transcurso activo del curso y la solución de las lecciones evaluativas en el entorno de cisco (Netacad).

Para el escenario 1 se aplicaron las configuraciones básicas y los protocolos de enrutamiento indicados,se crean inerfaces loopback con asignación de direcciones, se implementan anchos de banda con tiempo de retardo de microsegundos, se verifican los resultados obtenidos por medio de los comandos show ip route.

Para el escenario 2, se obtiene información detallada de las direcciones ip, interfaz y máscara de red, allí se implementa la configuración de vecinos BGP, anuncio de direcciones y identificación de router (ID); se verifica la correcta configuración por medio de show ip route.

Para el escenario 3, se identifica la topoligia de red y se configuro VTP para actualización de VLAN, se verifica por medio de show vtp status. Se configuro DT para los switchs 1 y 2, se observa como funcionan los enlaces troncales, se adicionaron VLAN y asignación de puertos, por medio de los pc se ralizan pruebas de ping entre la red, los pcs se configuraron con ip statica.

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