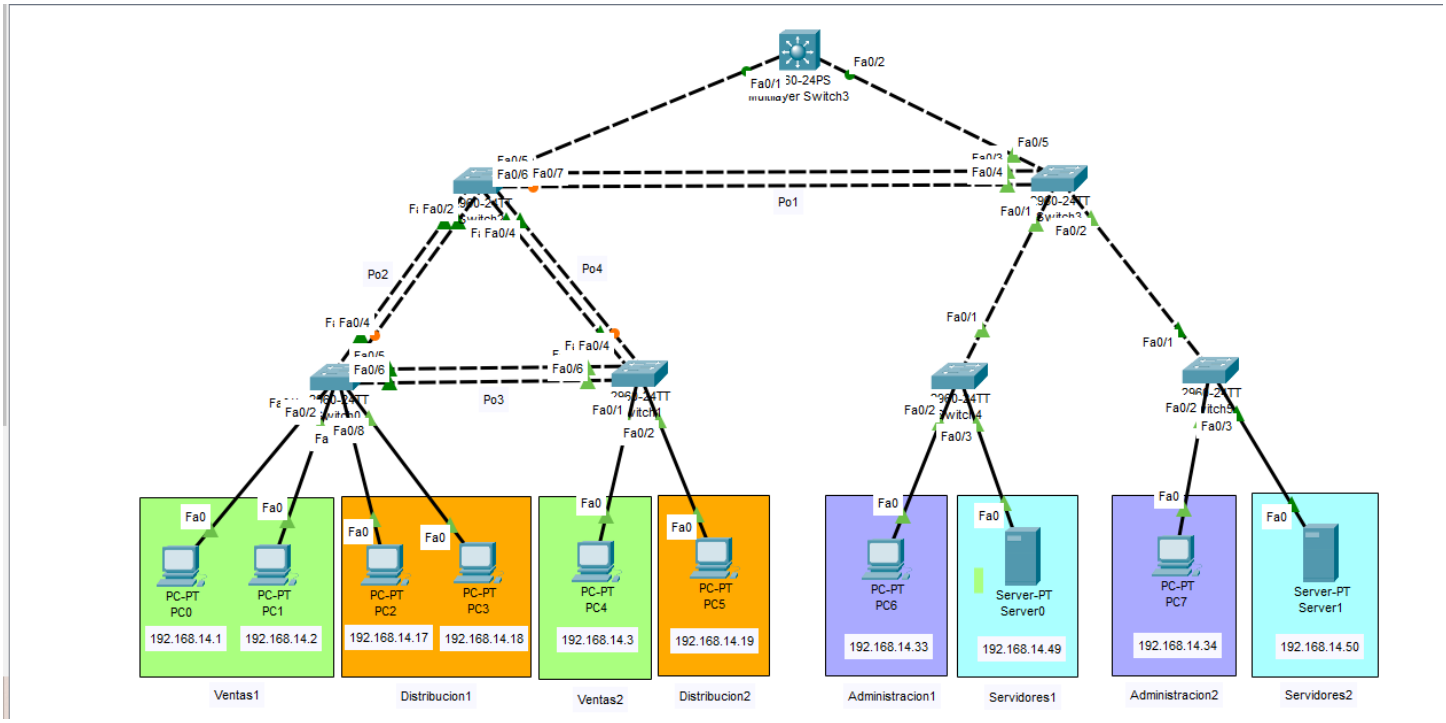
Manual Técnico

Topología



Composición de las VLANS

HOST	VLAN	Ip	Mascara	Puerto
PC0	14 - Ventas	192.168.14.1	255.255.255.240	Switch0 – Fa0/1
PC1	14 - Ventas	192.168.14.2	255.255.255.240	Switch0 – Fa0/2
PC4	14 - Ventas	192.168.14.3	255.255.255.240	Switch1 – Fa0/1
PC2	24 – Distribución	192.168.14.17	255.255.255.240	Switch0 – Fa0/7
PC3	24 - Distribución	192.168.14.18	255.255.255.240	Switch0 – Fa0/8
PC4	24 - Distribución	192.168.14.19	255.255.255.240	Switch1 – Fa0/2
PC6	34 - Administración	192.168.14.33	255.255.255.240	Switch4 – Fa0/2
PC7	34 - Administración	192.168.14.34	255.255.255.240	Switch5 – Fa0/2
Server0	44 - Servidores	192.168.14.49	255.255.255.240	Switch4 – Fa0/3
Server1	44 - Servidores	192.168..14.50	255.255.255.240	Switch5 – Fa0/3

Direcciones de Red

Red única: 192.168.1X.0/24

X: corresponde al número de grupo; grupo 22 al tener dos dígitos, estos se suman

Red única resultante: 192.168.14.0/24

Utilizando VLSM para obtener las subredes:

Vlan	Dirección de Red	Primera dirección asignable	Última dirección asignable	Dirección de broadcast	Máscara de subred
14 (Ventas)	192.168.14.0 /28	192.168.14.1	192.168.14.14	192.168.14.15	255.255.255.240
24 (Distribución)	192.168.14.16 /28	192.168.14.17	192.168.14.30	192.168.14.31	255.255.255.240
34 (Administración)	192.168.14.32 /28	192.168.14.33	192.168.14.46	192.168.14.47	255.255.255.240
44 (Servidores)	192.168.14.48 /30	192.168.14.49	192.168.14.62	192.168.14.63	255.255.255.240
99 (Management & Native)	192.168.14.64 /30	192.168.14.65	192.168.14.78	192.168.14.79	255.255.255.240
999 (BlackHole)	192.168.14.80 /30	192.168.14.81	192.168.14.94	192.168.14.95	255.255.255.240

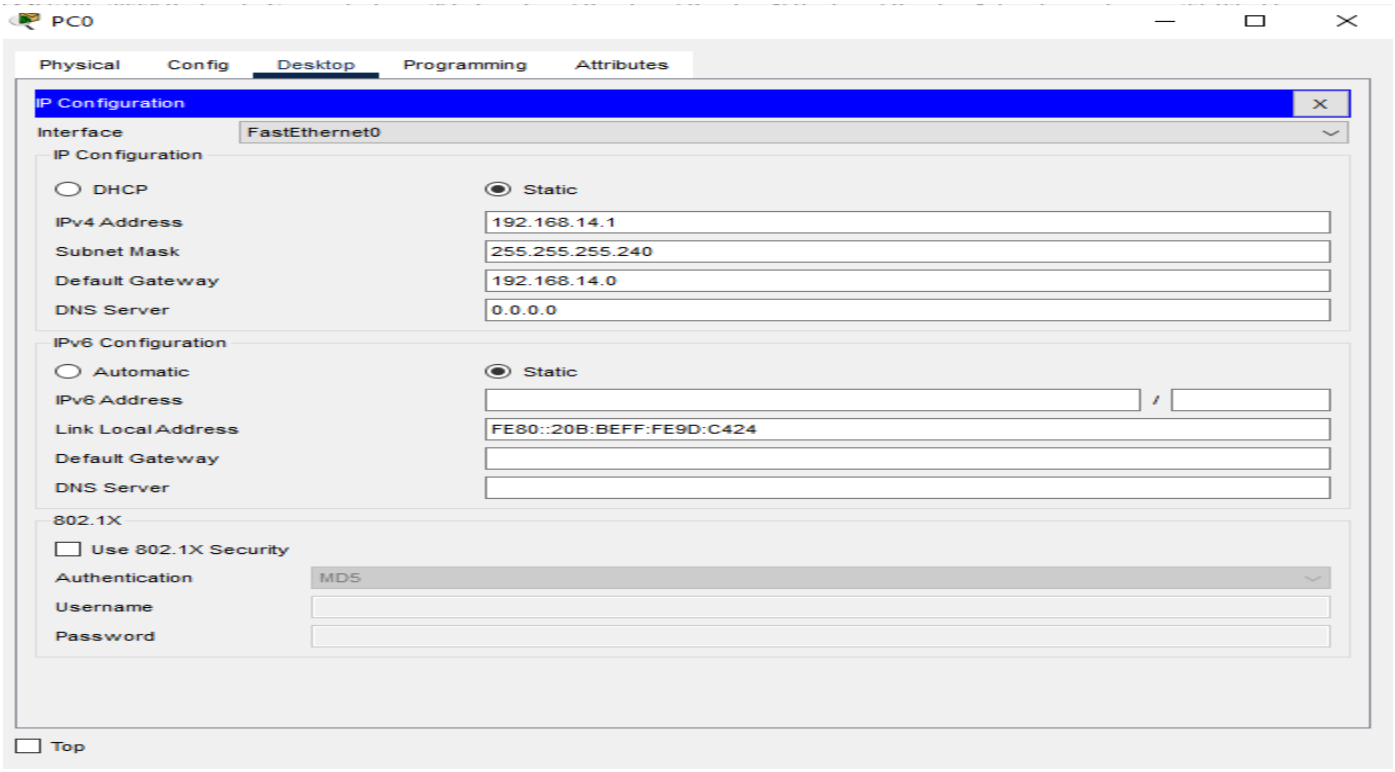
VLSM

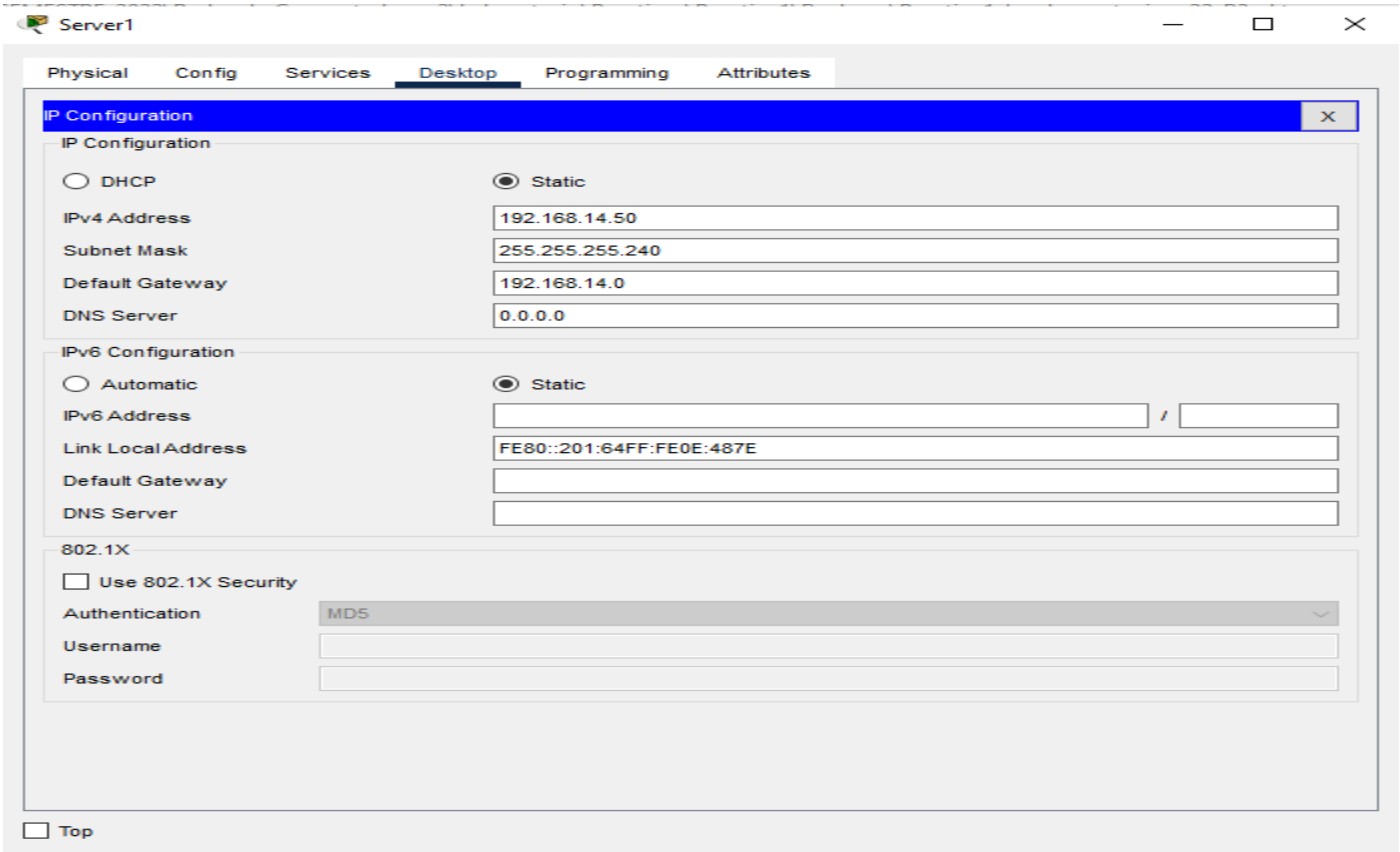
El concepto básico de VLSM es muy simple: Se toma una red y se divide en subredes fijas, luego se toma una de esas subredes y se vuelve a dividir en otras subredes tomando más bits del identificador de máquina, ajustándose a la cantidad de equipos requeridos por cada segmento de la red.

Por ejemplo, si una organización usa la dirección de red 192.168.1.0/24 y se subdivide usando una máscara /26 se tendrán 4 subredes (192.168.1.0/26, 192.168.1.64/26, 192.168.1.128/26 y 192.168.1.192/26) con $26 - 2 = 62$ direcciones posibles para equipos en cada subred. Suponiendo que se coge una de estas subredes (la subred 192.168.1.0/26) para direccionar un enlace entre dos routers de la red, se estarían desperdiciando 60 direcciones IP. Pero si se aplica VSLM a una de las subredes (por ejemplo, a la subred 192.168.1.0/26) y se toman otros 4 bits más para subred, la subred anterior se divide en otras 64 subredes con máscara /30 (192.168.1.0/30, 192.168.1.4/30, 192.168.1.8/30, 192.168.1.12/30, 192.168.1.16/30 y así sucesivamente hasta la 192.168.1.60/30). Cada una de estas subsubredes tiene 2 direcciones IP posibles para equipos. Cogiendo cualquiera de ellas para direccionar el enlace (por ejemplo, la 192.168.1.4/30 y aplicar las direcciones 192.168.1.5/30 y 192.168.1.6/30 a las interfaces de los routers) no se desperdicia ninguna dirección IP.

Configuraciones Básicas

Asignar IP, Mascara de subred y Gateway a los dispositivos finales. Ejemplos:

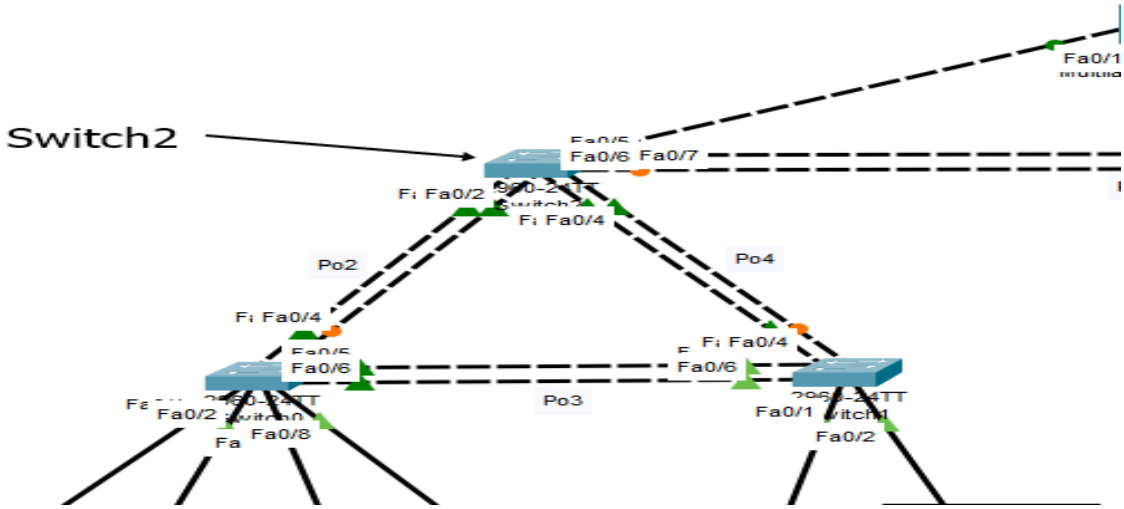




Switch2

El Switch2 actuará como server, para que se repliquen las vlans a los demás switch.

VTP



enable
config t
vtp domain g22
vtp password g22
vtp mode server
exit
show vtp status

Switch2

Physical | Config | CLI | Attributes

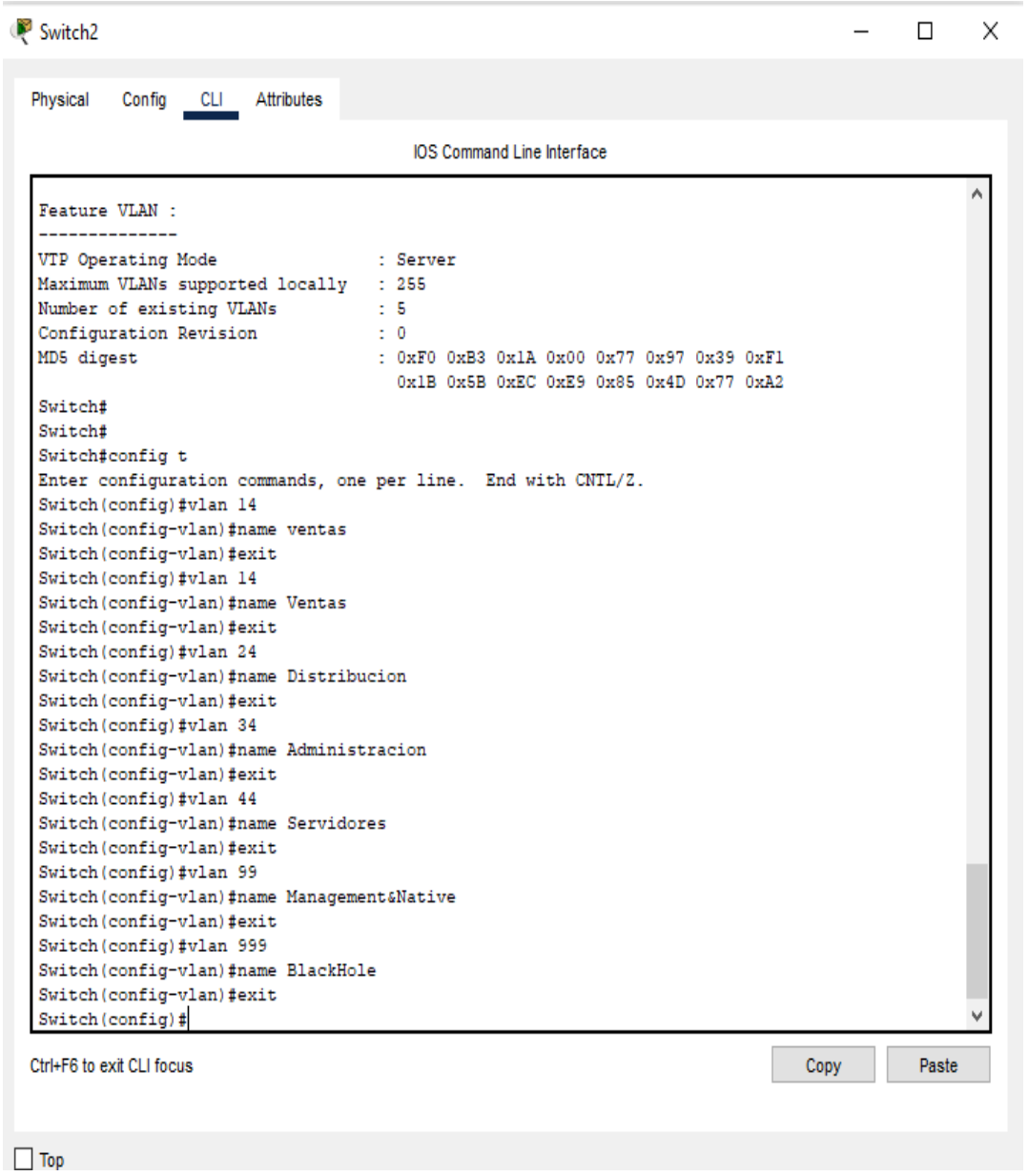
IOS Command Line Interface

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


Switch>
Switch>
Switch>
Switch>
Switch>
Switch>enable
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vtp domain g22
Changing VTP domain name from NULL to g22
Switch(config)#vtp password g22
Setting device VLAN database password to g22
Switch(config)#vtp mode server
Device mode already VTP SERVER.
Switch(config)#show vtp status
                 ^
% Invalid input detected at '^' marker.

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

Switch#
Switch#show vtp status
VTP Version capable             : 1 to 2
VTP version running             : 1
VTP Domain Name                 : g22
VTP Pruning Mode                : Disabled
VTP Traps Generation            : Disabled
Device ID                       : 0001.6345.3360
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
```

Ctrl+F6 to exit CLI focus

Copy | Paste

**********vlans
config t
vlan 14
name Ventas
exit
vlan 24
name Distribucion
exit
vlan 34
name Administracion
exit
vlan 44
name Servidores
exit
vlan 99
name Management&Native
exit
vlan 999
name BlackHole
exit
********** puertos troncales
enable
config t
interface fa0/1
switchport mode trunk
exit
interface fa0/2
switchport mode trunk
exit
interface fa0/3
switchport mode trunk
exit
interface fa0/4
switchport mode trunk



Switch0

Se va a configurar como vtp client.

********** vtp
enable
config t
vtp domain g22
vtp password g22
vtp mode client

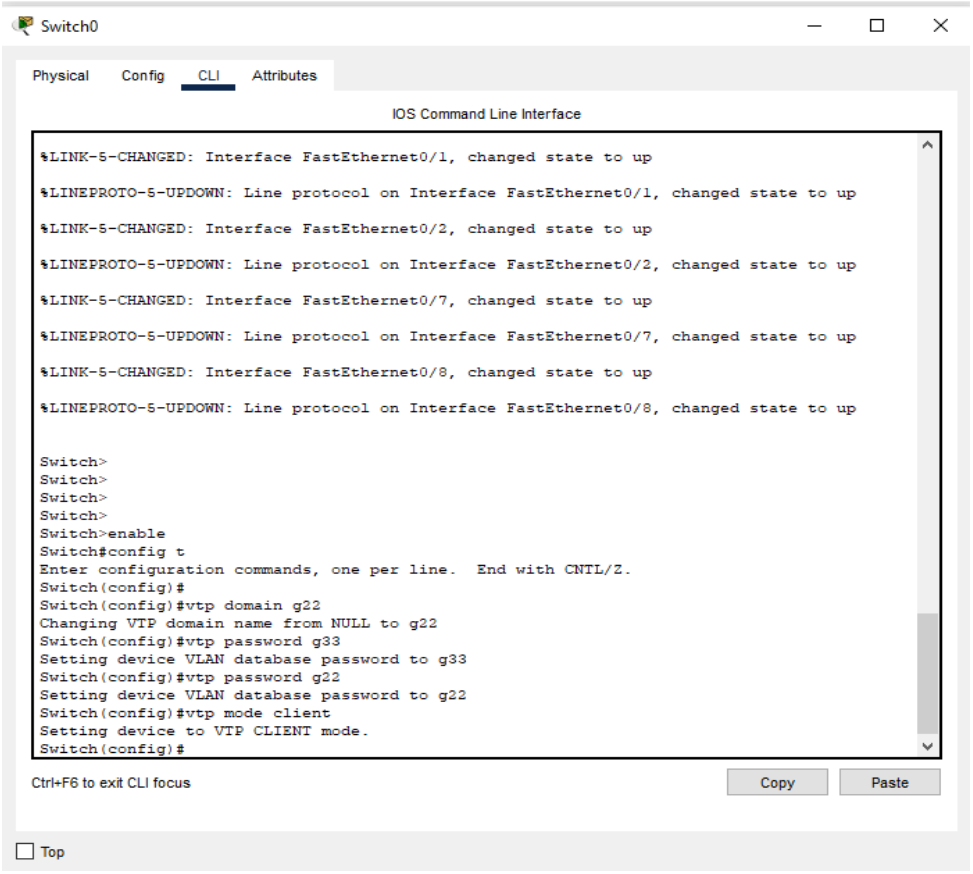
********** puertos troncales
enable
config t
interface fa0/3
switchport mode trunk
exit
interface fa0/4
switchport mode trunk
exit
interface fa0/5
switchport mode trunk
exit
interface fa0/6
switchport mode trunk

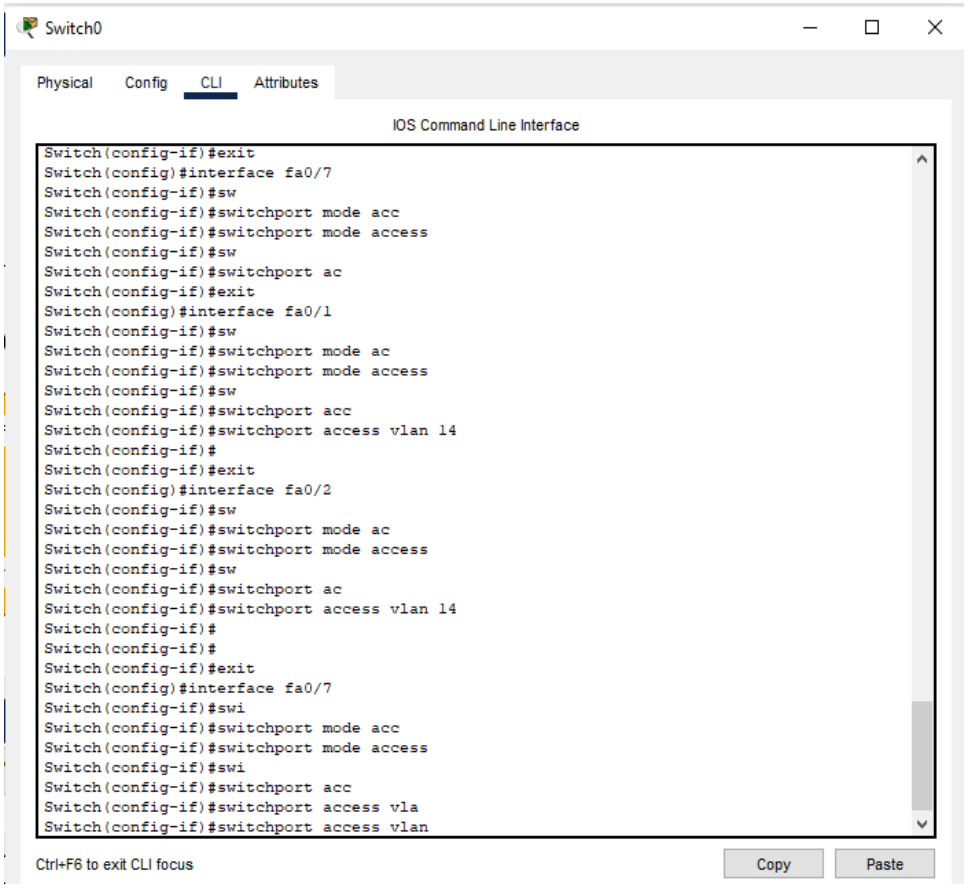
********** modo acceso
enable
config t
interface fa0/1
switchport mode access
switchoport access vlan 14

enable
config t
interface fa0/2
switchport mode access
switchoport access vlan 14

enable
config t
interface fa0/7
switchport mode access
switchoport access vlan 24

enable
config t
interface fa0/8
switchport mode access
switchoport access vlan 24





Switch1

********** vtp

enable
config t
vtp domain g22
vtp password g22
vtp mode client

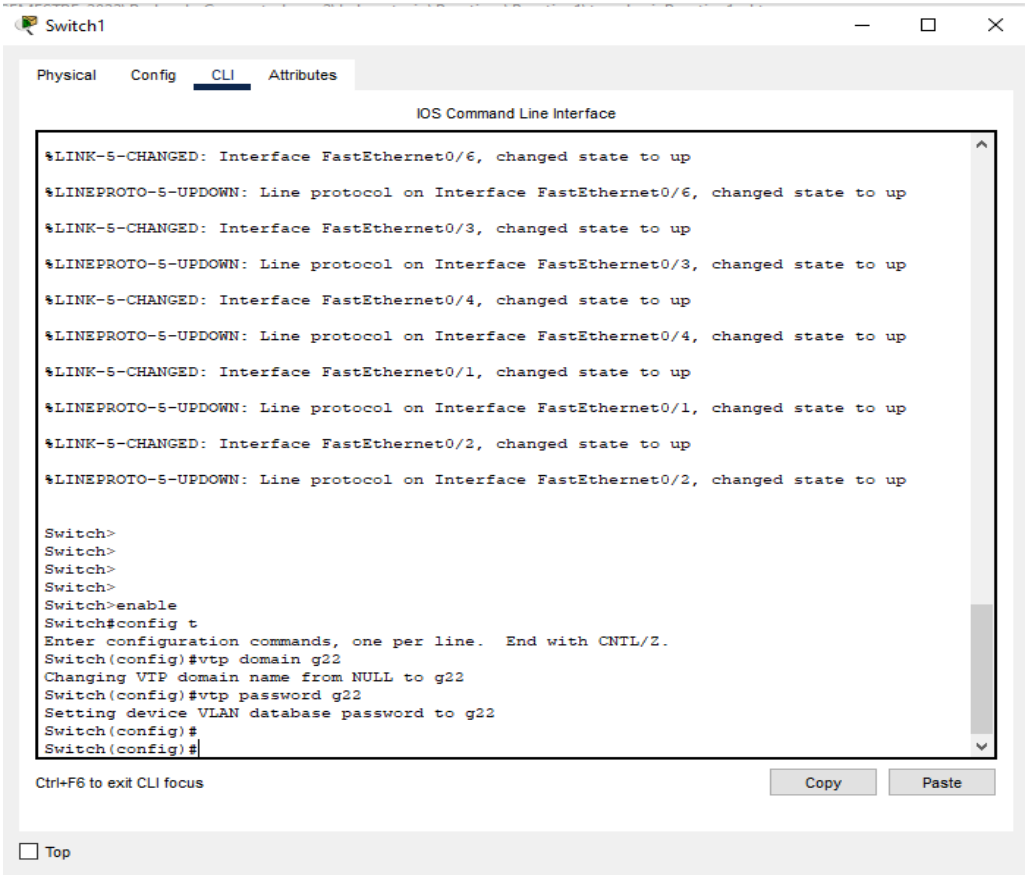
********** puertos troncales

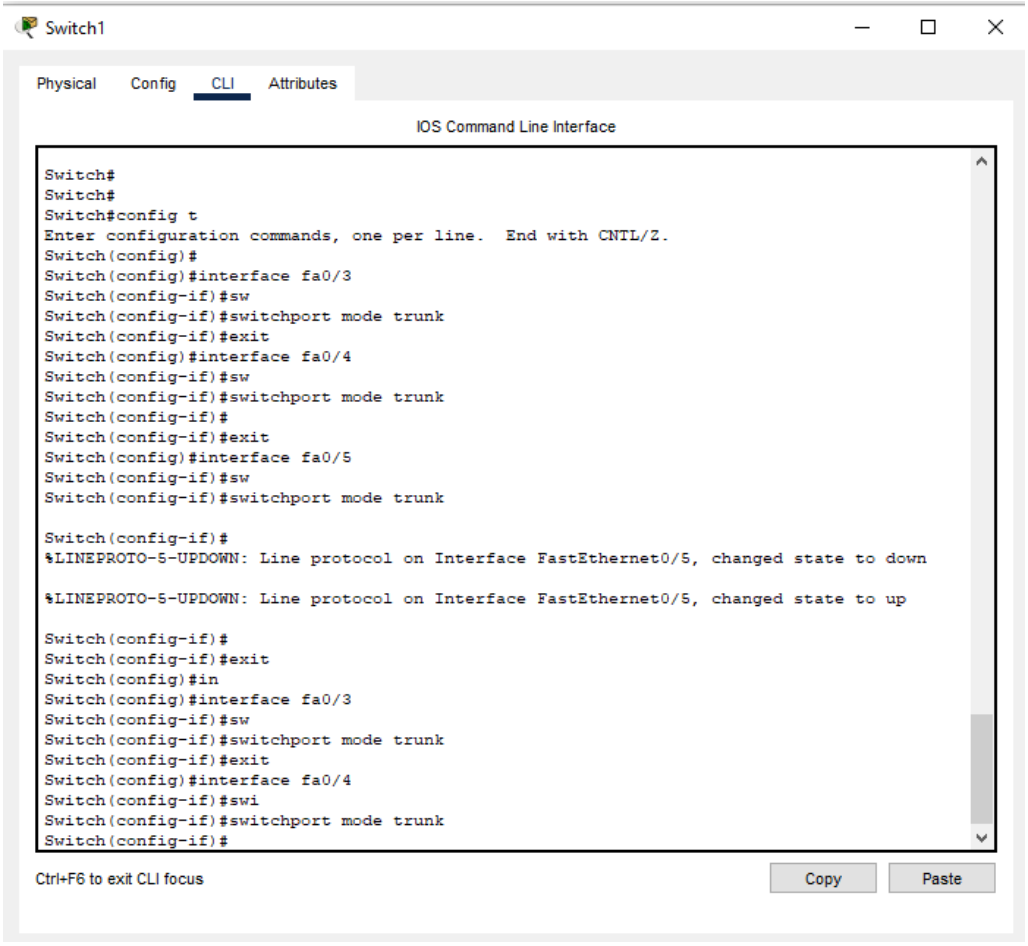
enable
config t
interface fa0/3
switchport mode trunk
exit
interface fa0/4
switchport mode trunk
exit
interface fa0/5
switchport mode trunk
exit
interface fa0/6
switchport mode trunk

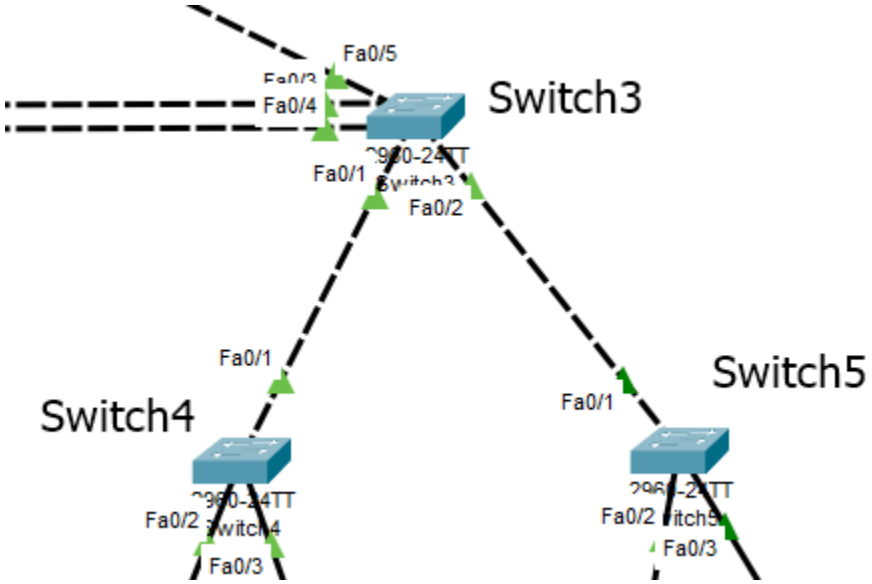
********** modo acceso

enable
config t
interface fa0/1
switchport mode access
switchoport access vlan 14

enable
config t
interface fa0/2
switchport mode access
switchoport access vlan 24

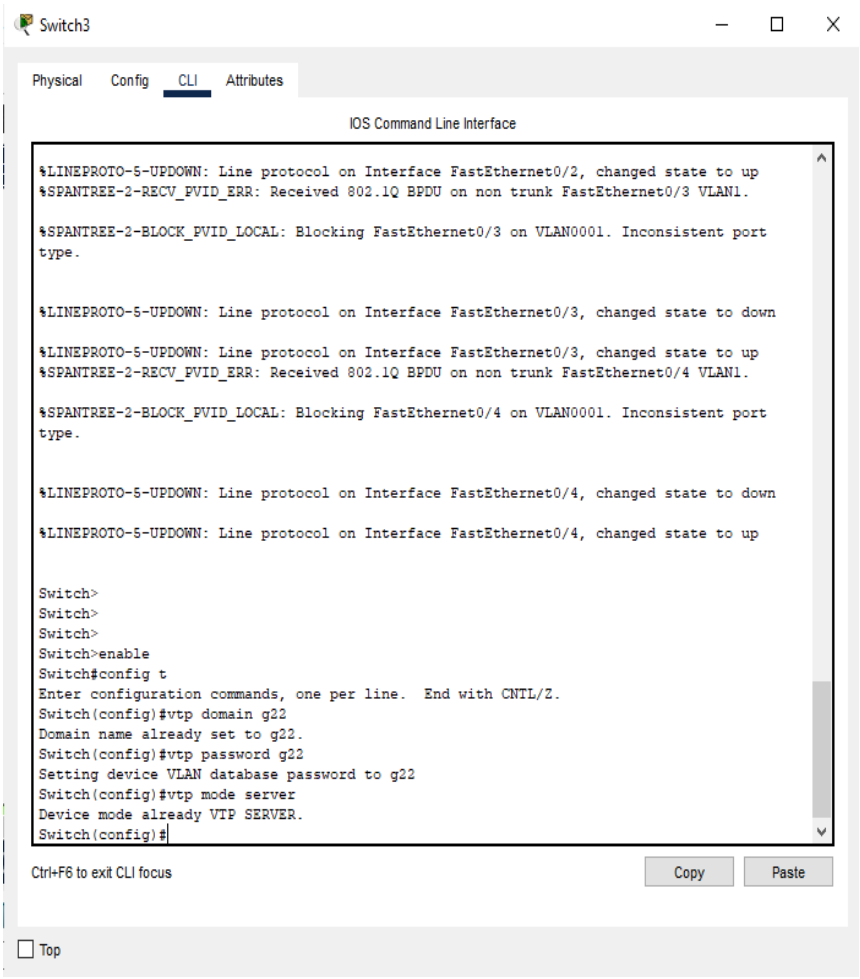






Switch3

********** vtp
enable
config t
vtp domain g22
vtp password g22
vtp mode server
exit
show vtp status



********** puertos troncales
enable
config t
interface fa0/1
switchport mode trunk
exit
interface fa0/2
switchport mode trunk
exit
interface fa0/3
switchport mode trunk
exit
interface fa0/4
switchport mode trunk
exit
interface fa0/4
switchport mode trunk

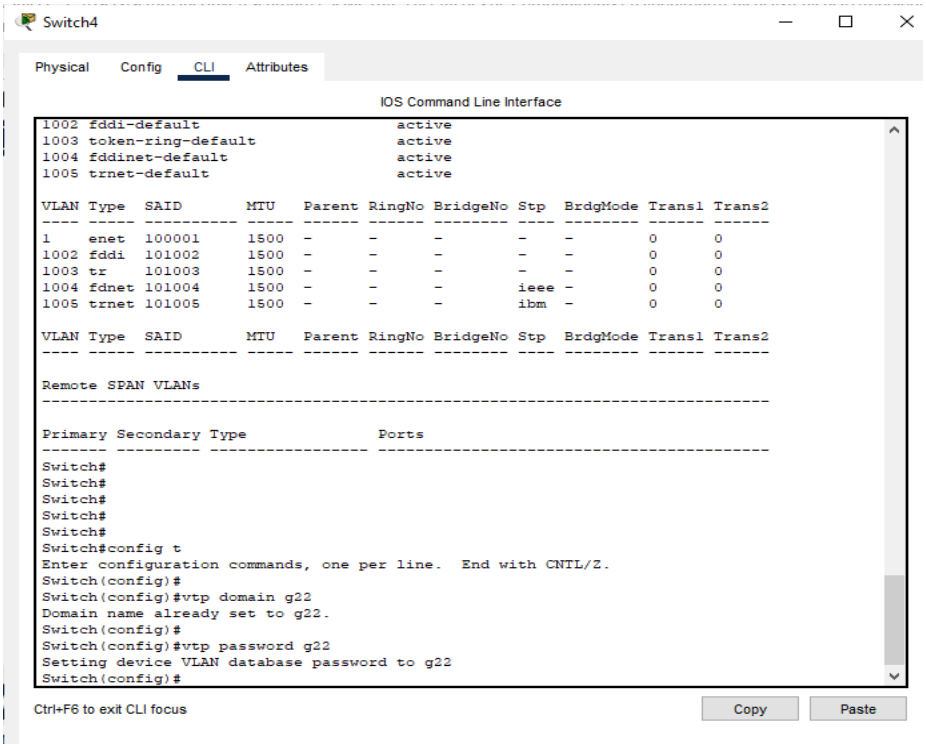
Switch4

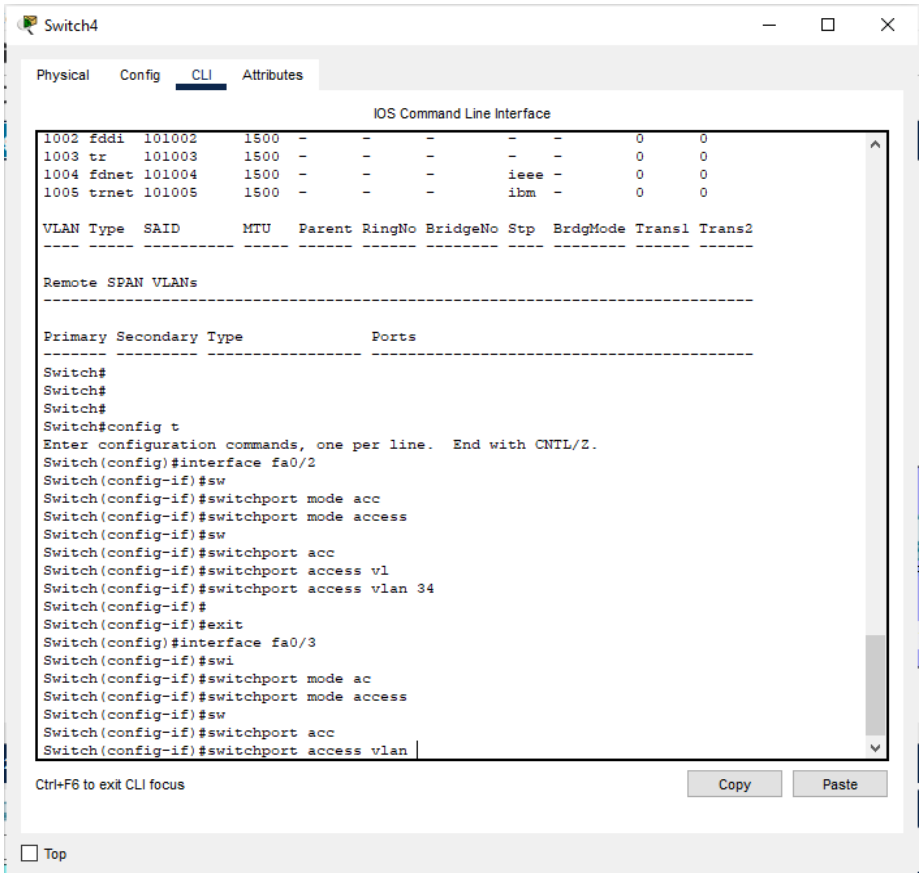
********** vtp
enable
config t
vtp domain g22
vtp password g22
vtp mode client

********** puertos troncales
enable
config t
interface fa0/1
switchport mode trunk
exit

********** modo acceso
enable
config t
interface fa0/2
switchport mode access
switchoport access vlan 34

enable
config t
interface fa0/3
switchport mode access
switchoport access vlan 44





Switch5

********** vtp
enable
config t
vtp domain g22
vtp password g22
vtp mode client

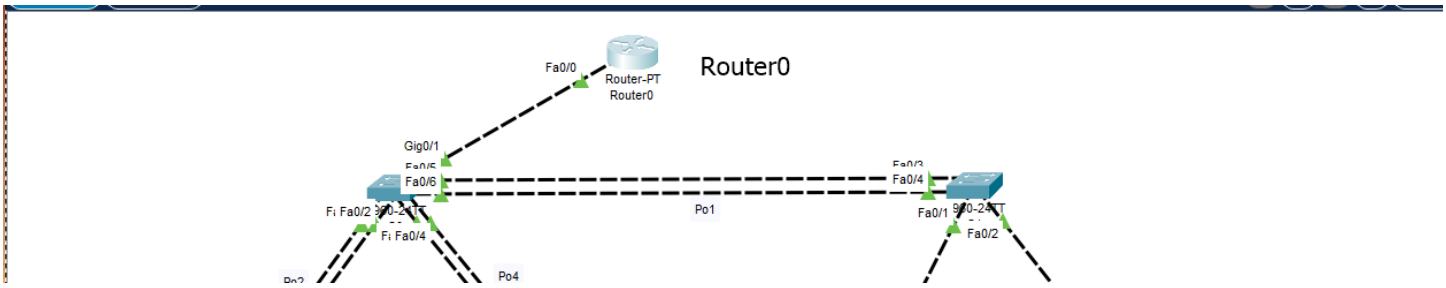
********** puertos troncales
enable
config t
interface fa0/1
switchport mode trunk
exit

********** modo acceso
enable
config t
interface fa0/2
switchport mode access
switchport access vlan 34

enable
config t
interface fa0/3
switchport mode access
switchport access vlan 44

InterVLAN

Método seleccionado: Router on a Stick



Configuraciones del Router0

Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
Router(config-subif)#encapsulation do
Router(config-subif)#encapsulation dot1Q 14
Router(config-subif)#ip ad
Router(config-subif)#ip address 192.168.14.1 255.255.255.240
Router(config-subif)#
Router(config-subif)#exit
Router(config)#
Router(config)#interface fa0/0.24
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.24, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.24, changed state to up

Router(config-subif)#
Router(config-subif)#enc
Router(config-subif)#encapsulation do
Router(config-subif)#encapsulation dot1Q 24
Router(config-subif)#
Router(config-subif)#ip add
Router(config-subif)#ip address 192.168.14.17 255.255.255.240
Router(config-subif)#
Router(config-subif)#exit
Router(config)#
Router(config)#int fa0/0.34
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.34, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.34, changed state to up

Router(config-subif)#
Router(config-subif)#en
Router(config-subif)#encapsulation do
Router(config-subif)#encapsulation dot1Q 34
Router(config-subif)#ip add
Router(config-subif)#ip address 192.168.
```

Ctrl+F6 to exit CLI focus

Copy Paste

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Router0

Physical | Config | CLI | Attributes

IOS Command Line Interface

```
Router(config-subif)#ip add
Router(config-subif)#ip address 192.168.14.17 255.255.255.240
Router(config-subif)#
Router(config-subif)#exit
Router(config)#
Router(config)#int fa0/0.34
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.34, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.34, changed state to up

Router(config-subif)#
Router(config-subif)#en
Router(config-subif)#encapsulation do
Router(config-subif)#encapsulation dot1Q 34
Router(config-subif)#ip add
Router(config-subif)#ip address 192.168.14.33 255.255.255.240
Router(config-subif)#
Router(config-subif)#exit
Router(config)#
Router(config)#int fa0/0.44
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.44, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.44, changed state to up

Router(config-subif)#enca
Router(config-subif)#encapsulation do
Router(config-subif)#encapsulation dot1Q 44
Router(config-subif)#ip ad
Router(config-subif)#ip address 192.168.14.49 255.255.255.240
Router(config-subif)#
Router(config-subif)#exit
Router(config)#
Router(config)#
```

Ctrl+F6 to exit CLI focus

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