

DIPLOMADO DE PROFUNDIZACION CISCO  
PRUEBA DE HABILIDADES PRÁCTICAS CISCO CCNP

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD  
ESCUELA DE CIENCIAS BÁSICAS TECNOLOGÍA E INGENIERÍA  
INGENIERÍA DE ELECTRÓNICA  
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2020

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PRUEBA DE HABILIDADES PRÁCTICAS CISCO CCNP

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CALI-VALLE  
2020

NOTA DE ACEPTACION

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Firma del Presidente del jurado

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Firma del Jurado

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Firma del Jurado

CALI- VALLE 22/MAYO/2020

## AGRADECIMIENTOS.

Este trabajo es resultado de la bendición de Dios y dedicado a mi familia, padres, hermano Mauricio, esposa y mi hermosa hija. Los cuales me han apoyado en cada uno de los retos afrontados. Doy agradecimiento a profesores y compañeros que me permitieron crecer profesionalmente y personalmente.

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## GLOSARIO

**NETWORKING:** red informática conjunto de equipos informáticos y software conectados entre sí por medio de dispositivos físicos que envían y reciben impulsos eléctricos.

**VLAN:** Varias VLAN pueden coexistir en un único commutador físico o en una única red física. Son útiles para reducir el dominio de difusión y ayudan en la administración de la red,

**CCNP:** Para obtener esta certificación, se han de superar varios exámenes clasificados según la empresa en 3 módulos.

**RED:** es un conjunto de equipos nodos y software conectados entre sí por medio de dispositivos físicos o inalámbricos que envían y reciben impulsos eléctricos.

**ROUTER:** permite interconectar computadoras que funcionan en el marco de una red.

**SWITCH:** que son los encargados de la interconexión de equipos dentro de una misma red.

**TOPOLOGÍA:** se trata de una especialización vinculada a las propiedades y características que poseen los cuerpos geométricos y que se mantienen sin alteraciones.

**ENRUTAMIENTO:** es la función de buscar un camino entre todos los posibles en una red de paquetes cuyas topologías poseen una gran conectividad.

## RESUMEN.

En este trabajo se desarrolla el trabajo final del diplomado de profundización de cisco ccnp, en el cual se desarrolla la prueba de habilidades. Con el desarrollo de dos escenarios realizaremos la configuración. En el primer escenario se realizará la configuración de la relación de vecino BGP por medio de cuatro routers y en el segundo escenario nos encontraremos con las configuraciones VTP en los diferentes modos y configuraciones de servidor y clientes en los switch, además manearemos enlaces troncales y manejo de Vlan's. Este trabajo cuenta con una descripción detallada del proceso de desarrollo mediante el uso de comandos `ping`, `traceroute`, `show ip route`, entre otros.

En un mundo globalizado las redes de comunicación juegan un papel vital para optimizar los procesos, allí es donde la electrónica y en este caso el uso de las redes proporcionan la base del desarrollo.

Palabras Clave: Networking, Vlan, CCNP, Red, Router, Switch, topología y enruteamiento.

## ABSTRACT

In this work, the final work of the cisco ccnp deepening diploma course is developed, in which the skills test is developed. With the development of two scenarios we will carry out the configuration. In the first scenario, the configuration of the BGP neighbor relationship will be carried out by means of four routers and in the second scenario we will find the VTP configurations in the different modes and server and client configurations on the switches, we will also handle trunks and handling from Vlan's. This work has a detailed description of the development process through the use of `ping`, `traceroute`, and `show ip route` commands, among others.

In a globalized world, communication networks play a vital role in optimizing processes, that's where electronics and in this case the use of networks provide the basis for development.

Key Words: Networking, Vlan, CCNP, Network, Router, Switch, topology and routing.

## INTRODUCCION

Mediante el desarrollo de este trabajo, se busca desarrollar dos escenarios de prueba de habilidades cisco, por lo cual se lograra poner en práctica todo el conocimiento adquirido durante todos los temas desarrollados, en el diplomado profundización CISCO CCNP.

Es importante resaltar que el presente trabajo se basa en la profundización de configuraciones sobre Routing and Switching de Cisco Networking Academi, bajo configuraciones o conceptos avanzados sobre redes de voz, video y datos de manera convergente. Se lograra instalar, configurar y operar pequeñas redes e implementar protocolos como TCP/IP, OSPF, EIGRP, BGP, además de ISDN, rame Relay, STP y VTP en redes de telecomunicaciones pequeñas, medianas o grandes.

Por último se lograra identificar la importancia de las redes de las telecomunicaciones en un mundo cada vez más globalizado, en el que la comunicación y el manejo de esta son de vital importancia en esta era digital.

## ESCENARIO 1

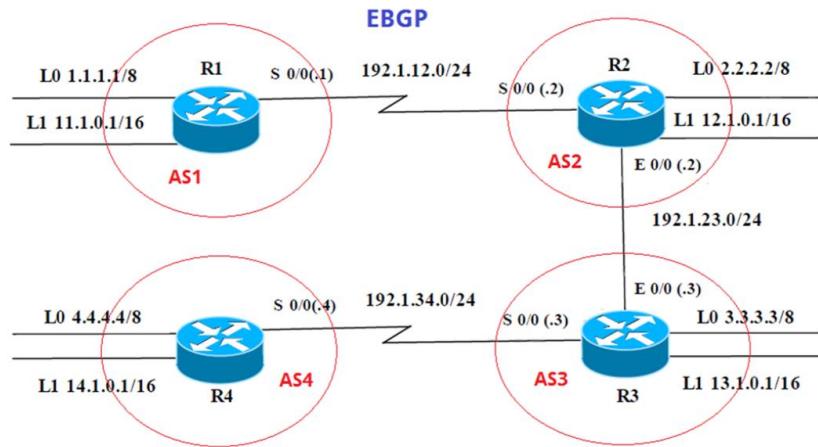


Figura 1. Descripción Escenario 1

Información para configuración de los Routers.

### Configuración-R1

Tabla 1. Router R1 interfaz, dirección ip y mascara

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

### Configurar-R2

Tabla 2. Router R2 interfaz, dirección ip y mascara

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

### Configurar R-3

Tabla 3. Router R3 interfaz, dirección ip y mascara

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

### Configurar R-4

Tabla 4. Router R4 interfaz, dirección ip y mascara

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

Se utilizara la configuración del protocolo EBGP. La red se configuraran 2 Loopback bajo dos rutas distintas para cada equipo, además se contara con la configuración de 2 rutas más, una para un puerto Ethernet y a otra para un puerto de Serial.

- 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 22.22.22.22 para R1 y como 33.33.33.33 para R2. Presente el paso a con los comandos utilizados y la salida del comando **show ip route**.



Figura 2. Descripción Escenario 1 simulación Packet Tracer.

A continuación el scrip que corresponde a la configuración:

### Configuración en R1

#### Configuración inicial R1.

```

R1
Physical Config CLI Attributes
IOS Command Line Interface
Would you like to enter the initial configuration dialog? [yes/no]: no
Press RETURN to get started!

Router>enable
Router#conf t
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#int lo 0

R1(config-if)# 
*LINK-5-CHANGED: Interface Loopback0, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

R1(config-if)#ip address 1.1.1.1 255.0.0.0
R1(config-if)#exit
R1(config)#

```

Ctrl+F6 to exit CLI focus      Copy      Paste

Figura 3. Configuración inicial R1

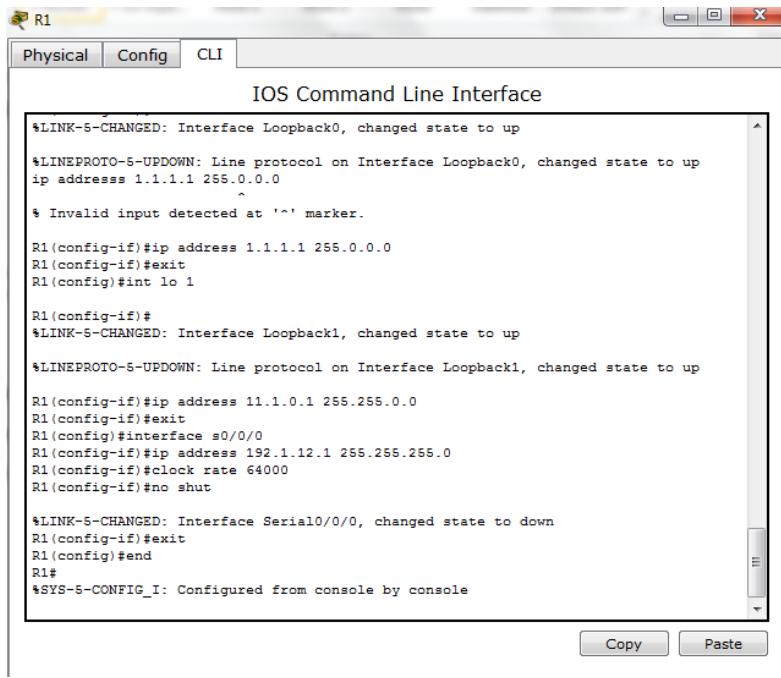


Figura 4. Configuración inicial R1

```

Router>enable
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#int lo 0

R1(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

R1(config-if)#ip address 1.1.1.1 255.0.0.0
R1(config-if)#exit

Router>enable
Router#conf
Configuring from terminal, memory, or network [terminal]?

```

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

Router(config)#hostname R1

R1(config)#int lo 0

R1(config-if)#

%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

R1(config-if)#ip address 1.1.1.1 255.0.0.0

R1(config-if)#exit

## Configuración inicial R2.

```
Router>enable
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#int lo 0

R2(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

R2(config-if)#ip address 2.2.2.2 255.0.0.0
R2(config-if)#exit
R2(config)#int lo 1

R2(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up

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

R2(config-if)#ip address 12.1.0.1 255.255.0.0
R2(config-if)#exit
R2(config)#int s0/0/0
R2(config-if)#ip address 192.1.12.2 255.255.255.0
R2(config-if)#no shut
```

Figura 5. Configuración inicial R2

```

R2
Physical Config CLI
IOS Command Line Interface
*LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
R2(config-if)#ip address 12.1.0.1 255.255.0.0
R2(config-if)#exit
R2(config)#int s0/0/0
R2(config-if)#ip address 192.1.12.2 255.255.255.0
R2(config-if)#no shut

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

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

R2(config-if)#int gigabitethernet 0/0
R2(config-if)#ip addresss 192.1.23.2 255.255.255.0
^
* Invalid input detected at '^' marker.

R2(config-if)#ip address 192.1.123.2 255.255.255.0
R2(config-if)#no shut

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

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

```

Copy      Paste

Figura 6. Configuración inicial R2

Router>enable

Router#conf

Configuring from terminal, memory, or network [terminal]?

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

Router(config)#hostname R2

R2(config)#int lo 0

R2(config-if)#

%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

R2(config-if)#ip address 2.2.2.2 255.0.0.0

R2(config-if)#exit

```
R2(config)#int lo 1

R2(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up

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

R2(config-if)#ip address 12.1.0.1 255.255.0.0
R2(config-if)#exit
R2(config)#int s0/0/0
R2(config-if)#ip address 192.1.12.2 255.255.255.0
R2(config-if)#no shut

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

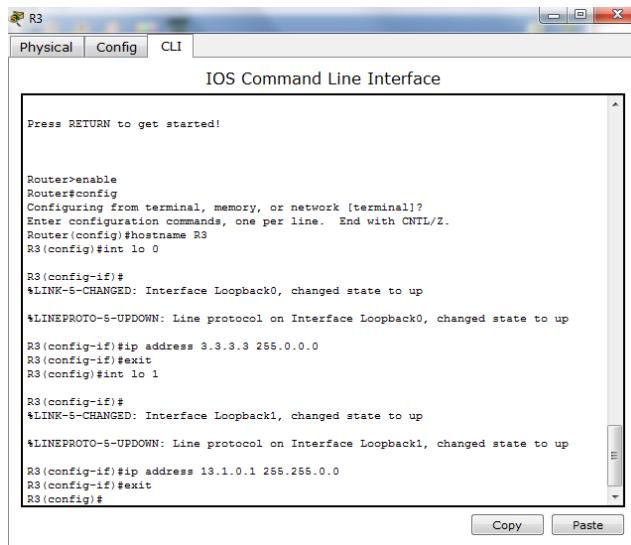
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state
to up

R2(config-if)#int gigabitethernet 0/0
R2(config-if)#ip addressss 192.1.23.2 255.255.255.0
^
% Invalid input detected at '^' marker.
R2(config-if)#ip address 192.1.123.2 255.255.255.0
R2(config-if)#no shut

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

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

## Configuración inicial R3



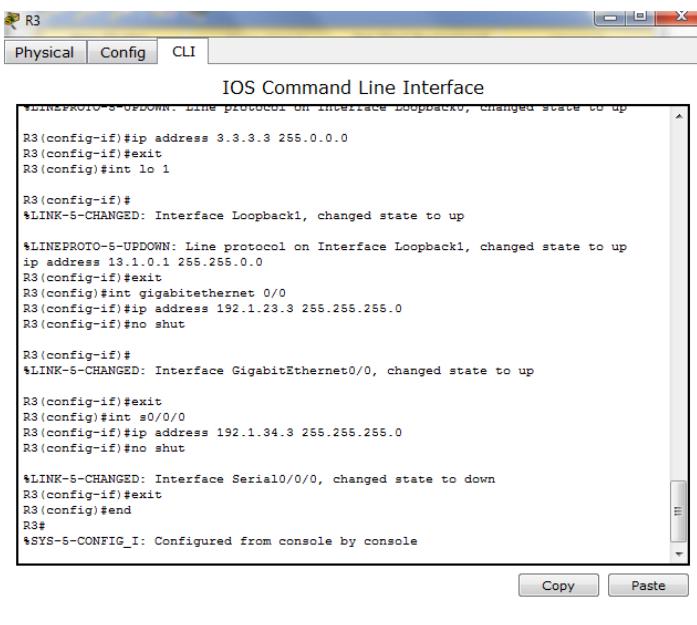
The screenshot shows the Cisco IOS Command Line Interface (CLI) running on a Windows host. The title bar says "R3". The tabs at the top are "Physical", "Config", and "CLI", with "CLI" being the active tab. The main window title is "IOS Command Line Interface". A message at the top says "Press RETURN to get started!". Below it, the CLI session shows the configuration of router R3:

```
Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#int lo 0
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
R3(config-if)#ip address 3.3.3.3 255.0.0.0
R3(config-if)#exit
R3(config)#int lo 1
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
R3(config-if)#ip address 13.1.0.1 255.255.0.0
R3(config-if)#exit
R3(config)#

```

At the bottom right of the window are "Copy" and "Paste" buttons.

Figura 7. Configuración inicial R3



This screenshot continues the configuration of router R3 from Figure 7. The CLI session shows the configuration of additional interfaces:

```
%LINKPROTO-5-UPDOWN: Line protocol on interface Loopback0, changed state to up
R3(config-if)#ip address 3.3.3.3 255.0.0.0
R3(config-if)#exit
R3(config)#int lo 1
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
ip address 13.1.0.1 255.255.0.0
R3(config-if)#exit
R3(config)#int gigabitethernet 0/0
R3(config-if)#ip address 192.1.23.3 255.255.255.0
R3(config-if)#no shut
R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
R3(config-if)#exit
R3(config)#int s0/0/0
R3(config-if)#ip address 192.1.34.3 255.255.255.0
R3(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R3(config-if)#exit
R3(config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 8. Configuración inicial R3

--- System Configuration Dialog ---

Continue with configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>enable

Router#conf

Configuring from terminal, memory, or network [terminal]?

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

Router(config)#hostname R3

R3(config)#int lo 0

R3(config-if)#

%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

R3(config-if)#ip address 3.3.3.3 255.0.0.0

R3(config-if)#exit

R3(config)#int lo 1

R3(config-if)#

%LINK-5-CHANGED: Interface Loopback1, changed state to up

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

ip address 13.1.0.1 255.255.0.0

R3(config-if)#exit

R3(config)#int gigabitethernet 0/0

R3(config-if)#ip address 192.1.23.3 255.255.255.0

R3(config-if)#no shut

R3(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

R3(config-if)#exit

R3(config)#int s0/0/0

R3(config-if)#ip address 192.1.34.3 255.255.255.0

R3(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down

R3(config-if)#exit

R3(config)#end

R3#

%SYS-5-CONFIG\_I: Configured from console by console

## Configuracion inicial R 4

The screenshot shows the Cisco IOS Command Line Interface (CLI) running on a device named R4. The window title is "R4". The tabs at the top are "Physical", "Config" (which is selected), and "CLI". The main pane displays the configuration commands entered by the user:

```
Press RETURN to get started!
Router>enable
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R4
R4(config)#int lo 0
R4(config-if)#
$LINK-5-CHANGED: Interface Loopback0, changed state to up
$LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
R4(config-if)#ip address 4.4.4.4 255.0.0.0
R4(config-if)#exit
R4(config)#int lo 1
R4(config-if)#
$LINK-5-CHANGED: Interface Loopback1, changed state to up
$LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
R4(config-if)#ip address 14.1.0.1 255.255.0.0
R4(config-if)#exit
R4(config)#int s0/0/0
R4(config-if)#ip address 192.1.34.4 255.255.255.0
$SYS-5-CONFIG_I: Configured from console by console
```

At the bottom right of the CLI window are "Copy" and "Paste" buttons.

Figura 10. Configuración inicial R4

This screenshot is identical to Figure 10, showing the Cisco IOS Command Line Interface (CLI) running on router R4. The configuration commands entered are the same:

```
Press RETURN to get started!
Router>enable
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R4
R4(config)#int lo 0
R4(config-if)#
$LINK-5-CHANGED: Interface Loopback0, changed state to up
$LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
R4(config-if)#ip address 4.4.4.4 255.0.0.0
R4(config-if)#exit
R4(config)#int lo 1
R4(config-if)#
$LINK-5-CHANGED: Interface Loopback1, changed state to up
$LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
R4(config-if)#ip address 14.1.0.1 255.255.0.0
R4(config-if)#exit
R4(config)#int s0/0/0
R4(config-if)#ip address 192.1.34.4 255.255.255.0
$LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
$LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
R4(config-if)#clock rate 64000
R4(config-if)#no shutdown
R4(config-if)#
$LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
$LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
R4(config-if)#exit
R4(config)#end
R4#
$SYS-5-CONFIG_I: Configured from console by console
```

At the bottom right of the CLI window are "Copy" and "Paste" buttons.

Figura 11. Configuración inicial R4

```
Router>enable
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R4
R4(config)#int lo 0

R4(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state
to up

R4(config-if)#ip address 4.4.4.4 255.0.0.0
R4(config-if)#exit
R4(config)#int lo 1

R4(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up

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

R4(config-if)#ip address 14.1.0.1 255.255.0.0
R4(config-if)#exit
R4(config)#int s0/0/0
R4(config-if)#ip address 192.1.34.4 255.255.255.0
R4(config-if)#clock rate 64000
R4(config-if)#no shutdown

R4(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

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

R4(config-if)#
R4(config)#exit
R4(config)#end
R4#
%SYS-5-CONFIG_I: Configured from console by console
```

## **CONFIGURACION DE VECINO PARA ROUTER R1.**

The screenshot shows a Windows application window titled "R1" with three tabs: "Physical", "Config" (which is selected), and "CLI". Below the tabs is the title "IOS Command Line Interface". The main area contains the following configuration commands:

```
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#write
Building configuration...
[OK]
R1#%BGP-5-ADJCHANGE: neighbor 192.1.12.2 Up

R1#en
R1#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router bgp 1
R1(config-router)#bgp router-id 22.22.22.22
R1(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.12.2 Up

R1(config-router)#neighbor 192.1.12.2 remote-as 2
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)#exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#write
Building configuration...
[OK]
R1#
```

At the bottom right of the CLI window are "Copy" and "Paste" buttons.

Figura 12. Configuración vecino router R1

```
R1#en
R1#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router bgp 1
R1(config-router)#bgp router-id 22.22.22.22
R1(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.12.2 Up

R1(config-router)#neighbor 192.1.12.2 remote-as 2
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)#exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#write
Building configuration...
[OK]
```

R1#

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R2>en
R2#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router bgp 2
R2(config-router)#bgp router-id 33.33.33.33
R2(config-router)#neighbor 192.1.12.1 remote-as 1
R2(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.12.1 Up

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)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#write
Building configuration...
[OK]
R2#
```

Figura 13. Configuración vecino router R2

```
R2>en
R2#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router bgp 2
R2(config-router)#bgp router-id 33.33.33.33
R2(config-router)#neighbor 192.1.12.1 remote-as 1
R2(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.12.1 Up

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)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
```

```
R2#write  
Building configuration...  
[OK]  
R2#
```

**Figura 9.** Se comprueba el funcionamiento de la relación BGP establecida

```
R1#ping 192.1.12.1  
  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 192.1.12.1, timeout is 2 seconds:  
!!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/8/16 ms  
  
R1#  
R2#ping 192.1.12.2  
  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 192.1.12.2, timeout is 2 seconds:  
!!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/19/88 ms
```

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 44.44.44.44. Presente el paso a con los comandos utilizados y la salida del comando **show ip route**.

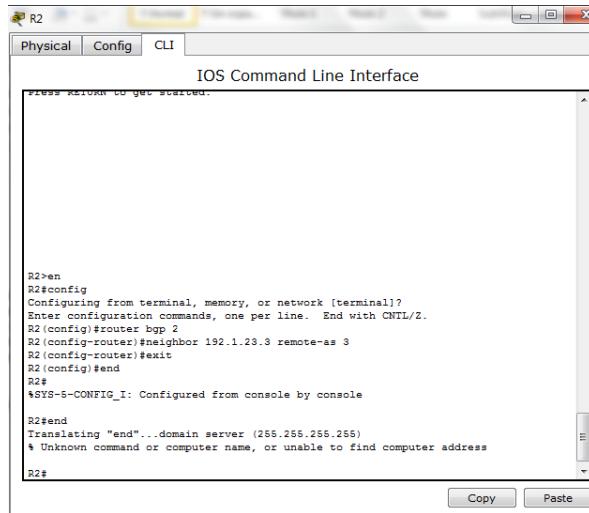


Figura 14. Configuración vecino BGP R2.

```
R2>en
R2#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router bgp 2
R2(config-router)#neighbor 192.1.23.3 remote-as 3
R2(config-router)#exit
R2(config)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
```

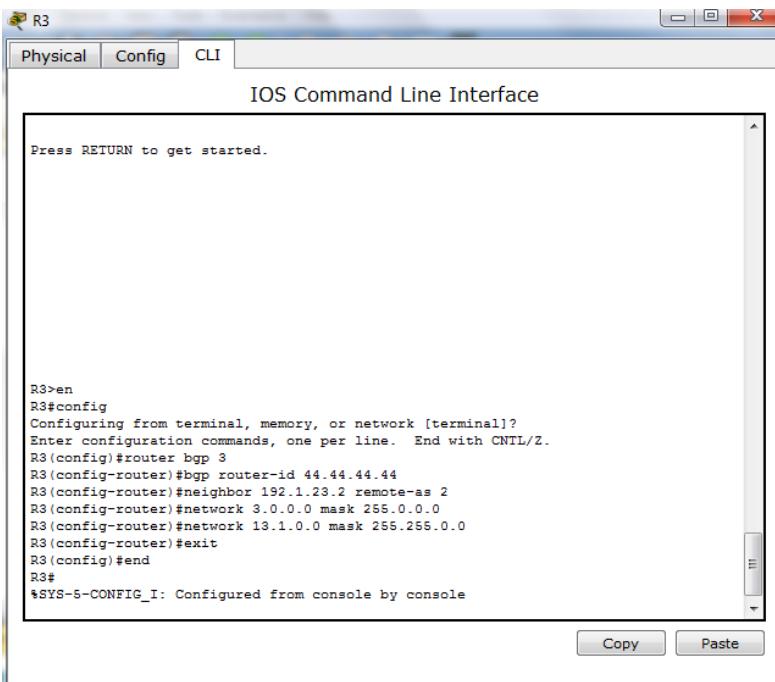


Figura 15. Configuración codificar el ID para el router R3.

```
R3>en
R3#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router bgp 3
R3(config-router)#bgp router-id 44.44.44.44
R3(config-router)#neighbor 192.1.23.2 remote-as 2
R3(config-router)#network 3.0.0.0 mask 255.0.0.0
R3(config-router)#network 13.1.0.0 mask 255.255.0.0
R3(config-router)#exit
R3(config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

Se verifica configuración BGP por medio del comando **Show ip BGP**

```

R2#end
Translating "end"...domain server (255.255.255.255)
* Unknown command or computer name, or unable to find computer address

R2#show ip bgp
BGP table version is 7, local router ID is 33.33.33.33
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        192.1.12.1          0       0     0 1 i
*-> 2.0.0.0/8        0.0.0.0             0       0   32768 i
*-> 11.1.0.0/16      192.1.12.1          0       0     0 1 i
*-> 12.1.0.0/16      0.0.0.0             0       0   32768 i

R2#

```

Figura 16. Verificación BGP.

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 66.66.66.66. 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**.

The screenshot shows a Windows-style application window titled "R3". The tab bar at the top has three tabs: "Physical" (which is selected), "Config", and "CLI". Below the tabs is a title bar "IOS Command Line Interface". A status message "PRESS RETURN TO GET STARTED." is displayed above the command input area. The main window contains the following configuration commands:

```
R3>end
Translating "end"...domain server (255.255.255.255)
* Unknown command or computer name, or unable to find computer address

R3>
R3>en
R3#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router bgp 3
R3(config-router)#neighbor 192.1.34.4 remote-as 4
R3(config-router)#exit
R3(config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

At the bottom right of the window are two buttons: "Copy" and "Paste".

Figura 18. Configuración vecino BGP R3.

```
R3>en
R3#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router bgp 3
R3(config-router)#neighbor 192.1.34.4 remote-as 4
R3(config-router)#exit
R3(config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

```

R4>en
R4#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)#router bgp 4
R4(config-router)#bgp router-id 66.66.66.66
R4(config-router)#neighbor 192.1.34.3 remote-as 3
R4(config-router)##%BGP-5-ADJCHANGE: neighbor 192.1.34.3 Up

R4(config-router)#network 4.0.0.0 mask 255.0.0.0
R4(config-router)#exit
R4(config)#ip route 3.0.0.0 255.0.0.0 192.1.34.3
R4(config)#router bgp 4
R4(config-router)##no network 4.0.0.0 mask 255.0.0.0
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)##exit
R4(config)##end
R4#
%SYS-5-CONFIG_I: Configured from console by console

```

Copy      Paste

Figura 19. Configuración codificar el ID para el router R4.

```

R4>en
R4#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)#router bgp 4
R4(config-router)#bgp router-id 66.66.66.66
R4(config-router)#neighbor 192.1.34.3 remote-as 3
R4(config-router)##%BGP-5-ADJCHANGE: neighbor 192.1.34.3 Up
R4(config-router)#network 4.0.0.0 mask 255.0.0.0
R4(config-router)##exit
R4(config)#ip route 3.0.0.0 255.0.0.0 192.1.34.3
R4(config)#router bgp 4
R4(config-router)##no network 4.0.0.0 mask 255.0.0.0
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)##exit
R4(config)##end
R4#
%SYS-5-CONFIG_I: Configured from console by console

```

Se verifica configuración BGP por medio del comando **Show ip BGP**, en el Router R4.

```
% Invalid input detected at '^' marker.

R4#show ip bgp
BGP table version is 6, local router ID is 66.66.66.66
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
*> 13.1.0.0/16       192.1.34.3           0       0 0 3 i
*> 14.1.0.0/16       0.0.0.0              0       0 32768 i

R4#
```

Figura 20. Verificación configuración BGP.

## ESCENARIO 2

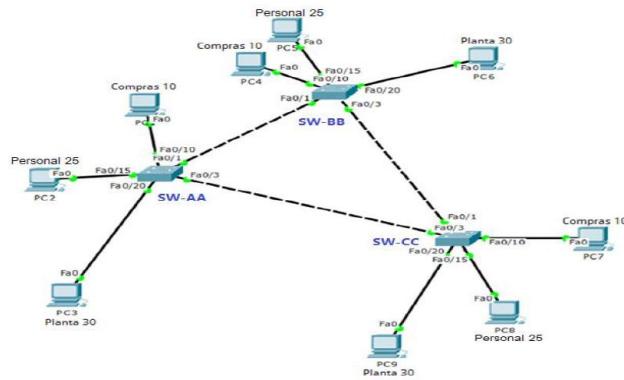


Figura 21 topologías escenario 2.

### A. Configurar VTP

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

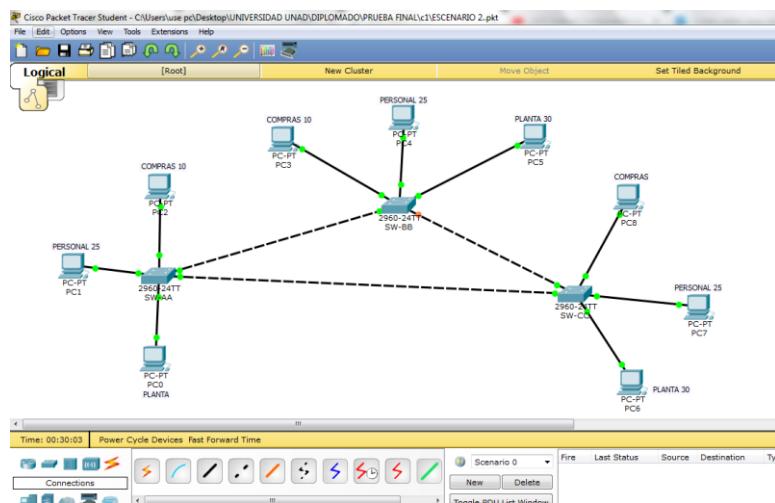


Figura 22. . Descripción Escenario 2 simulación Packet Tracer.

red comprendida por 3 Switches , cada uno de estos equipos tiene configuraciones independientes

SW-AA.

```
Switch#en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#en
Switch#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW-AA
SW-AA(config)#vtp domain ccnp
Changing VTP domain name from NULL to ccnp
SW-AA(config)#vtp mode client
Setting device to VTP CLIENT mode.
SW-AA(config)#vtp pass cisco
Setting device VLAN database password to cisco
SW-AA(config)#vtp version 2
Cannot modify version in VTP client mode
SW-AA(config)#exit
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console

SW-AA#write
Building configuration...
[OK]
SW-AA#
```

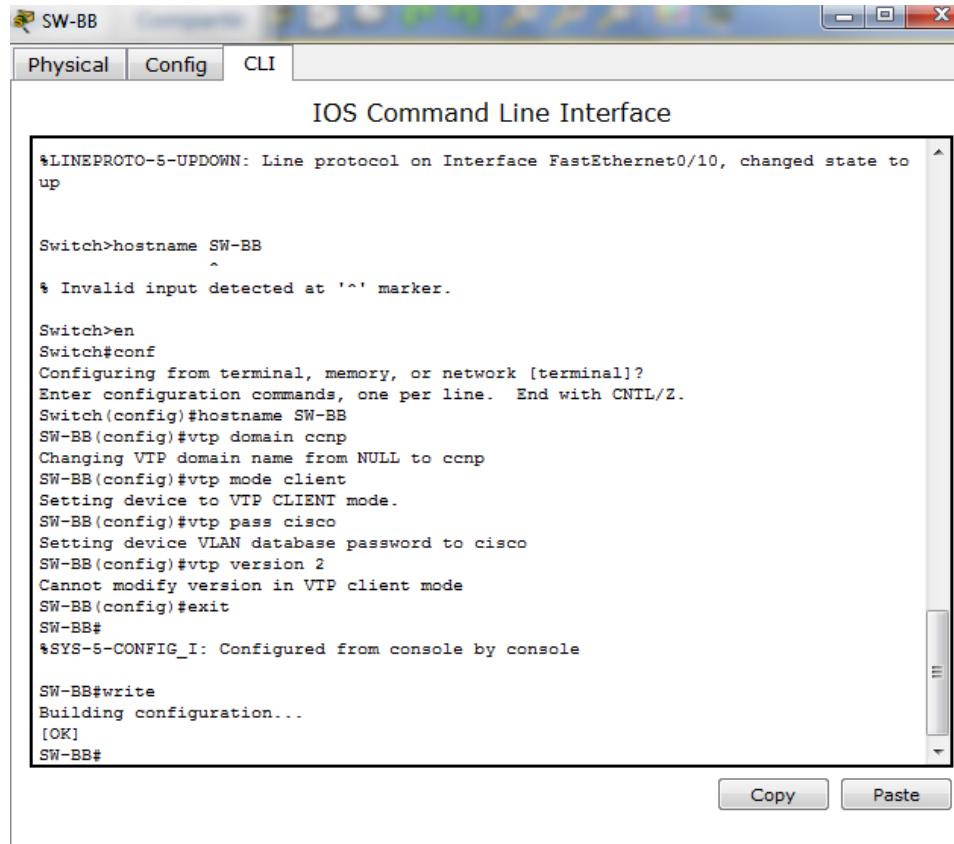
Figura 23. Configuracion SW\_AA.

```
Switch#en
Switch#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW-AA
SW-AA(config)#vtp domain ccnp
Changing VTP domain name from NULL to ccnp
SW-AA(config)#vtp mode client
Setting device to VTP CLIENT mode.
SW-AA(config)#vtp pass cisco
Setting device VLAN database password to cisco
SW-AA(config)#vtp version 2
Cannot modify version in VTP client mode
SW-AA(config)#exit
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console

SW-AA#write
Building configuration...
[OK]
```

SW-AA#

## SW-BB



```
*LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to up

Switch>hostname SW-BB
^
* Invalid input detected at '^' marker.

Switch>en
Switch#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW-BB
SW-BB(config)#vtp domain ccnp
Changing VTP domain name from NULL to ccnp
SW-BB(config)#vtp mode client
Setting device to VTP CLIENT mode.
SW-BB(config)#vtp pass cisco
Setting device VLAN database password to cisco
SW-BB(config)#vtp version 2
Cannot modify version in VTP client mode
SW-BB(config)#exit
SW-BB#
*SYS-5-CONFIG_I: Configured from console by console

SW-BB#write
Building configuration...
[OK]
SW-BB#
```

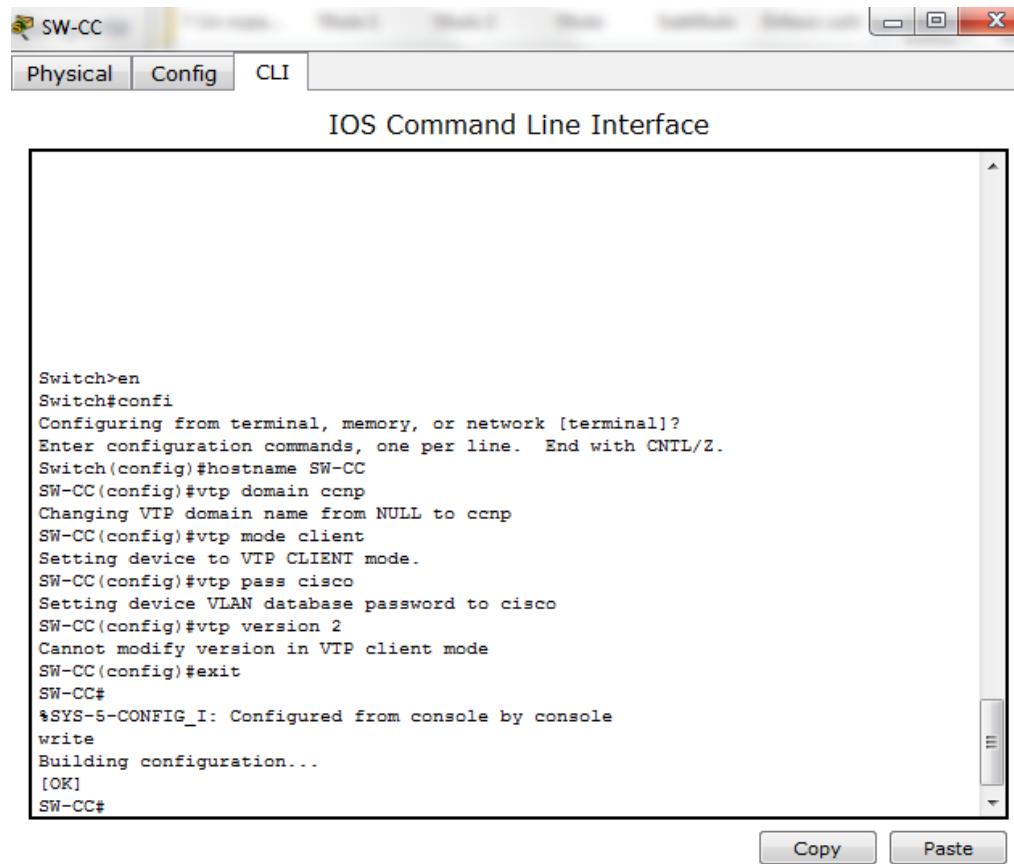
Figura 24. Configuracion SW\_BB.

```
Switch>en
Switch#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW-BB
SW-BB(config)#vtp domain ccnp
Changing VTP domain name from NULL to ccnp
SW-BB(config)#vtp mode client
Setting device to VTP CLIENT mode.
SW-BB(config)#vtp pass cisco
Setting device VLAN database password to cisco
SW-BB(config)#vtp version 2
Cannot modify version in VTP client mode
SW-BB(config)#exit
```

SW-BB#  
%SYS-5-CONFIG\_I: Configured from console by console

SW-BB#write  
Building configuration...  
[OK]  
SW-BB#

### SW-CC



IOS Command Line Interface

```
Switch>en
Switch#confi
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW-CC
SW-CC(config)#vtp domain ccnp
Changing VTP domain name from NULL to ccnp
SW-CC(config)#vtp mode client
Setting device to VTP CLIENT mode.
SW-CC(config)#vtp pass cisco
Setting device VLAN database password to cisco
SW-CC(config)#vtp version 2
Cannot modify version in VTP client mode
SW-CC(config)#exit
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console
write
Building configuration...
[OK]
SW-CC#
```

Copy Paste

Figura 25. Configuracion SW\_CC.

```
Switch>en
Switch#confi
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW-CC
SW-CC(config)#vtp domain ccnp
Changing VTP domain name from NULL to ccnp
```

```

SW-CC(config)#vtp mode client
Setting device to VTP CLIENT mode.
SW-CC(config)#vtp pass cisco
Setting device VLAN database password to cisco
SW-CC(config)#vtp version 2
Cannot modify version in VTP client mode
SW-CC(config)#exit
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console
write
Building configuration...
[OK]
SW-CC#

```

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

```

Press RETURN to get started.

SW-AA>show 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 : 0xEC 0xFE 0x6B 0x9F 0x42 0x47 0xE0 0x98
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
SW-AA>

```

Figura 26.verificar SW-AA Configuracion *show vtp status*.

The screenshot shows the Cisco IOS Command Line Interface (CLI) window titled "IOS Command Line Interface". At the top, there are tabs for "Physical", "Config" (which is selected), and "CLI". Below the tabs, a message says "Press RETURN to get started.". The main area displays the output of the "show vtp status" command:

```

SW-BB>show 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
MDS digest : 0x8C 0xFE 0x6B 0x9F 0x42 0x47 0xE0 0x98
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
SW-BB>

```

At the bottom right of the window are "Copy" and "Paste" buttons.

Figura 27.verificar SW-BB Configuracion *show vtp status*.

The screenshot shows the Cisco IOS Command Line Interface (CLI) window titled "IOS Command Line Interface". At the top, there are tabs for "Physical", "Config" (which is selected), and "CLI". Below the tabs, a message says "Press RETURN to get started.". The main area displays the output of the "show vtp status" command, preceded by configuration steps:

```

Switch(config)#hostname SW-CC
SW-CC(config)#vtp domain ccnp
Changing VTP domain name from NULL to ccnp
SW-CC(config)#vtp mode client
Setting device to VTP CLIENT mode.
SW-CC(config)#vtp pass cisco
Setting device VLAN database password to cisco
SW-CC(config)#vtp version 2
Cannot modify version in VTP client mode
SW-CC(config)#exit
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console
write
Building configuration...
[OK]
SW-CC#
SW-CC>show 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
MDS digest : 0x8C 0xFE 0x6B 0x9F 0x42 0x47 0xE0 0x98
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
SW-CC#

```

At the bottom right of the window are "Copy" and "Paste" buttons.

Figura 28.verificar SW-CC Configuracion *show vtp status*.

## B. Configurar DTP (Dynamic Trunking Protocol)

4. Configure un enlace troncal ("trunk") dinámico entre SW-AA y SW-BB. Debido a que el modo por defecto es ***dynamic auto***, solo un lado del enlace debe configurarse como ***dynamic desirable***.

PARA SW-AA

SW-AA

Physical Config CLI

### IOS Command Line Interface

```
VIP Domain Name : Cmp
VIP Pruning Mode : Disabled
VIP V2 Mode : Disabled
VIP Trap Generation : Disabled
HMAC Digest : 0xE0C 0xFF 0x6B 0x9F 0x42 0x47 0xE0 0x98
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
SW-AA>
SW-AA>en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#int fa0/1
SW-AA(config-if)#switchport mode trunk

SW-AA(config-if)#
%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

SW-AA(config-if)#switchport mode dynamic desirable

SW-AA(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to
up

SW-AA(config-if)#no shutdown
SW-AA(config-if)#exit
SW-AA(config)#+write
```

Figura 29. SW-AA Configuracion trunk

SW-AA>en  
SW-AA#conf

Configuring fm

Configuring from terminal, memory, or network [terminal]:  
Enter configuration commands, one per line. End with CNTL/Z.

Enter configuration commands, one per line. End with **CTRL/Z**.  
SW-AA(config)#int fa0/1

SW-AA(config)#int fa0/1  
SW-AA(config-if)#switch

SW-AA(config-if)#switchport mode trunk

SW-AA(config-if)#

%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

```
SW-AA(config-if)#switchport mode dynamic desirable
```

SW-AA(config-if)#

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

```
SW-AA(config-if)#no shutdown  
SW-AA(config-if)#exit
```

### PARA SW-BB

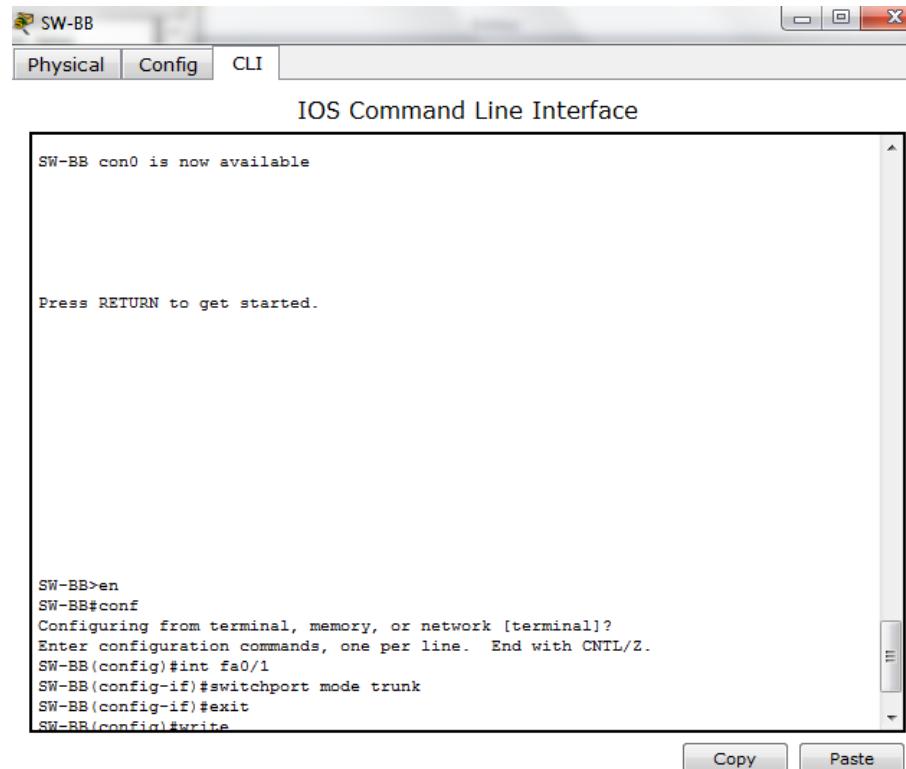


Figura 30. SW-BB Configuracion *trunk*

```
SW-BB>en-  
SW-BB#conf  
Configuring from terminal, memory, or network [terminal]?  
Enter configuration commands, one per line. End with CNTL/Z.  
SW-BB(config)#int fa0/1  
SW-BB(config-if)#switchport mode trunk  
SW-BB(config-if)#exit
```

5. Verifique el enlace "trunk" entre SW-AA y SW-BB usando el comando **show interfaces trunk**.

```

SW-AA>en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#int fa0/1
SW-AA(config-if)#switchport mode dynamic desirable
SW-AA(config-if)#exit
SW-AA(config)#write
^
* Invalid input detected at '^' marker.

SW-AA(config)#
SW-AA(config)#
SW-AA#
SYS-5-CONFIG_I: Configured from console by console

SW-AA#show int trunk
Port      Mode       Encapsulation  Status      Native vlan
Fa0/1    desirable   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-AA#

```

Figura 31. verificación SW-AA Configuracion *trunk*

```

SW-BB>en
SW-BB#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#int fa0/1
SW-BB(config-if)#switchport mode trunk
SW-BB(config-if)#exit
SW-BB(config)#write
^
* Invalid input detected at '^' marker.

SW-BB(config)#
SW-BB(config)#
SW-BB#
SYS-5-CONFIG_I: Configured from console by console

SW-BB#show int trunk
Port      Mode       Encapsulation  Status      Native vlan
Fa0/1    on         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-BB#

```

Figura 32. SW-BB Configuracion *trunk*

6. Entre SW-AA y SW-CC configure un enlace "trunk" estático utilizando el comando **switchport mode trunk** en la interfaz F0/3 de SW-AA

## SW-AA

```
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-AA#
SW-AA#en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#int fa0/3
SW-AA(config-if)#switchport mode trunk

SW-AA(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

SW-AA(config-if)#no shutdown
SW-AA(config-if)#exit
SW-AA(config)#end
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 33. SW-AA Configuracion *switchport mode trunk*.

```
SW-AA#en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#int fa0/3
SW-AA(config-if)#switchport mode trunk

SW-AA(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

SW-AA(config-if)#no shutdown
SW-AA(config-if)#exit
SW-AA(config)#end
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console
```

## SW-CC

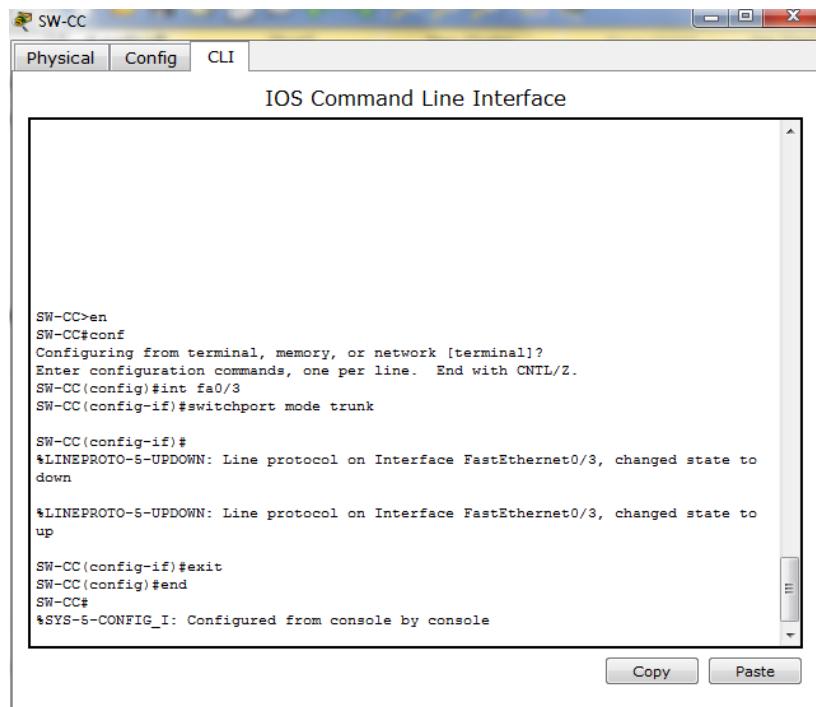


Figura 34. SW-CC Configuracion *switchport mode trunk*.

SW-CC>en

SW-CC#conf

Configuring from terminal, memory, or network [terminal]?

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

SW-CC(config)#int fa0/3

SW-CC(config-if)#switchport mode trunk

SW-CC(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

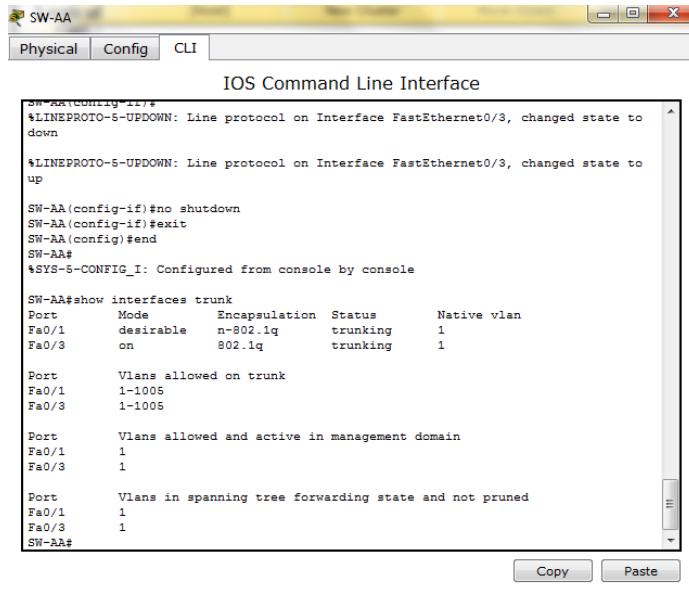
SW-CC(config-if)#exit

SW-CC(config)#end

SW-CC#

%SYS-5-CONFIG\_I: Configured from console by console

7. Verifique el enlace "trunk" el comando **show interfaces trunk** en SW-AA.



```
SW-AA#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

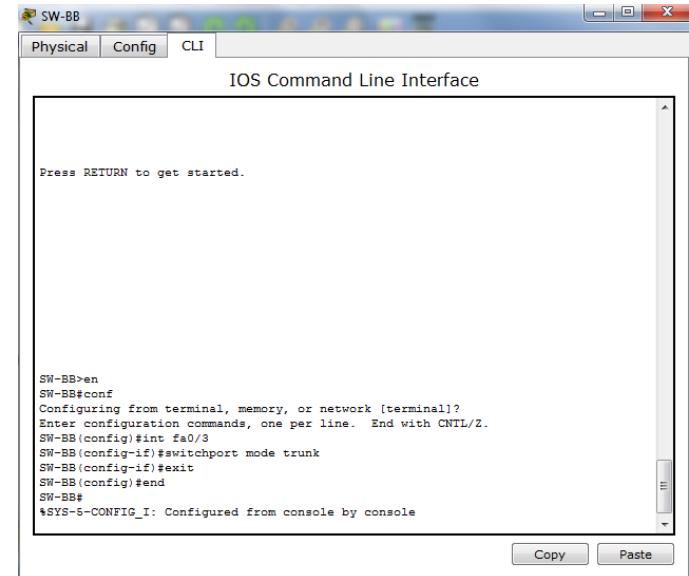
Port      Vlans allowed and active in management domain
Fa0/1    1
Fa0/3    1

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1    1
Fa0/3    1
SW-AA#
```

Figura 35. SW-AA verificacion Configuracion *switchport mode trunk*.

8. Configure un enlace "trunk" permanente entre SW-BB y SW-CC.

#### PARA SW-BB



```
Press RETURN to get started.

SW-BB>en
SW-BB>conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#int fa0/3
SW-BB(config-if)#switchport mode trunk
SW-BB(config-if)#exit
SW-BB(config)#end
SW-BB#
*SYS-5-CONFIG_I: Configured from console by console
```

Figura 36. SW-BB Configuracion *trunk*.

```

SW-BB>en
SW-BB#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#int fa0/3
SW-BB(config-if)#switchport mode trunk
SW-BB(config-if)#exit
SW-BB(config)#end
SW-BB#
%SYS-5-CONFIG_I: Configured from console by console

```

## PARA SW-CC

```

SW-CC>en
SW-CC#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-CC(config)#int fa0/1
SW-CC(config-if)#switchport mode trunk

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

SW-CC>en
SW-CC#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-CC(config)#int fa0/1
SW-CC(config-if)#switchport mode trunk
SW-CC(config-if)#exit
SW-CC(config)#end
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 37. SW-CC Configuracion *trunk*.

```

SW-CC#en
SW-CC#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.

```

```

SW-CC(config)#int fa0/1
SW-CC(config-if)#switchport mode trunk
SW-CC(config-if)#exit
SW-CC(config)#end
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console

```

### C. Agregar VLANs y asignar puertos.

9. En SW-AA agregue la VLAN 10. En SW-BB agregue las VLANS Compras (10), Personal (25), Planta (30) y Admon (99)

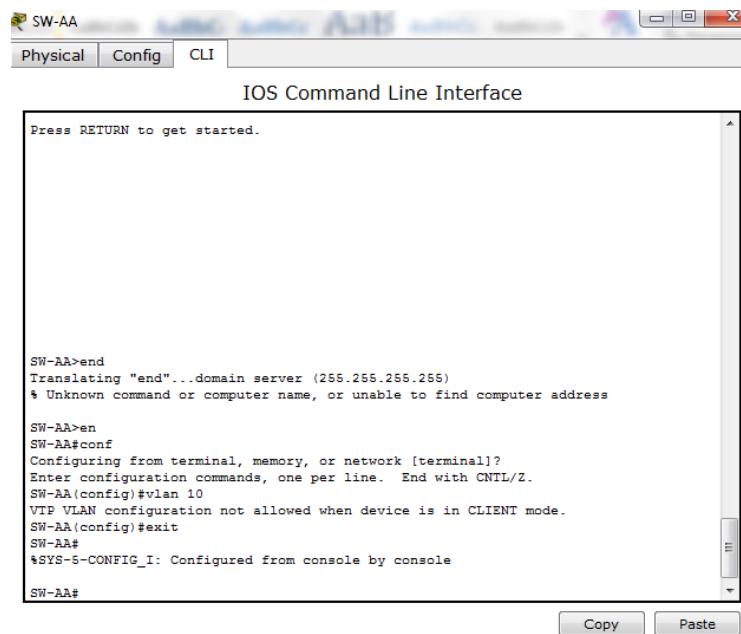


Figura 38. SW-AA VLANs.

```

SW-AA>en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#vlan 10
VTP VLAN configuration not allowed when device is in CLIENT mode.
SW-AA(config)#exit
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console

```

The screenshot shows a Windows-style application window titled "SW-BB". The tab bar at the top has "Physical", "Config" (which is selected), and "CLI". Below the tabs is a title bar "IOS Command Line Interface". The main area contains a command-line session:

```

SW-BB#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 : 0xEC 0xFE 0x6B 0x9F 0x42 0x47 0xE0 0x98
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)
SW-BB#en
SW-BB#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#vlan 10
SW-BB(config-vlan)#name compras
SW-BB(config-vlan)#vlan 25
SW-BB(config-vlan)#name persona
SW-BB(config-vlan)#vlan 30
SW-BB(config-vlan)#name planta
SW-BB(config-vlan)#vlan 99
SW-BB(config-vlan)#name admon
SW-BB(config-vlan)#exit
SW-BB(config)#end
SW-BB#
%SYS-5-CONFIG_I: Configured from console by console

```

At the bottom right of the terminal window are "Copy" and "Paste" buttons.

Figura 39. SW-BB VLANs.

```

SW-BB#en
SW-BB#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#vlan 10
SW-BB(config-vlan)#name compras
SW-BB(config-vlan)#vlan 25
SW-BB(config-vlan)#name persona
SW-BB(config-vlan)#vlan 30
SW-BB(config-vlan)#name planta
SW-BB(config-vlan)#vlan 99
SW-BB(config-vlan)#name admon
SW-BB(config-vlan)#exit
SW-BB(config)#end
SW-BB#
%SYS-5-CONFIG_I: Configured from console by console

```

10. Verifique que las VLANs han sido agregadas correctamente.

SW-AA

Physical Config CLI

IOS Command Line Interface

```
SW-AA>show vlan brief
VLAN Name          Status      Ports
---- -----
1    default        active      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
25   persona        active
30   planta          active
99   admon           active
1002 fddi-default   active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default   active
SW-AA>
```

Copy Paste

Figura 40. Verificar SW-AA VLANS.

SW-BB

Physical Config CLI

IOS Command Line Interface

```
SW-BB(config-vlan)#name persona
SW-BB(config-vlan)#vlan 30
SW-BB(config-vlan)#name planta
SW-BB(config-vlan)#vlan 99
SW-BB(config-vlan)#name admon
SW-BB(config-vlan)#exit
SW-BB(config)#end
SW-BB#
*SYS-5-CONFIG_I: Configured from console by console

SW-BB#show vlan brief
VLAN Name          Status      Ports
---- -----
1    default        active      Fa0/2, Fa0/3, Fa0/4, Fa0/5
                           Fa0/6, Fa0/7, Fa0/8, Fa0/9
                           Fa0/10, Fa0/11, Fa0/12, Fa0/13
                           Fa0/14, Fa0/15, Fa0/16, Fa0/17
                           Fa0/18, Fa0/19, Fa0/20, Fa0/21
                           Fa0/22, Fa0/23, Fa0/24, Gig0/1
                           Gig0/2
10   compras        active
25   persona        active
30   planta          active
99   admon           active
1002 fddi-default   active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default   active
SW-BB#
```

Copy Paste

Figura 41.verificar SW-AA VLANS.

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

Tabla 5. Puertos VLAN y direcciones ip.

Interfaz	VLAN	Direcciones IP de los PCs
F0/10	VLAN 10	190.108.10.X / 24
F0/15	VLAN 25	190.108.20.X / 24
F0/20	VLAN 30	190.108.30.X / 24

X = número de cada PC particular

## SW-AA

The screenshot shows a terminal window titled "IOS Command Line Interface" for a device named "SW-AA". The window has tabs for "Physical", "Config", and "CLI", with "CLI" selected. The main area displays the following configuration commands:

```
SW-AA>en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#interface vlan 10
SW-AA(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up

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

SW-AA(config-if)#ip address 190.108.10.1 255.255.255.0
SW-AA(config-if)#exit
SW-AA(config)#interface vlan 25
SW-AA(config-if)#
%LINK-5-CHANGED: Interface Vlan25, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan25, changed state to up

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

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

SW-AA(config-if)#ip address 190.108.30.1 255.255.255.0
SW-AA(config-if)#exit
```

At the bottom of the window are "Copy" and "Paste" buttons.

Figura 42. SW-AA puertos VLAN y direcciones ip.

```
SW-AA>en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
```

```

SW-AA(config)#interface vlan 10
SW-AA(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up

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

SW-AA(config-if)#ip address 190.108.10.1 255.255.255.0
SW-AA(config-if)#exit
SW-AA(config)#interface vlan 25
SW-AA(config-if)#
%LINK-5-CHANGED: Interface Vlan25, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan25, changed state to
up

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

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

SW-AA(config-if)#ip address 190.108.30.1 255.255.255.0
SW-AA(config-if)#exit
SW-AA(config)#end
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console
SW-BB

```

```

SW-BB#en
SW-BB#conf
Configuring from terminal, memory, or network (terminal)?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB#interface vlan 10
SW-BB(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up
SW-BB(config-if)#ip address 190.108.10.2 255.255.255.0
SW-BB(config-if)#exit
SW-BB#interface vlan 25
SW-BB(config-if)#
%LINK-5-CHANGED: Interface Vlan25, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan25, changed state to up
SW-BB(config-if)#ip address 190.108.20.2 255.255.255.0
SW-BB(config-if)#exit
SW-BB#interface vlan 30
SW-BB(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up
SW-BB(config-if)#ip address 190.108.30.2 255.255.255.0
SW-BB(config-if)#exit
SW-BB(config)#

```

Figura 43. SW-BB puertos VLAN y direcciones ip

```
SW-BB>en
SW-BB#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#interface vlan 10
SW-BB(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up

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

SW-BB(config-if)#ip address 190.108.10.2 255.255.255.0
SW-BB(config-if)#exit
SW-BB(config)#interface vlan 25
SW-BB(config-if)#
%LINK-5-CHANGED: Interface Vlan25, changed state to up

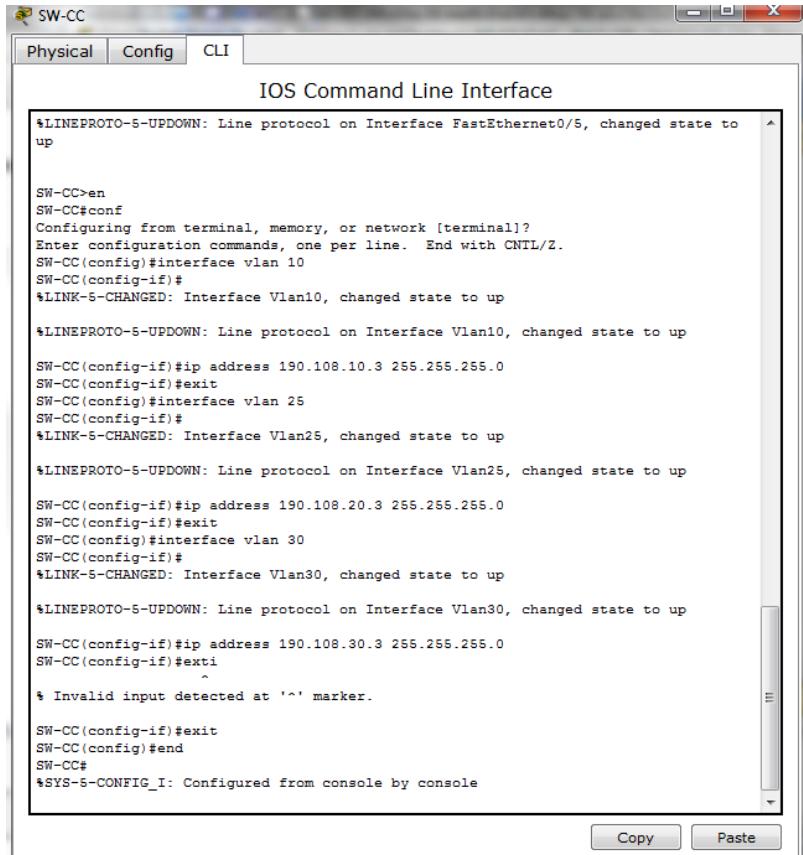
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan25, changed state to
up

SW-BB(config-if)#ip address 190.108.20.2 255.255.255.0
SW-BB(config-if)#exit
SW-BB(config)#interface vlan 30
SW-BB(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

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

SW-BB(config-if)#ip address 190.108.30.2 255.255.255.0
SW-BB(config-if)#exit
SW-BB(config)#end
SW-BB#
%SYS-5-CONFIG_I: Configured from console by console
```

## SW-CC



The screenshot shows the SW-CC software interface with the 'CLI' tab selected. The main window displays the IOS Command Line Interface. The command history includes configuration steps for VLANs 10, 25, and 30, setting IP addresses (190.108.10.3, 190.108.20.3, 190.108.30.3) and subnet masks (255.255.255.0). It also shows the creation of a configuration file and a message indicating it was configured from the console.

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

SW-CC>en
SW-CC#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-CC(config)#interface vlan 10
SW-CC(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up

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

SW-CC(config-if)#ip address 190.108.10.3 255.255.255.0
SW-CC(config-if)#exit
SW-CC(config)#interface vlan 25
SW-CC(config-if)#
%LINK-5-CHANGED: Interface Vlan25, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan25, changed state to up

SW-CC(config-if)#ip address 190.108.20.3 255.255.255.0
SW-CC(config-if)#exit
SW-CC(config)#interface vlan 30
SW-CC(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

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

SW-CC(config-if)#ip address 190.108.30.3 255.255.255.0
SW-CC(config-if)#exit
^
% Invalid input detected at '^' marker.

SW-CC(config-if)#exit
SW-CC(config)#end
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 44. SW-CC puertos VLAN y direcciones ip

```
SW-CC>en
SW-CC#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-CC(config)#interface vlan 10
SW-CC(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up

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

SW-CC(config-if)#ip address 190.108.10.3 255.255.255.0
SW-CC(config-if)#exit
SW-CC(config)#interface vlan 25
```

```

SW-CC(config-if)#
%LINK-5-CHANGED: Interface Vlan25, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan25, changed state to
up

SW-CC(config-if)#ip address 190.108.20.3 255.255.255.0
SW-CC(config-if)#exit
SW-CC(config)#interface vlan 30
SW-CC(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

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

SW-CC(config-if)#ip address 190.108.30.3 255.255.255.0
SW-CC(config-if)#exti
^
% Invalid input detected at '^' marker.
SW-CC(config-if)#exit
SW-CC(config)#end
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console

```

12. Configure el puerto F0/10 en modo de acceso para SW-AA, SW-BB y SW-CC y asígnelo a la VLAN 10.

Configuración puerto Fa0/10 y asignación vlan 10

### **SW-AA**

```

SW-AA>en
SW-AA#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#interface fa0/10
SW-AA(config-if)#switchport mode access
^
% Invalid input detected at '^' marker.
SW-AA(config-if)#switchport mode access
SW-AA(config-if)#switchport access vlan 10
SW-AA(config-if)#exit

```

```
SW-AA(config)#end
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console
```

## **SW-BB**

```
SW-BB>en
SW-BB#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#interface fa0/10
SW-BB(config-if)#switchport mode access
SW-BB(config-if)#switchport access vlan 10
 ^
% Invalid input detected at '^' marker.
SW-BB(config-if)#switchport access vlan 10
SW-BB(config-if)#exit
SW-BB(config)#end
SW-BB#
%SYS-5-CONFIG_I: Configured from console by console
```

## **SW-CC**

```
SW-CC>en
SW-CC#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-CC(config)#interface fa0/10
SW-CC(config-if)#switchport mode access
SW-CC(config-if)#switchport access vlan 10
SW-CC(config-if)#exit
SW-CC(config)#end
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console
```

13. Repita el procedimiento para los puertos F0/15 y F0/20 en SW-AA, SW-BB y SW-CC. Asigne las VLANs y las direcciones IP de los PCs de acuerdo con la tabla de arriba.

## **SW-AA**

```
SW-AA>en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#interface fa0/15
SW-AA(config-if)#switchport mode access
^
% Invalid input detected at '^' marker.
SW-AA(config-if)#switchport mode access
SW-AA(config-if)#switchport access vlan 20
SW-AA(config-if)#exit
SW-AA(config)#interface fa0/20
SW-AA(config-if)#switchport mode access
SW-AA(config-if)#switchport access vlan 30
SW-AA(config-if)#exit
SW-AA(config)#end
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console
```

## **SW-BB**

```
SW-BB>en
SW-BB#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#interface fa0/15
SW-BB(config-if)#switchport mode access
SW-BB(config-if)#switchport access vlan 25
SW-BB(config-if)#no shutdown
SW-BB(config-if)#exit
SW-BB(config)#interface fa0/20
SW-BB(config-if)#switchport mode access
SW-BB(config-if)#switchport access vlan 30
SW-BB(config-if)#exit
SW-BB(config)#end
SW-BB#
%SYS-5-CONFIG_I: Configured from console by console
```

## **SW-CC**

```
SW-CC>en
SW-CC#conf
Configuring from terminal, memory, or network [terminal]?
```

```

Enter configuration commands, one per line. End with CNTL/Z.
SW-CC(config)#interface fa0/10
SW-CC(config-if)#switchport mode access
SW-CC(config-if)#switchport access vlan 10
SW-CC(config-if)#exit
SW-CC(config)#interface fa0/15
SW-CC(config-if)#switchport mode access
SW-CC(config-if)#switchport access vlan 20
SW-CC(config-if)#exit
SW-CC(config)#interface fa0/20
SW-CC(config-if)#switchport mode access
SW-CC(config-if)#switchport access vlan 30
SW-CC(config-if)#exit
SW-CC(config)#end
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console

```

#### **D. Configurar las direcciones IP en los Switches.**

14. 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.

Tabla 5. Direccionamiento y active la interfaz

Equipo	Interfaz	Dirección IP	Máscara
SW-AA	VLAN 99	190.108.99.1	255.255.255.0
SW-BB	VLAN 99	190.108.99.2	255.255.255.0
SW-CC	VLAN 99	190.108.99.3	255.255.255.0

#### **SW-AA**

```

SW-AA>en
SW-AA#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-AA(config)#interface vlan99
SW-AA(config-if)#
%LINK-5-CHANGED: Interface Vlan99, changed state to up

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

```

```
SW-AA(config-if)#ip address 190.108.99.1 255.255.255.0
SW-AA(config-if)#exit
SW-AA(config)#end
SW-AA#
%SYS-5-CONFIG_I: Configured from console by console
```

## **SW-BB**

```
SW-BB>en
SW-BB#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-BB(config)#interface vlan99
SW-BB(config-if)#
%LINK-5-CHANGED: Interface Vlan99, changed state to up

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

SW-BB(config-if)#ip address 190.108.99.2 255.255.255.0
SW-BB(config-if)#exit
SW-BB(config)#end
SW-BB#
%SYS-5-CONFIG_I: Configured from console by console
```

## **SW-CC**

```
SW-CC>en
SW-CC#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
SW-CC(config)#interface vlan99
SW-CC(config-if)#
%LINK-5-CHANGED: Interface Vlan99, changed state to up

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

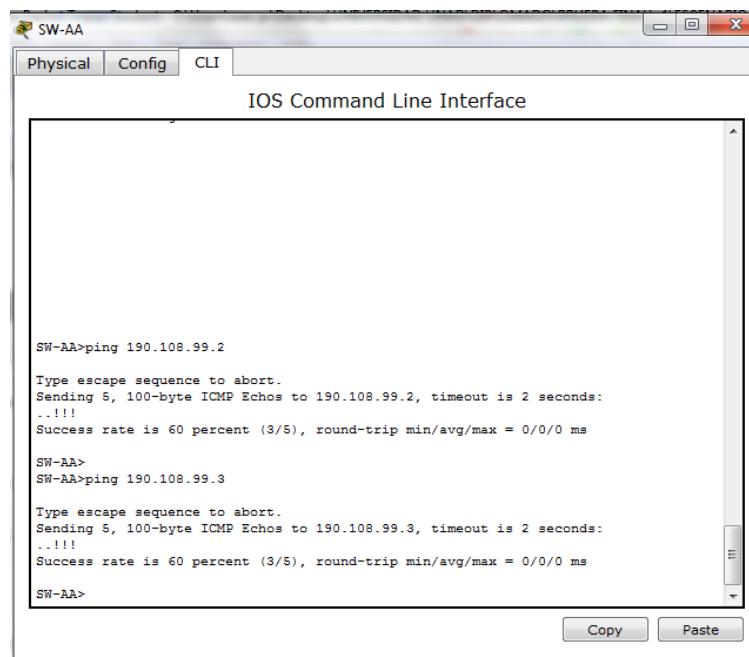
SW-CC(config-if)#ip address 190.108.99.3 255.255.255.0
SW-CC(config-if)#exit
SW-CC(config)#end
SW-CC#
%SYS-5-CONFIG_I: Configured from console by console
```

## E. Verificar la conectividad Extremo a Extremo

Si los equipos pertenecen en este caso la misma red vlan o red virtual la respuesta de ping es exitosa, pero en este caso como es contrario es erróneo.

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

Rpta:/ No se logra ejecutar el ping por que el tiempo de espera es muy corto.



```
SW-AA>ping 190.108.99.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.2, timeout is 2 seconds:
...!!!
Success rate is 60 percent (3/5), round-trip min/avg/max = 0/0/0 ms

SW-AA>ping 190.108.99.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.3, timeout is 2 seconds:
...!!!
Success rate is 60 percent (3/5), round-trip min/avg/max = 0/0/0 ms
```

Figura 45. Ejecuta ping con switch. SW-BB.

```
C:\>ping 190.108.30.1
```

```
Pinging 190.108.30.1 with 32 bytes of data:
```

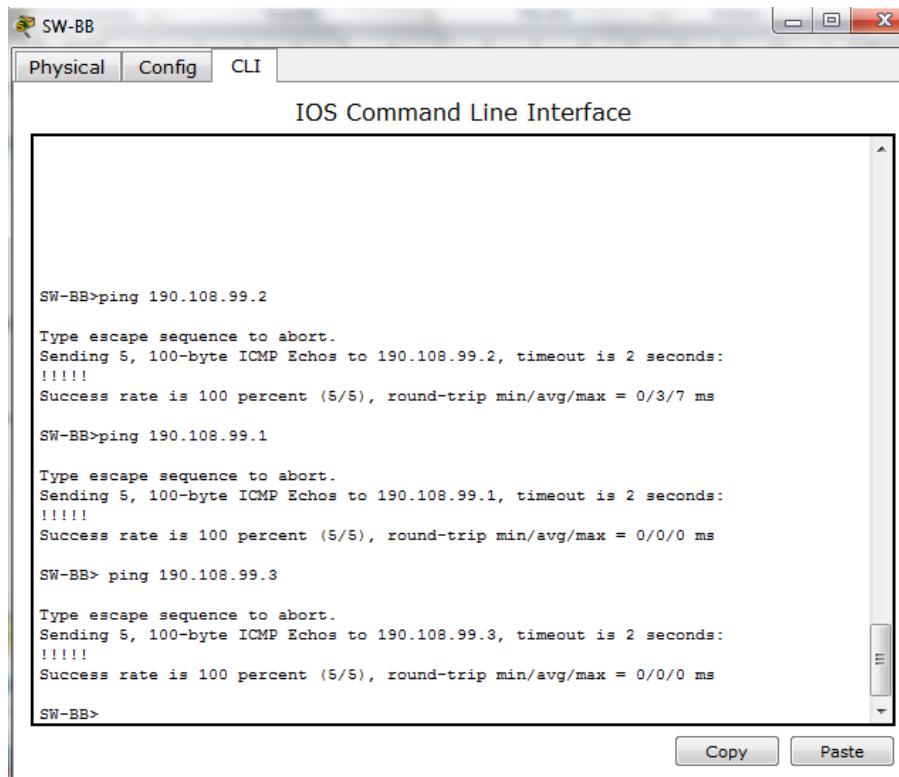
```
Request timed out.
```

```
Ping statistics for 190.108.30.1:
```

```
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

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

Rpta:/ El ping se ejecuta con éxito porque el tiempo de ejecución es de 2 segundos es suficiente para tener una tasa 100% 5/5.



The screenshot shows a software window titled "SW-BB" with a tab bar at the top labeled "Physical", "Config", and "CLI". The "CLI" tab is selected, displaying the "IOS Command Line Interface". Inside the interface, the user has entered several "ping" commands:

```
SW-BB>ping 190.108.99.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/3/7 ms

SW-BB>ping 190.108.99.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

SW-BB> ping 190.108.99.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.3, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

SW-BB>
```

At the bottom right of the CLI window, there are "Copy" and "Paste" buttons.

Figura 46. Ejecuta ping con switch. SW-BB.

```
SW-BB>ping 190.108.99.2
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/3/7 ms
```

```
SW-BB>ping 190.108.99.1
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms
```

SW-BB> ping 190.108.99.3

Type escape sequence to abort.

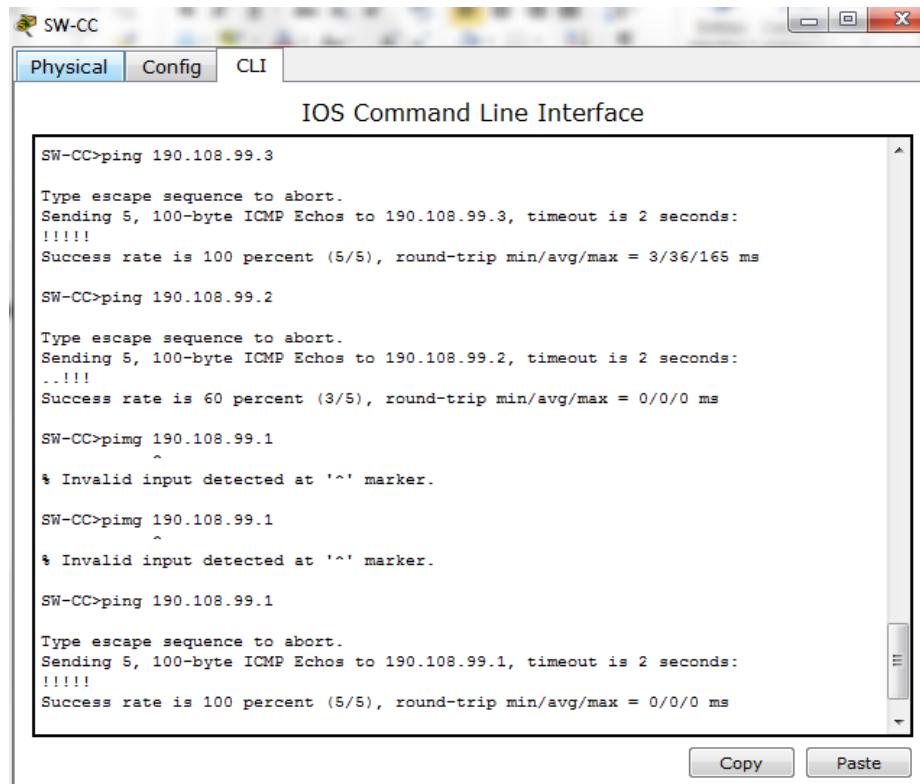
Sending 5, 100-byte ICMP Echos to 190.108.99.3, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

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

Rpta:/ El ping se ejecuta con éxito porque el tiempo de ejecución es de 2 segundos es suficiente para tener una tasa 100% 5/5.



The screenshot shows the SW-CC software interface with the 'CLI' tab selected. The window title is 'IOS Command Line Interface'. The command entered was 'ping 190.108.99.3'. The output shows a successful ping to 190.108.99.3 with a success rate of 100% (5/5). The next command entered was 'ping 190.108.99.2', which resulted in a failure with a success rate of 60% (3/5). The final command entered was 'pimg 190.108.99.1', which resulted in an error message: '% Invalid input detected at '^' marker.' The 'Copy' and 'Paste' buttons are visible at the bottom right of the CLI window.

```
SW-CC>ping 190.108.99.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.3, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

SW-CC>ping 190.108.99.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.2, timeout is 2 seconds:
..!!!
Success rate is 60 percent (3/5), round-trip min/avg/max = 0/0/0 ms

SW-CC>pimg 190.108.99.1
^
% Invalid input detected at '^' marker.

SW-CC>pimg 190.108.99.1
^
% Invalid input detected at '^' marker.

SW-CC>ping 190.108.99.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms
```

Figura 47. Ejecuta ping con switch. SW-CC.

SW-CC>ping 190.108.99.3

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 190.108.99.3, timeout is 2 seconds:  
!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 3/36/165 ms

SW-CC>ping 190.108.99.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 190.108.99.2, timeout is 2 seconds:  
..!!!

Success rate is 60 percent (3/5), round-trip min/avg/max = 0/0/0 ms

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 190.108.99.1, timeout is 2 seconds:  
!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

## CONCLUSIONES

En esta prueba de habilidades prácticas cisco CCNP, se logró desarrollar los conocimientos adquiridos en el diplomado de profundización cisco CCNP, por lo anterior se establecen la funcionalidad de los comandos detallados paso a paso, lo cual hemos desarrollado tales como el registro de los procesos de verificación de conectividad mediante el uso de comandos ping, traceroute, show ip route, entre otros.

Mediante el desarrollo de los escenarios, donde se utiliza el funcionamiento de las VLANs las cuales son compuertas lógicas de dispositivos donde nos permite administrar los swichest implementamos los protocolos VTP para su importante administración de cada Swicht y llevar cada ip a su respectivo pc.

Nos brinda los conocimientos prácticos y teóricos, en la utilización de herramientas como el software Packet Tracer, que permite entender mejor las redes y los protocolos de enrutamiento. Por lo cual se adquieren habilidades fundamentales para el análisis, en solución de fallas y desarrollo de proyectos de redes de comunicación.

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