Instituto Politécnico Nacional

Escuela Superior de Cómputo

Practica 2.3. VLAN

Materia:

Administración de servicios en red

Grupo:

4CV13

Profesor:

Henestrosa Carrasco Leticia

Integrantes: (***Equipo 1***)

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Pedroza García Rodolfo

Fecha:

jueves, 31 de marzo de 2022

Activity 3.3.4:
Configuring VLANs and Trunks

NOTE TO USER: Although you can complete this activity without printed instructions, a PDF version is available on the text side of the same page from which you launched this activity.

Learning Objectives

- View the default VLAN configuration
- Configure VLANs
- Assign VLANs to ports
- Configure trunking

Introduction

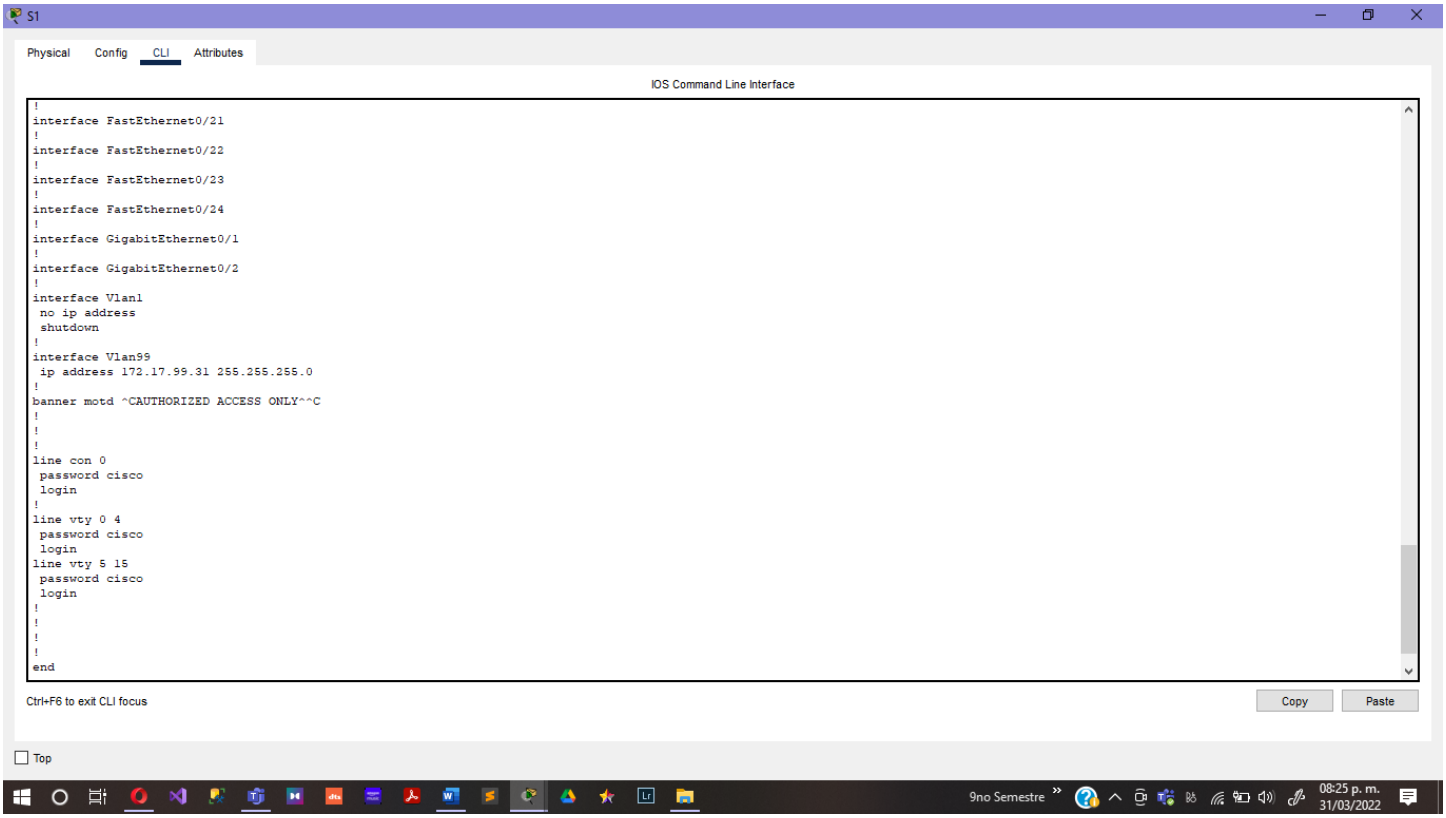
VLANs are helpful in the administration of logical groups, allowing members of a group to be easily moved, changed, or added. This activity focuses on creating and naming VLANs, assigning access ports to specific VLANs, changing the native VLAN, and configure configuring trunk links.

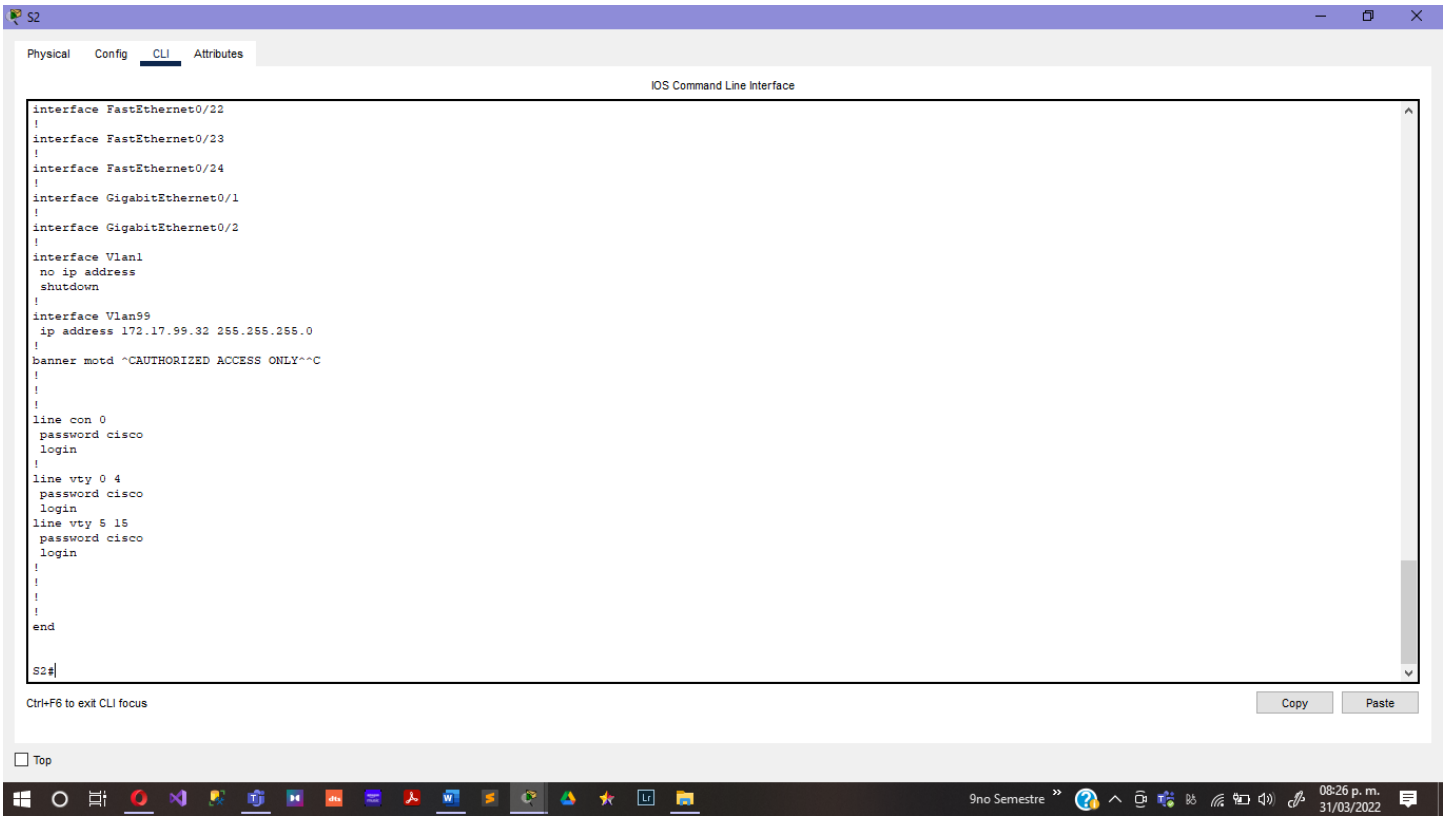
Task 1: View the Default VLAN Configuration

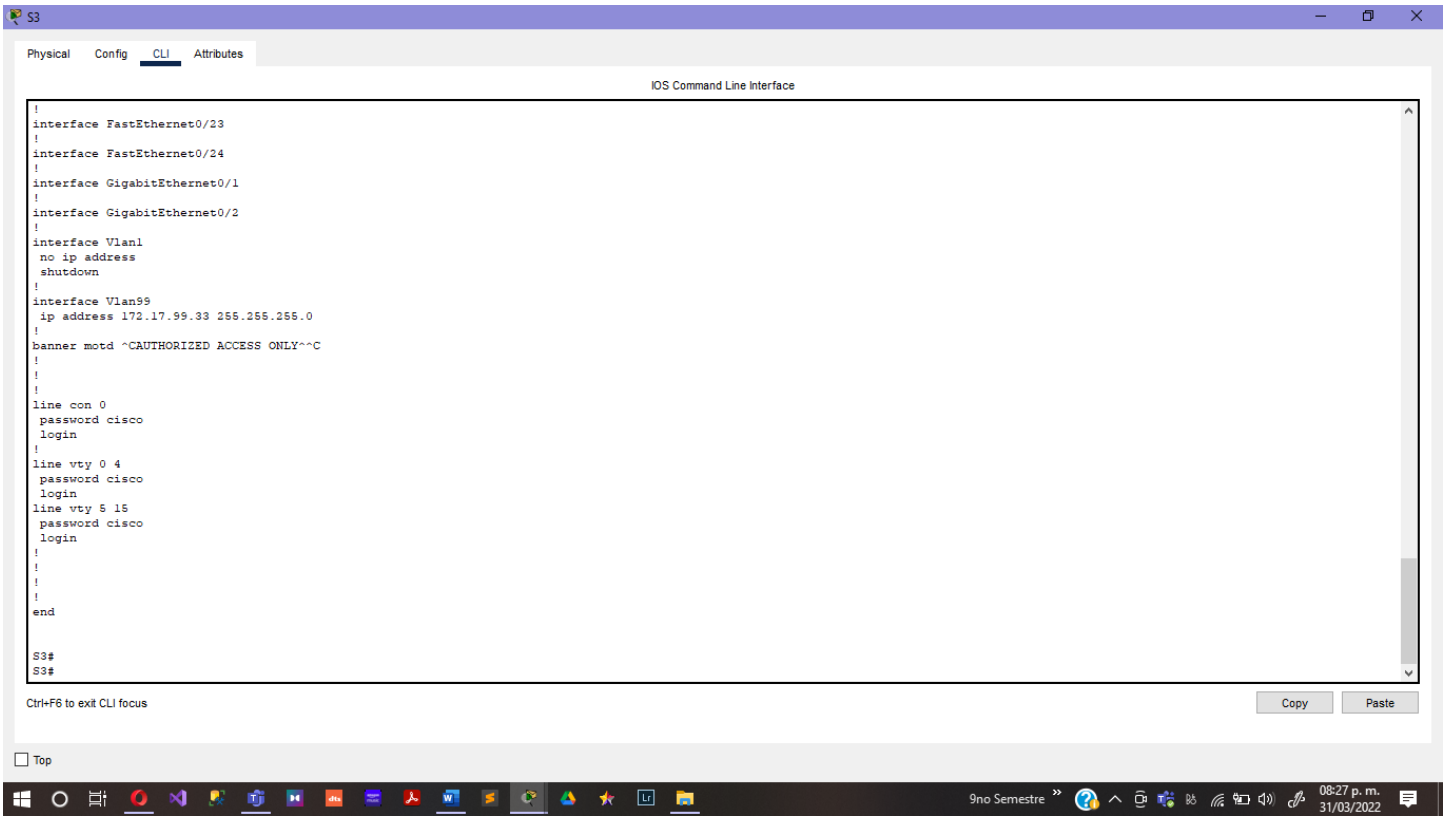
Step 1. Verify the current running configuration on the switches.

On all three switches, enter user EXEC mode with the password **cisco**. Then enter privileged EXEC mode with the password **class**.

From privileged EXEC mode on all three switches, issue the **show running-config** command to verify the current running configuration. The basic configurations are already set, but there are no VLAN assignments.

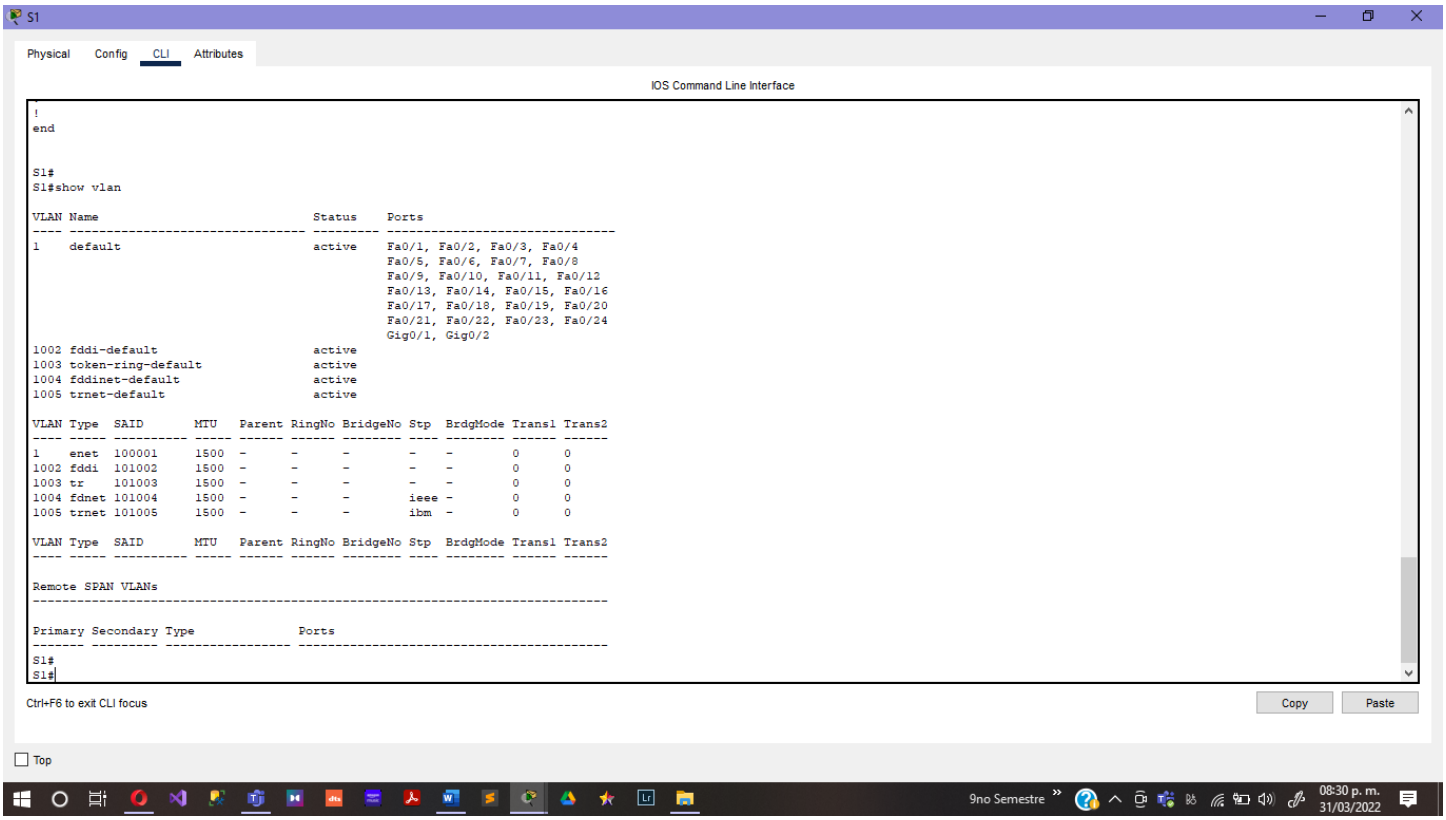






Step 2. Display the current VLANs.

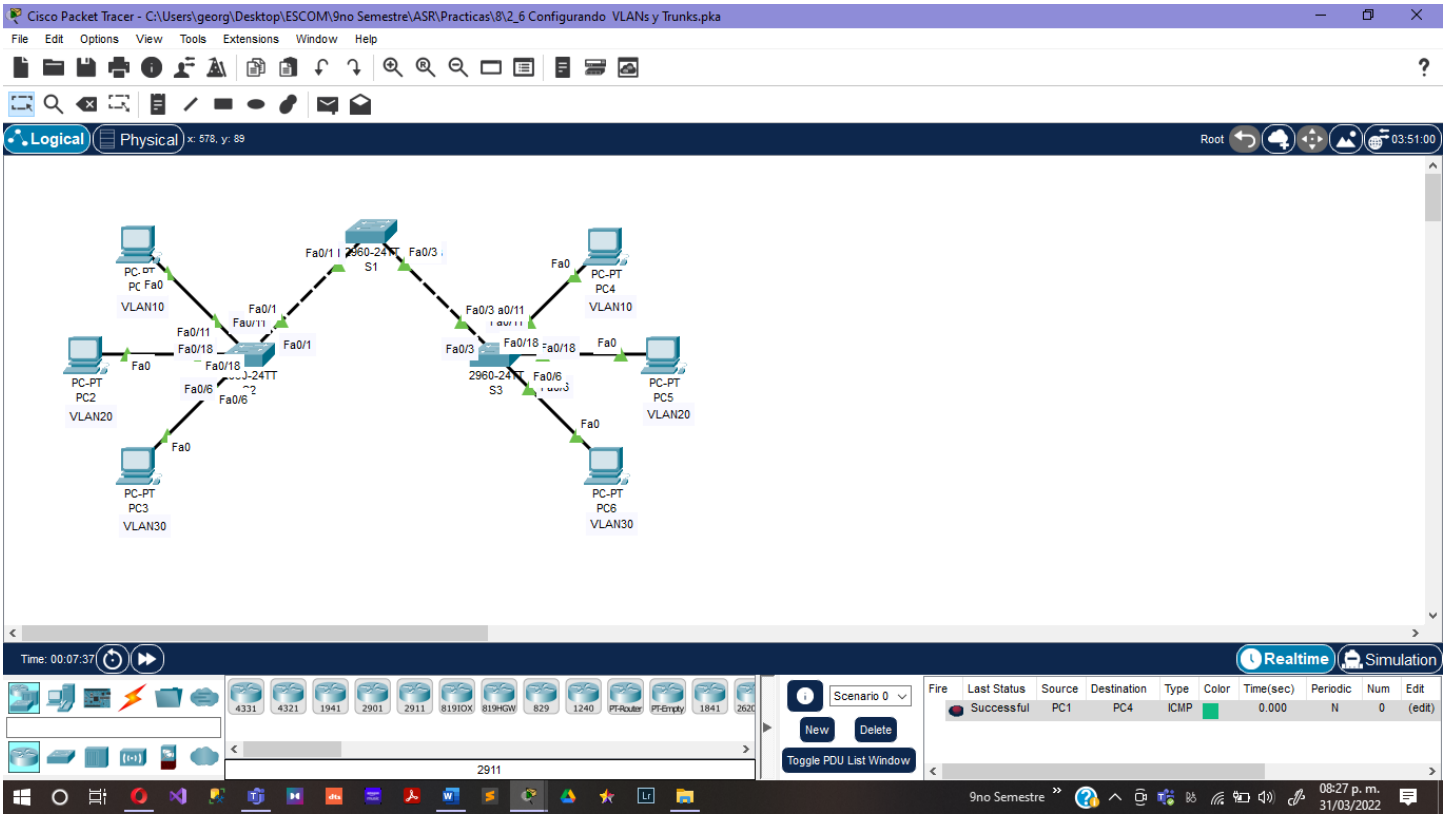
On S1, issue the **show vlan** command. The only VLANs present are the default ones. By default, all interfaces are assigned to VLAN 1.



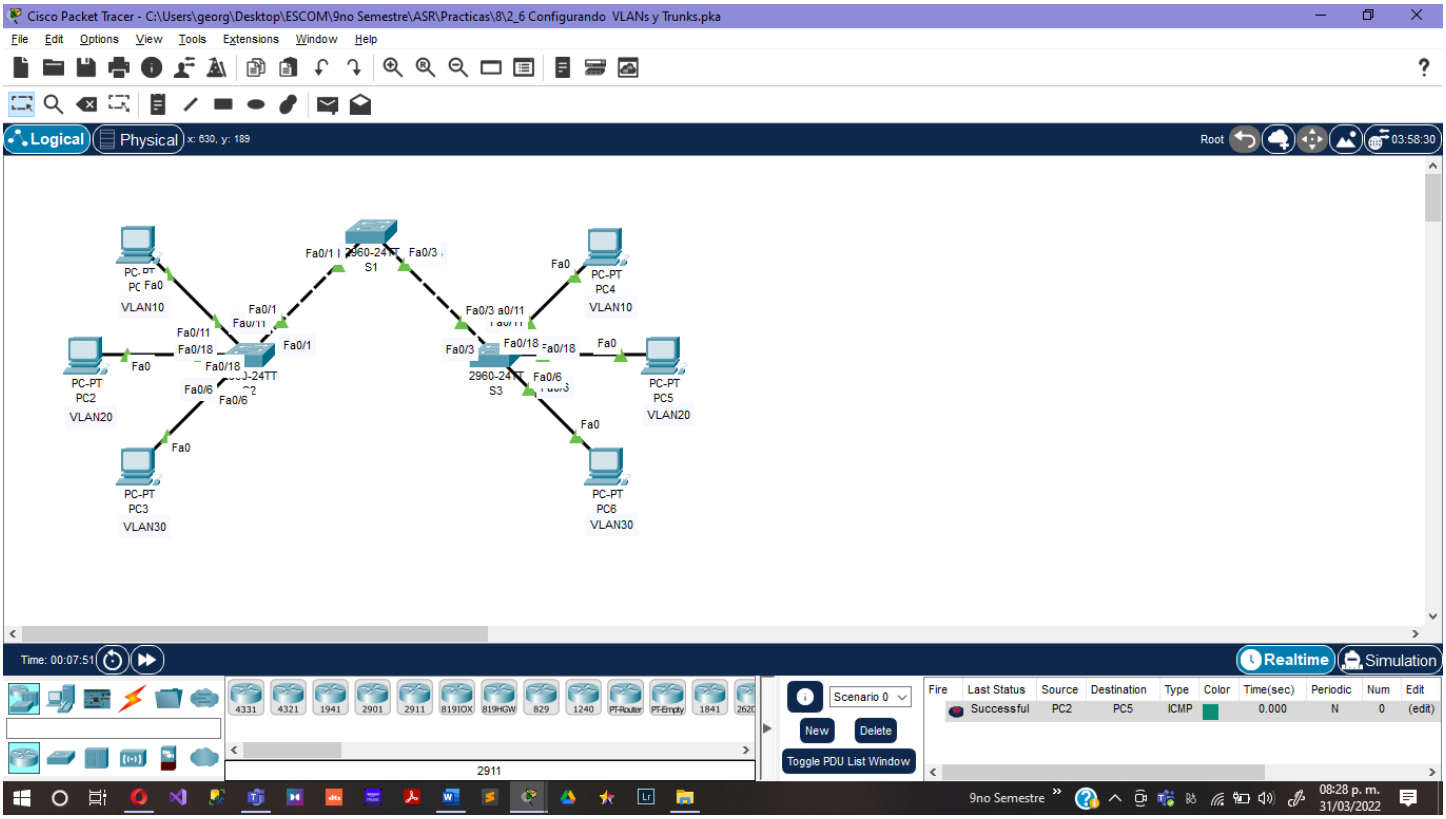
Step 3. Verify connectivity between PCs on the same network.

Notice that each PC can ping the other PC that shares the same network:

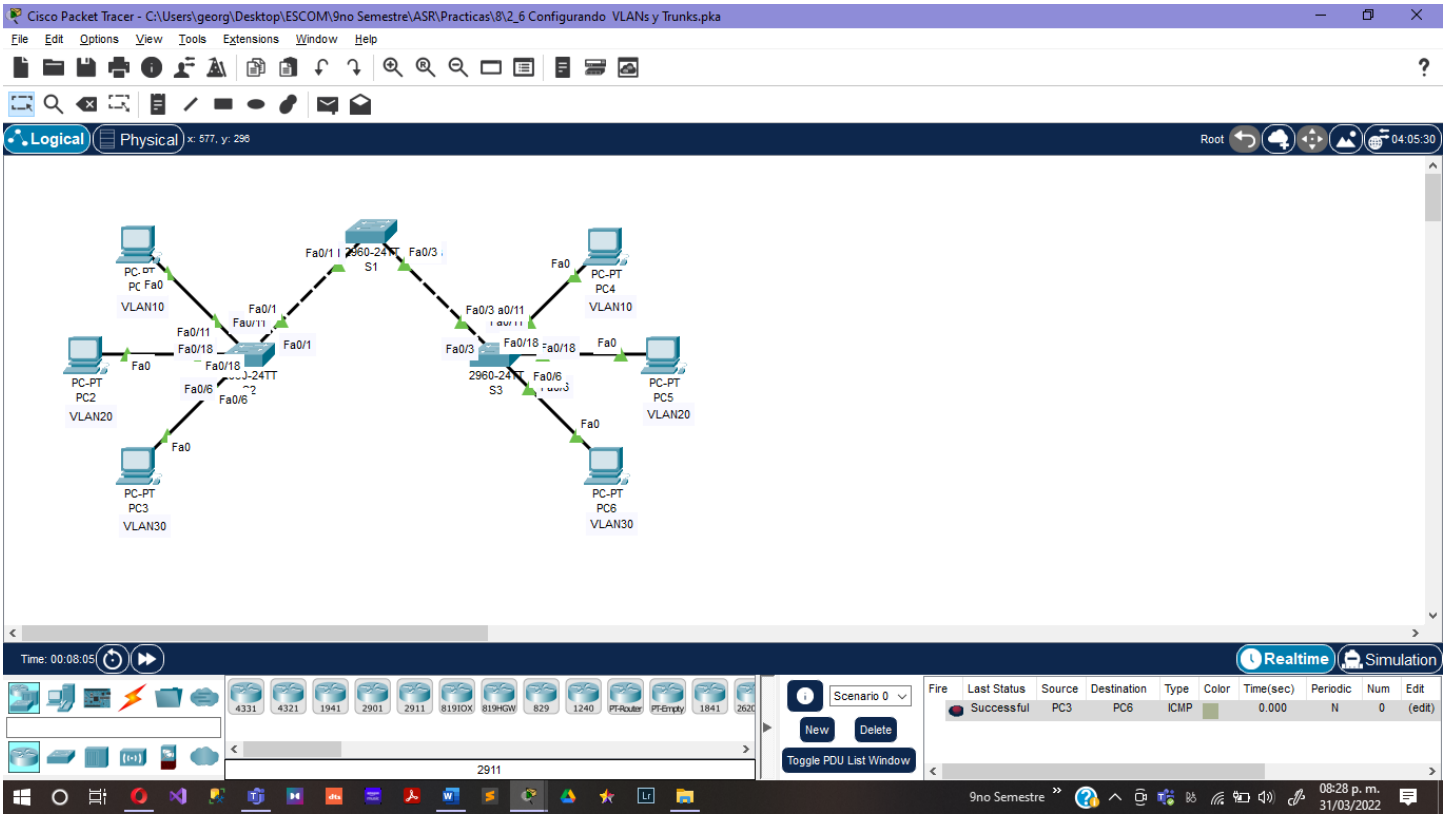
- PC1 can ping PC4



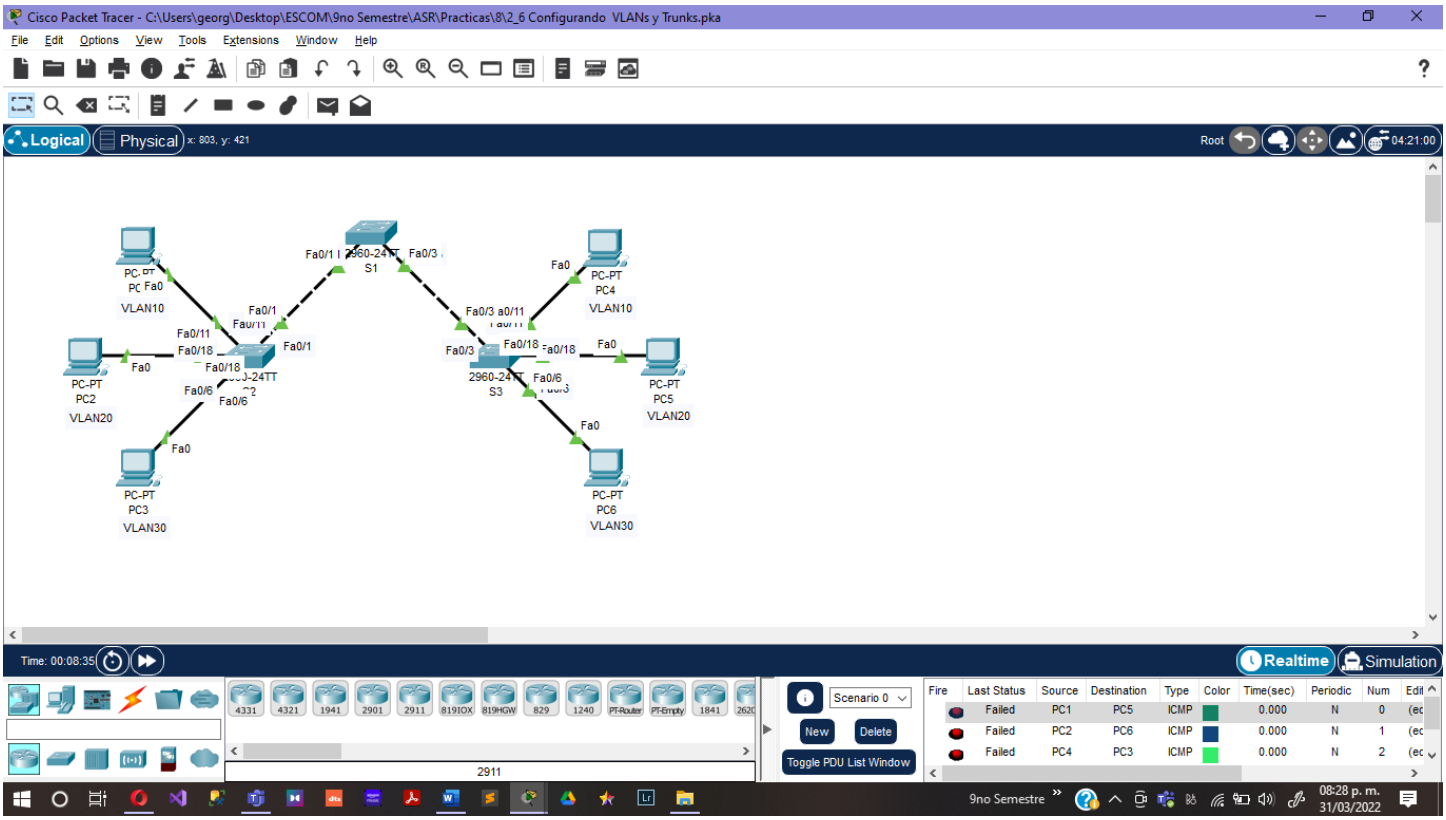
- PC2 can ping PC5



- PC3 can ping PC6



Pings to PCs in other networks fail.



What benefit will configuring VLANs provide to the current configuration?

El beneficio que nos proporcionan las vLANs es el aislamiento entre redes distintas.

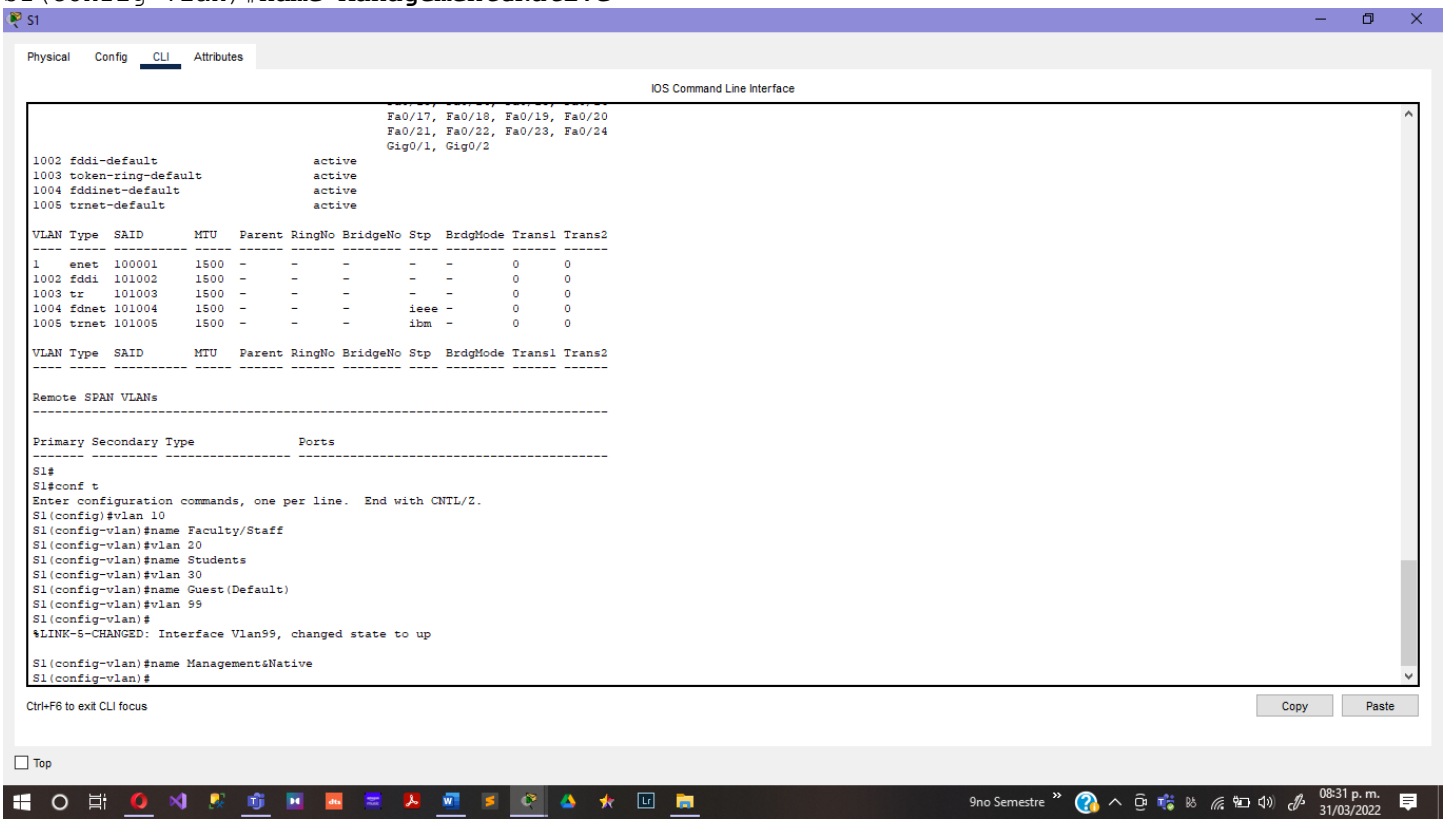
Task 2: Configure VLANs

Step 1. Create VLANs on S1.

The command **vlan** *vlan-id* creates a VLAN. Use the **name** *vlan-name* command to name a VLAN.

On S1, create four VLANs using the *vlan-ids* and the names shown below:

```
S1(config)#vlan 10
S1(config-vlan)#name Faculty/Staff
S1(config-vlan)#vlan 20
S1(config-vlan)#name Students
S1(config-vlan)#vlan 30
S1(config-vlan)#name Guest(Default)
S1(config-vlan)#vlan 99
S1(config-vlan)#name Management&Native
```

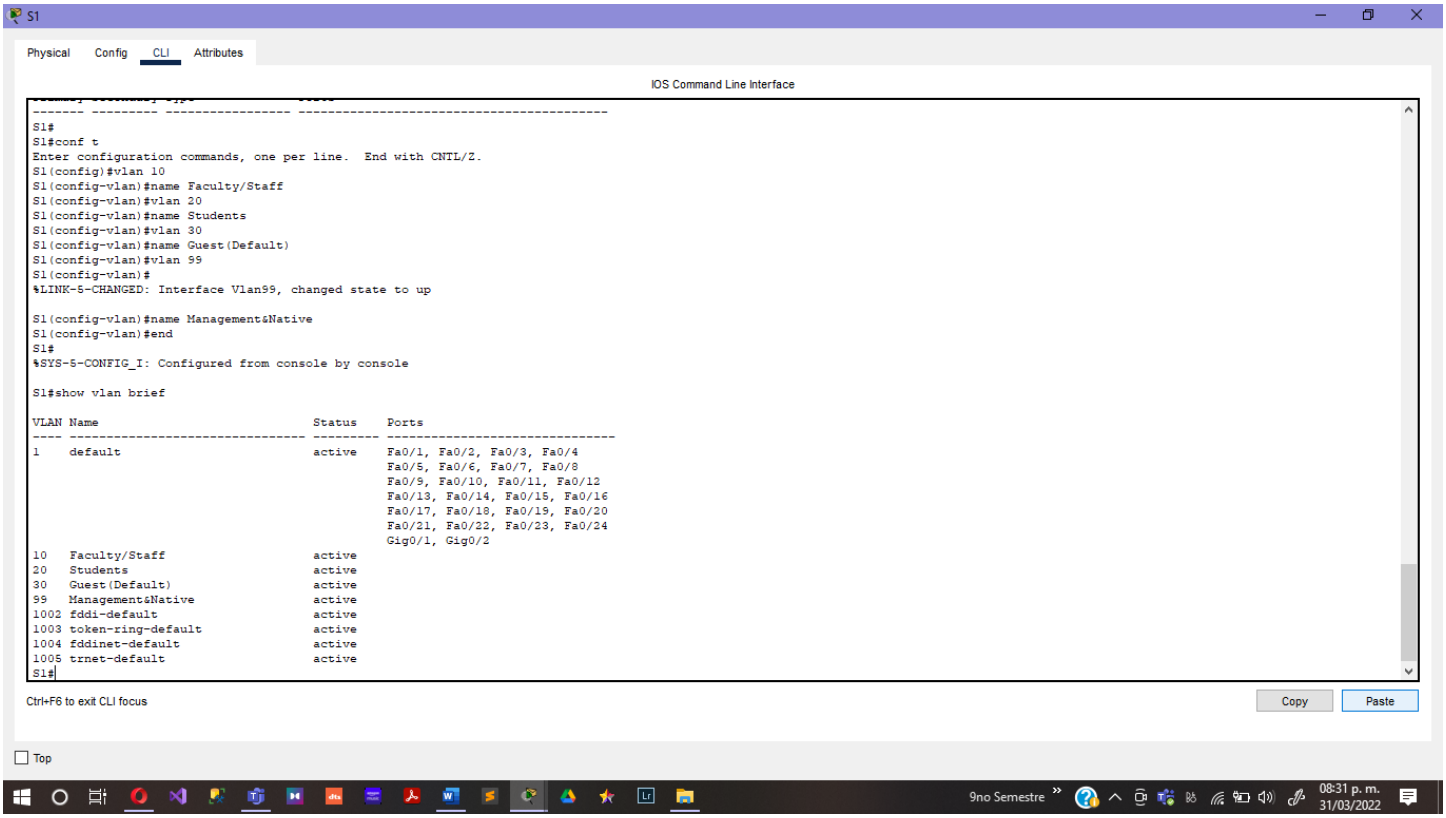


Step 2. Verify the VLAN configuration.

After creating the VLANs, return to privileged EXEC and issue the **show vlan brief** command to verify the creation of the new VLANs.

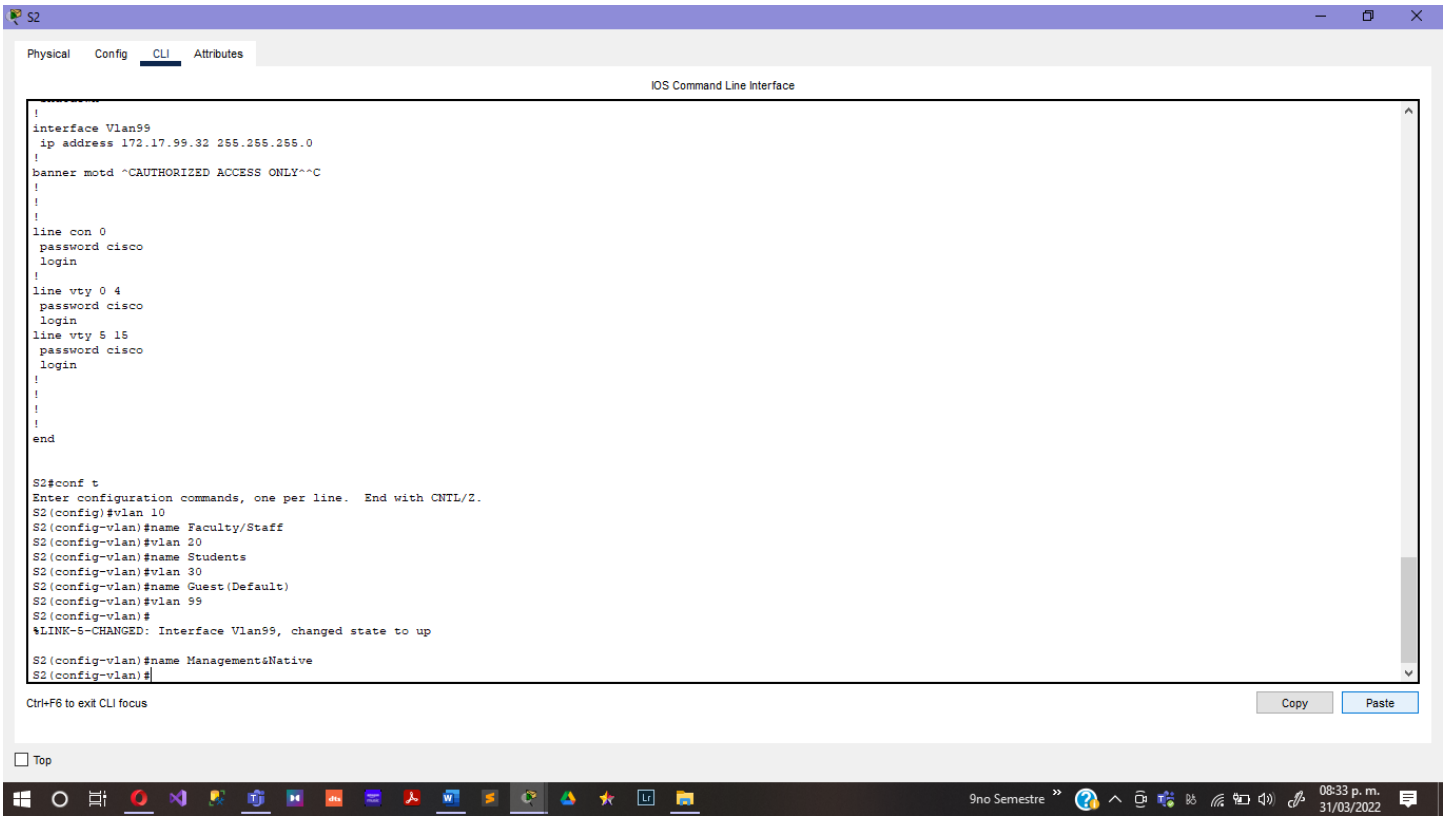
```
S1#show vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, 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
```

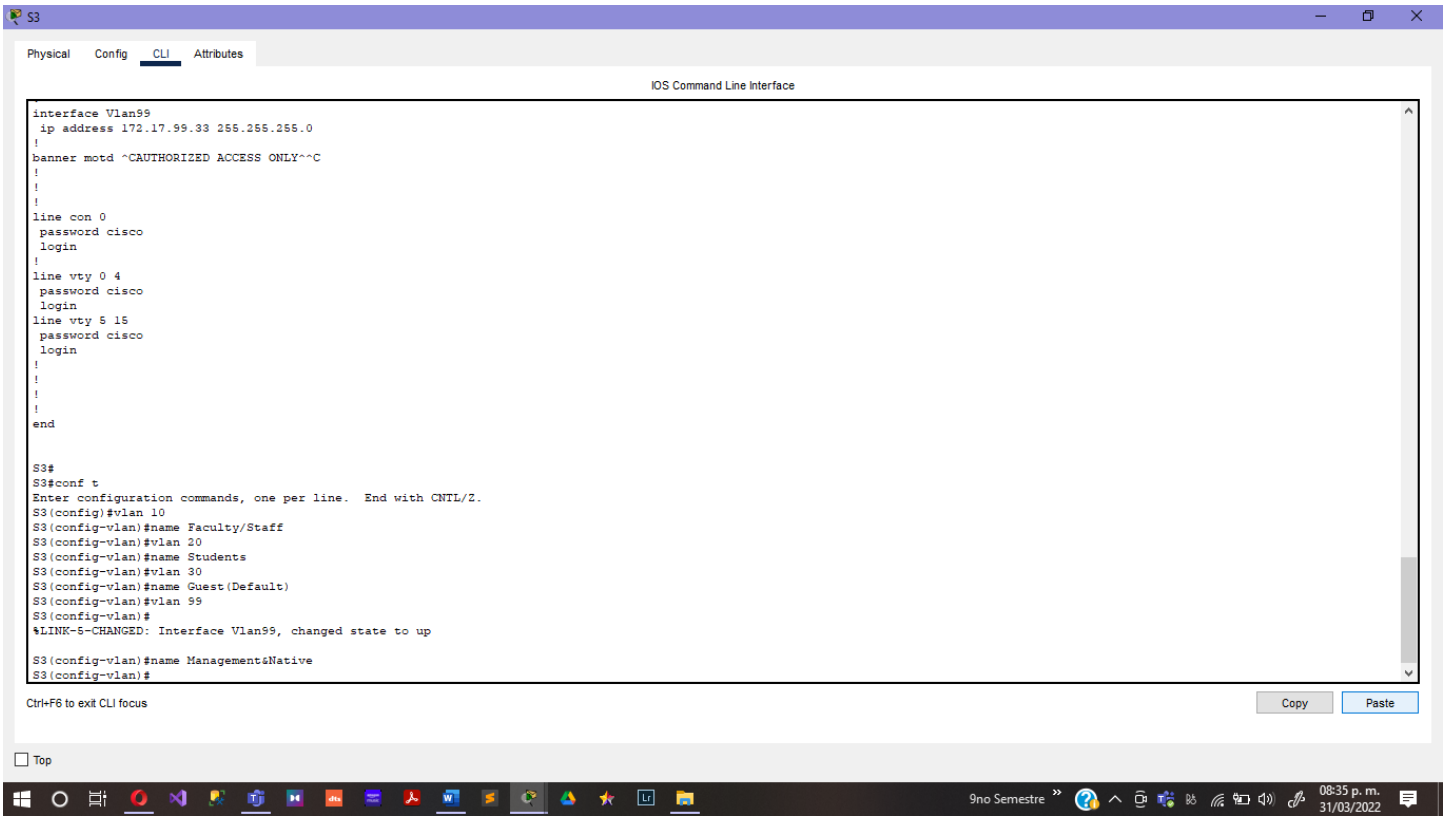
```
                                                Gig1/1, Gig1/2
10   Faculty/Staff                  active
20   Students                       active
30   Guest(Default)                 active
99   Management&Native              active
1002 fddi-default                   active
1003 token-ring-default             active
1004 fddinet-default                active
1005 trnet-default                  active
S1#
```



Step 3. Create the VLANs on S2 and S3.

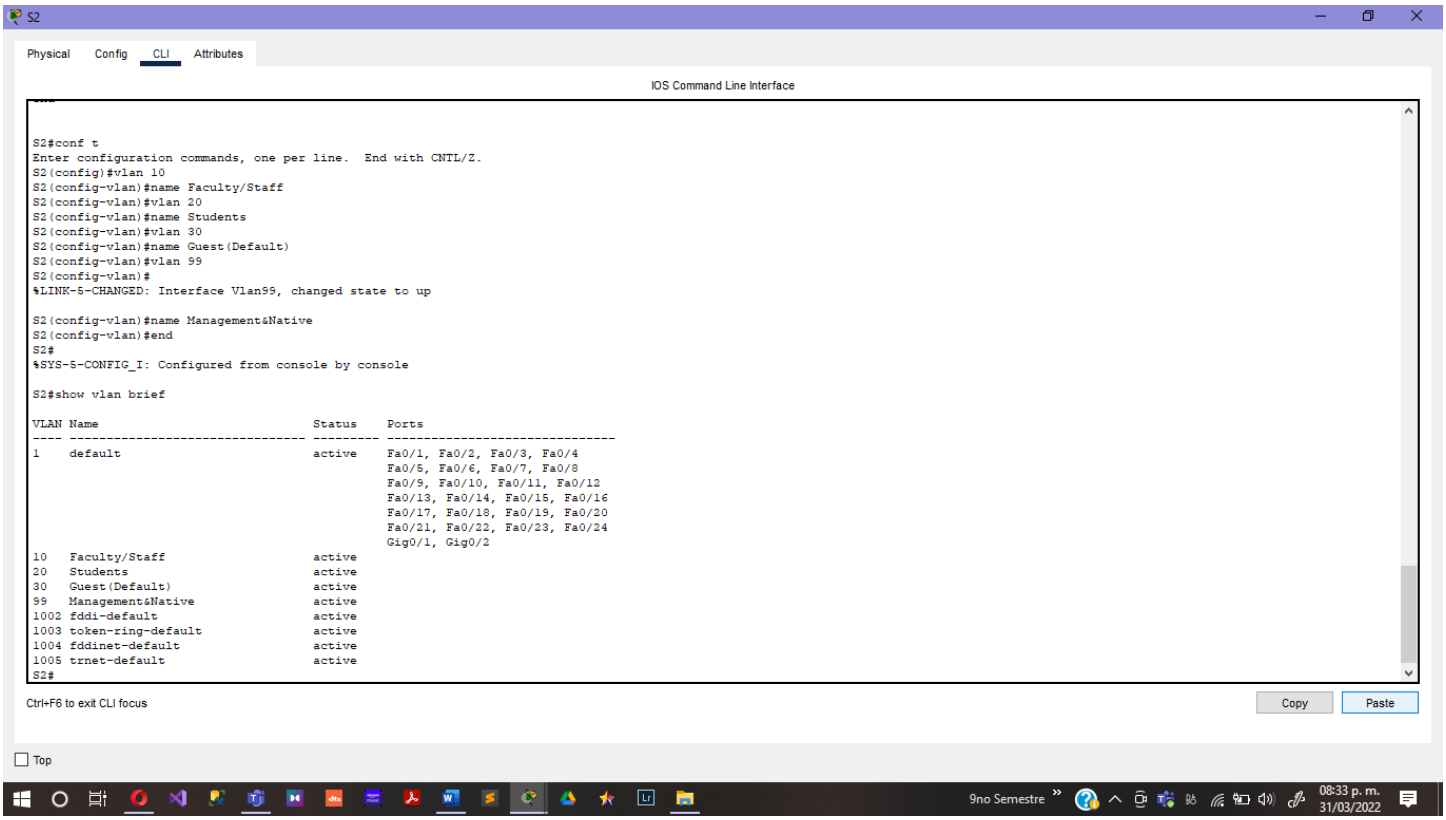
On S2 and S3, use the same commands you used on S1 to create and name the VLANs.

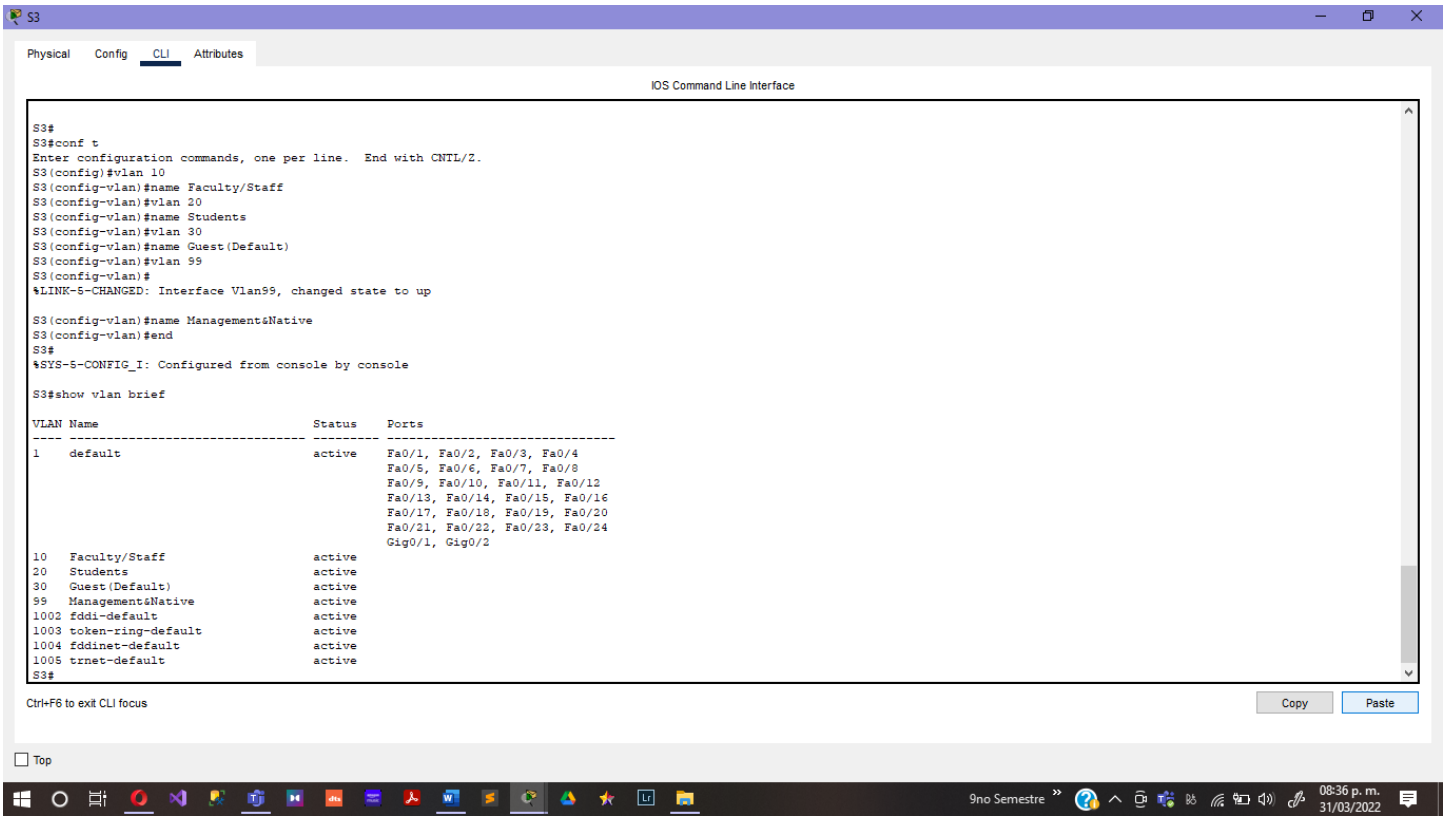




Step 4. Verify the VLAN configuration.

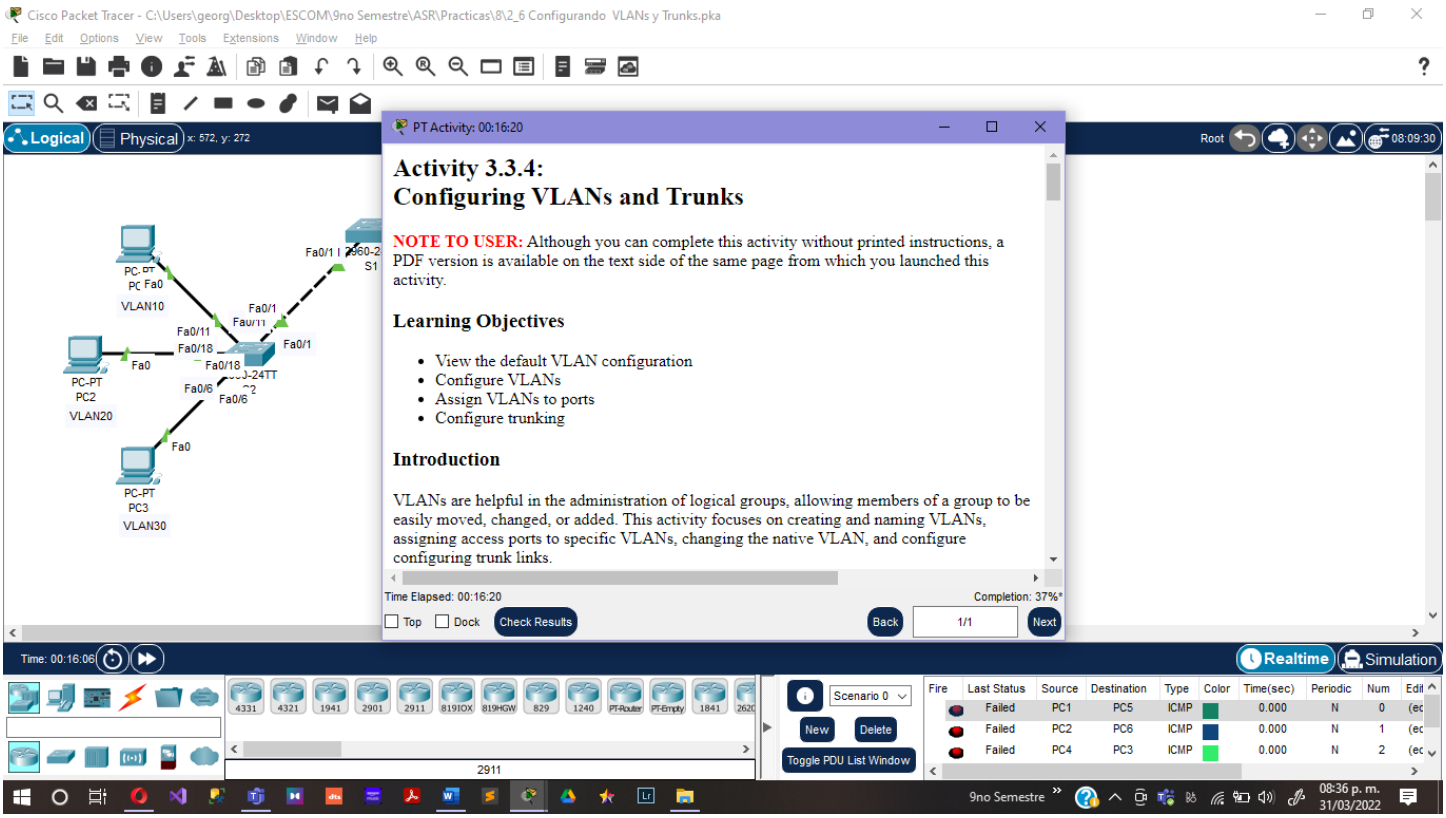
Use the **show vlan brief** command to verify all VLANs are configured and named.





Step 5. Check results.

Your completion percentage should be 38%. If not, click **Check Results** to see which required components are not yet completed.


Cisco Packet Tracer - C:\Users\georg\Desktop\ESCOM\9no Semestre\ASR\Practicas\8\2_6 Configurando VLANs y Trunks.pka
File Edit Options View Tools Extensions Window Help
Logical
Physical
PT Activity: 00:16:20
Activity 3.3.4:
Configuring VLANs and Trunks
NOTE TO USER: Although you can complete this activity without printed instructions, a PDF version is available on the text side of the same page from which you launched this activity.
Learning Objectives
View the default VLAN configuration
Configure VLANs
Assign VLANs to ports
Configure trunking
Introduction
VLANs are helpful in the administration of logical groups, allowing members of a group to be easily moved, changed, or added. This activity focuses on creating and naming VLANs, assigning access ports to specific VLANs, changing the native VLAN, and configure configuring trunk links.
Time Elapsed: 00:16:20
Completion: 37%
Top
Dock
Check Results
Back
1/1
Next
PC-PT PC Fa0 VLAN10
PC-PT PC2 VLAN20
PC-PT PC3 VLAN30
Fa0/1
Fa0/11
Fa0/18
Fa0/6
Fa0
Time: 00:16:06
Realtime
Simulation
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Failed PC1 PC5 ICMP 0.000 N 0
Failed PC2 PC6 ICMP 0.000 N 1
Failed PC4 PC3 ICMP 0.000 N 2
9no Semestre
08:36 p. m.
31/03/2022

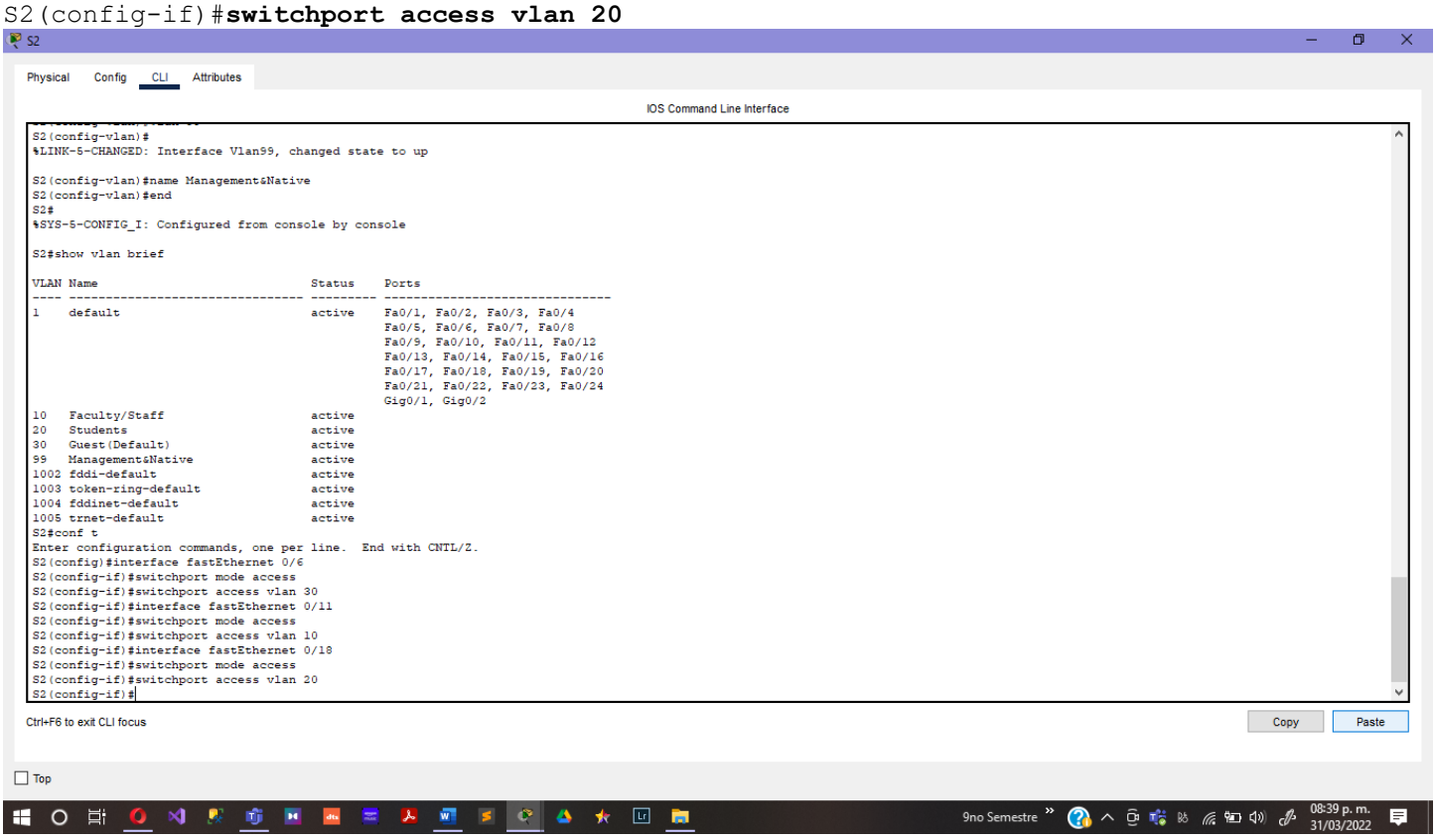
Task 3: Assign VLANs to Ports

The **range** command greatly reduces the amount of repetitive commands you must enter when configuring the same commands on multiple ports. However, Packet Tracer does not support the **range** command. So only the active interfaces are graded for the **switchport mode access** command.

Step 1. Assign VLANs to the active ports on S2.

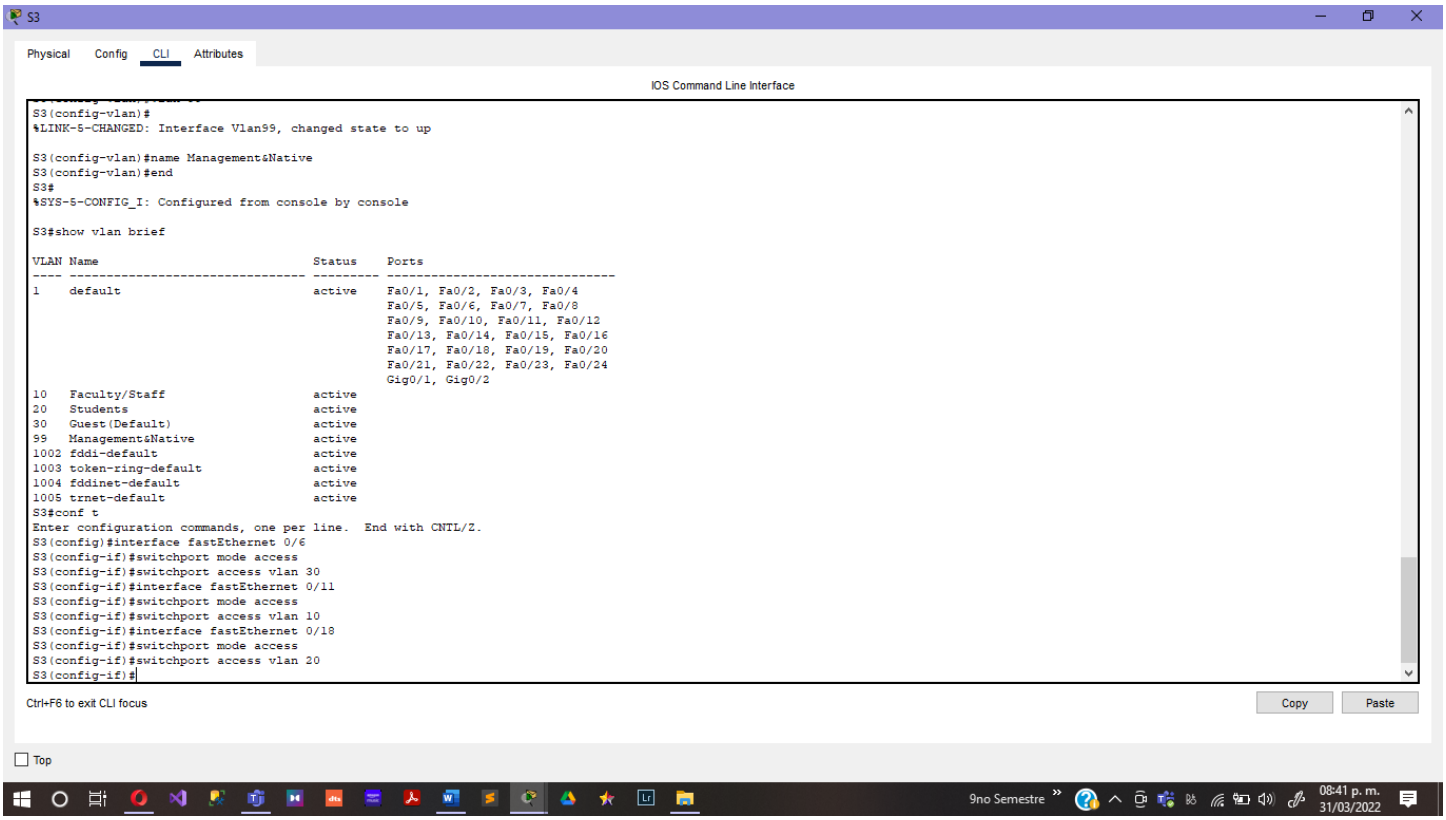
The **switchport mode access** command configures the interface as an access port. The **switchport access vlan** *vlan-id* command assigns a VLAN to the port. An access port can only be assigned one access VLAN. Enter the following commands on S2.

```
S2(config)#interface fastEthernet 0/6
S2(config-if)#switchport mode access
S2(config-if)#switchport access vlan 30
S2(config-if)#interface fastEthernet 0/11
S2(config-if)#switchport mode access
S2(config-if)#switchport access vlan 10
S2(config-if)#interface fastEthernet 0/18
S2(config-if)#switchport mode access
S2(config-if)#switchport access vlan 20
```



Step 2. Assign VLANs to the active ports on S3.

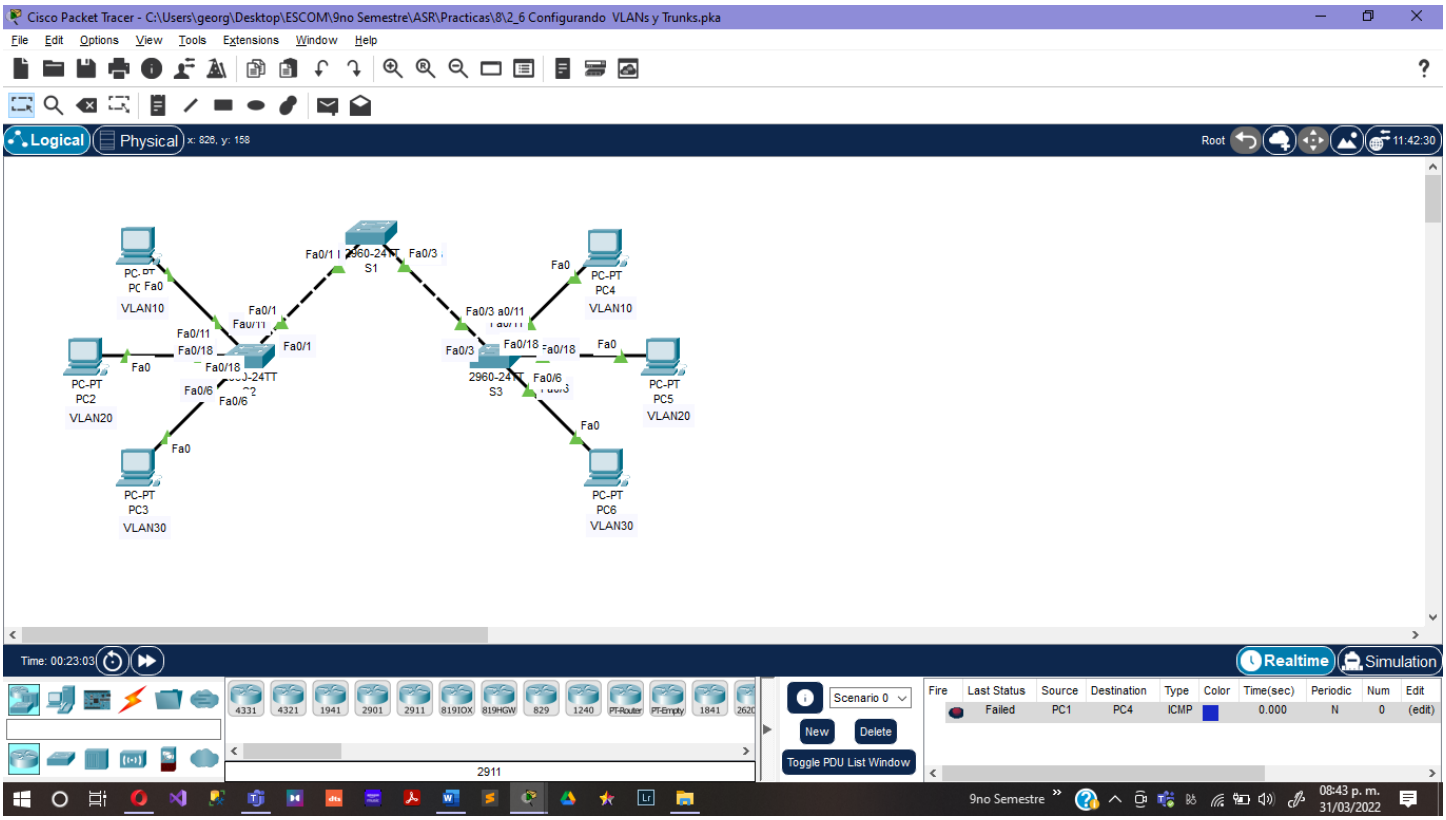
Assign VLANs to the active ports on S3. S3 uses the same VLAN access port assignments that you configured on S2.



Step 3. Verify loss of connectivity.

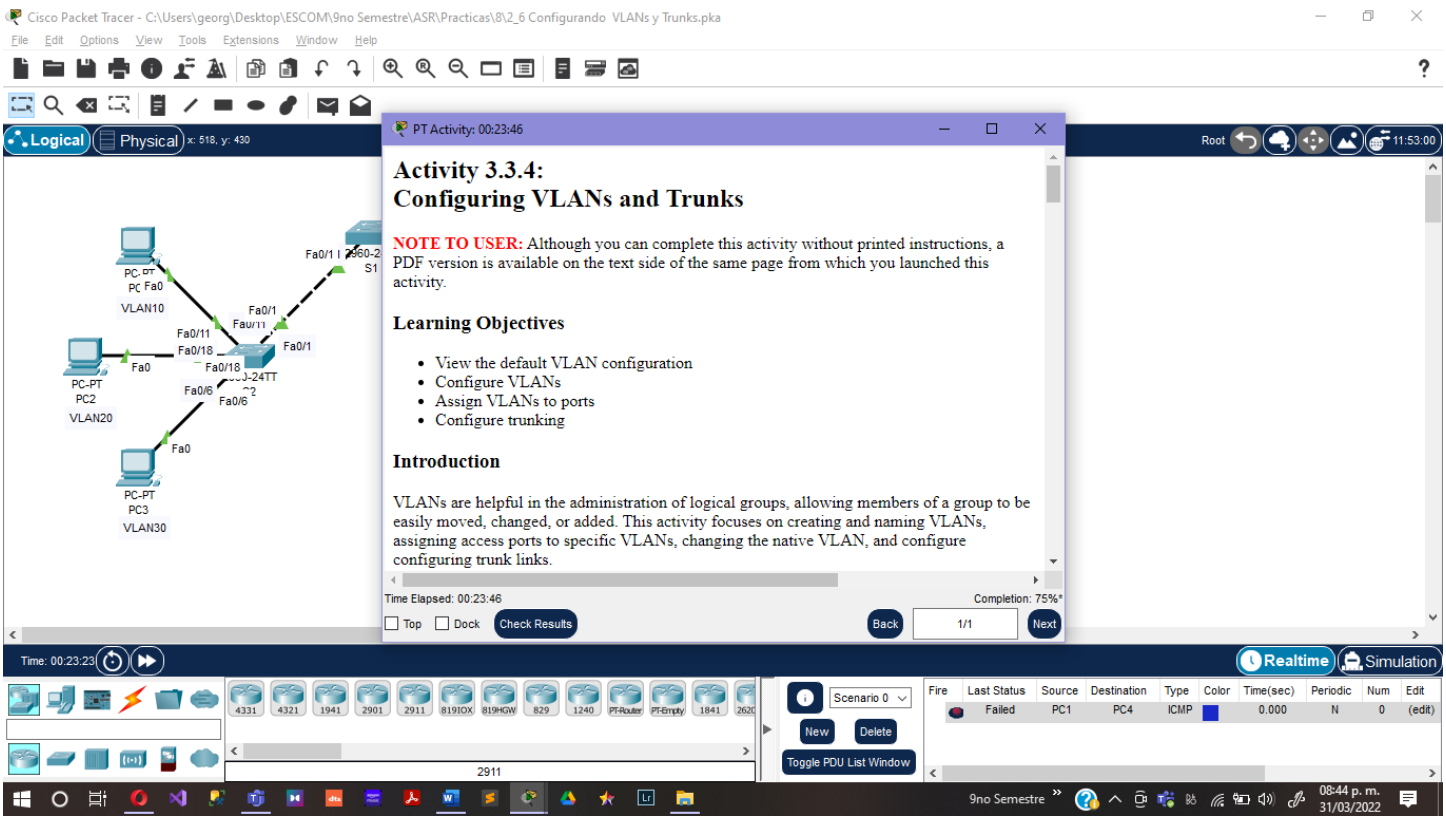
Previously, PCs that shared the same network could ping each other successfully. Try pinging between PC1 and PC4. Although the access ports are assigned to the appropriate VLANs, the ping fails. Why?

Esto se debe a que se modificaron los puertos a modo de acceso, lo que impide el ping.



Step 4. Check results.

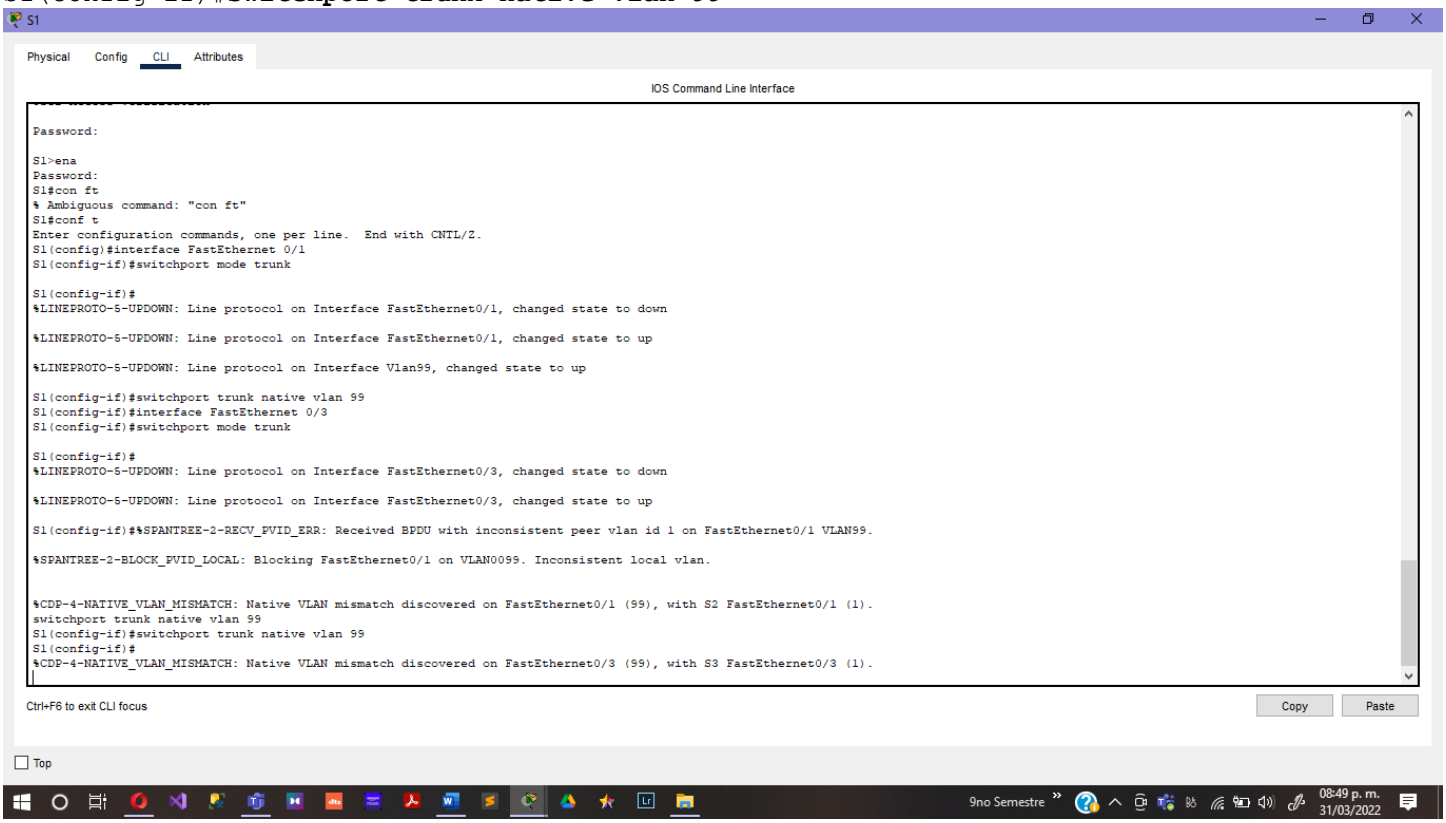
Your completion percentage should be 75%. If not, click **Check Results** to see which required components are not yet completed.



Task 4: Configure Trunking

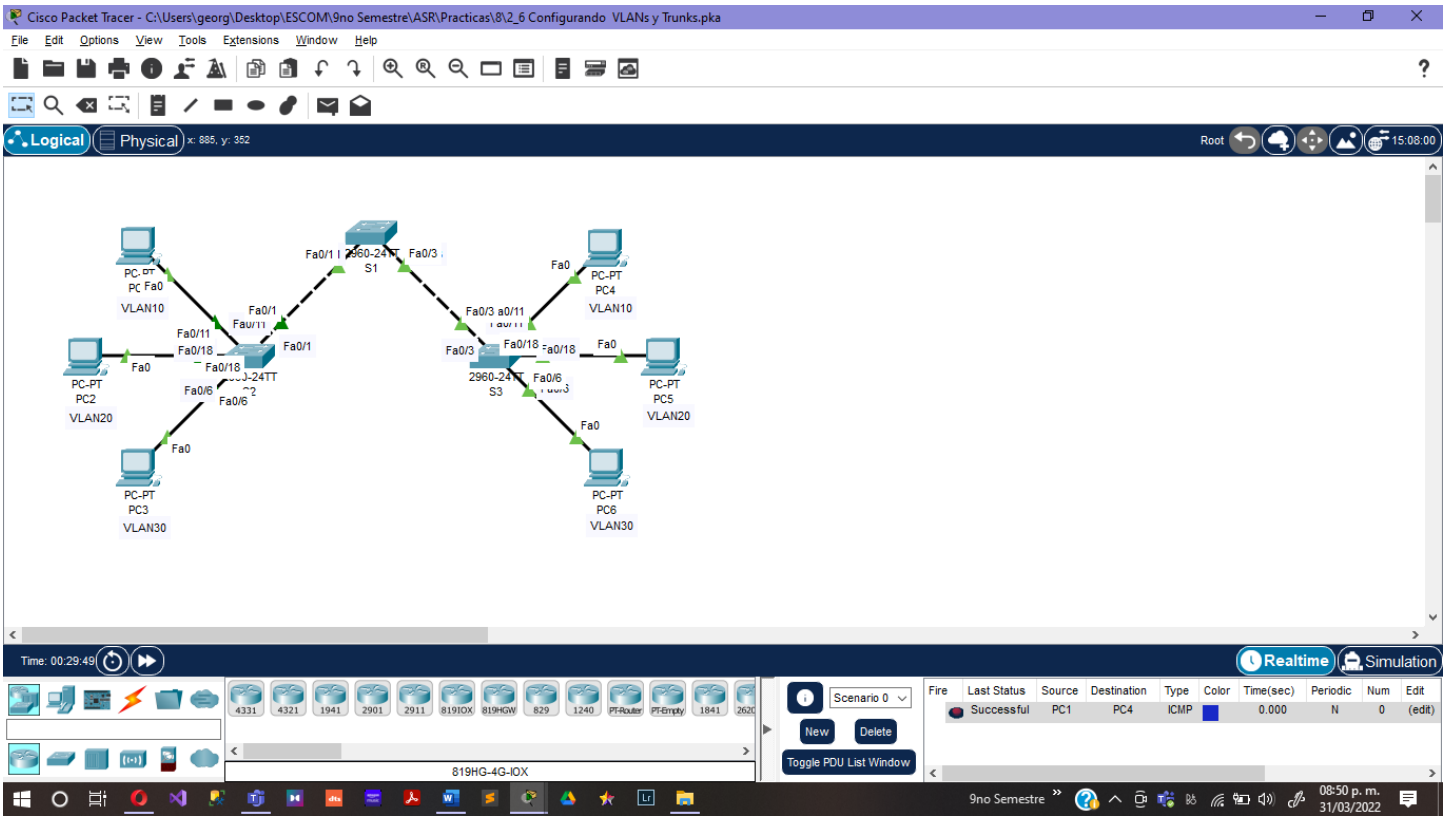
Step 1. Configure S1 Fa0/1 and Fa0/3 for trunking and to use VLAN 99 as the native VLAN.

```
S1(config)#interface FastEthernet 0/1
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 99
S1(config-if)#interface FastEthernet 0/3
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 99
```



The trunk port takes about a minute to become active again. You can switch between Realtime and Simulation modes three or four times to quickly bring the port back up.

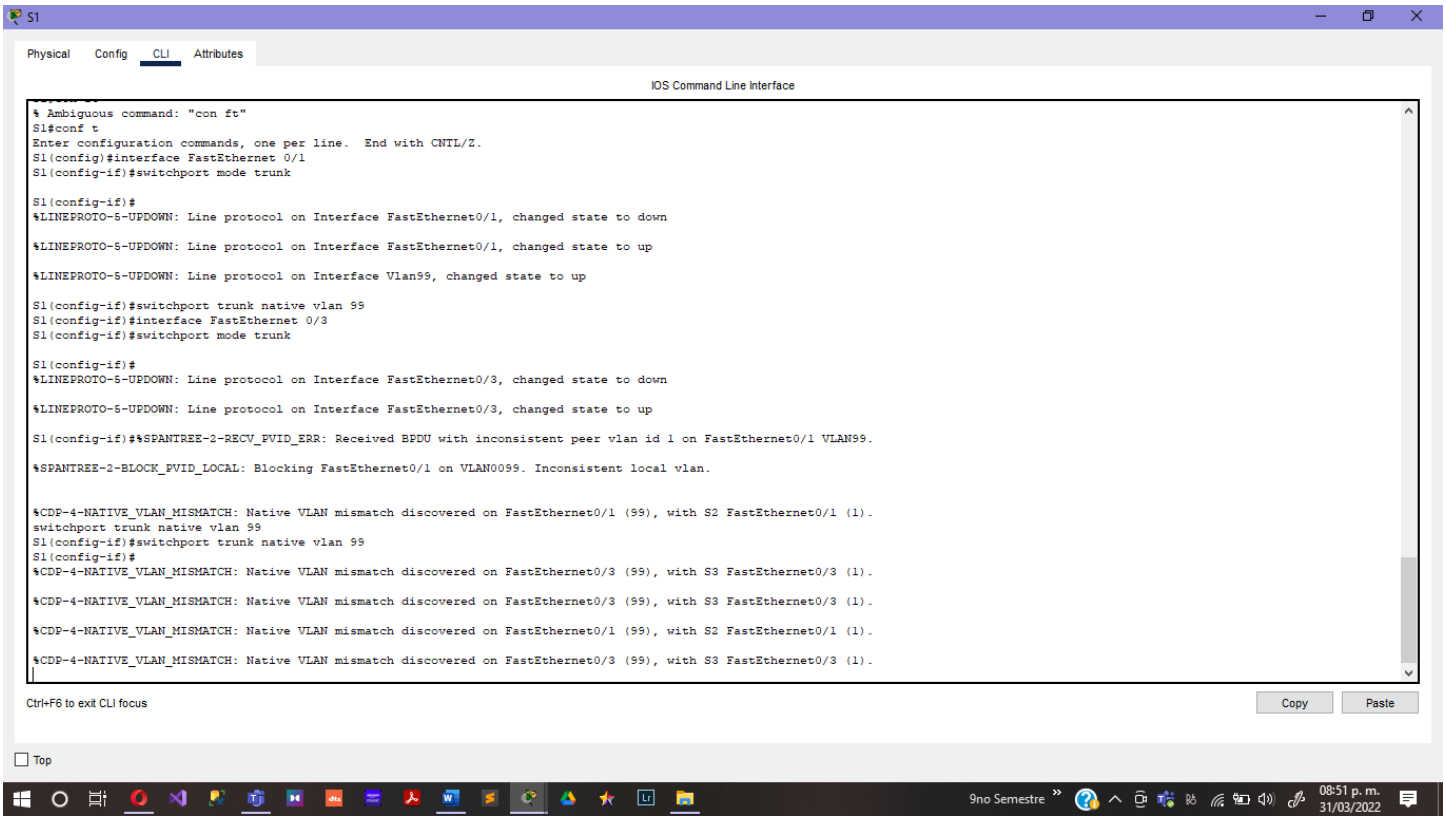
Then, the ports on S2 and S3 that connect to S1 become inactive. Again, switch between Realtime and Simulation modes three or four times to quickly bring the ports back up.



Once the ports become active, you periodically receive the following syslog messages:

```
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (99),
with S2 FastEthernet0/1 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/3 (99),
with S3 FastEthernet0/3 (1).
```

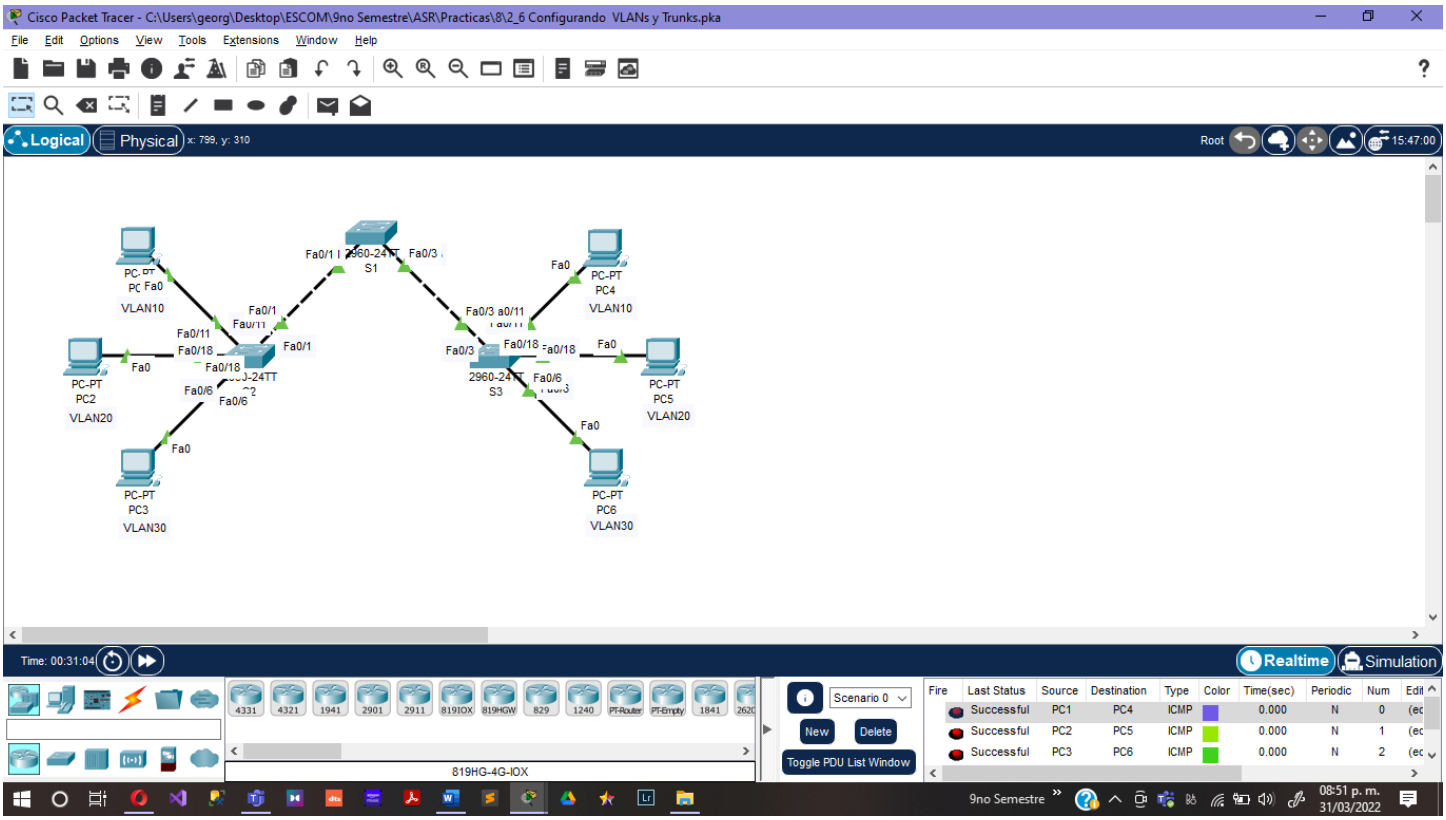
You configured the native VLAN on S1 to be VLAN 99. However, the native VLAN on S2 and S3 is set to the default VLAN 1.



Step 2. Verify connectivity between devices on the same VLAN.

Although there is currently a native VLAN mismatch, pings between PCs on the same VLAN are now successful. Why?

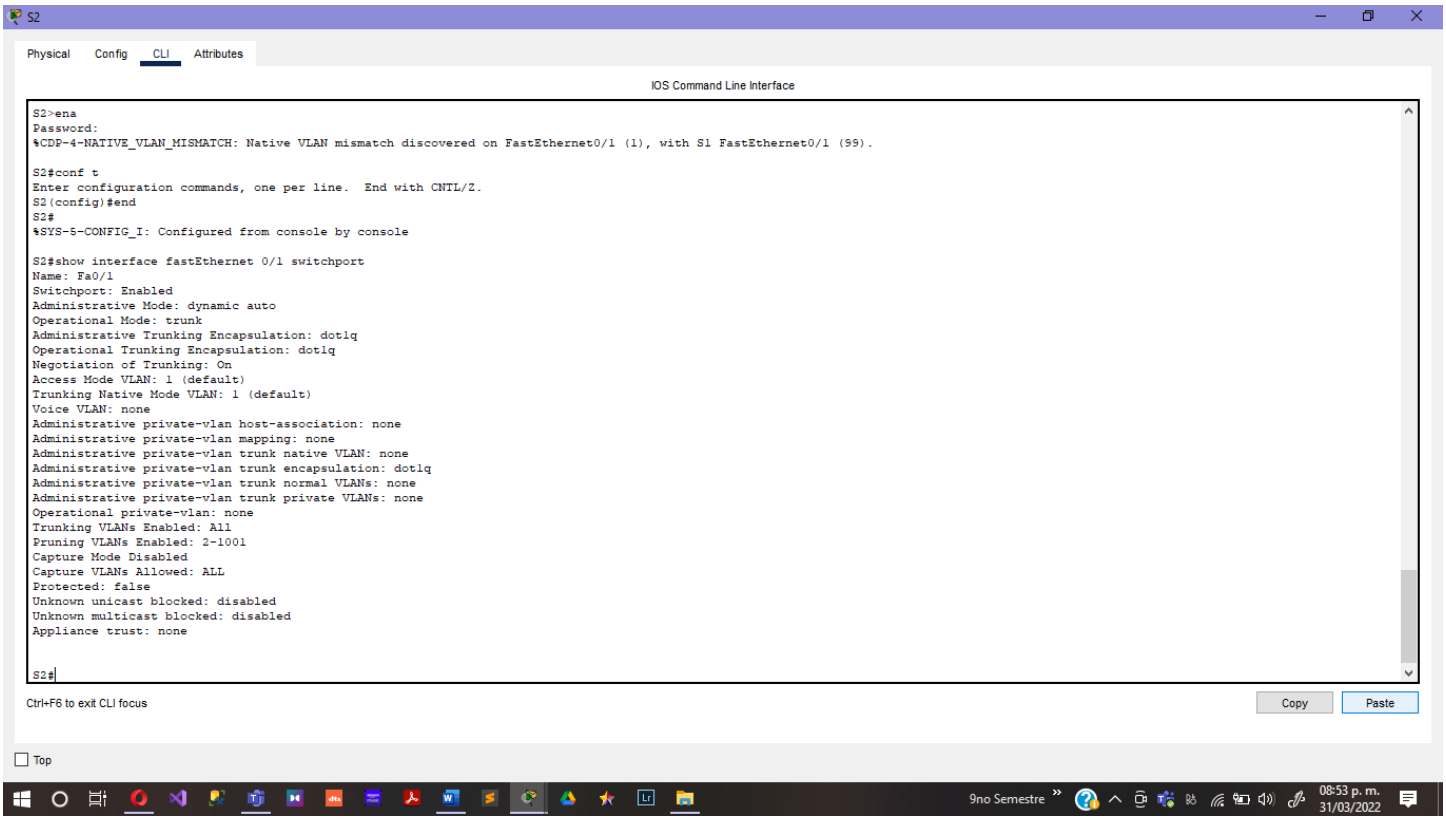
Esto se debe a que se realizó la correspondiente configuración de por Trunqueo.



Step 3. Verify trunking is enabled on S2 and configure VLAN 99 as the native VLAN.

Dynamic Trunking Protocol (DTP) has automatically enabled the Fast Ethernet 0/1 port on S2 for trunking. Once you configured the mode to trunking on S1, DTP messages sent from S1 to S2 automatically informed S1 to move the state of Fa0/1 to trunking. This can be verified with the following command on S1:

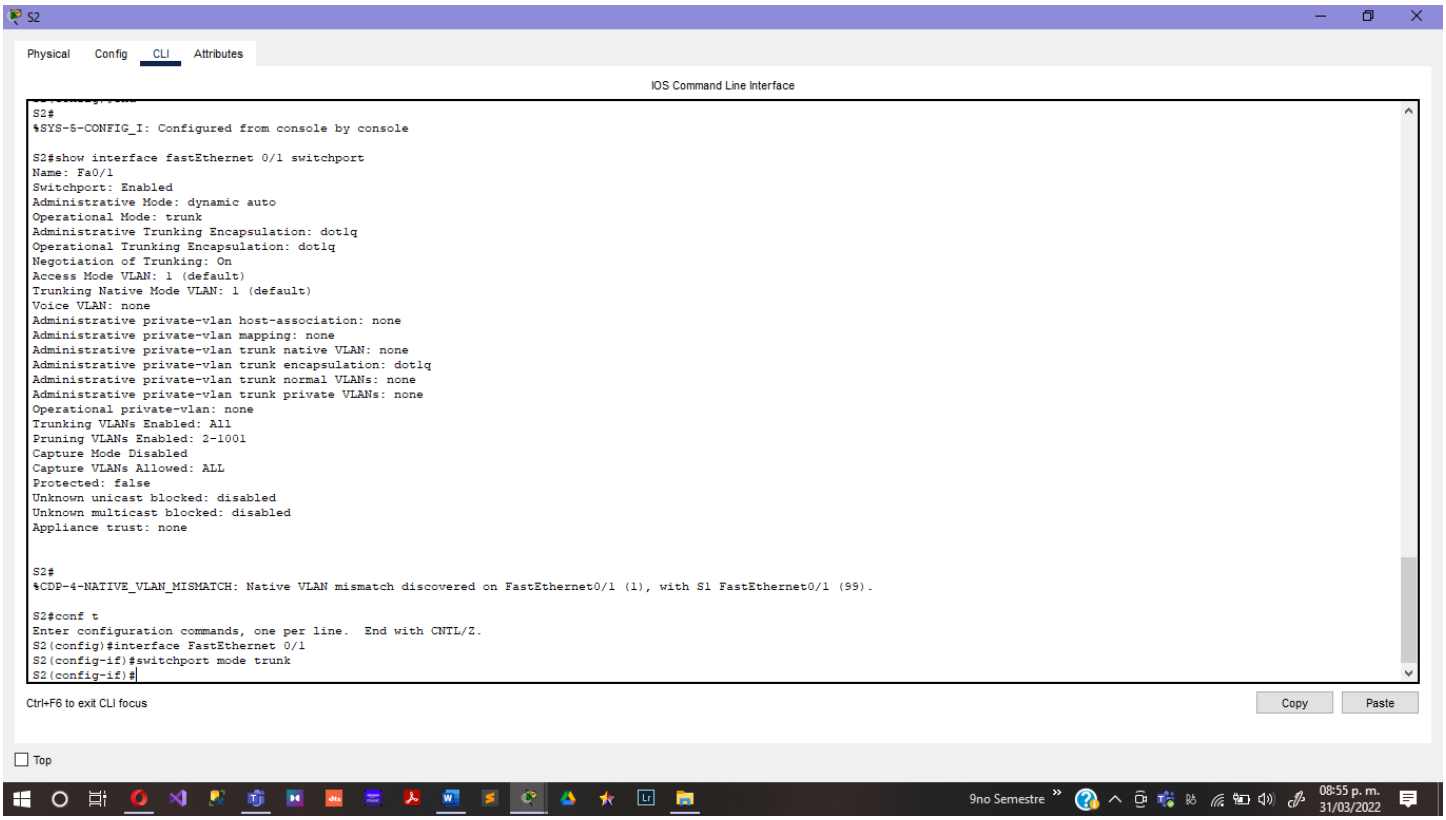
```
S2#show interface fastEthernet 0/1 switchport
Name: Fa0/1
Switchport: Enabled
Administrative Mode: dynamic auto
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
<output omitted>
S2#
```



Notice that the administrative mode is set to **dynamic auto**. This is the default state of all ports on a Cisco IOS switch. However, DTP has negotiated trunking, so the operation mode is **trunk**, resulting in a native VLAN mismatch.

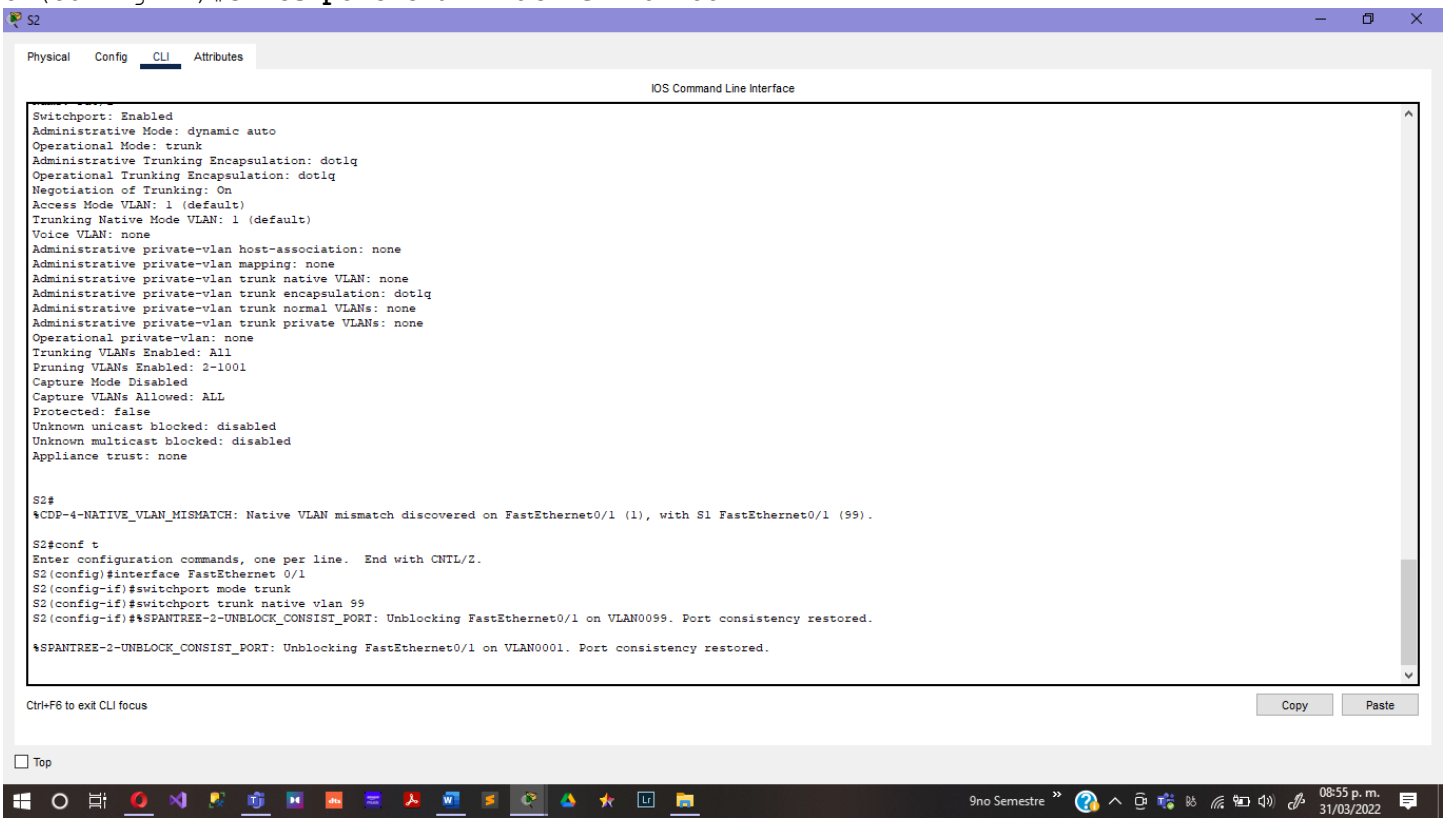
As a best practice, configure the administrative mode of the trunking interface to be in trunk mode. This ensures that the interface is statically configured as a trunk port and never negotiates a different mode.

```
S2(config)#interface FastEthernet 0/1
S2(config-if)#switchport mode trunk
```



To correct the native VLAN mismatch, configure the trunking port with the switchport trunk native vlan 99 command.

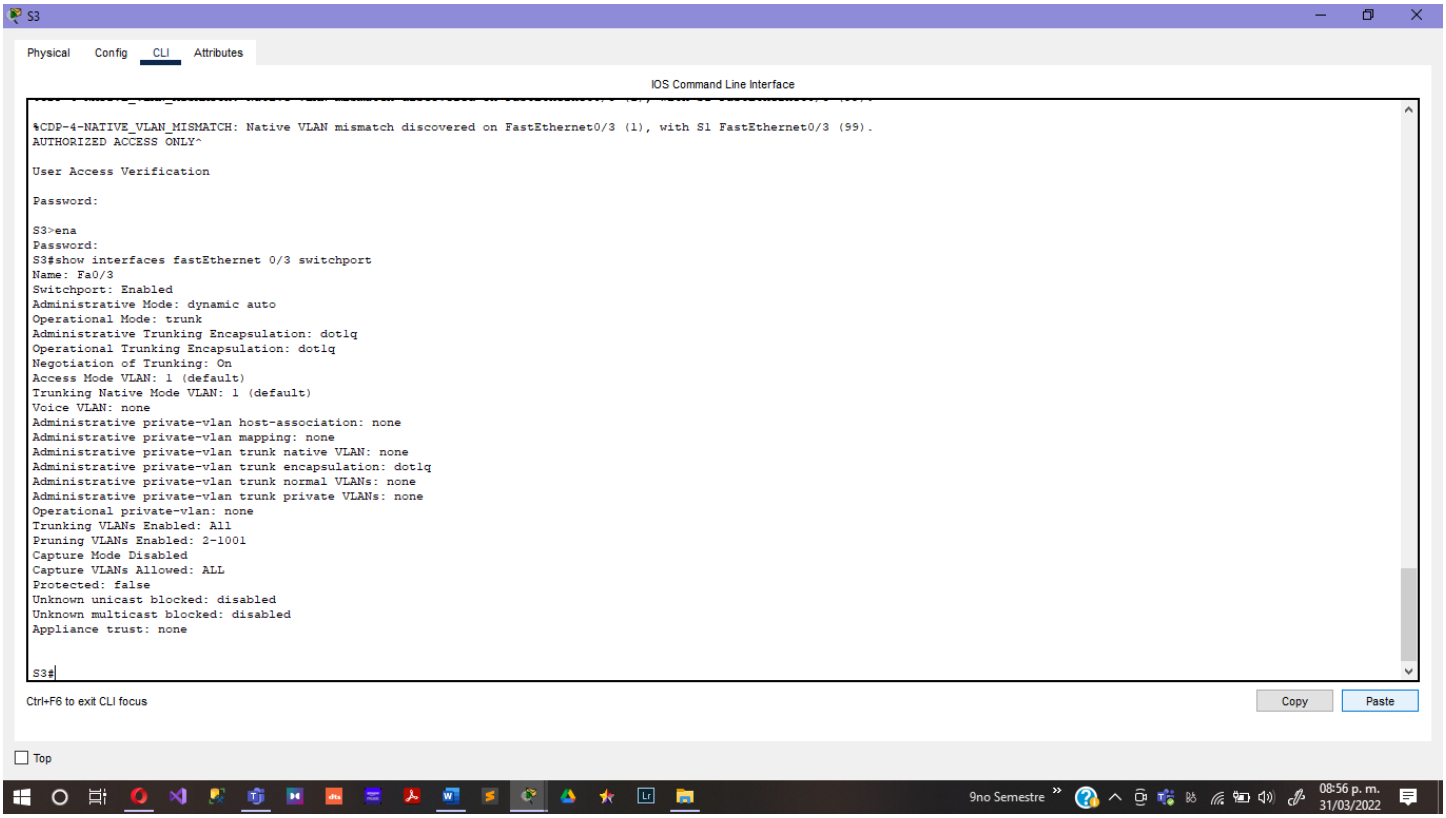
```
S2(config-if)#switchport trunk native vlan 99
```



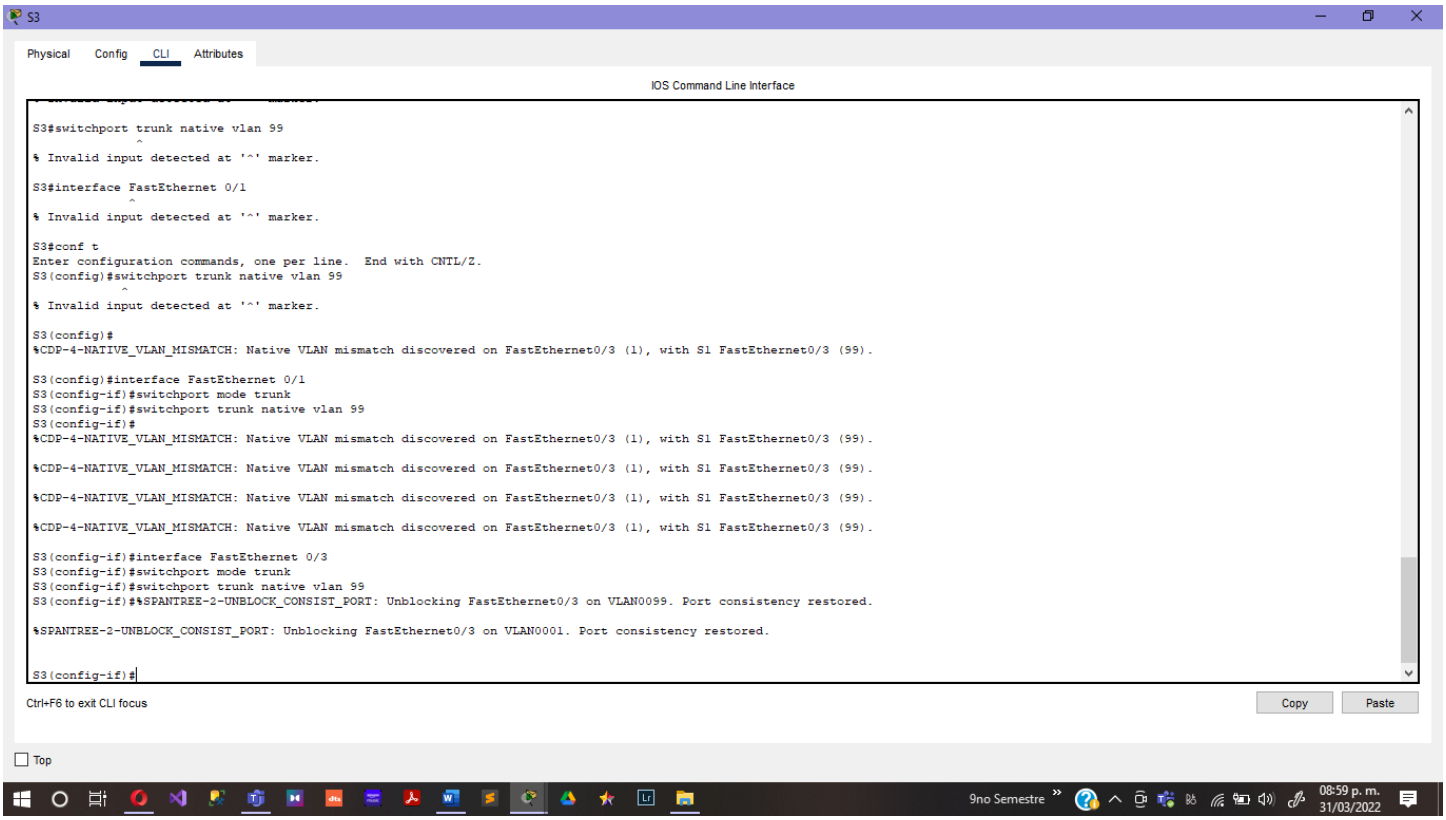
Step 4. Verify trunking is enabled on S3 and configure VLAN 99 as the native VLAN.

DTP has also successfully negotiated a trunk between S1 and S3.

```
S3#show interfaces fastEthernet 0/3 switchport
Name: Fa0/3
Switchport: Enabled
Administrative Mode: dynamic auto
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
<output omitted>
S3#
```

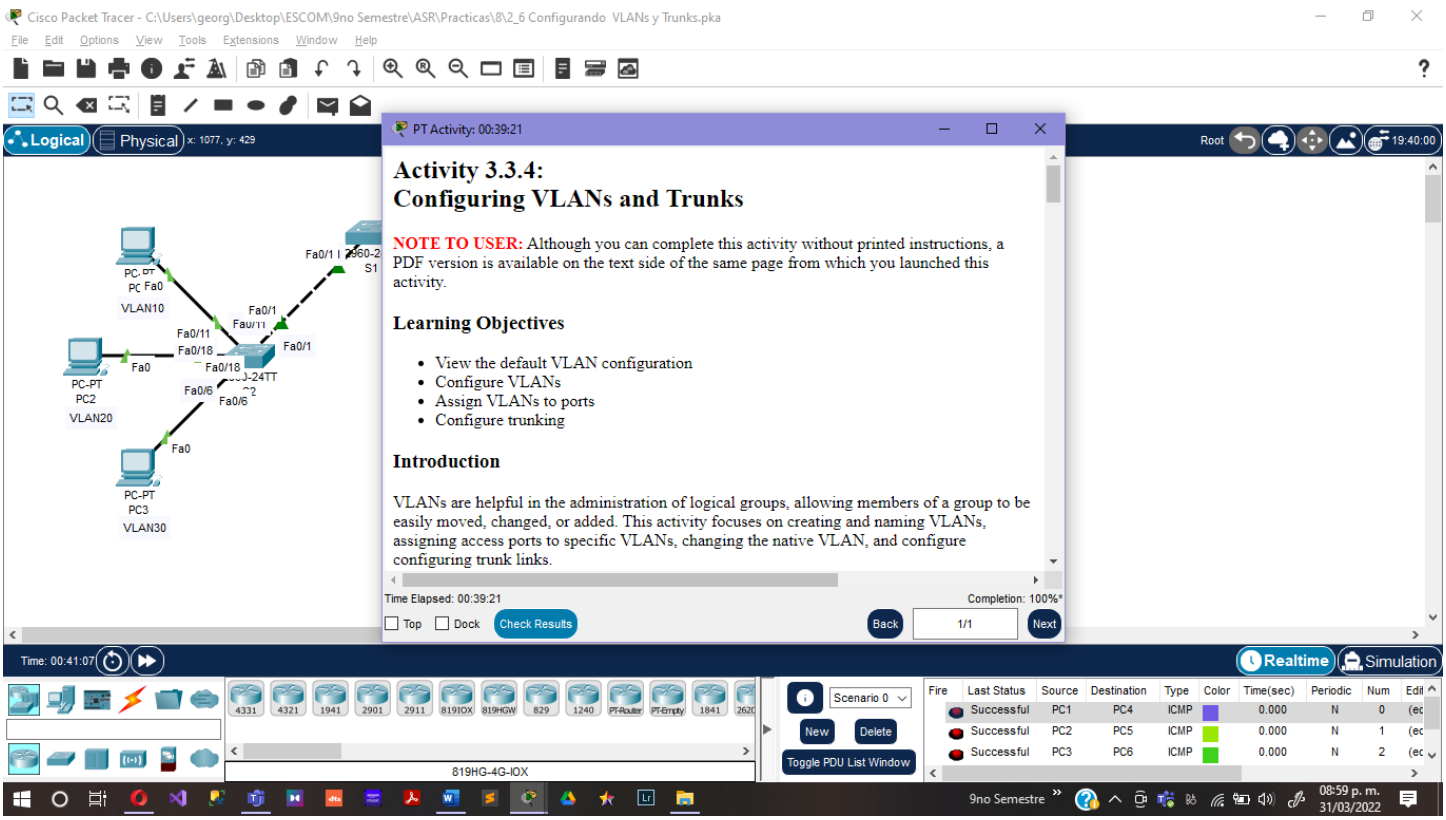


Configure the administrative mode of the trunking interface to be in trunk mode, and correct the native VLAN mismatch with the **switchport trunk native vlan 99** command.



Step 4. Check results.

Your completion percentage should be 100%. If not, click Check Results to see which required components are not yet completed.



Conclusiones:

Arévalo Andrade Miguel Ángel:

Se lograron los objetivos:

• Ver la configuración de VLAN predeterminada

• Configurar VLAN

• Asignar VLAN a puertos

• Configurar enlace troncal

Castro Cruces Jorge Eduardo:

Se cumplieron los objetivos principales de la práctica:

- View the default VLAN configuration
- Configure VLANs
- Assign VLANs to ports
- Configure trunking

López Mares Irene Elizabeth:

Durante está práctica nos adentramos más en el concepto de las VLANs las cuales sirven para segmentar adecuadamente la red y usar cada subred de una forma diferente, además, al segmentar por subredes usando VLANs se puede permitir o denegar el tráfico entre las diferentes VLAN gracias a un dispositivo como el switch que implementamos en esta práctica.

Pedroza García Rodolfo:

En esta practica continuamos con la implementación de las VLANs, con las que podemos administrar grupos lógicos, permitiendo que los miembros del grupo puedan ser movidos, cambiados o agregados fácilmente. En esta practica a diferencia de la pasada ya configuramos VLANs de una forma más completa, asignando las VLANs a los puertos y configurando el trunking.