

Assignment 4:

Part 1 — Review Default VLANs

Step 1 – Display current VLANs (on S1)



```
S1
CLI

Top Assembly Revision Number : A0
Version ID : V02
CLEI Code Number : COM3L00BRA
Hardware Board Revision Number : 0x01

Switch Ports Model          SW Version  SW Image
-----
*  1 26 WS-C2960-24TT-L  15.0(2)SE4  C2960-LANBASEK9-M

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
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Compiled Wed 26-Jun-13 02:49 by mnguyen

Press RETURN to get started!

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up

S1>enable
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
                                           Gig0/1, Gig0/2
1002 fddi-default          active
1003 token-ring-default     active
1004 fddinet-default        active
1005 trnet-default           active
S1#
```

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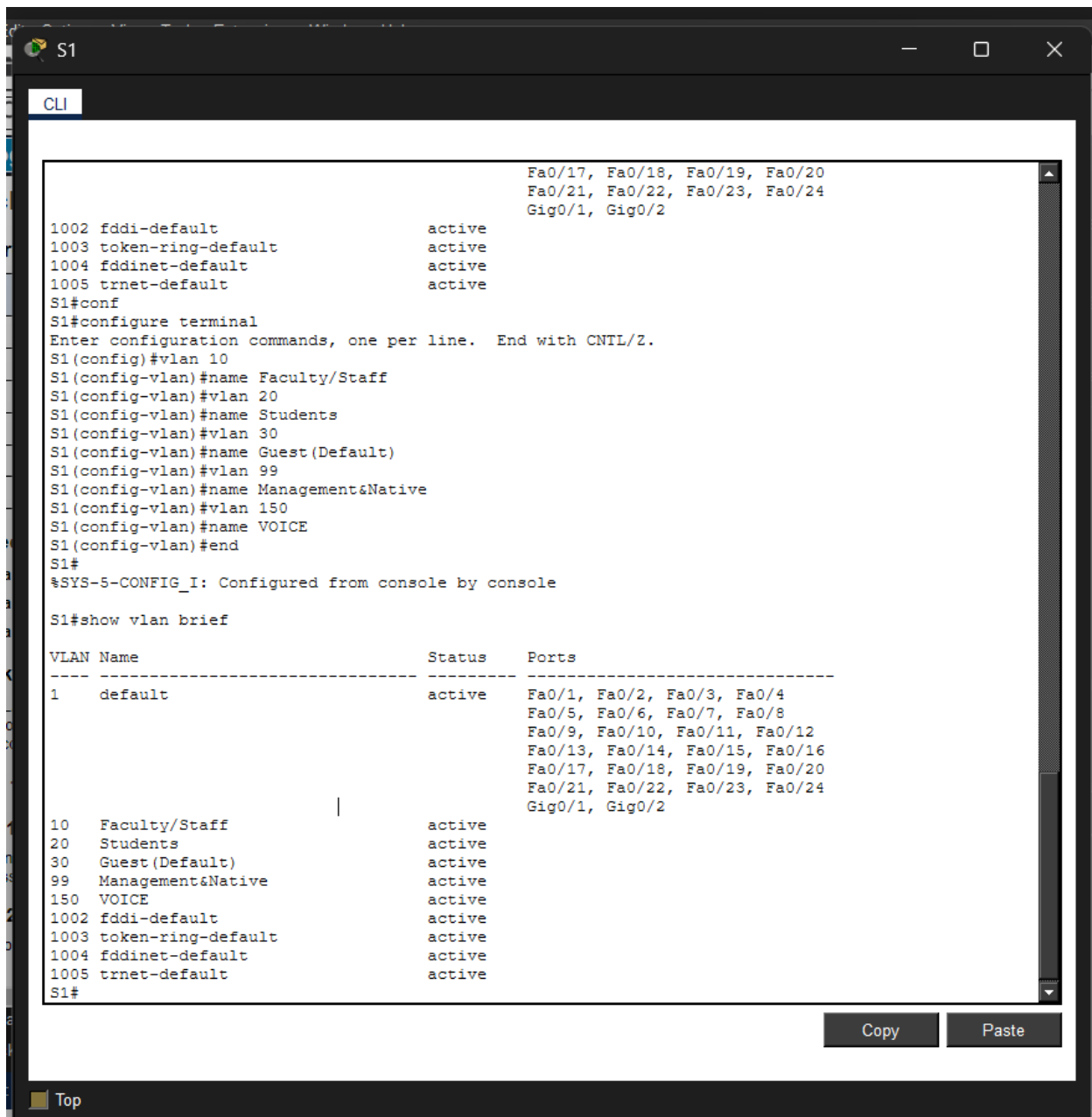
Top

Q: What benefits can VLANs provide?

A:

- **Segmentation:** break a large broadcast domain into smaller ones.
- **Performance:** reduces unnecessary broadcast traffic.
- **Security/Isolation:** separates users/roles (faculty, students, guests, voice).
- **Flexibility/Manageability:** move users logically without re-cabling; apply per-VLAN policies/QoS.

Part 2 — Create & Name VLANs



```
S1
CLI
Fa0/17, Fa0/18, Fa0/19, Fa0/20
Fa0/21, Fa0/22, Fa0/23, Fa0/24
Gig0/1, Gig0/2
1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default         active
S1#conf
S1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
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
S1(config-vlan)#vlan 150
S1(config-vlan)#name VOICE
S1(config-vlan)#end
S1#
%SYS-5-CONFIG_I: Configured from console by console

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
                                           Gig0/1, Gig0/2

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

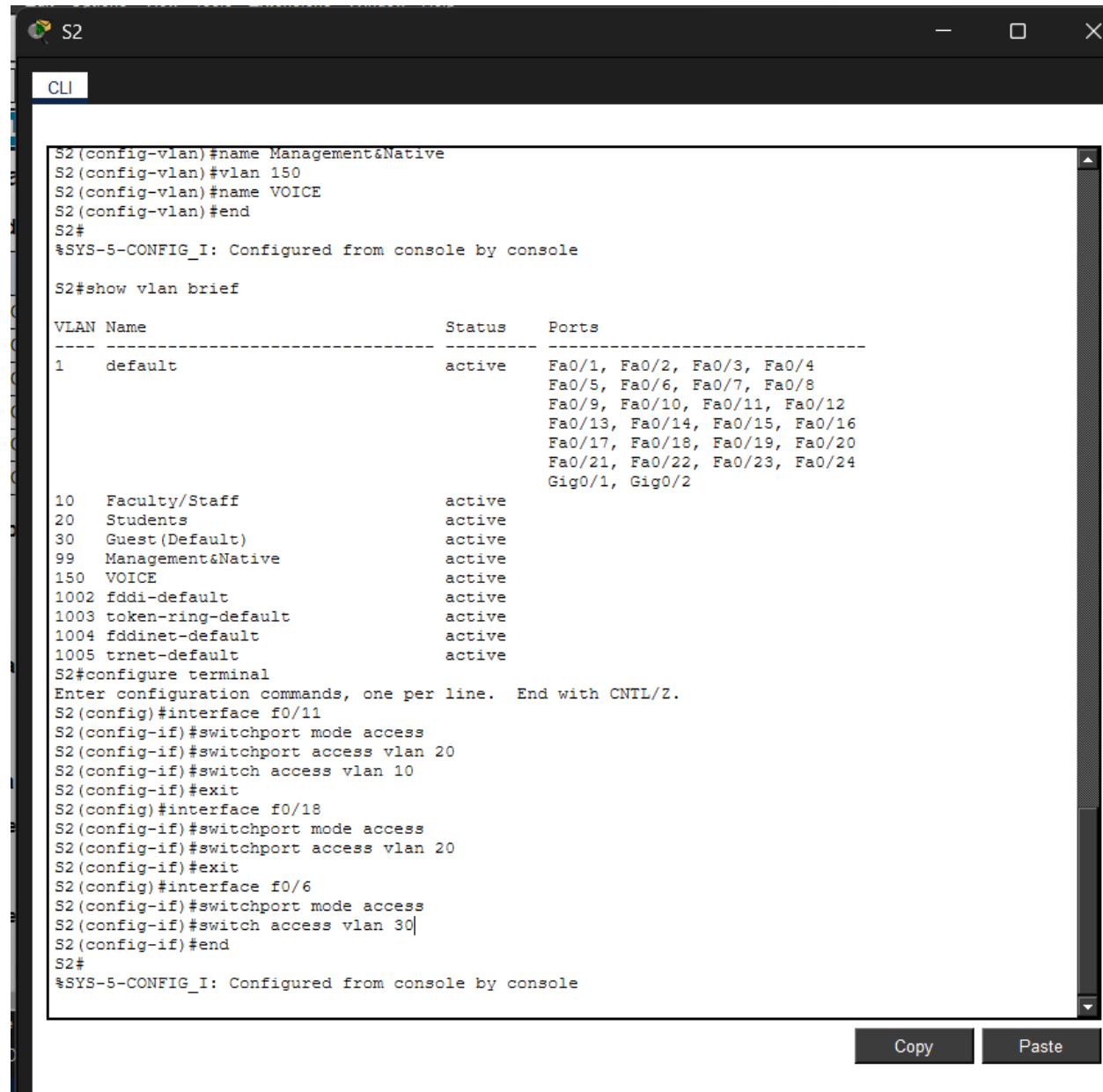
Same for S2 and S3.

Q: Which command shows only VLAN name, status, and ports?

A: show vlan brief

Part 3 — Assign VLANs to Access Ports & Enable Voice

Step 1 – S2 access ports:



The screenshot shows a terminal window for switch S2. The CLI shows the configuration of two VLANs: 'Management&Native' (VLAN 150) and 'VOICE' (VLAN 150). It then displays the output of the 'show vlan brief' command, which lists all VLANs and their associated ports. Finally, it shows the configuration of three access ports: f0/11, f0/18, and f0/6, each assigned to a specific VLAN (20, 20, and 30 respectively).

```
S2(config-vlan)#name Management&Native
S2(config-vlan)#vlan 150
S2(config-vlan)#name VOICE
S2(config-vlan)#end
S2#
%SYS-5-CONFIG_I: Configured from console by console

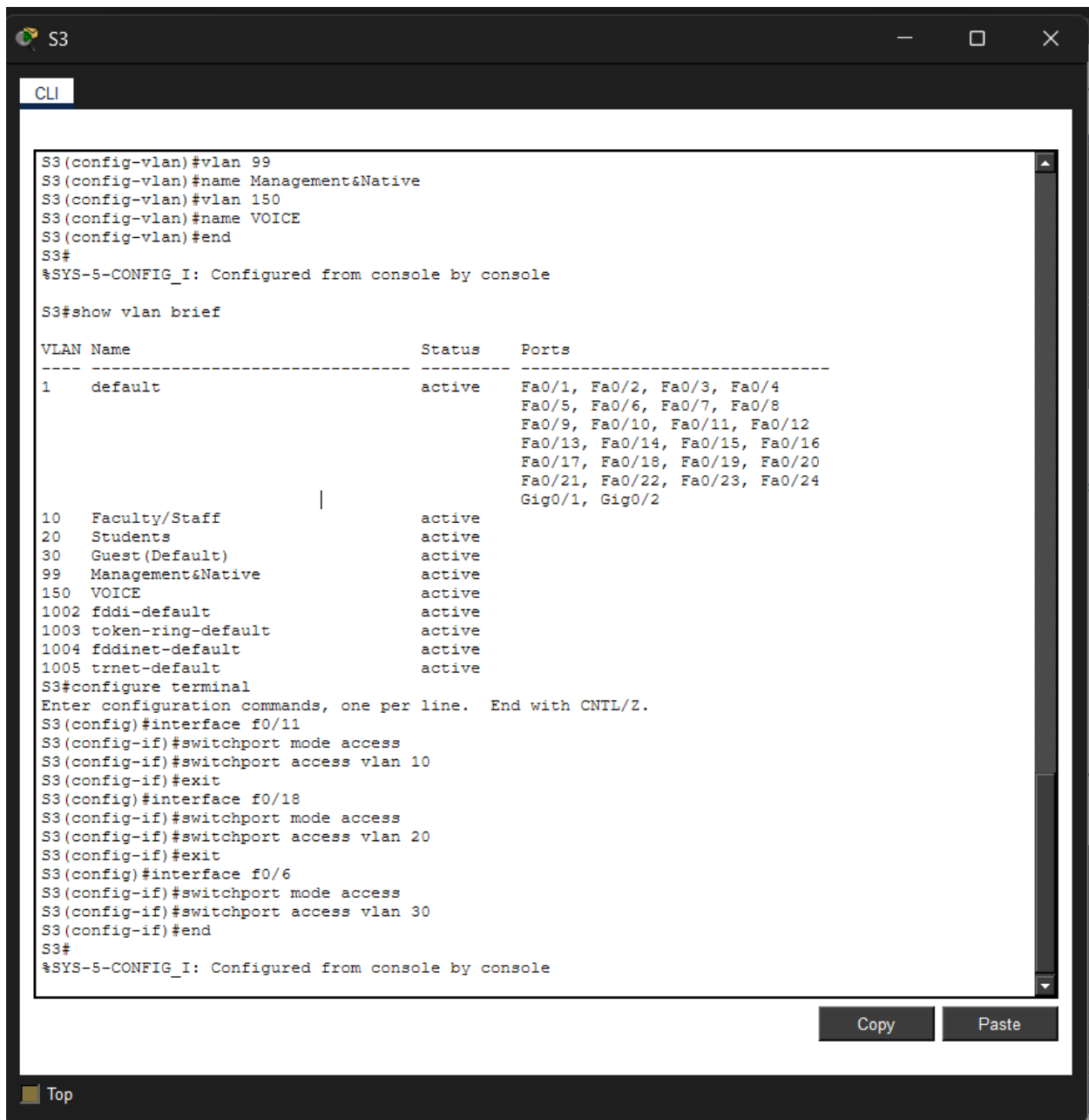
S2#show vlan brief

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
                                           Gig0/1, Gig0/2
10   Faculty/Staff          active
20   Students               active
30   Guest(Default)         active
99   Management&Native      active
150  VOICE                   active
1002 fddi-default            active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default        active

S2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
S2(config)#interface f0/11
S2(config-if)#switchport mode access
S2(config-if)#switchport access vlan 20
S2(config-if)#switch access vlan 10
S2(config-if)#exit
S2(config)#interface f0/18
S2(config-if)#switchport mode access
S2(config-if)#switchport access vlan 20
S2(config-if)#exit
S2(config)#interface f0/6
S2(config-if)#switchport mode access
S2(config-if)#switch access vlan 30
S2(config-if)#end
S2#
%SYS-5-CONFIG_I: Configured from console by console
```

Copy Paste

Step 2 – S3 access ports (same pattern)



The screenshot shows a terminal window titled 'S3' with a 'CLI' tab. The terminal displays the following commands and output:

```
S3(config-vlan)#vlan 99
S3(config-vlan)#name Management&Native
S3(config-vlan)#vlan 150
S3(config-vlan)#name VOICE
S3(config-vlan)#end
S3#
%SYS-5-CONFIG_I: Configured from console by console

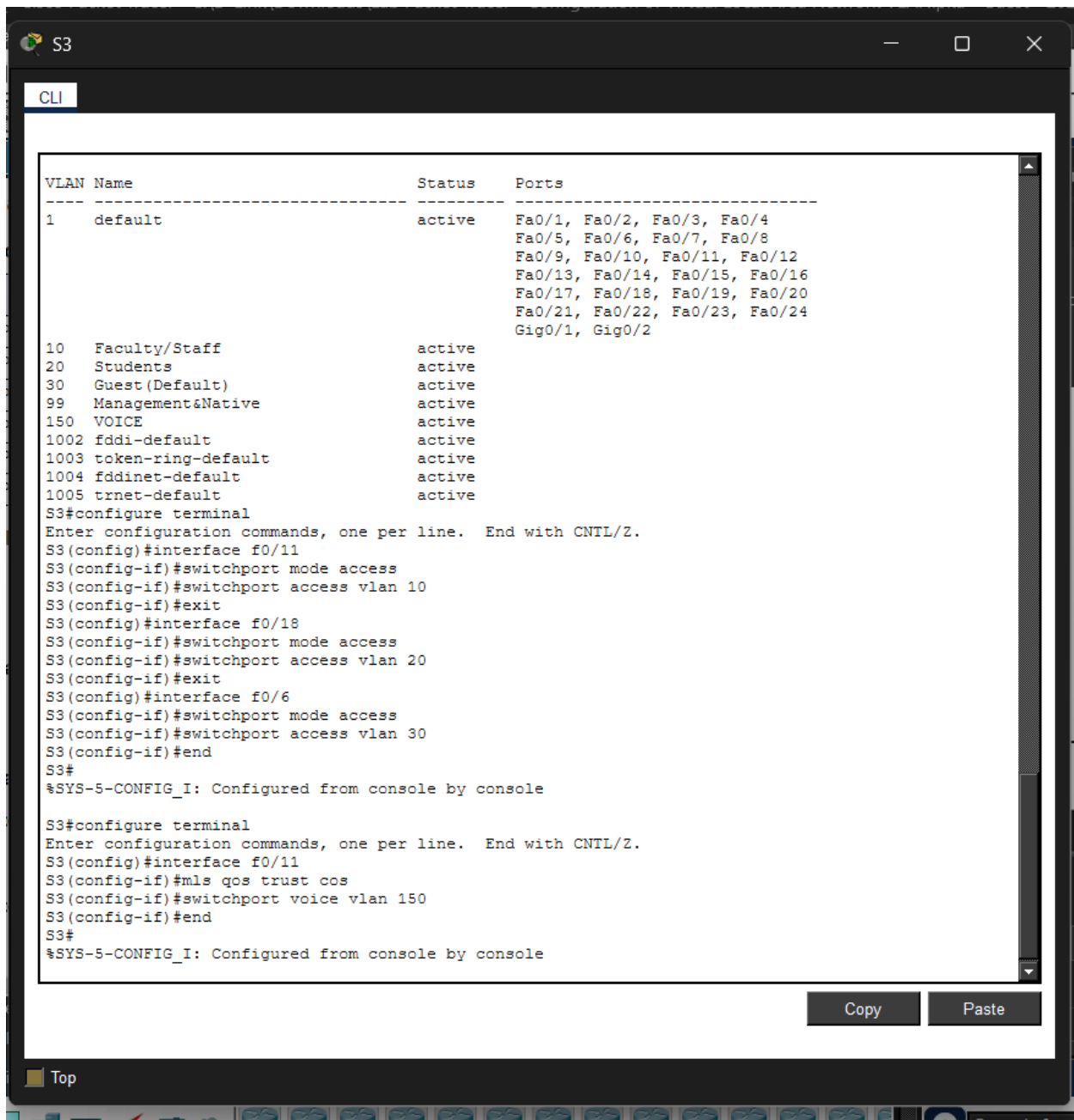
S3#show vlan brief
```

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 Gig0/1, Gig0/2
10 Faculty/Staff	active	
20 Students	active	
30 Guest(Default)	active	
99 Management&Native	active	
150 VOICE	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

```
S3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#interface f0/11
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 10
S3(config-if)#exit
S3(config)#interface f0/18
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 20
S3(config-if)#exit
S3(config)#interface f0/6
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 30
S3(config-if)#end
S3#
%SYS-5-CONFIG_I: Configured from console by console
```

At the bottom of the terminal window, there are 'Copy' and 'Paste' buttons, and a 'Top' link.

Step 3 – Voice VLAN on S3 F0/11 (IP Phone + PC4)



The screenshot shows a CLI window for switch S3. At the top, there's a table of VLANs. Below it, the user enters configuration commands for interfaces f0/11, f0/18, and f0/6. The first configuration sets f0/11 to access VLAN 10 and f0/18 to access VLAN 20. The second configuration sets f0/6 to access VLAN 30. The output shows the configuration was successful.

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 Gig0/1, Gig0/2
10	Faculty/Staff	active	
20	Students	active	
30	Guest(Default)	active	
99	Management&Native	active	
150	VOICE	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
S3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#interface f0/11
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 10
S3(config-if)#exit
S3(config)#interface f0/18
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 20
S3(config-if)#exit
S3(config)#interface f0/6
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 30
S3(config-if)#end
S3#
%SYS-5-CONFIG_I: Configured from console by console

S3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#interface f0/11
S3(config-if)#mls qos trust cos
S3(config-if)#switchport voice vlan 150
S3(config-if)#end
S3#
%SYS-5-CONFIG_I: Configured from console by console
```

Critical Step — TRUNK the inter-switch links

S1 uplinking to S2 and S3 on **gigabit** ports. To carry VLANs between switches, I converted those links to **802.1Q trunks** and made **VLAN 99 the native** (as named “Management&Native”).

- On S1 (uplinks to S2 and S3):

```
S1>enable
S1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#interface range g0/1 - 2
S1(config-if-range)#switchport mode trunk

S1(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up

S1(config-if-range)#switchport trunk native vlan 99
S1(config-if-range)#switchport trunk allowed vlan 10,20,30,99,150
S1(config-if-range)#end
S1#
%SYS-5-CONFIG_I: Configured from console by console

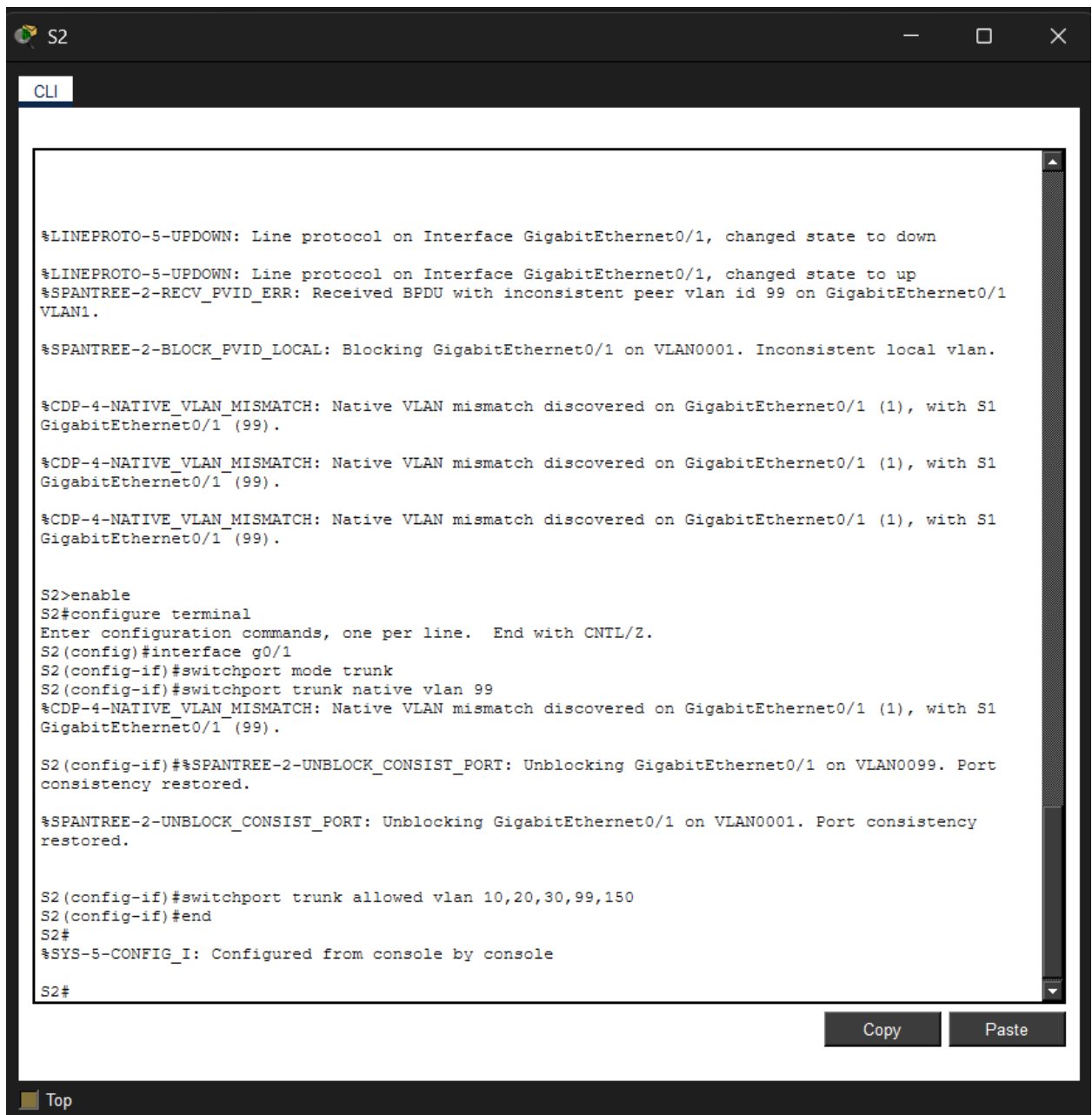
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (99), with S3
GigabitEthernet0/2 (1).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/1 (99), with S2
GigabitEthernet0/1 (1).
```

Copy Paste

Top

- On S2 (uplink to S1, typically G0/1):



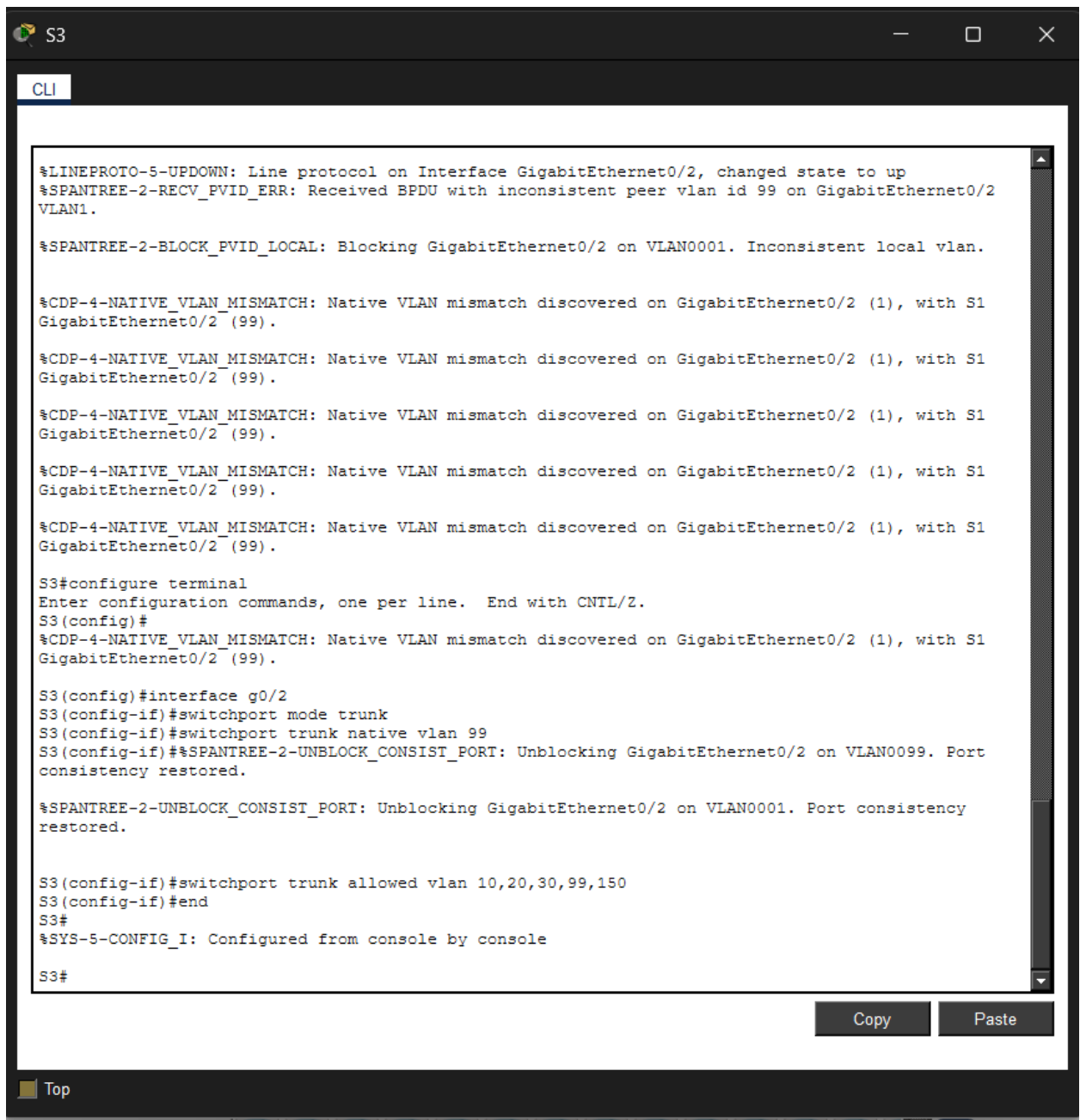
The screenshot shows a terminal window titled 'S2' with a 'CLI' tab. The terminal displays several system messages and configuration commands. The messages include: '%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down', '%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up', '%SPANTREE-2-RECV_FVID_ERR: Received BPDU with inconsistent peer vlan id 99 on GigabitEthernet0/1 VLAN1.', '%SPANTREE-2-BLOCK_FVID_LOCAL: Blocking GigabitEthernet0/1 on VLAN0001. Inconsistent local vlan.', and three instances of '%CDP-4-NATIVE_VLAN MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/1 (1), with S1 GigabitEthernet0/1 (99)'. The configuration commands entered are: 'S2>enable', 'S2#configure terminal', 'S2(config)#interface g0/1', 'S2(config-if)#switchport mode trunk', 'S2(config-if)#switchport trunk native vlan 99', 'S2(config-if)#%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking GigabitEthernet0/1 on VLAN0099. Port consistency restored.', 'S2(config-if)#%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking GigabitEthernet0/1 on VLAN0001. Port consistency restored.', 'S2(config-if)#switchport trunk allowed vlan 10,20,30,99,150', and 'S2(config-if)#end'. The terminal ends with 'S2#' and a 'Top' button at the bottom left. 'Copy' and 'Paste' buttons are located at the bottom right of the terminal area.

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%SPANTREE-2-RECV_FVID_ERR: Received BPDU with inconsistent peer vlan id 99 on GigabitEthernet0/1
VLAN1.
%SPANTREE-2-BLOCK_FVID_LOCAL: Blocking GigabitEthernet0/1 on VLAN0001. Inconsistent local vlan.
%CDP-4-NATIVE_VLAN MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/1 (1), with S1
GigabitEthernet0/1 (99).
%CDP-4-NATIVE_VLAN MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/1 (1), with S1
GigabitEthernet0/1 (99).
%CDP-4-NATIVE_VLAN MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/1 (1), with S1
GigabitEthernet0/1 (99).
S2>enable
S2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S2(config)#interface g0/1
S2(config-if)#switchport mode trunk
S2(config-if)#switchport trunk native vlan 99
%CDP-4-NATIVE_VLAN MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/1 (1), with S1
GigabitEthernet0/1 (99).
S2(config-if)#%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking GigabitEthernet0/1 on VLAN0099. Port
consistency restored.
%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking GigabitEthernet0/1 on VLAN0001. Port consistency
restored.
S2(config-if)#switchport trunk allowed vlan 10,20,30,99,150
S2(config-if)#end
S2#
%SYS-5-CONFIG_I: Configured from console by console
S2#
```

Copy Paste

Top

- On S3 (uplink to S1, typically G0/2):



```
S3
CLI

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up
%SPANTREE-2-RECV_PVID_ERR: Received BPDU with inconsistent peer vlan id 99 on GigabitEthernet0/2
VLAN1.

%SPANTREE-2-BLOCK_PVID_LOCAL: Blocking GigabitEthernet0/2 on VLAN0001. Inconsistent local vlan.

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

S3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

S3(config)#interface g0/2
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 99
S3(config-if)#%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking GigabitEthernet0/2 on VLAN0099. Port
consistency restored.

%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking GigabitEthernet0/2 on VLAN0001. Port consistency
restored.

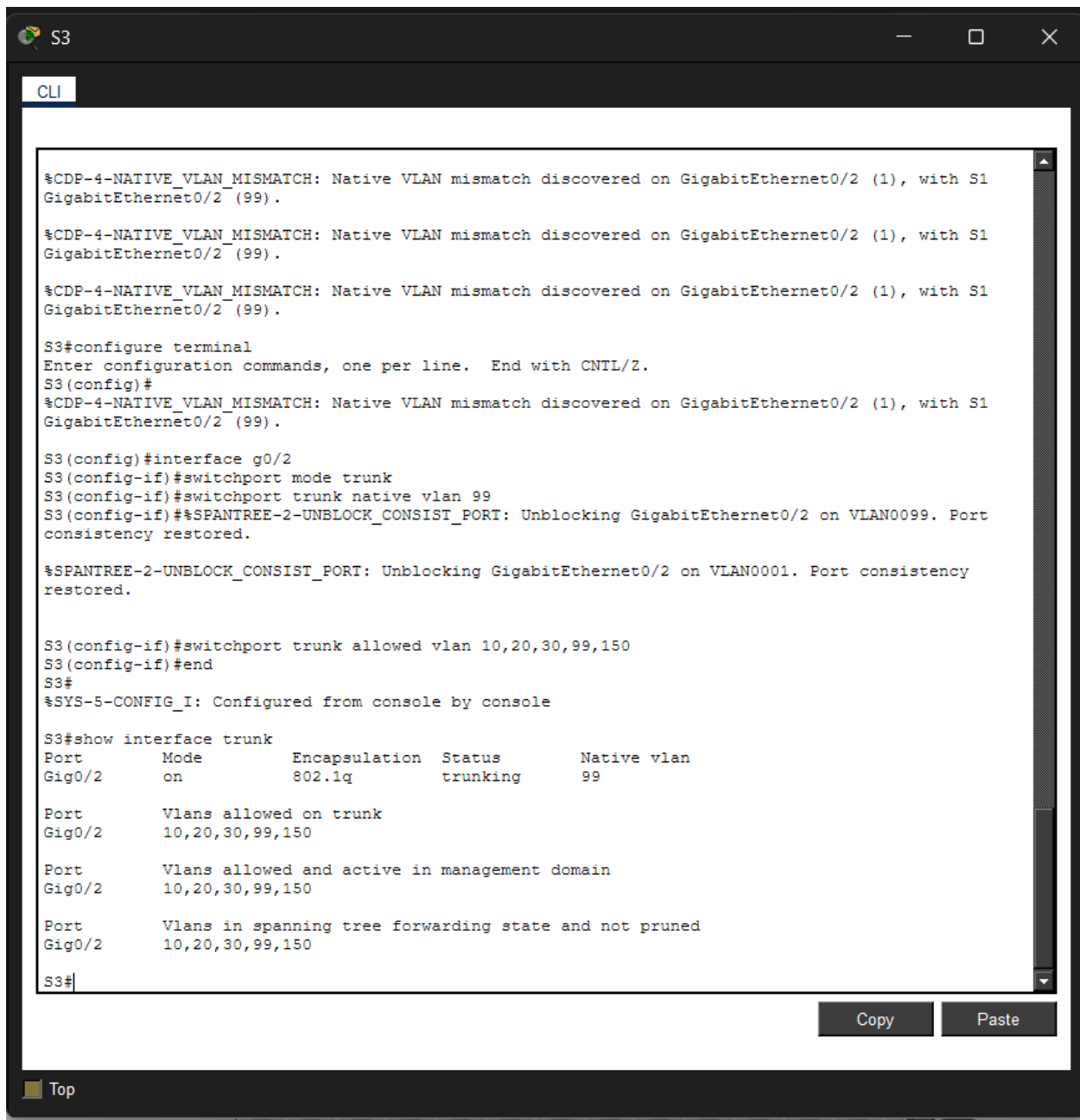
S3(config-if)#switchport trunk allowed vlan 10,20,30,99,150
S3(config-if)#end
S3#
%SYS-5-CONFIG_I: Configured from console by console

S3#
```

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Top

Verifying one trunk (S3)



```
S3
CLI

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

S3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (1), with S1
GigabitEthernet0/2 (99).

S3(config)#interface g0/2
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 99
S3(config-if)##SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking GigabitEthernet0/2 on VLAN0099. Port
consistency restored.

%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking GigabitEthernet0/2 on VLAN0001. Port consistency
restored.

S3(config-if)#switchport trunk allowed vlan 10,20,30,99,150
S3(config-if)#end
S3#
%SYS-5-CONFIG_I: Configured from console by console

S3#show interface trunk
Port      Mode      Encapsulation  Status      Native vlan
Gig0/2    on        802.1q         trunking    99

Port      Vlans allowed on trunk
Gig0/2    10,20,30,99,150

Port      Vlans allowed and active in management domain
Gig0/2    10,20,30,99,150

Port      Vlans in spanning tree forwarding state and not pruned
Gig0/2    10,20,30,99,150

S3#
```

Copy Paste

Top

Step 4 — Verify loss / restoration of connectivity

What S2 show vlan brief reveals (before trunks):

- Access ports are in correct VLANs, but **G0/1 is not shown** because trunks don't appear in show vlan brief. If G0/1 is still in **access mode (VLAN 1)**, same-VLAN traffic **cannot** cross switches → pings fail.

Q: Although the access ports are assigned to the appropriate VLANs, were the pings successful? Explain.

A: No (until trunks are configured). VLAN membership does not cross a link unless that link is an 802.1Q trunk permitting those VLAN IDs. With an access link or mismatched native/allowed lists, inter-switch same-VLAN traffic is dropped.

Q: What could be done to resolve this issue?

A:

- Configure the inter-switch links as trunks (commands above).
- Ensure native VLAN matches (VLAN 99 on both ends).
- Ensure allowed VLAN list includes 10, 20, 30, 99, 150 on all trunks.
- Re-verify with: show interfaces trunk
- Show vlan brief

S3

CLI

Port

Gig0/2

Mode

on

Encapsulation

802.1q

Status

trunking

Native vlan

99

Port

Gig0/2

Vlans allowed on trunk

10,20,30,99,150

Port

Gig0/2

Vlans allowed and active in management domain

10,20,30,99,150

Port

Gig0/2

Vlans in spanning tree forwarding state and not pruned

10,20,30,99,150

S3#SHOW INTERFACE TRUNK

Port

Gig0/2

Mode

on

Encapsulation

802.1q

Status

trunking

Native vlan

99

Port

Gig0/2

Vlans allowed on trunk

10,20,30,99,150

Port

Gig0/2

Vlans allowed and active in management domain

10,20,30,99,150

Port

Gig0/2

Vlans in spanning tree forwarding state and not pruned

10,20,30,99,150

S3#show vlan brief

VLAN	Name	Status	Ports
1	default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1
10	Faculty/Staff	active	Fa0/11
20	Students	active	Fa0/18
30	Guest (Default)	active	Fa0/6
99	Management&Native	active	
150	VOICE	active	Fa0/11
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

S3#

Copy

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Top

100% Completion:

Cisco Packet Tracer - C:\D-Link\Downloads\Lab Packet Tracer - Configuration of Virtual Local Area Network VLAN.pka - Guest - 2025-10-25 12:53:28

File Edit Options View Tools Extensions Window Help

Logical Physical 119 / 72

Packet Tracer - VLAN Configuration

Addressing Table

Device	Interface	IP Address	Subnet Mask	VLAN
PC1	NIC	172.17.10.21	255.255.255.0	10
PC2	NIC	172.17.20.22	255.255.255.0	20
PC3	NIC	172.17.30.23	255.255.255.0	30
PC4	NIC	172.17.10.24	255.255.255.0	10
PC5	NIC	172.17.20.25	255.255.255.0	20
PC6	NIC	172.17.30.26	255.255.255.0	30

Objectives

- Part 1: Verify the Default VLAN Configuration
- Part 2: Configure VLANs
- Part 3: Assign VLANs to Ports

Background

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, and assigning access ports to specific VLANs.

Part 1: View the Default VLAN Configuration

Step 1: Display the current VLANs.

On S1, issue the command that displays all VLANs configured. By default, all interfaces are assigned to VLAN 1.

Step 2: Verify connectivity between PCs on the same network.

Notice that each PC can ping the other PC that shares the same subnet.

- PC1 can ping PC4

Time Elapsed: 04:15:22 Completion: 100%

Back Check Results I/I New

Time: 03:48:20

Scenario 0

New Delete

Toggle PDU List Window

File Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Realtime Simulation

5:08 PM 2025-10-25