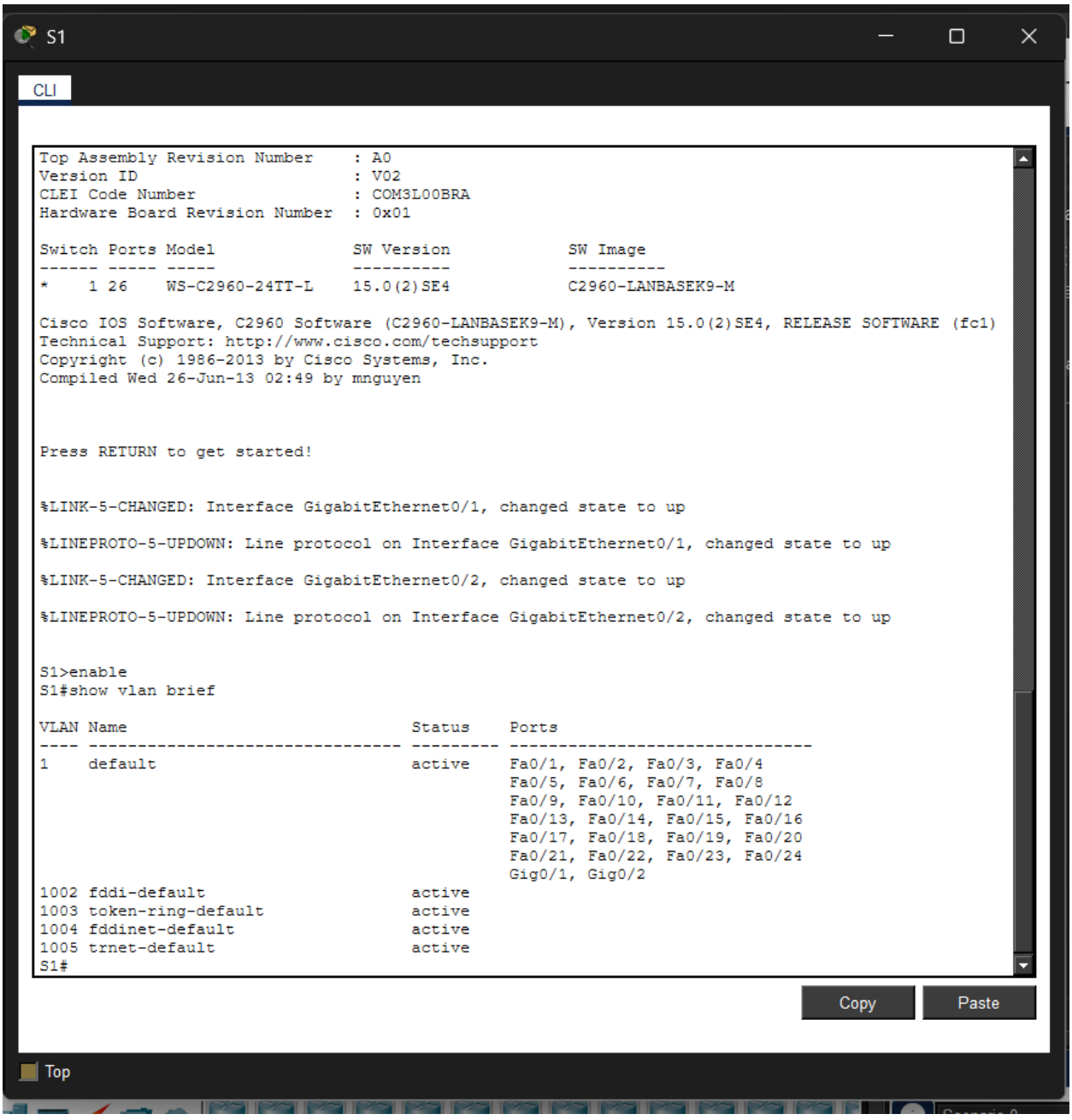
Assignment 4:

Part 1 — Review Default VLANs

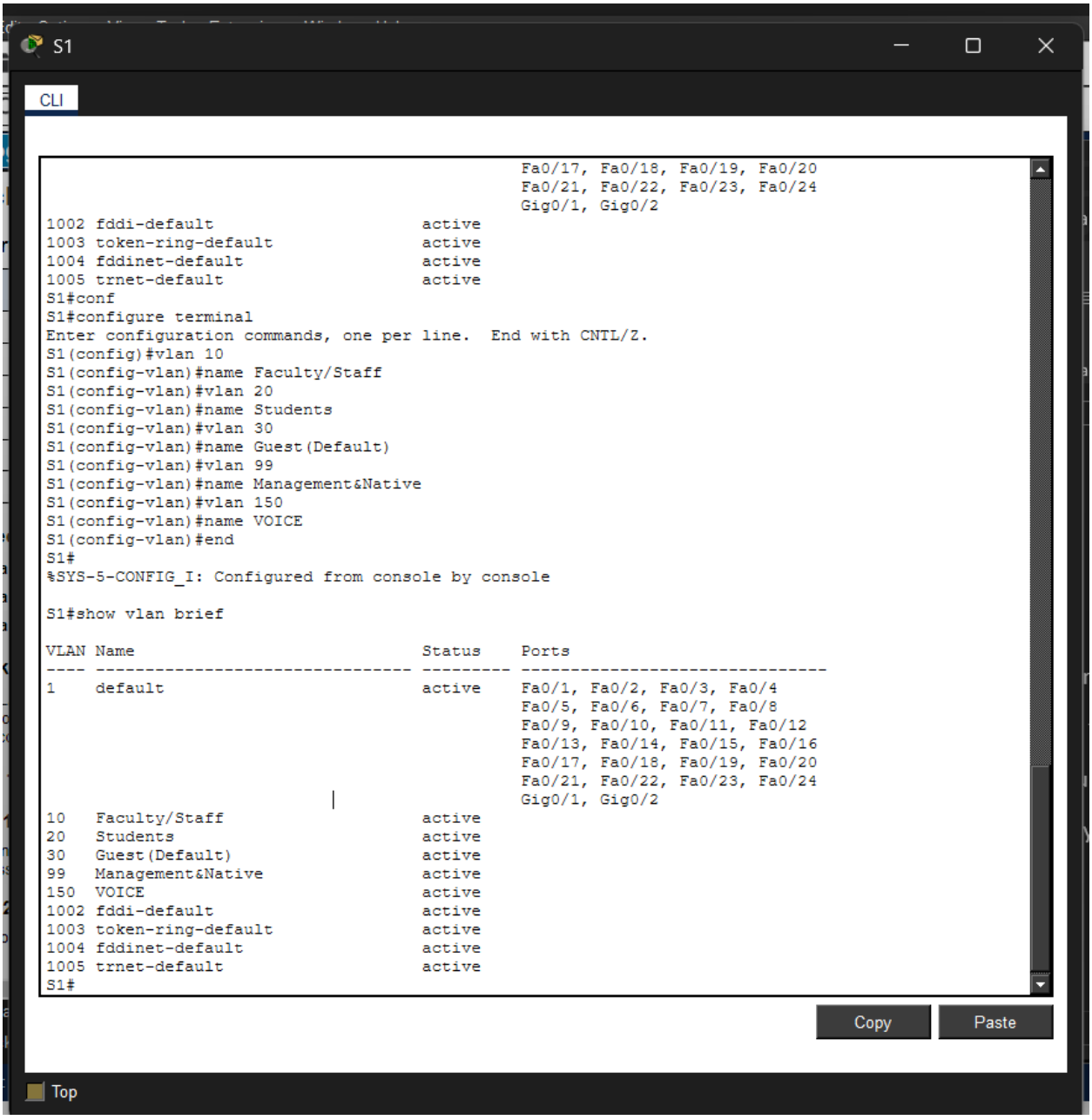
Step 1 – Display current VLANs (on S1)



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



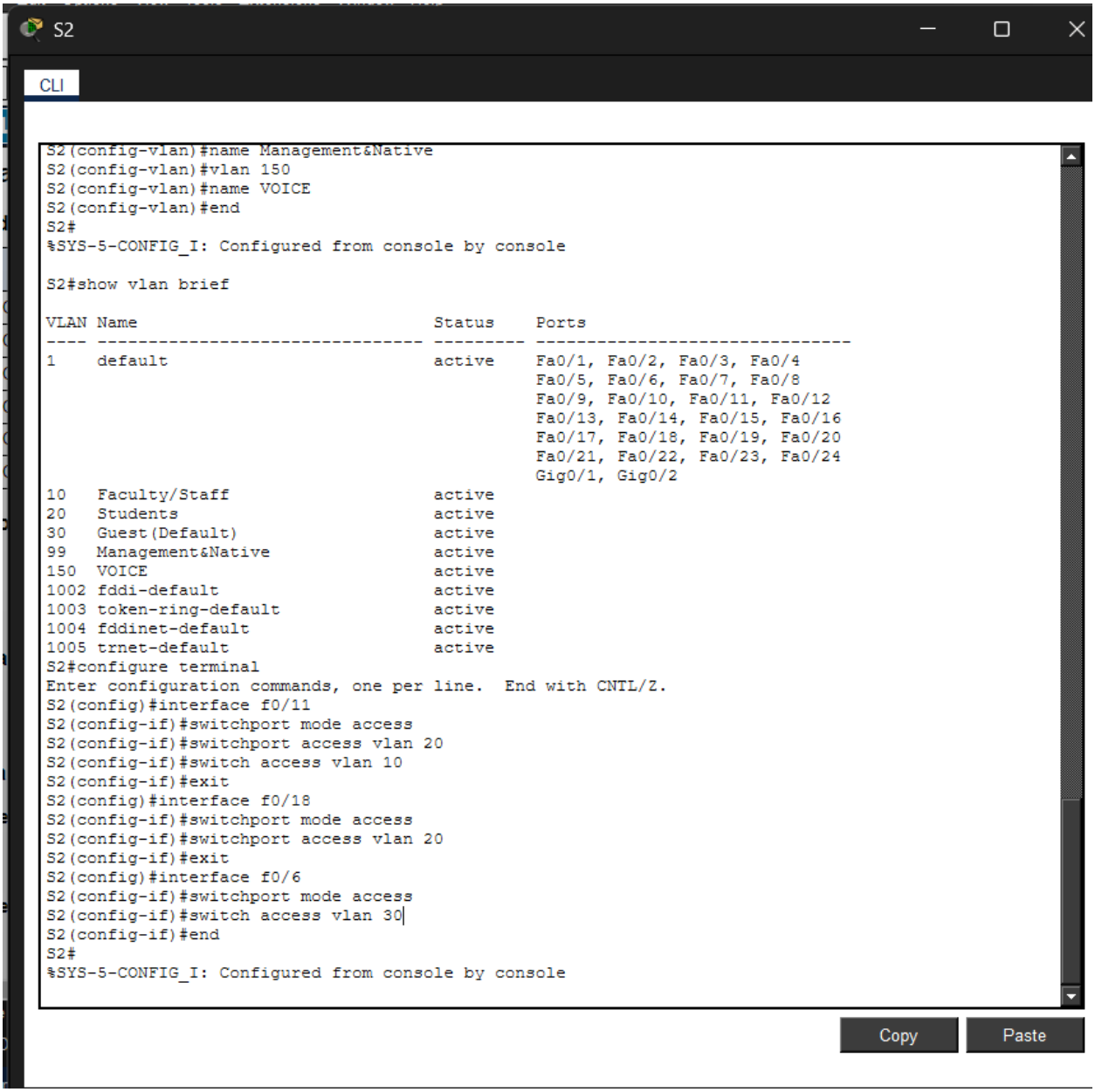
Same for S2 and S3.

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

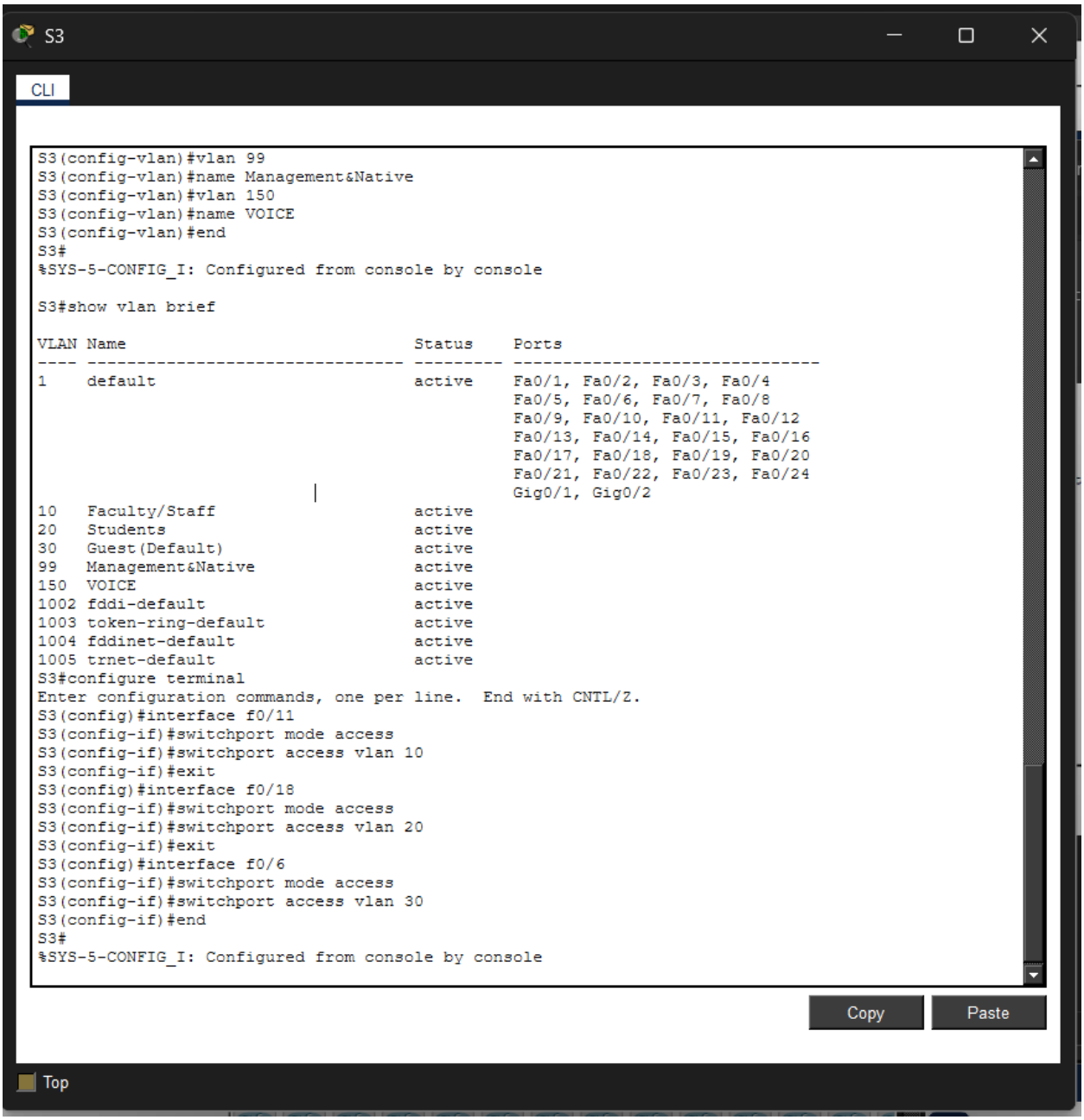
A: show vlan brief

Part 3 — Assign VLANs to Access Ports & Enable Voice

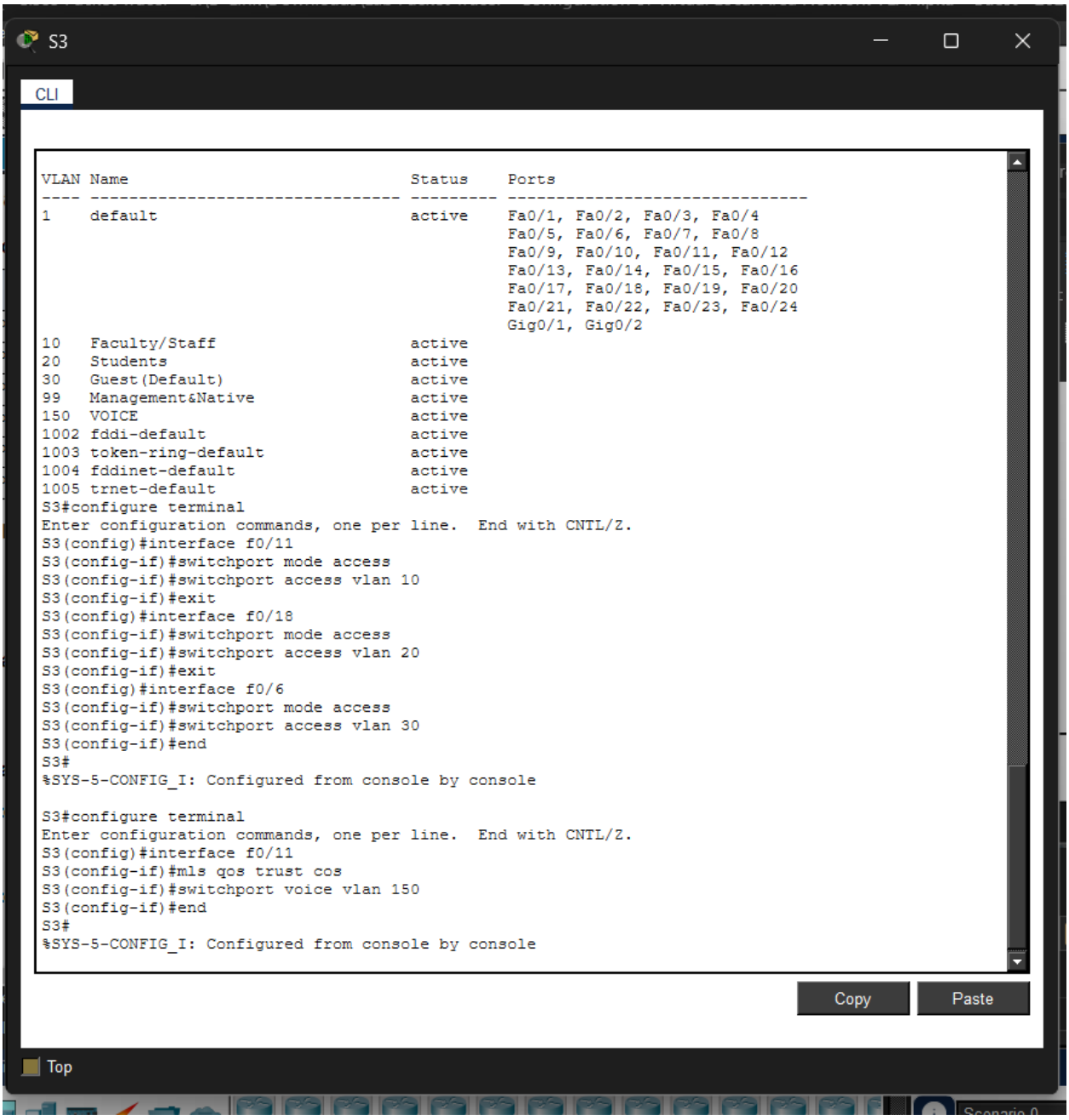
Step 1 – S2 access ports:



Step 2 – S3 access ports (same pattern)



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

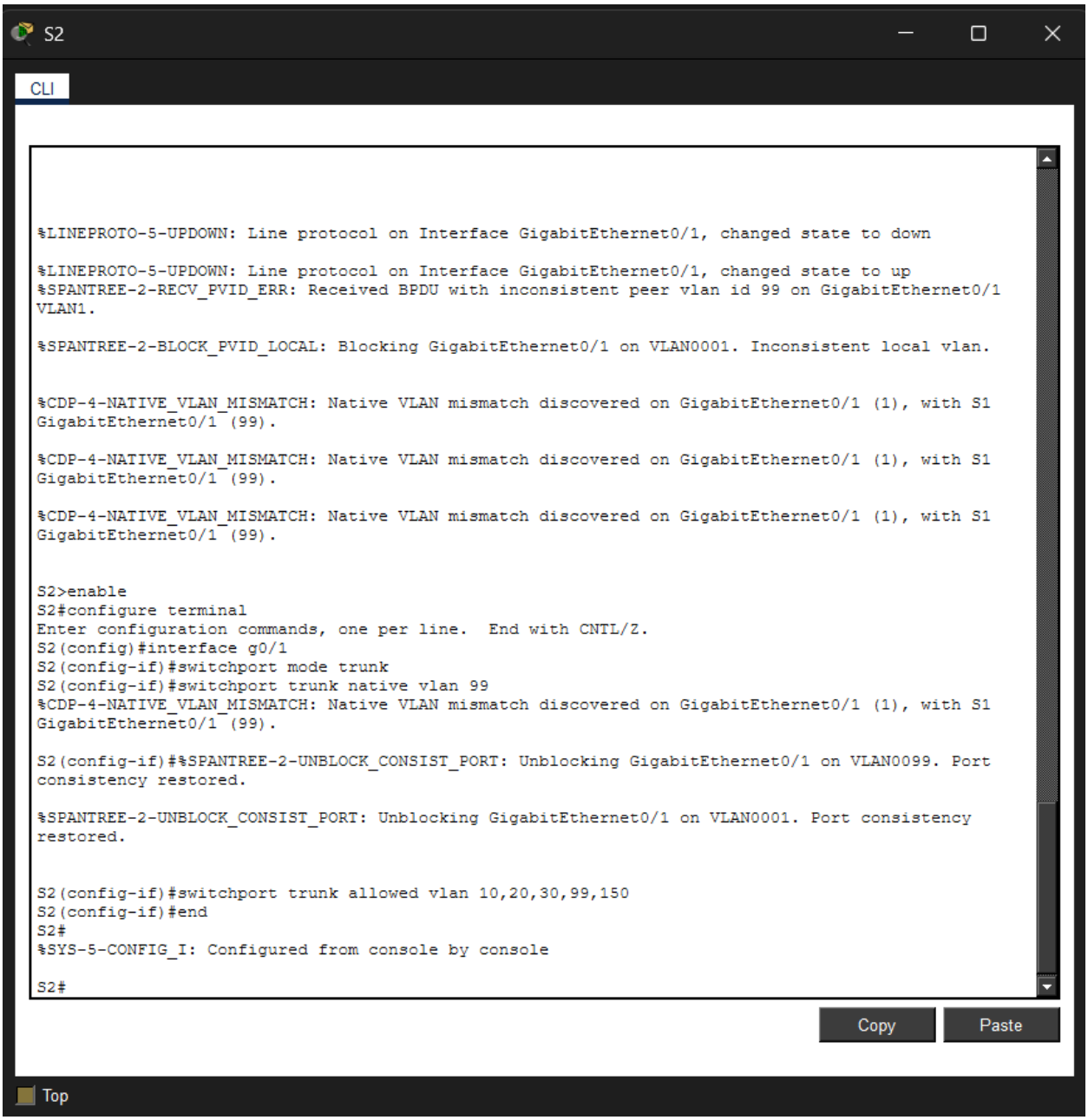


Critical Step — TRUNK the inter-switch links

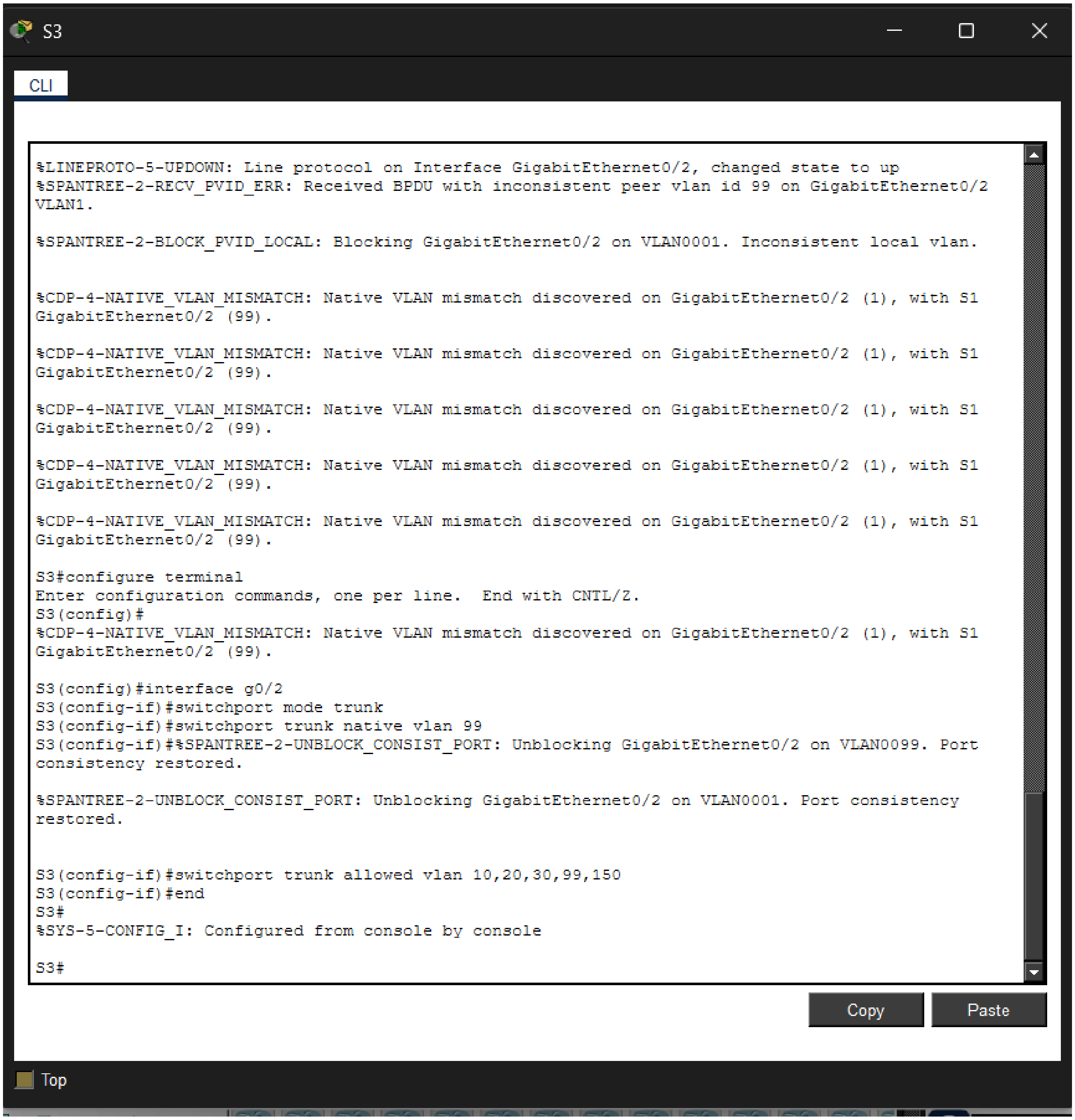
S1 uplinking to S2 and S3 on **gigabit** ports. To carry VLANs between switches, I converted those links to **802.1Q trunks** and made **VLAN 99 the native** (as named “Management&Native”).

- On S1 (uplinks to S2 and S3):

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

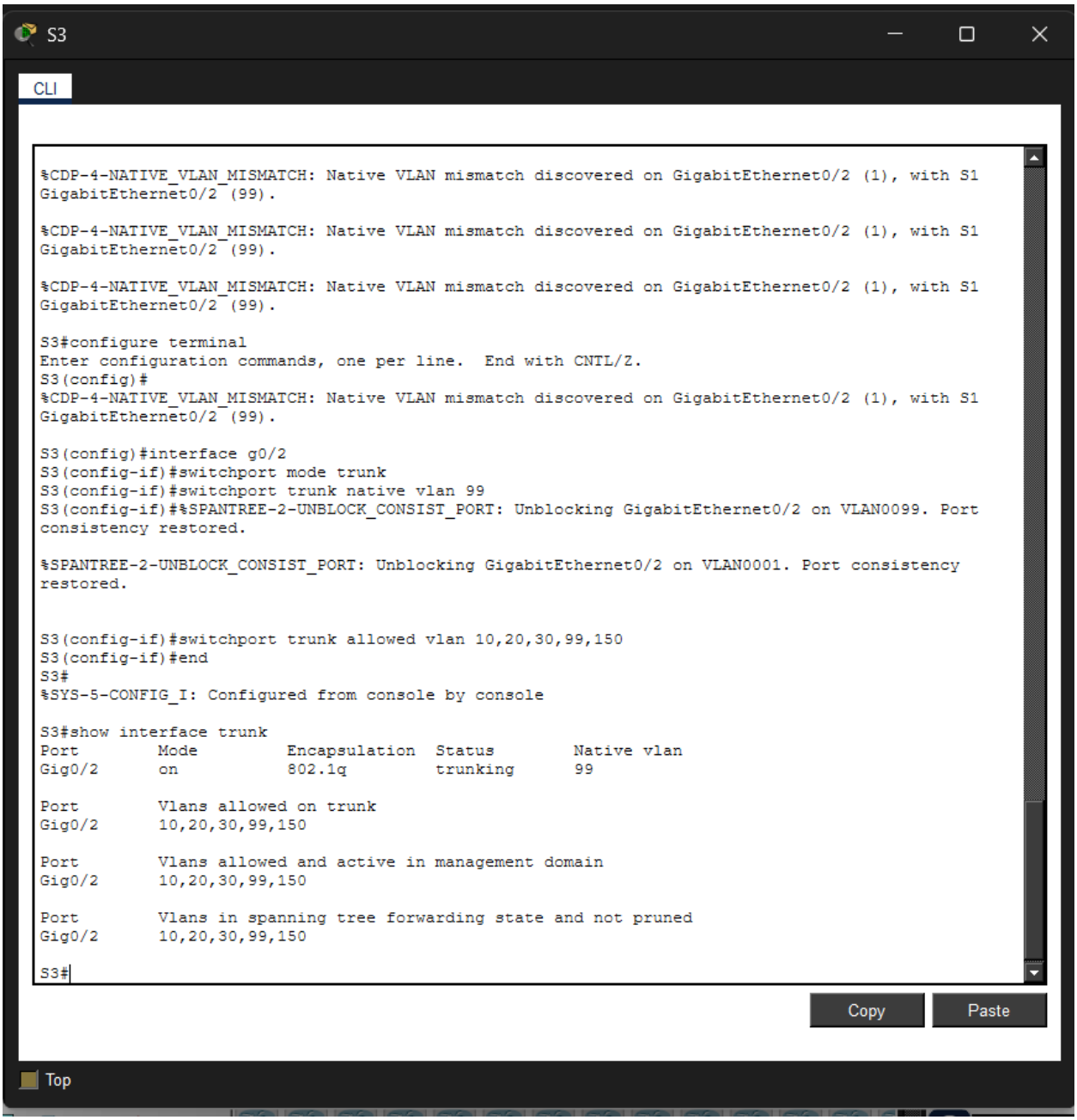


- On S3 (uplink to S1, typically G0/2):



```
%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#
```

Verifying one trunk (S3)



Step 4 — Verify loss / restoration of connectivity

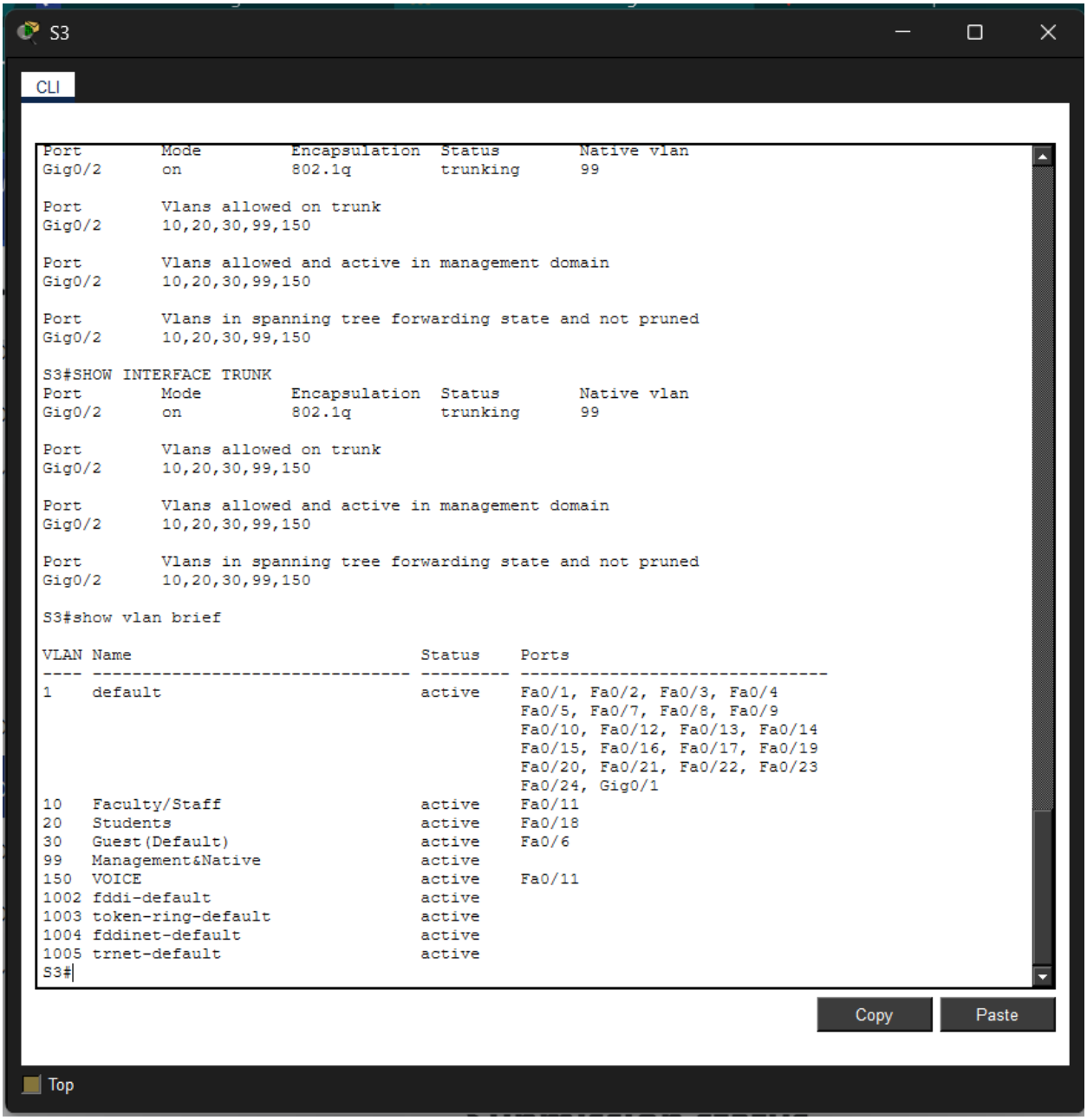
What S2 show vlan brief reveals (before trunks):

- 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 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#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#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
Paste
Top

100% Completion: