



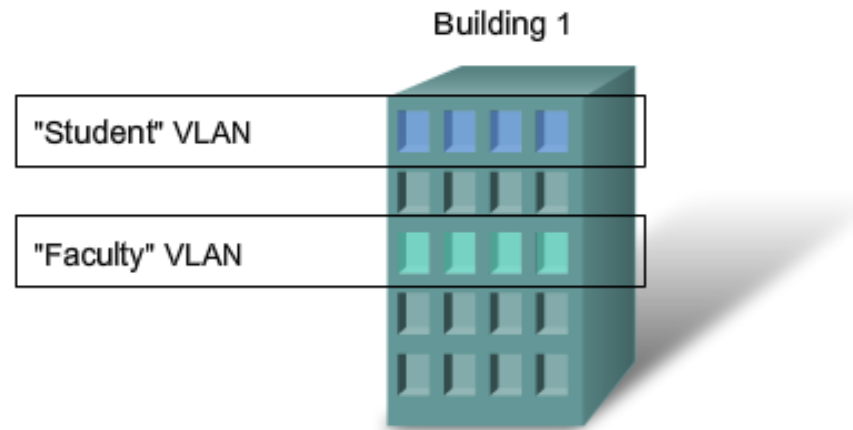
# VLANs



## LAN Switching and Wireless – Chapter 3

# Role of VLANs in a Converged Network

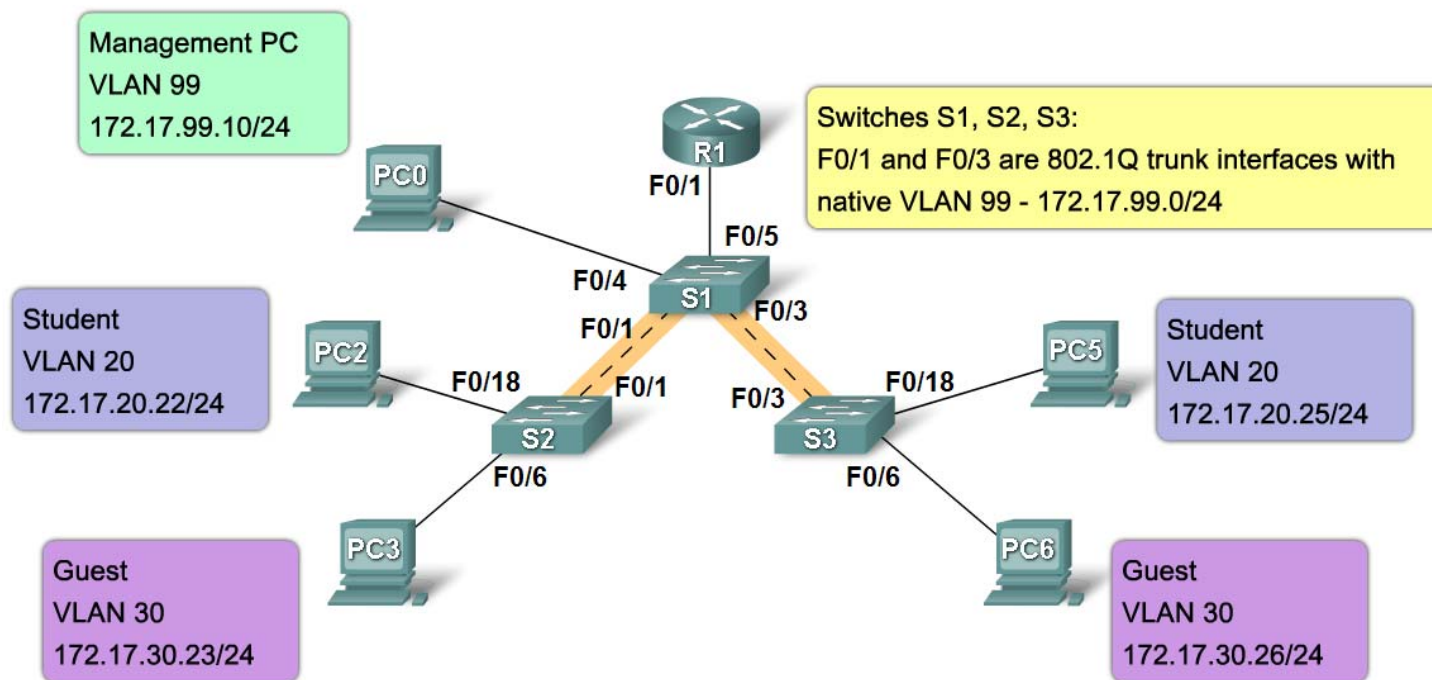
What is a VLAN?



- A VLAN is an independent LAN network.
- A VLAN allows student and faculty PCs to be separated although they share the same infrastructure.
- A VLAN can be named for easier identification.

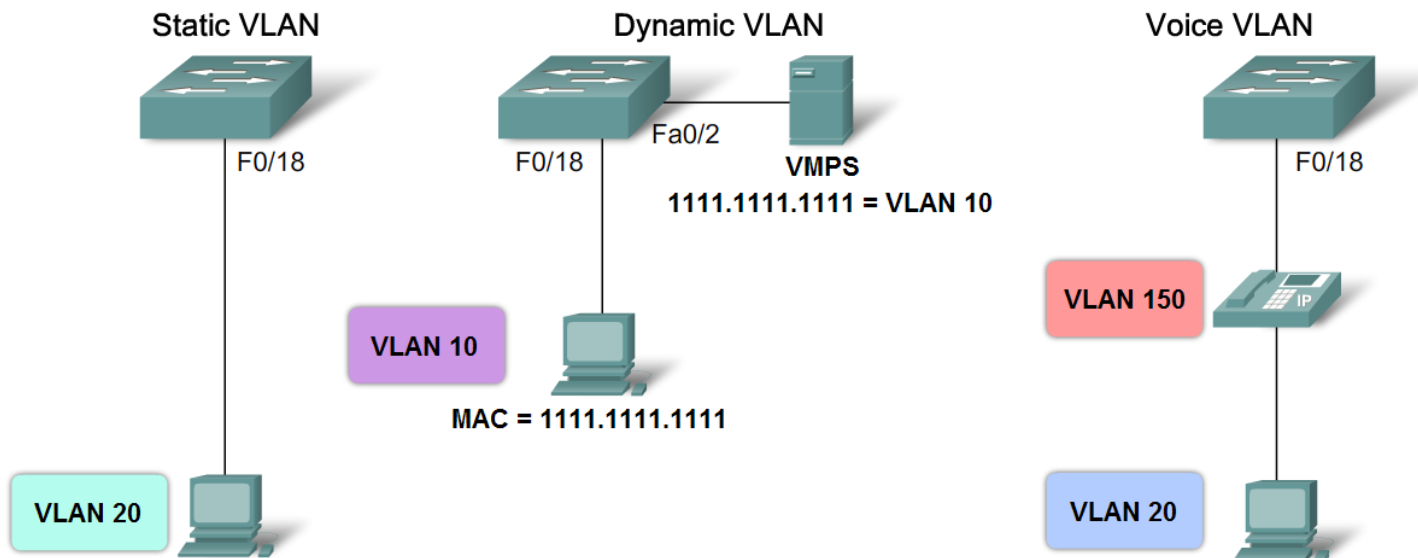
# Role of VLANs in a Converged Network

## Types of VLANs



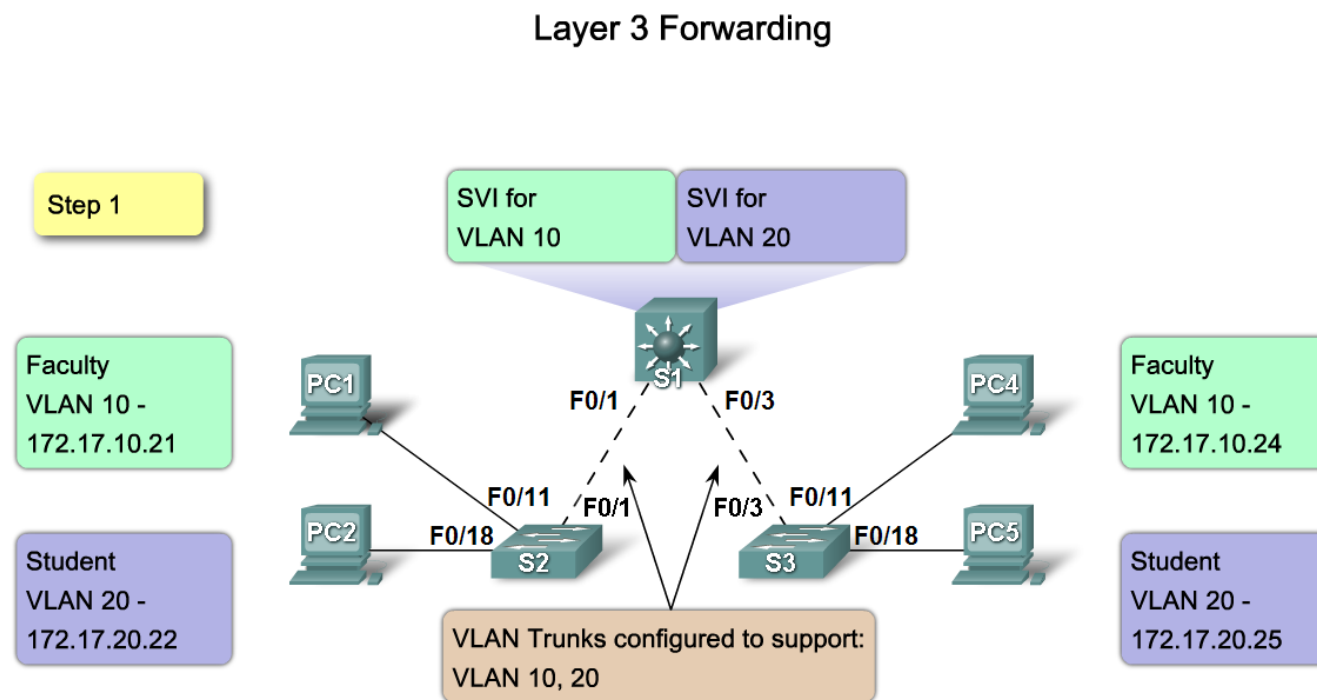
# Role of VLANs in a Converged Network

## VLAN Port Membership Modes



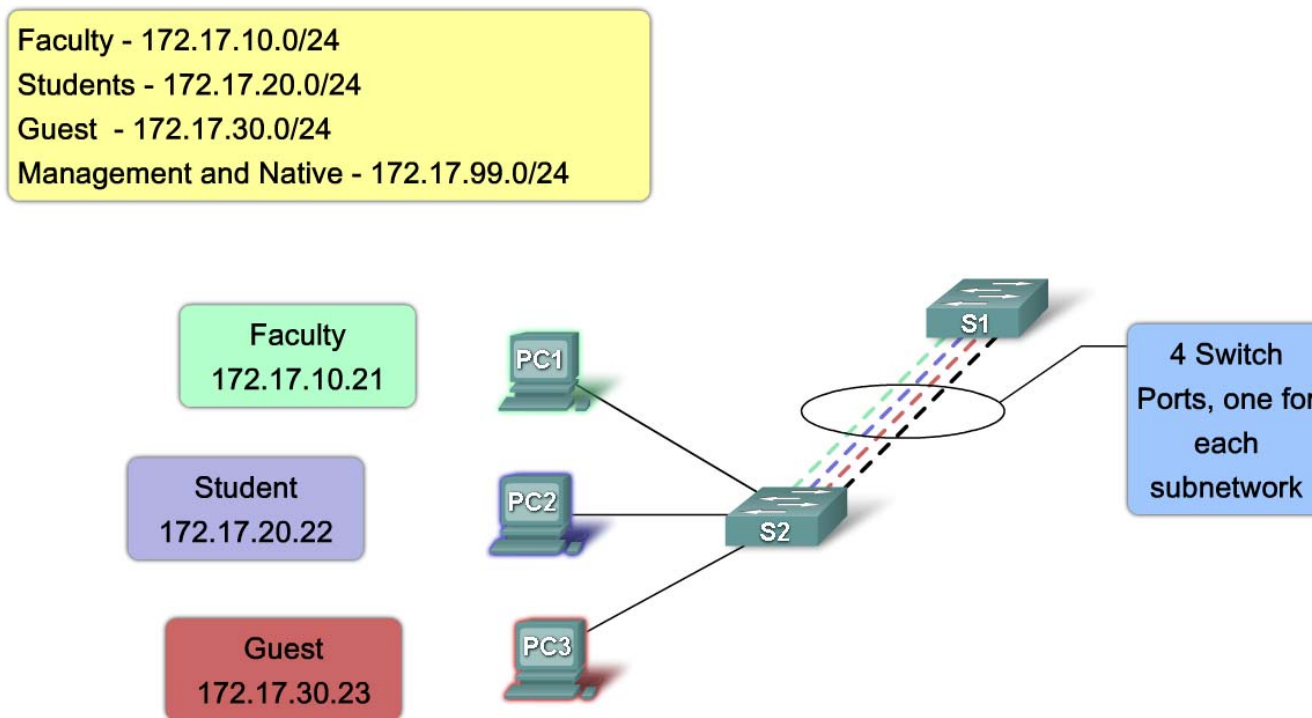
# Role of VLANs in a Converged Network

- How to manage broadcast domains with VLANs



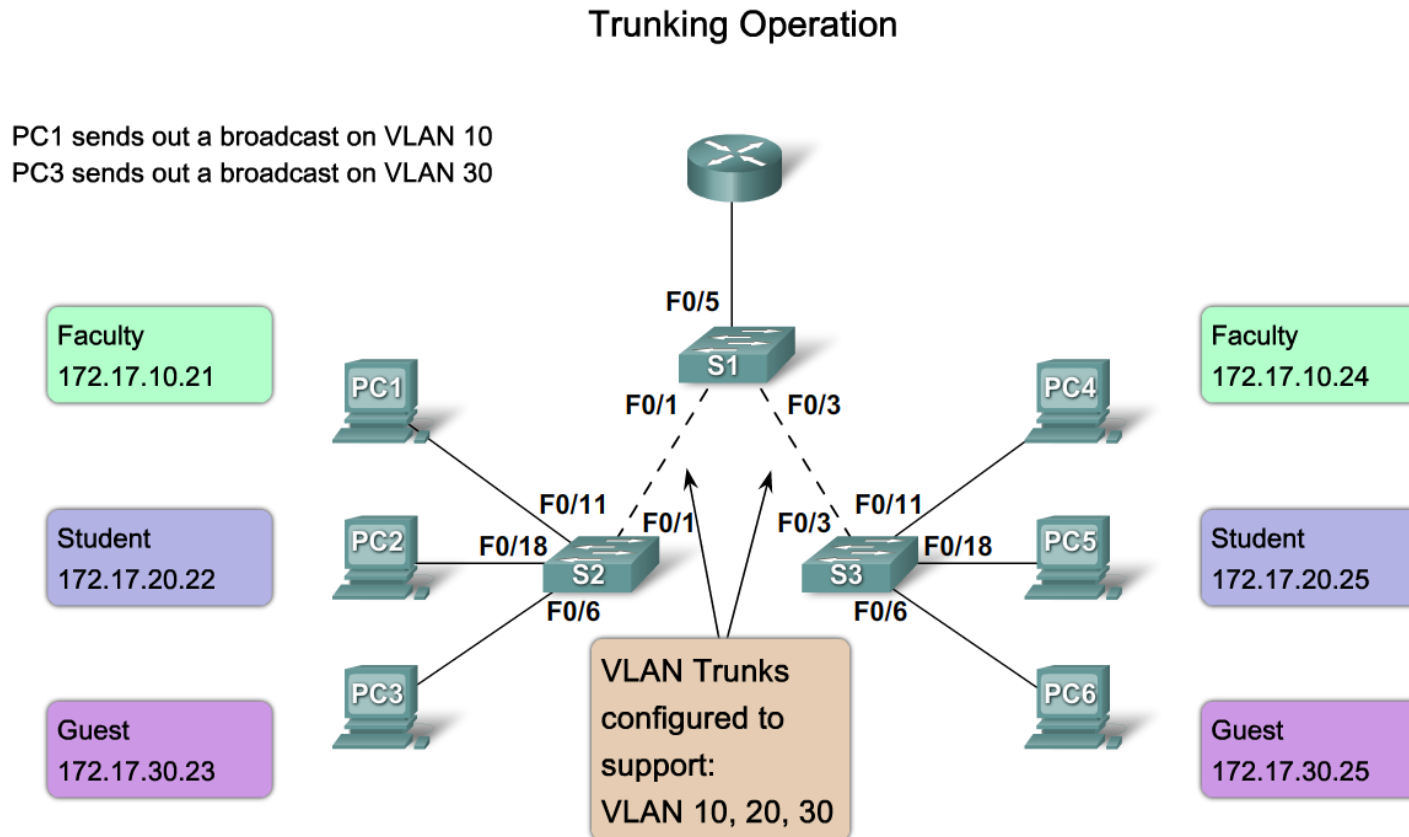
# Role of Trunking VLANs in a Converged Network

- Role of a trunk when using multiple VLANs in a converged network



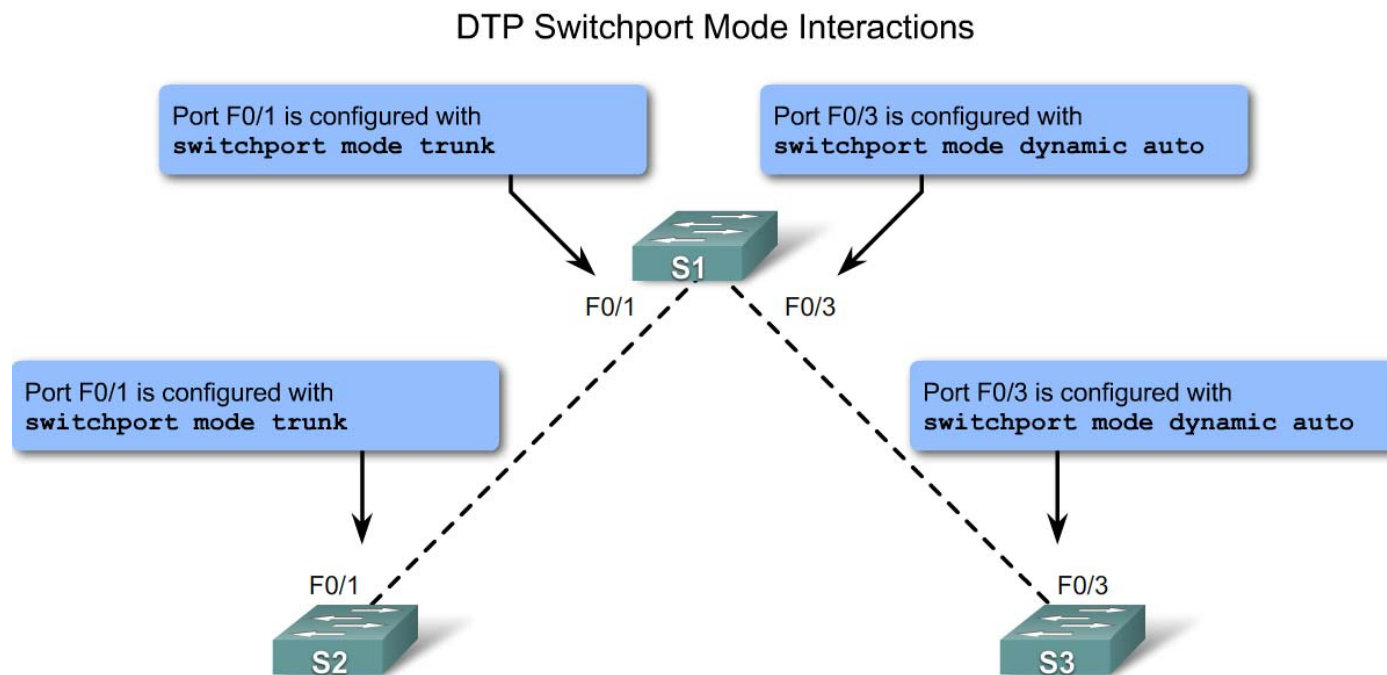
# Role of Trunking VLANs in a Converged Network

- How a trunk works



# Role of Trunking VLANs in a Converged Network

- Switch port trunking modes





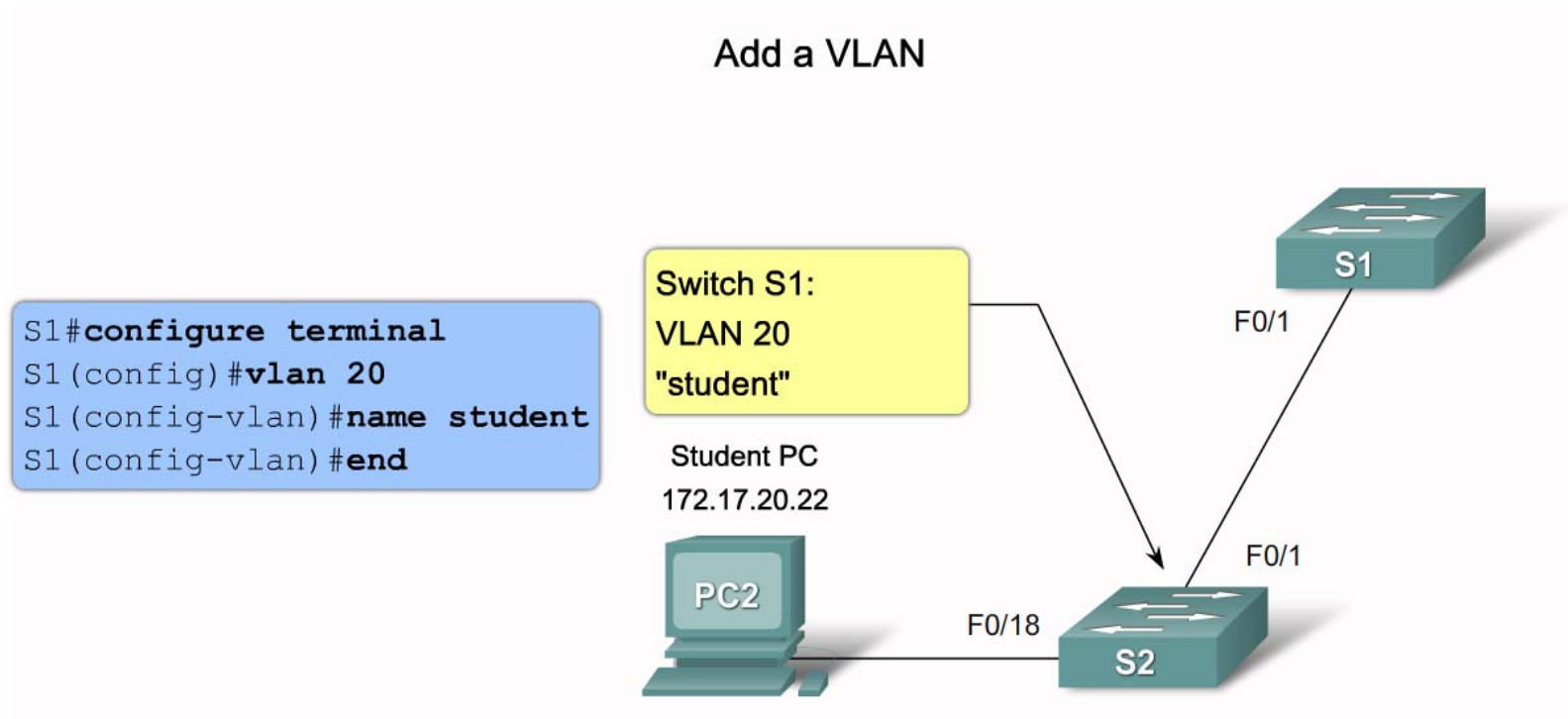
# Configure VLANs on the Switches in a Converged Network Topology

## Configuring VLANs and Trunks Overview

Use the following steps to configure and verify VLANs and trunks on a switched network:

1. Create the VLANs.
2. Assign switch ports to VLANs statically.
3. Verify VLAN configuration.
4. Enable trunking on the inter-switch connections.
5. Verify trunk configuration.

# Configure VLANs on the Switches in a Converged Network Topology



# Configure VLANs on the Switches in a Converged Network Topology

## Verify VLANs and Port Memberships

### Show VLAN Command

Cisco IOS CLI Command Syntax	
<b>show vlan</b> [ <b>brief</b>   <b>id</b> <i>vlan-id</i>   <b>name</b> <i>vlan-name</i>   <b>summary</b> ].	
Display one line for each VLAN with the VLAN name, status, and its ports.	<b>brief</b>
Display information about a single VLAN identified by VLAN ID number. For <i>vlan-id</i> , the range is 1 to 4094.	<b>id</b> <i>vlan-id</i>
Display information about a single VLAN identified by VLAN name. The VLAN name is an ASCII string from 1 to 32 characters.	<b>name</b> <i>vlan-name</i>
Display VLAN summary information.	<b>summary</b>

### Show Interfaces Command

Cisco IOS CLI Command Syntax	
<b>show interfaces</b> [ <i>interface-id</i>   <b>vlan</b> <i>vlan-id</i> ]   <b>switchport</b>	
Valid interfaces include physical ports (including type, module, and port number) and port channels. The port-channel range is 1 to 6.	<i>interface-id</i>
VLAN identification. The range is 1 to 4094.	<b>vlan</b> <i>vlan-id</i>
Display the administrative and operational status of a switching port, including port blocking and port protection settings.	<b>switchport</b>

# Configure VLANs on the Switches in a Converged Network Topology

## Configure an 802.1Q Trunk

Cisco IOS CLI Command Syntax	
Enter global configuration mode.	S1#configure terminal
Enters the interface configuration mode for the defined interface.	S1(config)#interface <i>interface id</i>
Force the link connecting the switches to be a trunk link.	S1(config-if)#switchport mode trunk
Specify another VLAN as the native VLAN for untagged for IEEE 802.1Q trunks.	S1(config-if)#switchport trunk native vlan <i>vlan id</i>
Return to privileged EXEC mode.	S1(config-if)#end

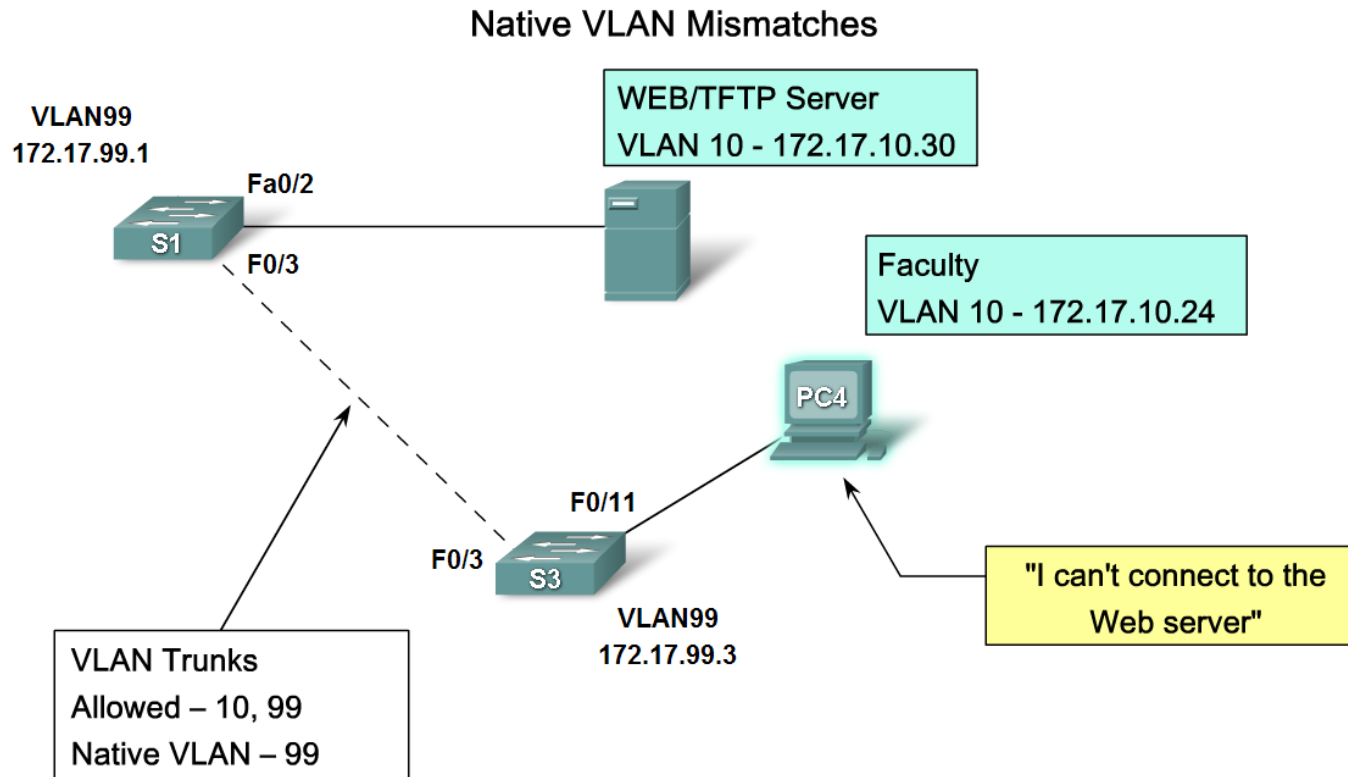
# Troubleshoot Common Software or Hardware Misconfigurations Associated with VLANs

Common Problems with VLANs and Trunks

Problem	Result	Example
Native VLAN mismatches	Pose a security risks and create unintended results.	For example one port has defined as VLAN 99, the other defined as VLAN 100.
Trunk mode mismatches	Causes loss of network connectivity.	For example on port configured as trunk mode "off" and the other as trunk mode "on".
VLANs and IP Subnets	Causes loss of network connectivity.	For example user computers may have been configured with the incorrect IP addresses.
Allowed VLANs on Trunks	Causes unexpected traffic or no traffic is being sent over the trunk.	The list of allowed VLANs does not support current VLAN trunking requirements.

# Troubleshoot Common Software or Hardware Misconfigurations Associated with VLANs

- Common problems with VLANs and trunks



# Troubleshoot Common Software or Hardware Misconfigurations Associated with VLANs

