



VLANs



Version 4.0

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- Giới thiệu VLAN.
- VLAN Trunking.
- Cấu hình VLAN và Trunk.
- Chuẩn đoán VLAN và Trunk.

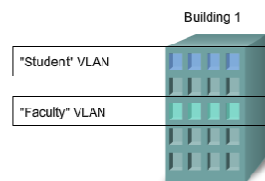
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Giới thiệu VLAN

- Mô tả VLAN trong mạng

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.

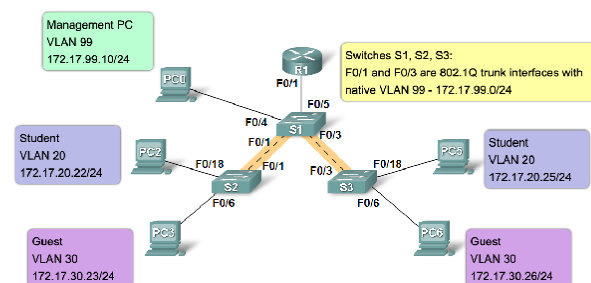
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Giới thiệu VLAN

- Các loại VLAN

Types of VLANs

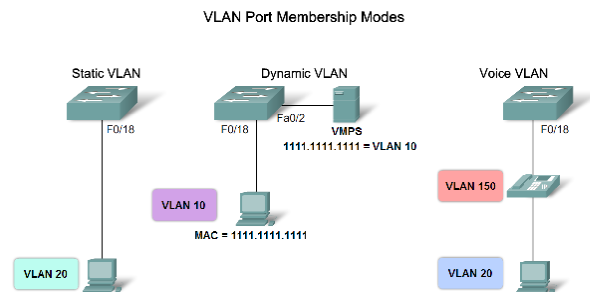


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Giới thiệu VLAN

- VLAN port membership

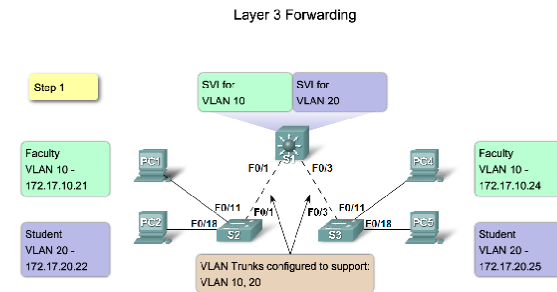


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Giới thiệu VLAN

- Quản lý broadcast domains với các VLAN

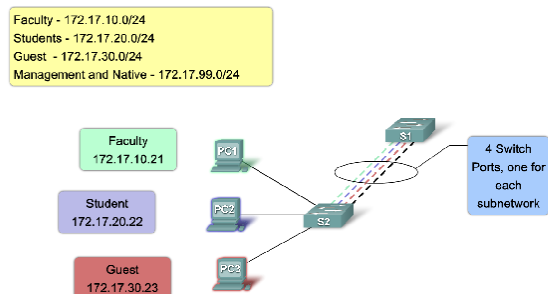


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VLAN Trunking

- Giải thích Trunk khi hoạt động trên multiple VLAN

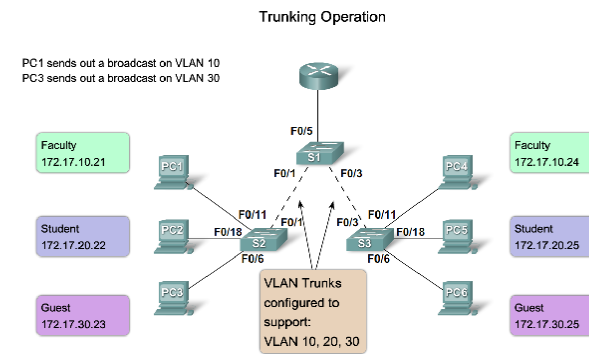


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VLAN Trunking

- Cơ chế hoạt động của Trunk

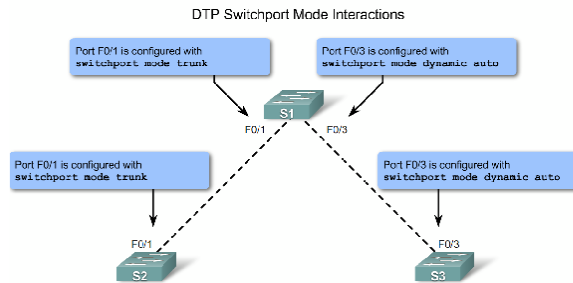


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VLAN Trunking

- Mô tả chế độ port trunking



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Cấu hình VLAN và Trunk

- Các bước cấu hình trunk và VLAN

Configuring VLANs and Trunks Overview

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

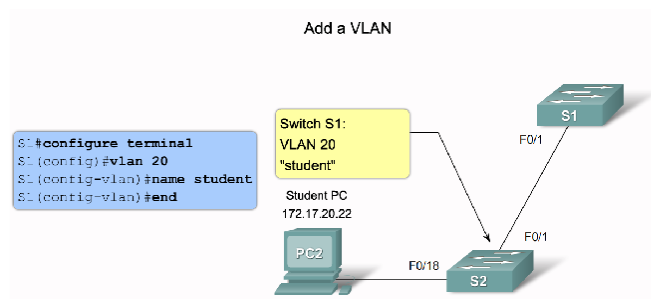
- Create the VLANs.
- Assign switch ports to VLANs statically.
- Verify VLAN configuration.
- Enable trunking on the inter-switch connections.
- Verify trunk configuration.

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Cấu hình VLAN và Trunk

- Lệnh dùng tạo VLAN



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Cấu hình VLAN và Trunk

- Lệnh dùng quản lý VLAN

Verify VLANs and Port Memberships

Show VLAN Command

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

Show Interfaces Command

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

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Cấu hình VLAN và Trunk

- Lệnh tạo Trunk

Configure an 802.1Q Trunk

Cisco IOS CLI Command Syntax	
Enter global configuration mode.	S1(config)#terminal
Enter the interface configuration mode for the defined interface.	S1(config)#interface interface_id
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 (or IEEE 802.1Q trunks).	S1(config-if)#switchport trunk native vlan vlan_id
Return to privileged EXEC mode.	S1(config-if)#end

Chẩn đoán VLAN và Trunking

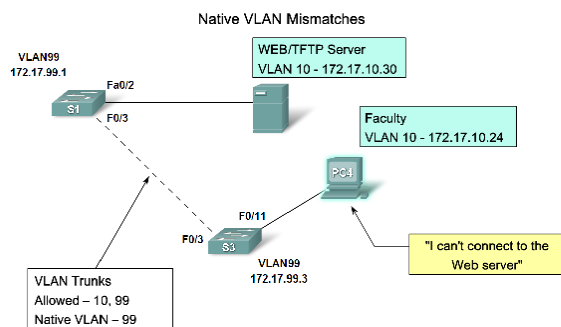
- Các sự cố thường gặp của VLAN và trunk

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.

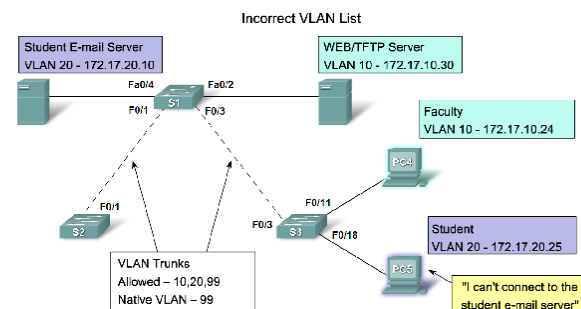
Chẩn đoán VLAN và Trunking

- Các sự cố thường gặp của VLAN và trunk



Chẩn đoán VLAN và Trunking

- Cách chẩn đoán và khắc phục sự cố



Summary

- VLANS

Allows an administrator to logically group devices that act as their own network

Are used to segment broadcast domains

Some benefits of VLANs include

Cost reduction, security, higher performance, better management

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Summary

- Types of Traffic on a VLAN include

Data

Voice

Network protocol

Network management

- Communication between different VLANs requires the use of

Routers

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Summary

- Trunks

A common conduit used by multiple VLANs for intra-VLAN communication

- IEEE 802.1Q

The standard trunking protocol

Uses frame tagging to identify the VLAN to which a frame belongs

Does not tag native VLAN traffic

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