



3. VLAN

NETWORKING TECHNOLOGIES– v1.2025

PHỤC VỤ MỤC ĐÍCH GIÁO DỤC
FOR EDUCATIONAL PURPOSE ONLY

A. OVERVIEW

1. Learning objective

Students will demonstrate practical proficiency in implementing VLAN technologies through direct configuration and testing exercises. Students will configure switch ports for specific VLAN assignments, establish and verify trunk port connectivity between switches, and implement VTP.

Through guided practice scenarios and troubleshooting exercises, students will apply configuration commands to create functional VLAN architectures, verify connectivity between devices in the same and different VLANs, and diagnose common implementation issues using appropriate diagnostic tools and techniques. Students will document their configurations, demonstrate proper lab procedures, and successfully complete practical assessments that validate their ability to implement VLAN solutions in real network environments.

2. Practice Environment

- Networking simulation with Cisco Packet Tracer.

B. LAB TASKS

1. VLANS Configuration

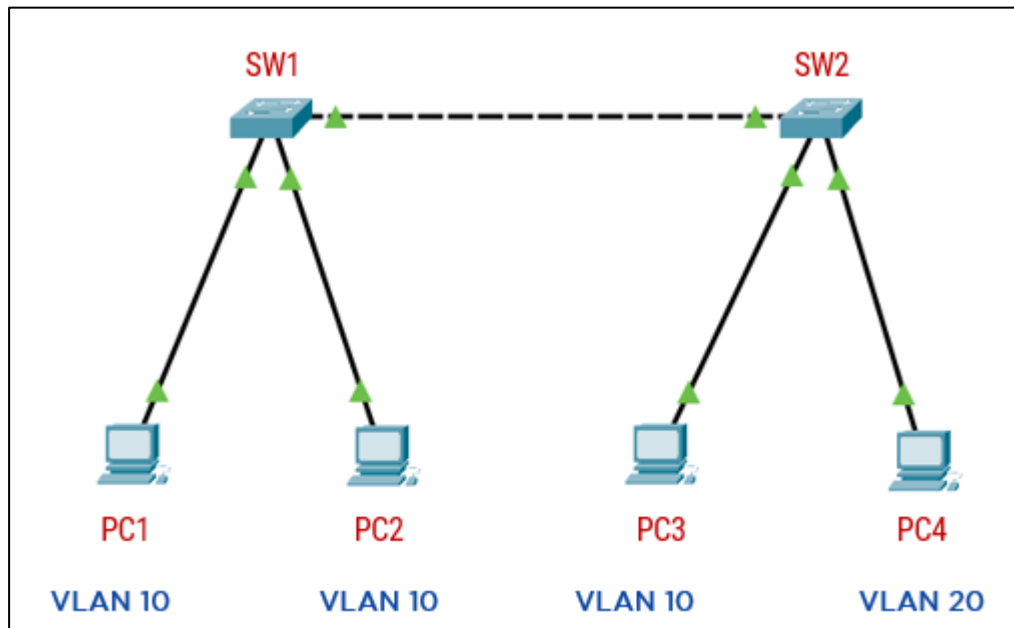


Figure 1: The topology diagram for Task 1

Table 1: Addressing Table

Device	Interface	IP Address	Subnet Mask	VLAN
PC1	NIC	192.168.10.11	255.255.255.0	10
PC2	NIC	192.168.10.12	255.255.255.0	10
PC3	NIC	192.168.10.13	255.255.255.0	10
PC4	NIC	192.168.20.14	255.255.255.0	20

You are giving a topology diagram as shown in the figure above. Use the subnet 192.168.10.0/24, 192.168.20.0/24 for VLAN 10, 20 respectively.

Requirements:

1. Assign the IP address for all PCs according to Table 1.
2. Create VLAN 10 and VLAN 20 on both SW1 and SW2.
3. Assign the corresponding VLANs to the ports on Switches.
4. Configure trunking for the link that connects SW1 and SW2.
5. Check if PC1 can communicate with all other PCs. If not, explain why.

2. Complex VLANs

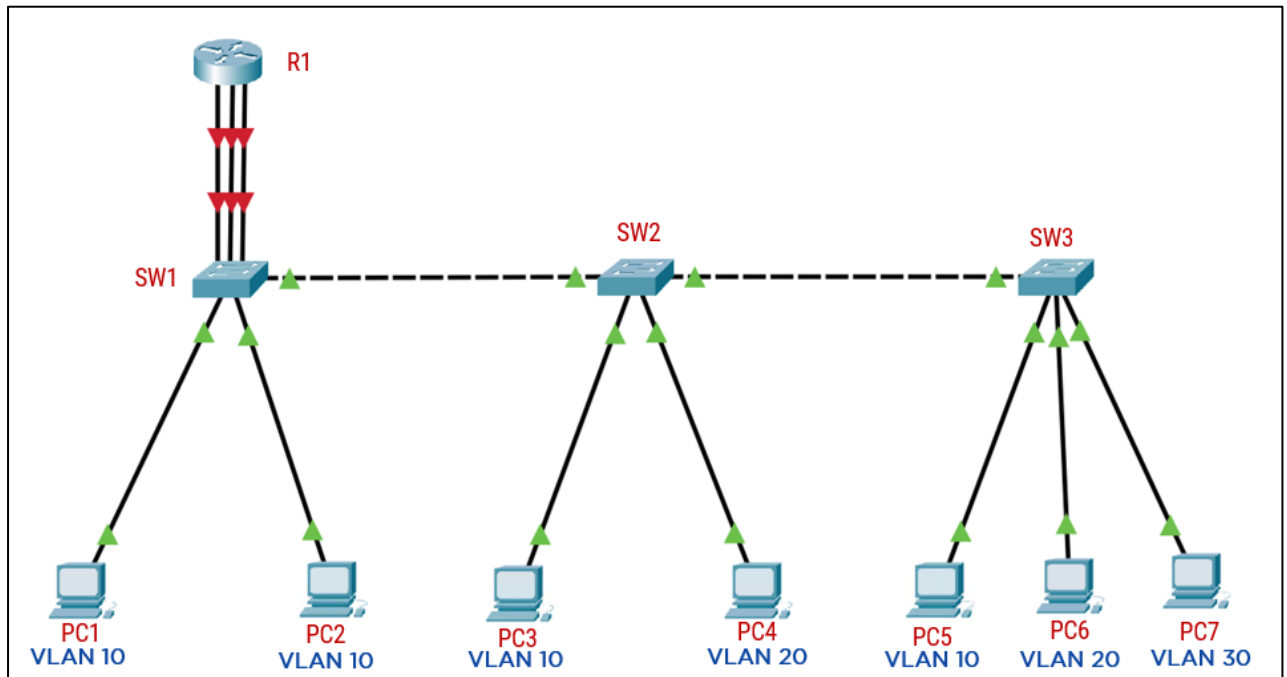


Figure 2: The network topology for Task 2

You are giving a topology diagram as shown in the figure above. Use the subnet 192.168.10.0/24, 192.168.20.0/24, 192.168.30.0/24 for VLAN 10, 20, 30 respectively.

Requirements:

1. Assign the IP address for all PCs and router R1 (the first usable IP for router's interfaces).
2. Create VLAN 10, 20 on both SW1 and SW2.
3. Assign the corresponding VLANs to the ports on Switches.
4. Configure trunking for the link that connects SW1 ↔ SW2, SW2 ↔ SW3.
5. Check if PC1 can communicate PC2, PC3, and PC4.
6. Configure VTP to sync VLAN among three switches. SW1 will be the VTP server, the others will be VTP clients.
7. Create VLAN 30 on SW1. Check if VLAN 30 is propagated to the rest of the switches. Check if PC1 can communicate with other PCs.

C. REQUIREMENTS

You are expected to complete all tasks in section B (Lab tasks). Advanced tasks are optional, and you could get bonus points for completing those tasks.

Your submission must meet the following requirements:

- You need to submit a **detailed lab report in .docx** (*Word Document*) format, **using the report template** provided on the UIT Courses website.
- A report written in English is required.
- When it comes to **programming tasks** (*require you to write an application or script*), please attach all source-code and executable files (if any) in your submission. Please also list the important code snippets followed by explanations and screenshots when running your application in your report. Simply attaching code without any explanation will not receive points.
- Submit work you are proud of – don't be sloppy and lazy!

Your submissions must be your own. You are free to discuss with other classmates to find the solution. However, copying reports is prohibited, even if only a part of your report. Both reports of the owner and the copier will be rejected. Please remember to cite any source of the material (website, book,...) that influences your solution.

Notice: Combine your lab report and all related files into a single **ZIP file (.zip)**, name it as follow:

StudentID_ReportLabX.zip