YILDIZ TECHNICAL UNIVERSITY

FACULTY OF ELECTRICAL AND ELECTRONICS

Computer Networking Technologies

(BLM 3022)

LAB #2 REPORT

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1. INTRODUCTION

A VLAN (Virtual Local Area Network) is designed and configured. VLAN networks both provide a secure network system for users and reduce unnecessary traffic on the network by balancing the traffic on the network, thus increasing performance.

The established structure consists of 3 different sections and each section includes 3 different groups of people. In the case we want, each group of people should be able to communicate within themselves. In addition, groups in the same department should not be able to communicate with each other. In the design of this network infrastructure, four Cisco 2960 Switches and nine computers are used, three of which are connected to each Switch. The structure established is given below.

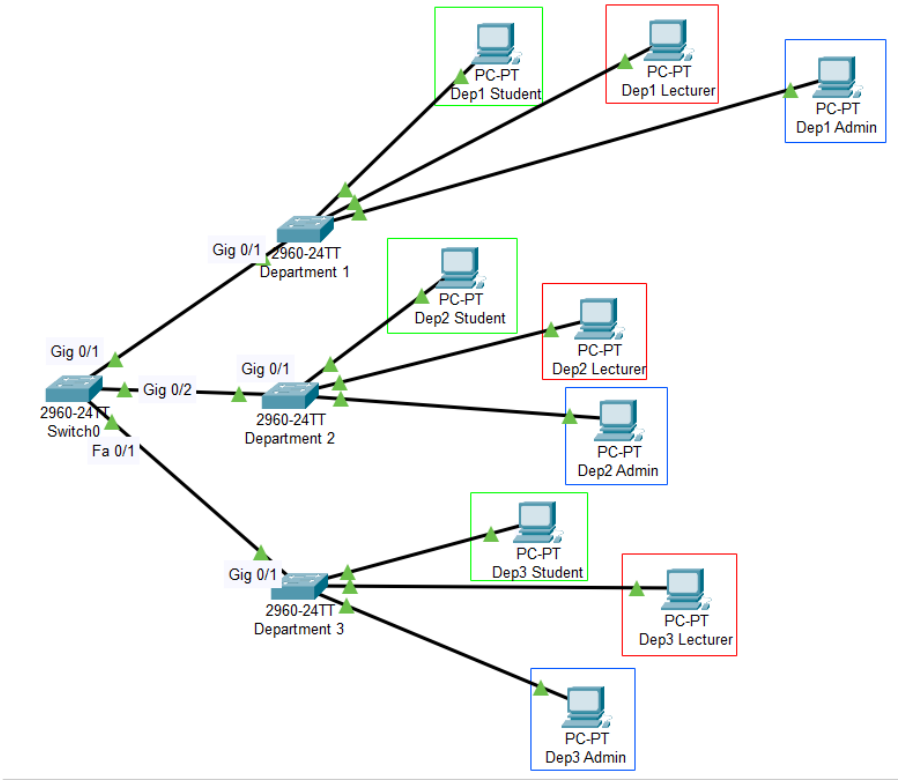


Fig1. VLAN Topology

Switch0 is set to trunk mode and connected to department switches with 2 gigabit ethernet and 1 fast ethernet. Department switches are set to acces mode and connections are established with computers via fast ethernet.

2. METHOD

After the tree topology structure was established, the configuration settings of the switch and end computers were made. The learner group is set to VLAN 10, the teacher group is set to VLAN 20, and the admin group is set to VLAN 30. The following photo shows the department 1 example settings of the admin group.

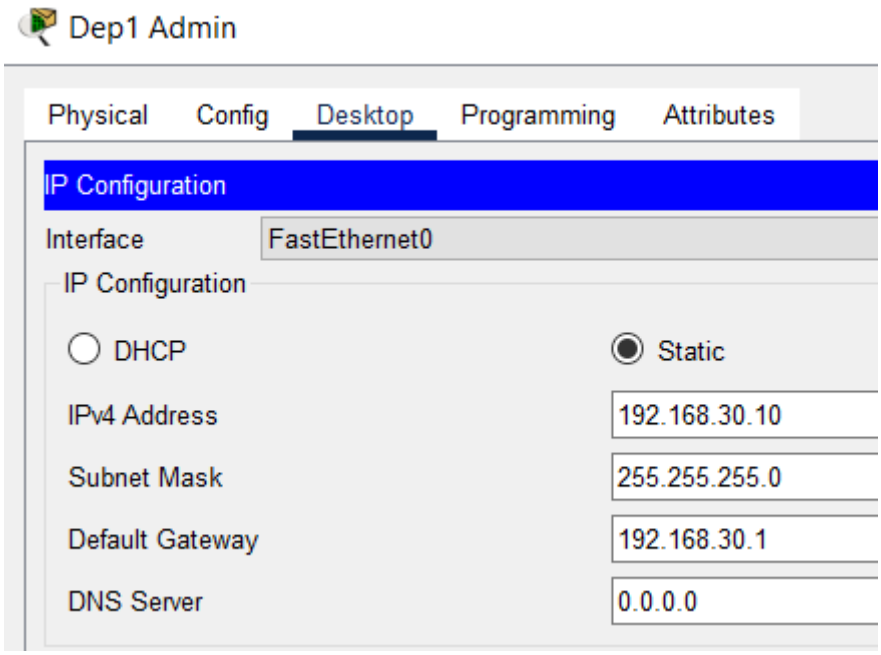


Fig2. Department 1 Admin Configurations

After the computer settings are made, it is necessary to make the switch settings next. In the example below, the VLAN setting of FastEthernet 0/3 for the department 1 switch is set to 30, which is the admin group.

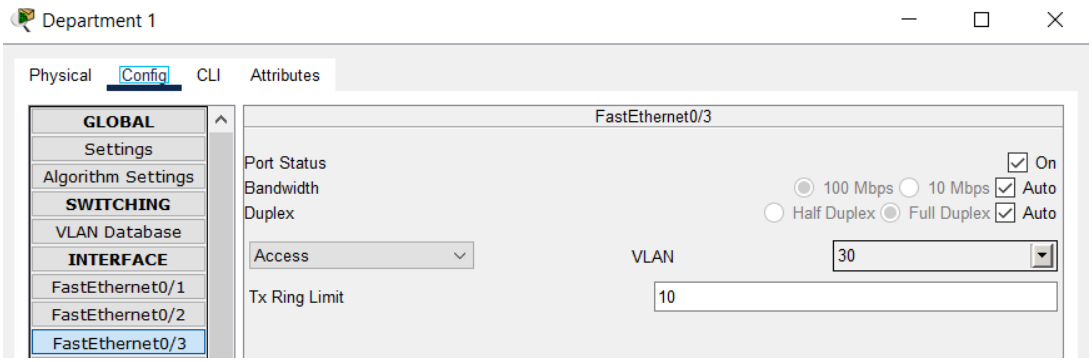


Fig3. Department 1 Switch Configuration Example

Switches inside should be set to access mode, and our only switch outside should be set to trunk mode. Necessary adjustments can be made manually with the application's tools or by typing into the CLI command prompt. In the example below, CLI commands for switching to trunk mode are given as an example.

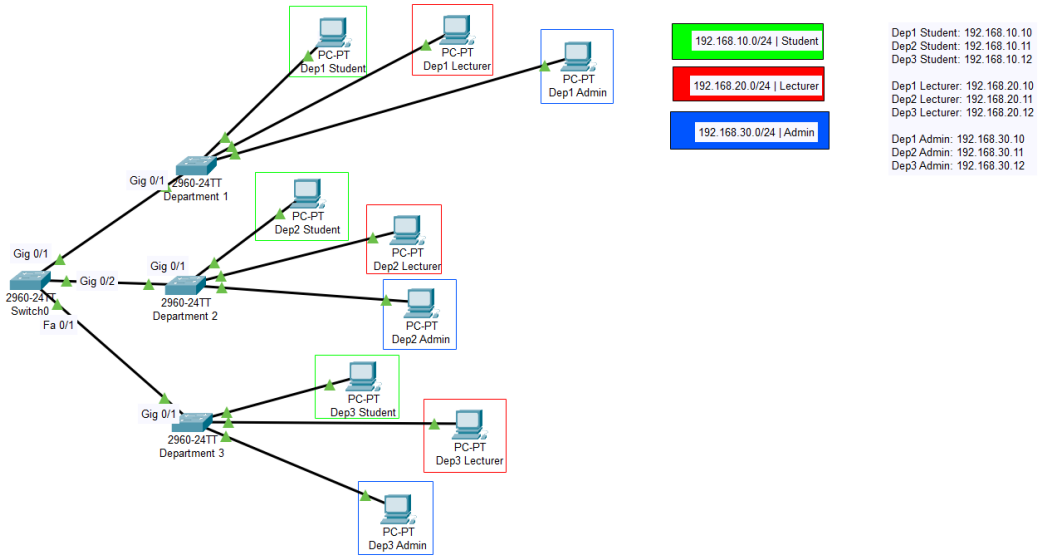
```
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%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
```

```
Switch(config)#interface GigabitEthernet0/2
Switch(config-if)#
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%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
```

Fig4. Switching Port to Trunk Mode

3. RESULTS

As a result of the realized design, communication takes place only between computers connected to the same virtual network.



Fire	Last Status	Source	Destination	Type	Color	Time(sec)
	Successful	Dep1 Student	Dep2 Student	ICMP		0.000
	Failed	Dep1 Student	Dep2 Lecturer	ICMP		0.000
	Failed	Dep1 Student	Dep3 Admin	ICMP		0.000

Fire	Last Status	Source	Destination	Type	Color	Time(sec)
	Failed	Dep2 Student	Dep2 Lecturer	ICMP		0.000
	Failed	Dep2 Student	Dep2 Admin	ICMP		0.000
	Successful	Dep3 Student	Dep2 Student	ICMP		0.000

Fig5. Examples