Version 1.0

CMIT 351 Project 1

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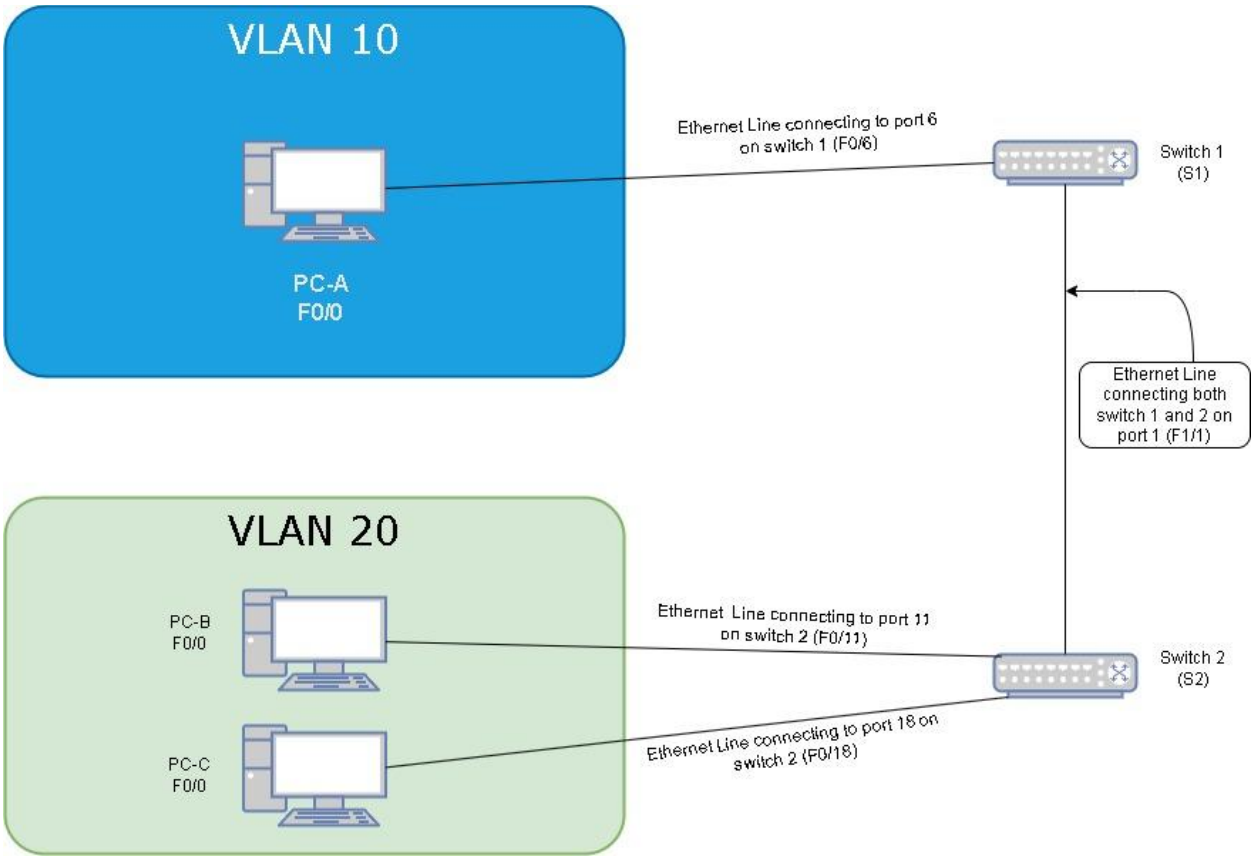
Part 1: Design the Local Area Network



Part 2: Switch configurations

2.1 Cabling

All cabling used in this setup are ethernet cables and the connections are:

1. Port 1 on switch 1(S1) was connected to port 1 on switch 2(S2).
2. PC-A connection port was connected to port 6 on switch 1(S1).
3. PC-B connection port was connected to port 11 on switch 2(S2).
4. PC-C connection port was connected to port 18 on switch 2(S2).

2.2. Configure the basic switch functions

To start, the commands below have to be implemented for both switches. In step 3, substitute S1 for S2 when configuring switch 2 (S2):

1. You must get into Exec mode by typing *en* in the command line interface (CLI) of the switch.
2. After, type in *configure terminal* to get into configuration mode of the switch.
3. Rename the switch to S1 by entering the command: *hostname S1*.
4. To enable the password for the switch, type *enable secret class* to set the password to class.
5. Then change the password for the line configuration 0 by first getting into the interface by typing *line con 0*.
6. After, type *password cisco* to set the password.
7. Next, the same process would be for line vty 0 15. Type *line vty 0 15* to get into that interface.
8. Type *password cisco* to set the password for line vty.
9. Type *exit* to end configuration mode.
10. To set the Message Of The Day (MOTD), get back into configuration mode by typing *configure terminal*.
11. Type *banner Unauthorized access is strictly prohibited.* to change the MOTD.
12. To set synchronous logging in line con 0, get into the interface by typing *line con 0*.
13. Type *logging synchronous* to change the logging.
14. Type *exit* to exit configuration mode and *exit* again to return to user mode.
15. Both switches should now be configured to the settings required.

2.3 Configure the computers

At each computer, get into the ethernet adapter properties and change the IPv4 settings described below:

1. **PC-A** would have an IP address of 192.168.10.3, Subnet of 255.255.255.0 with a default gateway of 192.168.10.1.
2. **PC-B** would have an IP address of 192.168.10.4, Subnet of 255.255.255.0 with a default gateway of 192.168.10.1.
3. **PC-C** would have an IP address of 192.168.20.3, Subnet of 255.255.255.0 with a default gateway of 192.168.20.1.

2.4 Test and Validate Connectivity

- From computer A, I would ping 192.168.10.4 (PC-B) that resulted in a reply from PC-B.
- From computer B, I would ping 192.168.20.3 (PC-C) but resulted in a “request timed out”.
- I would do the same with computer A to ping 192.168.20.3 (PC-C) with the results also ending in “request timed out”.
- Trying vice versa, using computer C to ping both 192.168.10.3 (PC-A) and 192.168.10.4 (PC-B) results in “request timed out”.

Part 3: Define the VLANs

3.1

The commands below apply to both switch 1(S1) and switch 2(S2) when setting up VLANs for Students, Faculty and Management:

- Get into Exec mode by typing *enable* in the command line interface.
- Get into global configuration mode by entering *config t*.
- Create VLAN 10 by typing *vlan 10*. After it is created, enter *name Students* to create the name of VLAN 10.
- Next is to create VLAN 20. Type *vlan 20* to create that vlan.
- After, enter the command *name Faculty* to create the name for VLAN 20.
- Create one more VLAN 99. Type *vlan 99* to create it and type *name Management* to create the name for VLAN 99.

3.2

Defining the interfaces of the VLANs on each switch as directed are as follows:

Switch 1:

VLAN 10

1. From Configuration mode, type *int fa0/6* to be in that interface.
2. Ensure the interface is in access mode by typing *switchport mode access*. Then assign it to VLAN 10 by entering *switchport access vlan 10*.
3. Type *exit* to exit out of that interface.
4. You would also apply this to interfaces 12-20, starting with step 1 again but typing *int range fa0/12-20* instead. Then follow steps 2 and 3 to complete this VLAN setup.
5. Next, you would do it again for interfaces 22-23. Follow step 1 but type *int range fa0/22-23.* Also following steps 2 and 3 to complete this VLAN setup.

VLAN 20

1. From configuration mode, go into interface 11 typing *int fa0/11*.
2. Ensure the interface is in access mode by typing *switchport mode access*. Then assign it to VLAN 20 by entering *switchport access vlan 20*.
3. Type *exit* to exit out of that interface.
4. Next is to have interface 21 part of VLAN 20 by typing *int fa0/21*.
5. Then follow steps 2 and 3 to complete this interface VLAN setup.

VLAN 99

1. Enter vlan 99 to enter that interface in the command line interface.
2. Type *ip address 192.168.11 255.255.255.0* to assign that specific ip address to VLAN 99.
3. Type *no shutdown* to make it an up state.
4. Type *end* to finish configuration.

Switch 2:

VLAN 10

1. From Configuration mode, type *int fa0/11* to be in that interface.
2. Ensure the interface is in access mode by typing *switchport mode access*. Then assign it to VLAN 10 by entering *switchport access vlan 10*.

VLAN 20

1. From configuration mode, go into interface 18 typing *int fa0/18*.
2. Ensure the interface is in access mode by typing *switchport mode access*. Then assign it to VLAN 20 by entering *switchport access vlan 20*.

VLAN 99

1. Enter *vlan 99* to enter that interface in the command line interface.
2. Type *ip address 192.168.12 255.255.255.0* to assign that specific ip address to VLAN 99.
3. Type *no shutdown* to make it an up state.
4. Type *end* to finish configuration.

Part 4: Implement VLAN Trunking

4.1

Apply the settings below to both switch 1(S1) and switch 2(S2). To enable VLAN trunking on interface 1 on both switches:

1. Enter Exec mode by typing *enable* in the command line interface.
2. You can type *show interfaces status* to verify first that interface 1 is not in trunk mode. (Note: Fa 0/1 as interface 1)
3. Then you have to enter configuration mode by typing *configure terminal* or *conf t*.
4. You then have to get into interface 1 by typing *interface fa 0/1*, or *int fa 0/1*.
5. Type *switchport mode trunk* to change that interface to trunk mode.
6. Type *end* to exit out of the interface and to exit configuration mode.

4.2

To verify the connections in with VLAN trunking set up, used the ping command again at each PC. PC-C (VLAN 20) were unable to communicate with either PC-A or PC-B and vice versa. PC-A (VLAN 10) and PC-B (VLAN 10) were able to communicate with each other.