Report 1

VLAN and Switches

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Introduction

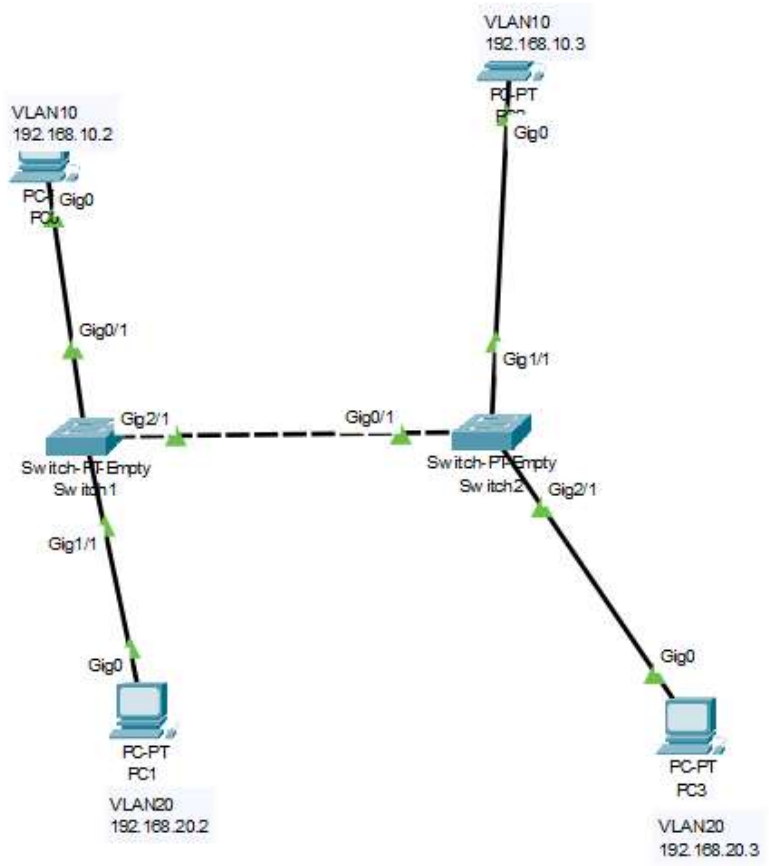
In assignment, we have taken two switches, switch1 and switch2, and both switches are connected to 2 personal computers each. The two switches are connected. The main purpose of the assignment is to show how two devices connected in different switches can be connected through VLANs (Virtual Local Area Network) and trunking is a technique of connecting one VLAN to another through (using switches in this case). So, a device in one switch would be able to connect to another device in another switch if they are in the same VLAN.

Equipment/Software Setup:

Assignment 1 is performed in Cisco Packet Tracer; a virtual cross-platform visual simulation tool for creating network topologies and simulating modern computer networks. For this assignment, 2 empty switches (Switch1 and Switch2) are used and 4 personal computers (PC0, PC1, PC2, PC3) are taken. Then, all the items are linked together with Ethernet cable. Here, 1CGE cable is taken to connect all the items present in the simulation. PC0 and PC1 are connected to switch1 and PC2 and PC3 are linked to switch2 and both switch1 and switch2 are also linked. Built-in CLI switches are also used to setup the connection.

Initial Configuration:

In Switch1, we first set the hostname to OLD_MAIN and HOL for Switch 2 using the command: “hostname YOUR_HOSTNAME”, replacing YOUR_HOSTNAME with OLD_MAIN for Switch1 and HOL for Switch2. Then DNS lookup was disabled using the command “no ip domain-lookup” in both switches. After this, we enable secret password using “enable secret CTIRSUCO” command. This will ask you password every time enable is entered in the terminal. Then we create a local user named “anthony” with password “CTIRSUCO1$2%3” by using “username Anthony secret CTIRSUCO1$2%3” for added security. For only Switch2, we also add synchronous logging with exec-timeout of 8 15 using command “line console 0”, “logging synchronous”, “login local” and “exec-timeout 81 5”.
Furthermore, we add domain name using the command “ip domain-name anthonytru.com” and generate RSA modulus of 2048 using “crypto key generate rsa” and press enter and then enter the modulus value of 2048. Finally we configure VTY for local login and SSH access using the command “line vty 015”, “login local”, “transport input ssh” and for Switch2 we also add another command “exec-timeout 8 9” to give exec-timeout of 8 09.



VLAN Configuration:

VLAN 10 named “SALES” and VLAN 20 named “TECH” is created in Switch1 using the command “vlan 10”, “name SALES” and “vlan 20”, “names TECH”, respectively. “do show vlan brief” command is used to check whether VLANs have been setup correctly or not. Then ethernet interfaces Gig0/1 and Gig1/1 are configured as access ports in VLAN 10 and 20 respectively using the command “interface GigabitEthernet0/1”, “switchport mode accesss”, “switchport access vlan 10”, and for gig1/1 replacing the first command with 1/1 and replacing vlan 10 with vlan 20 in the last command. To verify vlan we can use the command “show vlan” as it lists out all VLANs configured on the switch with all its ids and names and other details.

To see the interface “show interface GigabitEthernet0/1” and “show interface GIgabitEthernet1/1” can be used to check. In Switch2, gig1/1 and gig2/1 is also configured as access port in vlan 10 and 20 respectively using the command as used for the above ethernets. To verify Switch2, “show vlan brief” could be used.

Trunking Configuration:

On Switch1, to configure GigabitEternet2/1 as a Trunk port we use the command, “interface GIgabitEthernet2/1”, and “switchport mode trunk”. To remove access VLAN Configuration on Gig2/1 we use the command “switchport access vlan 1”. To allow VLANs 1, 10, 20 on the Trunkport, “Switchport trunk allow vlan 1,10,20” command is used. This is done for gib0/1 as well in Switch2. To check trunking, “show interfaces INTERFACE switchport” command can be used, replacing INTERFACE with gig2/1 or with gig0/1.

Verification and Testing:

To verify VLAN configuration on Switch1 and Switch2“show vlan brief” as it shows all VLAN IDs, names as well as the ethernet connected to it. You can also use “do show brief” command. To verify trunking Configuration “show interfaces GigabitEthernet0/1 switchport” command can be used for Switch2 and “show interfaces GigabitEthernet2/1” for Switch1.

TO test whether the PC in the same VLANs could be connected, we can go to one of the PC and ping to the other PC in the same VLAN. It can check for both VLAN 20 and VLAN 10. The pinging is done in the command prompt of the respected PC. The command example is as follows: “ping 192.168.10.3”. If the pings are successful, we get a proper reply from the other PC as it will say that all packet is received. If failed, it will show the packet loss in the command prompt.

Conclusion:

Hence, from the above assignment, we can conclude that even though two PC are connected to two different switches, they could be connected by connecting them to same VLAN and then connecting using trunking. It also improves security. The main challenge for this assignment was to check whether the trunking was working properly as well as to generate a RSA key to modulus 2048bits, as most of the command was given combines which were not working. It only worked when the code was split which took a long time to figure out.