Final Project CN-1: Subnet an IPv4 Network

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Introduction:  
 The goal of this assignment was to Subnet an IPv4 Network using Cisco Packet Tracer. Through taking given information, configuring the devices, and with some troubleshooting, our end goal is to have a working simulation. In the next few pages, I will be discussing my process of creation for the Cisco Packet Tracer, how I was able to configure the topology, as well as the troubleshooting and what came from my results. Working alone on this project, I found this final project time consuming but very interesting to visually see what we have been learning in class this term. In the last few pages, I have created an index of screenshots that I have referenced throughout my report.

Part 1:  
 In part 1, I was instructed to create a subnetting scheme based on the table given in the project’s word document. I initially started off by gathering all of the devices from the Addressing Table and laying them out into Cisco Packet Tracer. I selected the devices based on what interfaces they had in their config. I had to configure some of the device’s interfaces manually to reflect the ones needed in the Addressing Table. I was able to do this by going into the physical view of the routers. I had to turn off the device first by clicking the visual power button, once it was off, I was able to drag the modules that best reflected the interfaces needed in the Addressing Table. Then, I looked at the IP addresses and the Default Gateway’s from the Addressing table to figure out what devices are linked to one another. This is why I placed the devices the way that I did. I then used the Automatic Connection Type to figure out what wires I need for the different connections to the devices. Then once I connected wires to everything, some wires were waiting to connect (orange), and some were automatically connected (green). Once I was finished with all of the configurations in Part 2, the whole topology was fully connected. An image of my completed topology can be seen in Figure 1.1 – Cisco PT Subnet for IPv4 Network. This part of the project was the most time consuming with trying to strategically figure out where everything goes and how to get the specific interfaces that are required. Once this part was completed, then I headed to Part 2 to configure the specifications of the devices.  
  
Part 2:  
 In Step 1, Once everything was connected, I began to configure the CustomerRouter. In the CLI section on the window that pops up when clicking on devices, I typed the code “enable”, once the system was enabled, I typed “configure terminal”. This is what is going to allow me to configure all the information listed in Part 2-Step 1. In the same CLI window, I used the command “hostname CustomerRouter” to set the host name to CustomerRouter as per the table. After that, I enabled the secret password on Customer Router to Class123 with the command “enable secret Class123”. The next line I entered into the CLI was “line con 0”. This line of code is used to connect a switch/router or in our case, both. After that I said the login password to Cisco123 with the command “password Cisco123”. I then configured the G0/0 and G0/1 interfaces with the IP addresses and subnet masks from the table given in Part 1, which can be found in the CN Project 1 Document on Teams. After setting the IP address, I used the command “no shutdown” to enable the interface. Once I completed entering the IP addresses, subnet masks, and enabling the interfaces it was time to finish configuring the terminal. I finished the configuration with entering the command “end”, which will let the system know I was finished configuring the terminal.

In step 2, when I needed to configure the two customer LAN switches, I had to go back to the CLI Window (Reference Fig. 1.2). I started with VLAN-A Switch. This is when I enabled the configure terminal again. Then I set the interface to VLAN 1. Once I set the interface, I set the IP address to reflect the Addressing Table. I then typed “no shutdown to enable the interface. Finally, I set the “ip default-gateway” to the address of the Customer Router at G0/0. I repeated this step with VLAN-B Switch. The only difference is that I set the “ip default-gateway” to the address of the Customer Router at G0/1.

In step 3, to configure the IP address, subnet mask, and default gateway settings I first clicked on PC-A. In the config section of the window, I entered in the default gateway under IPv4 within the Settings tab on the left side (Reference Figure 2.1). To configure the IP address and the subnet mask, in the left side under FastEthernet0, I entered both IPs in which reflect the ones shown in the Address Table. For PC-B I went ahead and did the same steps, clicked on PC-B, clicked on config, under settings entered the Default Gateway. Then under FastEthernet0 I entered the IP address and the subnet mask under the IPv4 section of the IP configuration (Reference Figure 2.2).

Part 3:  
 In part 3 we are asked to test and trouble shoot. First, we are directed to use the ping command to determine if PC-A can communicate with its default gateway. Then we want to figure out if we get a reply. When I went into PC-A’s Desktop GUI (Reference Figure 3.1), I went into the Command Prompt option where it brought up a terminal which allows me to run the Ping command. I typed the command “ping 192.168.0.1” (Reference Figure 3.2). After running the command, PC-A sent 4 packets to the default gateway (aka the Customer Router), and it does reply that it has received 4 packets.   
 In the next part, we are asked to determine if PC-B can communicate with its default gateway. It also wants to know if we get a reply. I went through the same steps for PC-A, for PC-B. I went to the Desktop GUI into the Command Prompt where I entered the command, “ping 192.168.0.65“. We can see from Figure 3.3: PC-B Communication to Default Gateway, that it can communicate as well as we get the reply that 4 packets were sent and received.

Finally, we need to determine if PC-A can communicate with PC-B. We will need to go back into the Command Prompt within PC-A and type in the command “ping 192.168.0.126”, which is PC-B’s IP address. We can see in Figure 3.4: PC-A Communicating to PC-B, that we they can communicate as well as we get a reply the same as the previous parts above.

Furthermore, to close out this report, I have successfully completed all the objectives. I designed an IPv4 network subnetting scheme, I configured the devices based on the tables given in the initial project report, and I tested and troubleshooted the network to ensure it all works correctly.

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Graphical user interface, text

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Figure 1.1: Cisco PT Subnet for IPv4 Network Figure 1.2: CLI Window

Graphical user interface, text, application, email

Description automatically generatedGraphical user interface, application

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Figure 2.1: PC-A Config Window Figure 2.2 PC-B FastEthernet0 Window

A picture containing text, monitor, electronics, display

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Graphical user interface, text

Description automatically generatedFigure 3.1: PC-A Desktop GUI

Figure 3.2: PC-A Communicating with its default gateway

Text

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Figure 3.3: PC-B Communication to Default Gateway

Graphical user interface, text

Description automatically generated

Figure 3.4: PC-A Communicating to PC-B