



Department of Computer Science and Engineering
Islamic University of Technology (IUT)
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Lab Report 01_1

CSE 4512: Computer Networks Lab

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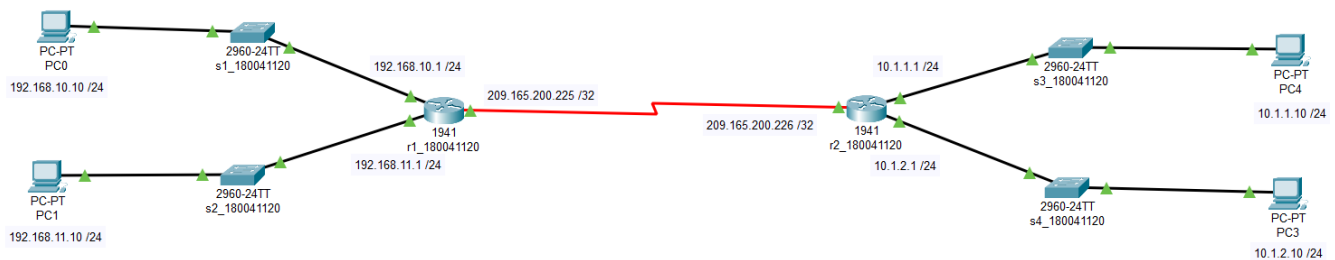
Date of Submission: 05-06-21

Title: Configure router using static routing to connect multiple networks in Cisco Packet Tracer

Objectives:

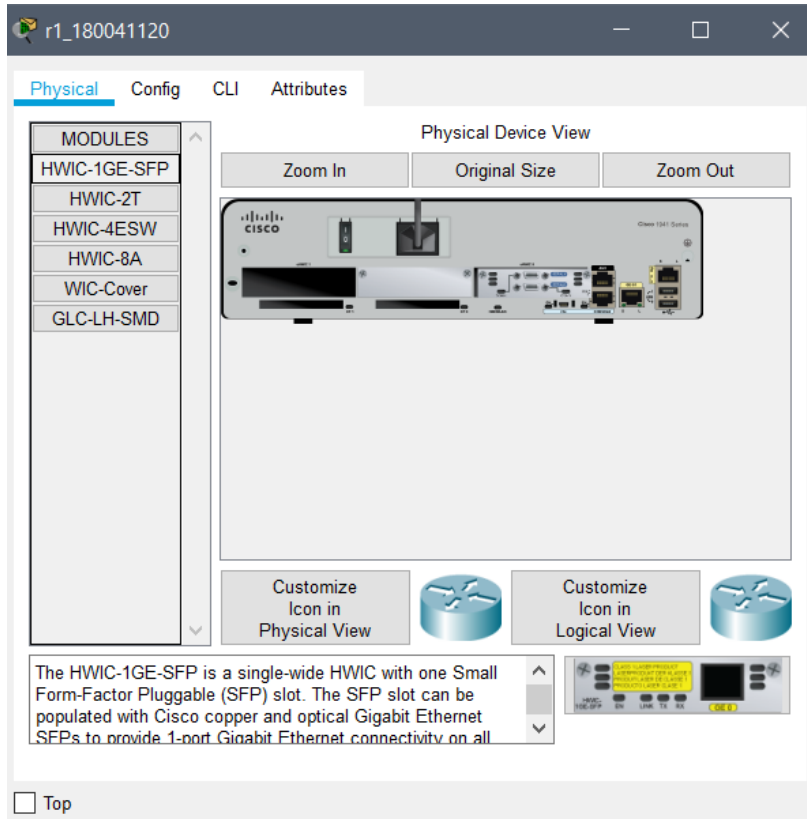
1. Understand how to operate Cisco Packet Tracer
2. Learn to create and connect multiple networks using static routing
3. Understand wiring of different network components like router, switch, PC etc.
4. Configure router and switch interfaces
5. Verify connectivity of the network

Diagram of the experiment:



Working Procedure:

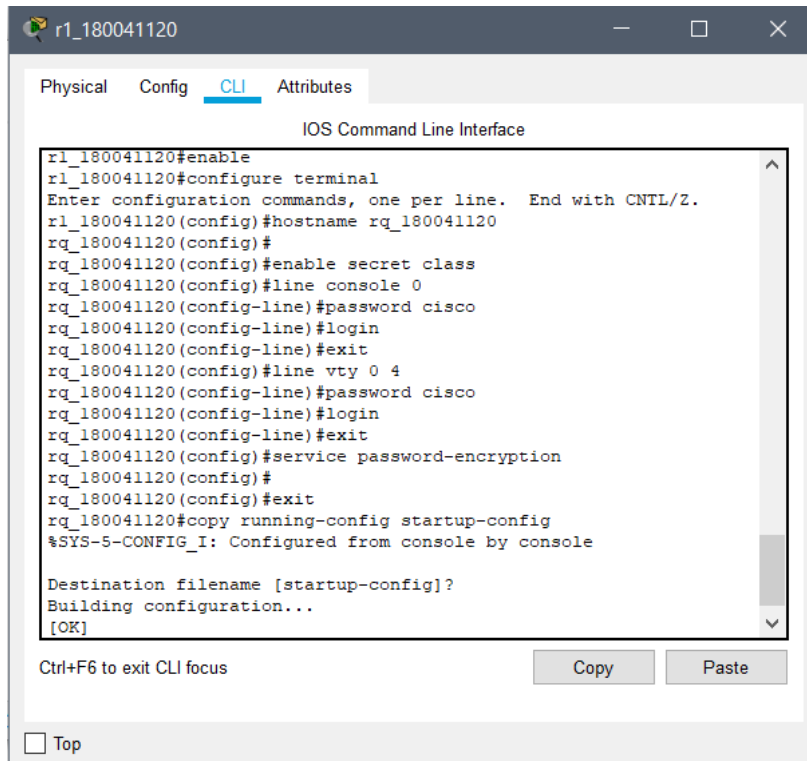
- I. At first I selected the necessary components for our topology. For the routers, I selected the 1941 model, for the switch I selected the 2960-24TT model, and for end devices I selected PC-PT.
- II. Then I added the necessary modules required for the devices. In the given topology, the router needs to be connected to two switches through gigabit ethernet and another router through serial port. For this I need a router with at least 2 gigabit ethernet ports and at least 1 serial port. The router I selected has two gigabit ethernet ports. For adding serial ports, I added the module HWIC-2T which provided the router 2 more serial ports for serial communication. The module was added after turning off the router and clicking on the HWIC-2T in physical mode. Then the module was dragged and put on the back of the router.



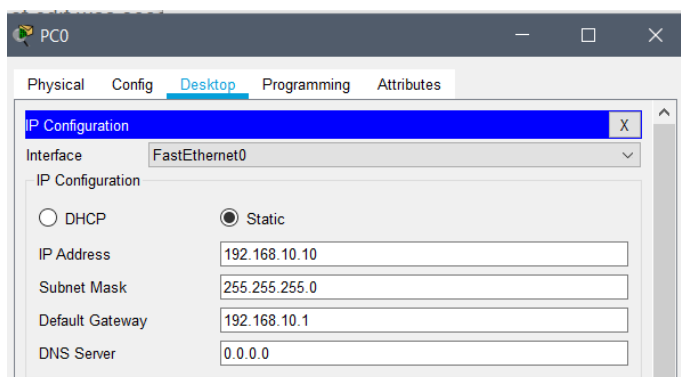
III. After adding the modules, I connected the routers using automatic connection.



IV. Then each router was configured with the given instructions by going to the router's CLI. The hostname was changed to routerNo_180041120. The necessary IP addresses were also set as given in the lab handout diagram.



- V. The router and switch display names were changed. All the devices were labeled with respective IP addresses.
- VI. The PC IP addresses were configured by clicking on the PC and going to Desktop>IP configuration. The IP addresses and masks are set as given in the diagram. The default gateway was set to the IP address of the interface of the router connecting that end device. In the given topology, it is the interface that the next switch is connected to.



- VII. Then the configuration was verified by checking the brief status of all the IP interfaces of the router. We used

```
show ip interface brief
```

And then the pings were checked for connected devices.

```

rq_180041120#show ip interface brief
Interface          IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0  192.168.10.1    YES manual up
up
GigabitEthernet0/1  192.168.11.1    YES manual up
up
Serial10/0/0        209.165.200.225 YES manual up
up
Serial10/0/1        unassigned      YES unset
administratively down down
Vlan1               unassigned      YES unset
administratively down down
rq_180041120#

```

Ctrl+F6 to exit CLI focus

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- VIII. Finally, if checked if the gateway router can be reached from the end devices by going to the PC, the Desktop>Command Prompt. Then I ran the command

```
ping ip_address
```

where ip_address is replaced by the actual IP address of the gateway router I was trying to reach from that end device.

```

PC0
Physical Config Desktop Programming Attributes
Command Prompt
Request timed out.
Reply from 192.168.11.10: bytes=32 time<1ms TTL=127
Reply from 192.168.11.10: bytes=32 time<1ms TTL=127
Reply from 192.168.11.10: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.11.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
C:\>ping 209.165.200.225

Pinging 209.165.200.225 with 32 bytes of data:

Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255

Ping statistics for 209.165.200.225:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>

```

Questions:

Q1. Write the command for adding a **motd banner** with the string "*Restricted Access. Only for authorized individuals.*"

Ans:

```
router_name(config)# banner motd
#Restricted Access. Only for authorized individuals.
#
```

Q2. What is the recommended way of enabling password in a cisco device? Why is it better than other methods?

Ans: The recommended way of enabling passwords is to use the `secret` command -

```
router_name(config)# enable secret password_name
```

The `secret` command doesn't store the plain text of the password. It instead stores the md5 hash of the password and thus provides better security.

Q3. What are the differences between DCE and DTE cables?

Ans: A DTE or Data Terminal Equipment are devices that have no networking capabilities and act as an information source or sink. They connect to DCE or Data communication equipment for networking where DCE converts the signals to appropriate format for transmission. DTEs are usually the serial port of a computer and DCEs are usually modem, networking interface and so on. The cabling used to connect DTEs with DCEs are DCE cables while the cables used to connect DCEs with other DCEs are DCE cables.

Q4. Write the command to check the status of all interfaces in a router.

Ans:

```
show ip interface brief
```

Q5. How do you make all the configuration changes in a cisco device persistent? What would happen if you don't do this?

Ans: We need to save the running configuration using the command

```
router_name# copy running-config startup-config
```

If we don't do this then the configuration changes will not be saved once we turn off the router, and thus the router will go back to the previous configuration after rebooting.

Challenges:

- I faced little difficulty in attaching modules as I didn't know how to find and attach modules. I initially started with a different router with three gigabit interfaces but later figured out a router with two gigabit interfaces and a serial module should suffice. I had to search for the procedure of attaching modules to routers.

Overall the challenges I faced weren't major and I was able to overcome them by investing some time and effort.