Final Assignment
CENG 3007, Computer Networks

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Abstract

In this assignment, I constructed a topology using Cisco Packet Tracer. The topology contains 3 networks connected via Router. I connected devices using both IPv4 and IPv6. I configured each netmask of 3 networks to support ip need. I enabled password and configured telnet communication. I configured a DNS server that reachable from PC0. This report includes the documantation of my progress and tasks with pictures.

Introduction

The goal of this assignment is for us improve our skills and familiarity with Cisco Packet Tracer to learn the basics and fundamentals of networking. Cisco Packet Tracer is easy to use and has a friendly interface, so beginners like me can improve relatively fast.

Assignments

My task is to create a topology with three networks as shown in the assignment paper and apply multiple configurations to the network. I will separately show my progress in each task.

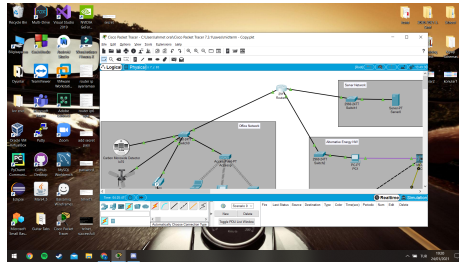# 1) Install packet tracer on your PC/laptop

Screenshot :

Figure 1

2) Implement the topology

I implemented the topology as asked in the assignment paper. I created 3 networks with required devices and appropriate cabling. I wrote the IPv4, IPv6 and Subnet Masks of the networks as Notes in topology.

For office network IPv4 address starts with 200.100.10.1 and Subnet Mask is 255.255.255.192 because max IP need for office is 100. 255.255.255.192 Netmask is the closest one (but not higher) to 100 with 64 addresses, thats why I used it.

Alternative Energy network uses IPv4 address of 200.100.20.1 and 255.255.255.224 because max ip need is 50 and this Netmask is the one closest to it.

Server Network's IPv4 address starts with 200.100.30.1 and Netmask of 255.255.255.240. Netmask is choosen because of the same reason, it was closest to max ip need which is 20.
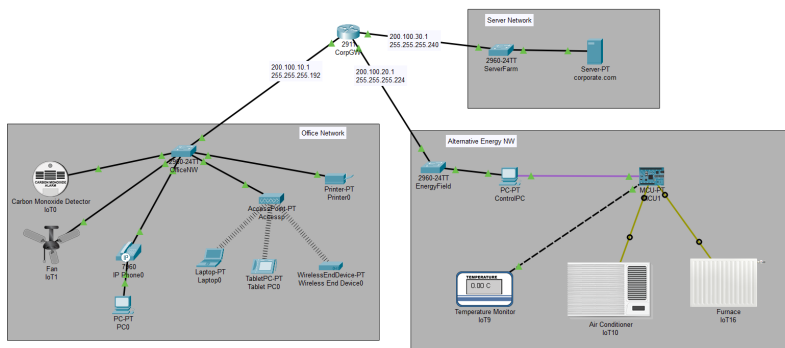

Figure 2

3) Subnetting

I configured the Subnet Masks of the networks according to the IP Need(max). At first I didn't understand but I think choosing the Netmask with closest number of addresses without exceeding the max Ip limit is the right way. I know that a Netmask with the Ip of '255.255.255.128/25' have total of 128 addresses, and a Netmask with Ip of '255.255.255.192/26' have total of 64 addresses. So, for the Office Network I choosed the one with '192/26' because it has less than 100 addresses but still, it is closest to 100. I applied the same logic to other networks.

	IP Need (Max)	IPV4 Nw	IPV4 Prefix	IPv6 NW	IPv6 Prefix
FULL		200.100.10.0	/24	2001:DB8:ACAD::	/64
OFFICE NW	100	200.100.10.1	/26	2001:DB8:ACAD:1::1/64	/64
Alternative Energy NW	50	200.100.20.1	/27	2001:DB8:ACAD:1::2/64	/64
SERVER NW	20	200.100.30.1	/28	2001:DB8:ACAD:1::3/64	/64

Figure 3
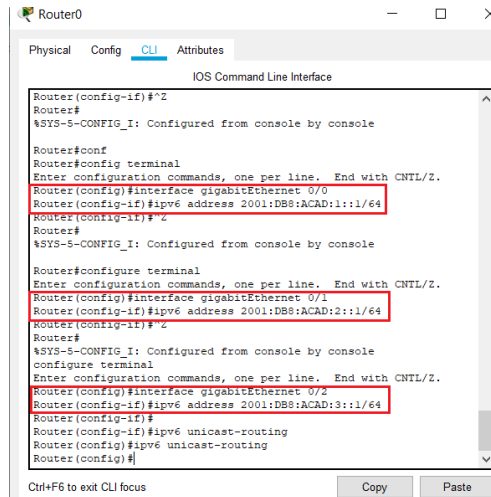
4) IP Address Assignment

Device	IPV4 Address	IPv6 Address
Server	200.100.30.2	2001:DB8:ACAD:1::1/64
PC0	200.100.10.4	2001:DB8:ACAD:1:205:5EFF:FEA7:B20D/64
ControlPC	200.100.20.2	2001:DB8:ACAD:2:205:5EFF:FE53:28D2/64

Figure 4

5) Router IOS Config

5.1) Router ethernet interface IPV4 IPV6 config for 3 NWs

I configured IPv4 and IPv6 addresses for 3 networks in routers interface. IPv4 was very straightforward as I just simply write the numbers in the IPv4 area. For IPv6 commands I wrote are in the figure left.

5.2) Enable secret pass "netseclab"

```
Router#config t
Enter configuration commands, one per line.
Router(config)#enable secret netseclab
Router(config)#^Z
Router#
```

I enabled the secret pass as 'netseclab'

```
Router>enable
Password:
Router#password = netseclab
```

To 'enable' the router, it requires the password and as shown in the figure on left, user can enter the password to continue.

5.3) Config which will enable telnet communication to the device

```
Router(config)#username ahmet privilege 15 password cisco123
Router(config)#line vty 0 4
Router(config-line)#login local
Router(config-line)#privilege level 15
Router(config-line)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#wr
Building configuration...
[OK]
Router#
Router#
```

I configured the telnet communication from the router with the as username: 'ahmet' , password: 'cisco123'. And I used privilege level 15.

```
C:\>telnet 200.100.10.130
Trying 200.100.10.130 ...Open


User Access Verification

Username: ahmet
Password:
Router#Im in Router!
```

Figure on the left is from the terminal of 'PC0'. From PC0 we can succesfully connect to Router using telnet communication using the username and password we determined.

6) D. IP Connectivity Control


```
Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:ACAD:3::1

Pinging 2001:DB8:ACAD:3::1 with 32 bytes of data:

Reply from 2001:DB8:ACAD:3::1: bytes=32 time=1ms TTL=255
Reply from 2001:DB8:ACAD:3::1: bytes=32 time<1ms TTL=255
Reply from 2001:DB8:ACAD:3::1: bytes=32 time<1ms TTL=255
Reply from 2001:DB8:ACAD:3::1: bytes=32 time<1ms TTL=255

Ping statistics for 2001:DB8:ACAD:3::1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

```
C:\>ping 200.100.30.2

Pinging 200.100.30.2 with 32 bytes of data:

Reply from 200.100.30.2: bytes=32 time<1ms TTL=127
Reply from 200.100.30.2: bytes=32 time=1ms TTL=127
Reply from 200.100.30.2: bytes=32 time<1ms TTL=127
Reply from 200.100.30.2: bytes=32 time<1ms TTL=127

Ping statistics for 200.100.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```
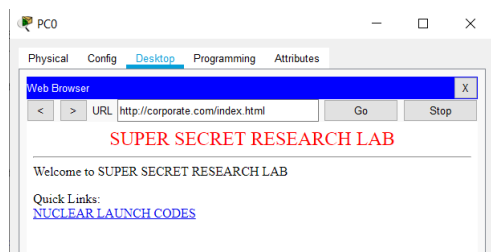
(a) IPv6   (b) IPv4

Figure 5: Pinging Server from PC0

7) Server NW Services

From the services inside Server, I configured the webiste with the address of corporate.com. I configured DNS server for PC0 to reach web server by writing corporate.com on the browser.

1 Conclusion

So in this assignment I tried to get every aspect of my tasks correct because I couldn't manage the bonus part. I wanted to create a system that measures the temperature and automatically decides to open Furnace or Air Conditioner according to temperature. But I failed and lost my interest, so sadly I leave the bonus part empty. Besides that, in my midterm I had created a network with 3 vlans and 3 routers, I also learned to create web server for fun. I used these ways I learned from that time and applied it. I hope I didn't misunderstood any of my tasks because it is something that happens to me a lot. Furthermore, in this task, I learned how to use IPv6 and Subnet Mask which looks simple at first but as I started to work on I realized how much I don't know. I tried to close my gap of knowledge and worked to learn new things. I really like the simplicity of Cisco Packet Tracer and I enjoy working with it.