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2 Assignments

After connect network devices with cable, i gave IPv6 addresses to gigabit ethernet interfaces with this commands with routers command line interface. Command for g0/1 was "ipv6 address 2001:DB8:ACAD:0002::1/64" and for g0/2 was "ipv6 address 2001:DB8:ACAD:0003::1/64". I also enabled secret pass "netseclab" here.

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable secret netseclab
Router(config)#ipv6 unicast-routing
Router(config)#int g0/0
Router(config-if)#ipv6 address 2001:DB8:ACAD:0001::1/64
Router(config-if)#no shutdown
```

Then i gave IPv4 addresses to gigabit ethernet interfaces with this commands with routers command line interface. Command for g0/1 was "ip address 200.100.20.1 255.225.255.192" and command for g0/2 was "ip address 200.100.20.1 255.225.255.224". We can see giving IPv4 address to bigger network will be a headache but IPv6 addresses will be easy. Because difference of IP address number is very big between IPv4 and IPv6.

```
Router(config)#int g0/0
Router(config-if)#ip address 200.100.10.1 255.255.255.128
Router(config-if)#no shutdown
```

2.1 Subnetting

Here is subnet table of the IPv4 and IPv6 networks. IPv4 prefix should be like this because office network needed more addresses.

	IP Need (Max)	IPv4 Nw	IPv4 Prefix	IPv6 NW	IPv6 Prefix
FULL		200.100.10.0	/24	2001:DB8:ACAD::	/48
OFFICE NW	100	200.100.10.1	/25	2001:DB8:ACAD:0001::1	/64
Alternative Energy NW	50	200.100.20.1	/26	2001:DB8:ACAD:0002::1	/64
SERVER NW	20	200.100.30.1	/27	2001:DB8:ACAD:0003::1	/64

2.2 IP Address Assignment

In this part i gave static IP addresses to given network devices in table. Normally, IPv6 addresses should be given auto but in this assignment i have to use server with static IP. From IP

configuration menu of network devices, IP could give auto.

Device	IPv4 Address	IPv6 Address
Server	200.100.30.2/27	2001:DB8:ACAD:0003::2/64
PC0	200.100.10.2/25	2001:DB8:ACAD:0001::2/64
ControlPC	200.100.10.2/26	2001:DB8:ACAD:0002::2/64

2.3 Telnet

Telnet is an application protocol used on the Internet or local area network to provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection. In this part i configured telnet between router and PC0 with this commands on router CLI.

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

Here is what happened when i wrote showline command to router and PC0 CLIs after telnet configuration.

```
Trying 200.100.10.1 ...Open
User Access Verification
Username: cisco
Password:
Router#
Router#show line
  Tty Line Typ Tx/Rx A Roty AccO AccI Uses Noise
Overruns Int
* 0 0 CTY - - - - 0 0
0/0 -
0/0 1 1 AUX 9600/9600 - - - - 0 0
0/0 -
* 388 388 VTY - - - - 8 0
0/0 -
389 389 VTY - - - - 0 0
0/0 -
390 390 VTY - - - - 0 0
0/0 -
391 391 VTY - - - - 0 0
0/0 -
392 392 VTY - - - - 0 0
0/0 -
Line(s) not in async mode -or- with no hardware support:
3-387
```

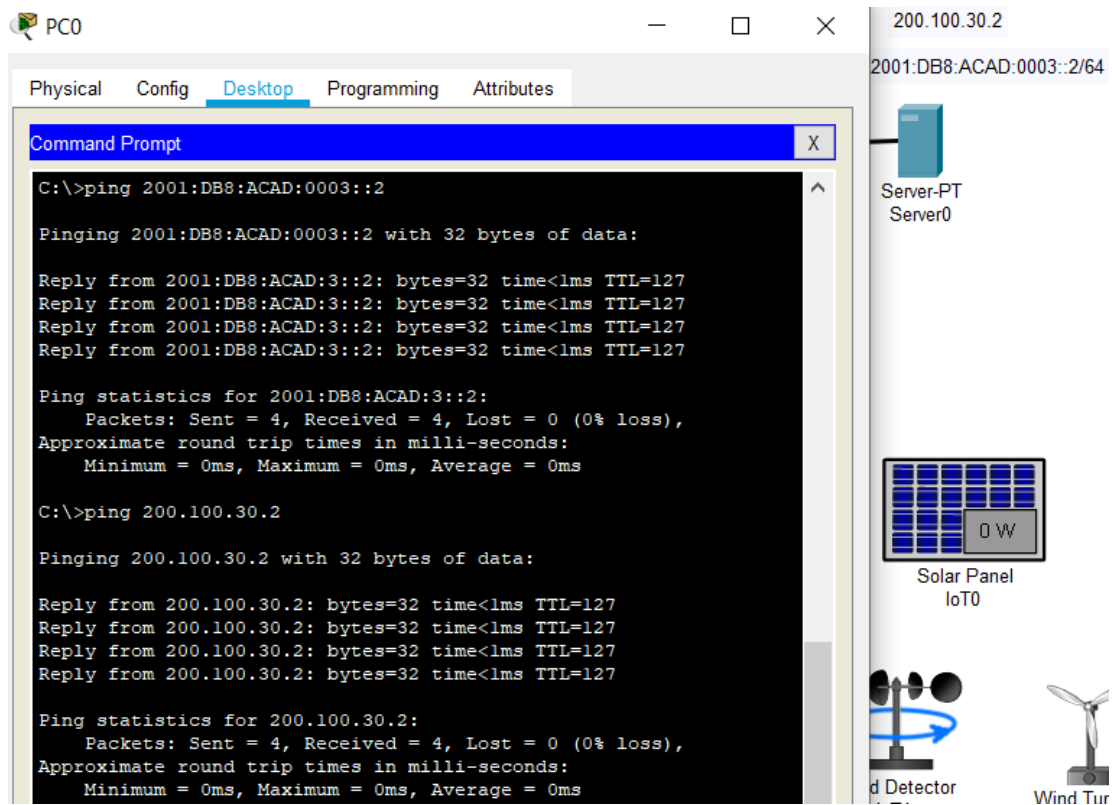
Physical
Config
CLI
Attributes

IOS Command Line Interface

```
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show line
  Tty Line Typ Tx/Rx A Roty AccO AccI Uses Noise
Overruns Int
* 0 0 CTY - - - - 0 0
0/0 -
0/0 1 1 AUX 9600/9600 - - - - 0 0
0/0 -
* 388 388 VTY - - - - 8 0
0/0 -
389 389 VTY - - - - 0 0
0/0 -
390 390 VTY - - - - 0 0
0/0 -
391 391 VTY - - - - 0 0
0/0 -
392 392 VTY - - - - 0 0
0/0 -
Line(s) not in async mode -or- with no hardware support:
3-387
```

2.4 IP Connectivity Control

In this part i proved connection between server and PC0 with ping command. I wrote ping command for both IPv6 and IPv4 addresses of server from PC0's command prompt. Ping value was zero because there was wired connection.



"arp -a" command shows your devices connection. I wrote this command to PC0's command prompt and it only shows routers g0/0 IPv4 address and MAC address(physical address). We can not see address of devices from other networks here. Also "arp -a" command does not work for IPv6 connection.

```
C:\>arp -a

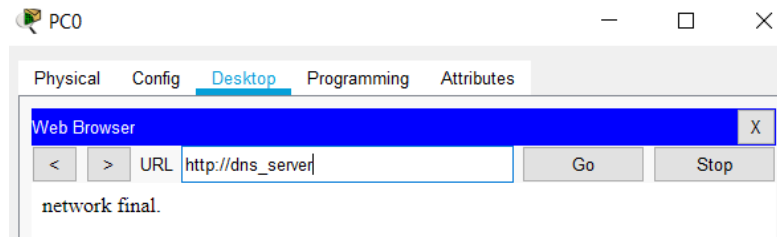
Internet Address      Physical Address      Type
200.100.10.1          00d0.ba51.2b01        dynamic
```

2.5 Server NW Services

In this part i configured a DNS server with using server0 with IPv4 addresses.

<div>Add</div> <div>Save</div> <div>Remove</div>			
No.	Name	Type	Detail
0	dns_server	A Record	200.100.30.2
1	pc0	A Record	200.100.10.2

Here as you can see i connected server with dns-server name. This name can be different.



Then i wrote ping command from servers command prompt with PC0's name.

```
C:\>ping pc0

Pinging 200.100.10.2 with 32 bytes of data:

Reply from 200.100.10.2: bytes=32 time<1ms TTL=127
Reply from 200.100.10.2: bytes=32 time<1ms TTL=127
Reply from 200.100.10.2: bytes=32 time<1ms TTL=127
Reply from 200.100.10.2: bytes=32 time<1ms TTL=127

Ping statistics for 200.100.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

3 Conclusion

In this assignment, i practised theoretical knowledge that i learned in computer networks lesson. I learned advantages using IPv6 and i understand how it works. We should not use IPv4 anymore. It is old and useless. I learned how DNS works. It is like a phonebook. It makes addresses readable. And I also learned how router works, how router connects networks each other. Actually this assignment was based on using router.