

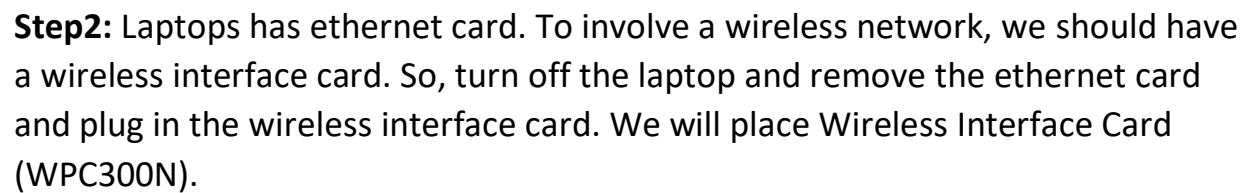
Name : Jawad Ahmed

Roll No : 20P-0165

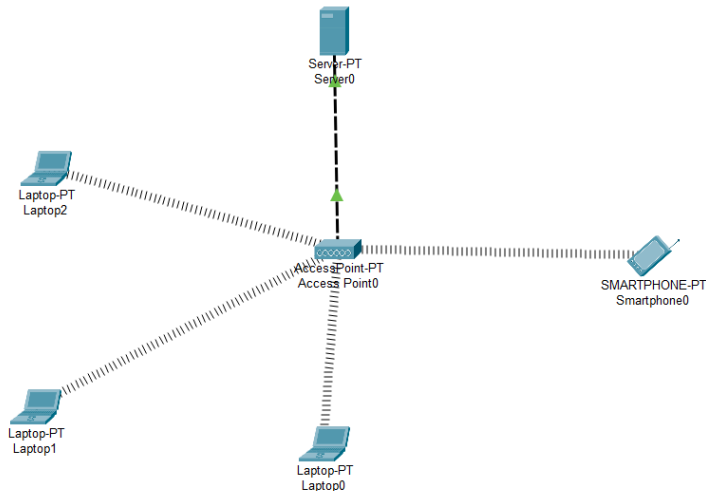
Section : BCS-5A

Lab Task 7

Step1: Create this Topology in packet tracer.



Do It for all the Laptops.



We have APIPA (Automatic Private IP Addressing). These addresses are from the block “169.254.x.x/25”. Simple, when we say this type of IP address in a device, we can say that it has no IP address.

Step3: DHCP Server Configuration

Go into the **Desktop -> IP Configuration of the Server**. Then assign IP address to the Server. IP Address = 192.168.1.1

Then Go into the **Services -> DHCP -> On DHCP -> Add pool into that with following values.**



Now Go To any Laptop IP Configuration and select DHCP in the IP configuration. The IP will be assigned successfully.

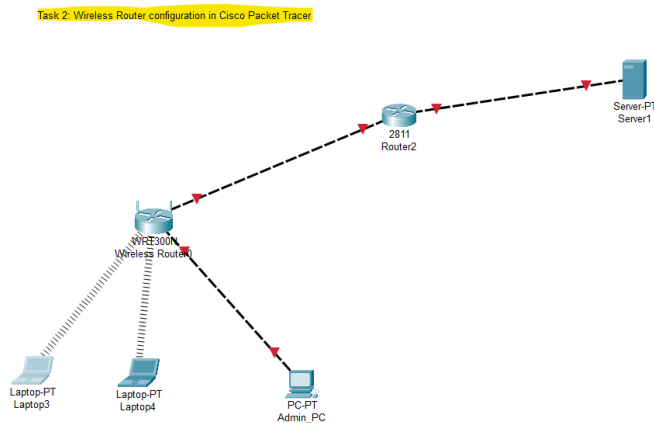


Task 2: Wireless Router configuration in Cisco Packet Tracer

In this task we will perform

1. Wireless LAN administration.
2. Wireless LAN network setup.
3. Securing a wireless network with WPA and WEP security features.
4. Setting up internet connectivity on the wireless router.

Step1: Create this topology first.



Step2: Wireless Router Administration.

Go Into the Wireless Router -> Select GUI -> Administration. Change the password. The admin username and password are important, as only a network admin(or a user with admin rights) is able to log into the router and manage its settings.

The screenshot displays the 'Administration' tab of a 'Wireless-N Broadband Router' web interface. The top navigation bar includes 'Physical', 'Config', 'GUI' (selected), and 'Attributes'. Below this, a secondary bar shows 'Administration' (selected), 'Setup', 'Wireless', 'Security', 'Access Restrictions', 'Applications & Gaming', 'Wireless-N Broadband Router', and 'WRT300N Status'. The 'Administration' section is divided into 'Management' and 'Router Access'. The 'Router Access' section contains two password fields: 'Router Password: *****' and 'Re-enter to confirm: *****', both highlighted with yellow boxes. To the right of these fields is a 'Help...' link. Below the password fields, the 'Web Access' section shows 'Web Utility Access' with 'HTTP' selected and 'HTTPS' unselected. 'Web Utility Access via Wireless' is set to 'Enabled'. The 'Remote Access' section shows 'Remote Management' set to 'Disabled'. Below this, 'Web Utility Access' is set to 'HTTP', 'Remote Upgrade' is set to 'Disabled', and 'Allowed Remote Ip Address' is set to 'Any Ip Address'. The 'Remote Management Port' is set to '8080'. At the bottom, the 'Upnp' section shows 'Upnp' set to 'Disabled'.

Step3: LAN Setup and Internet Setup

Go Into the network setup of the wireless router.

- Ensure DHCP is checked.
- Leave the IP address as 192.168.0.1.
- Set a start address of 192.168.0.50 and set maximum users to 100
- Leave the DNS server entry.
- Scroll down and Save settings.

Wireless Router0

Physical Config **GUI** Attributes

Firmware Version: v0.93.3

Setup Setup **Wireless** Security Access Restrictions Applications & Gaming Administration Status

Basic Setup DDNS MAC Address Clone Advanced Routing

Internet Setup

Internet Connection type: Automatic Configuration - DHCP

Optional Settings (required by some internet service providers):

Host Name:

Domain Name:

MTU: Size: 1500

Network Setup

Router IP: IP Address: 192 . 168 . 0 . 1

Subnet Mask: 255.255.255.0

DHCP Server Settings

DHCP Server: ☒ Enabled ☐ Disabled DHCP Reservation

Start IP Address: 192.168.0.50

Maximum number of Users: 100

IP Address Range: 192.168.0.50 - 149

Client Lease Time: 0 minutes (0 means one day)

Static DNS 1: 0 . 0 . 0 . 0

Static DNS 2: 0 . 0 . 0 . 0

Static DNS 3: 0 . 0 . 0 . 0

WINS: 0 . 0 . 0 . 0

Help...

Now enable **DHCP IP Configuration**. Check if the IP is assigned successfully or not.

Laptop4

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface: Wireless0

IP Configuration

☒ DHCP ☐ Static

IP Address: 192.168.0.100

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

☒ DHCP ☐ Auto Config ☐ Static

IPv6 Address: /

Link Local Address: FE80::201:63FF:FE23:794

IPv6 Gateway:

IPv6 DNS Server:

Top

If Ip is not assigning to Admin PC make sure you used cross over cable. After that correct IP will be assigned successfully.

Admin PC

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IP Address 192.168.0.53

Subnet Mask 255.255.255.0

Default Gateway 192.168.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::230:A3FF:FECC:B24E

IPv6 Gateway

IPv6 DNS Server

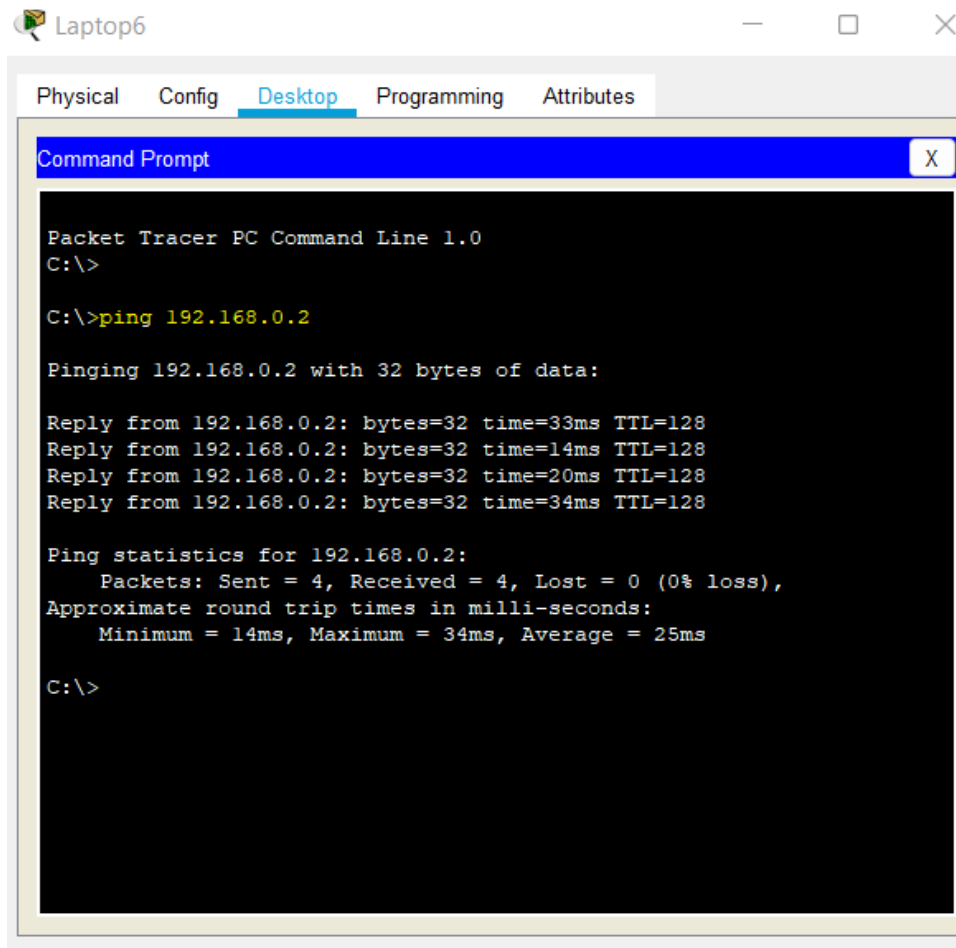
802.1X

☐ Use 802.1X Security

Authentication MD5

☐ Top

Ping PC2 from PC1. Ping should succeed



The screenshot shows a Packet Tracer window for a device named 'Laptop6'. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of a ping command to 192.168.0.2, which succeeds. The output includes details about the data size (32 bytes), response times (ranging from 14ms to 34ms), and TTL (128). Ping statistics show 4 packets sent, 4 received, and 0% loss.

```
Packet Tracer PC Command Line 1.0
C:\>

C:\>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

Reply from 192.168.0.2: bytes=32 time=33ms TTL=128
Reply from 192.168.0.2: bytes=32 time=14ms TTL=128
Reply from 192.168.0.2: bytes=32 time=20ms TTL=128
Reply from 192.168.0.2: bytes=32 time=34ms TTL=128

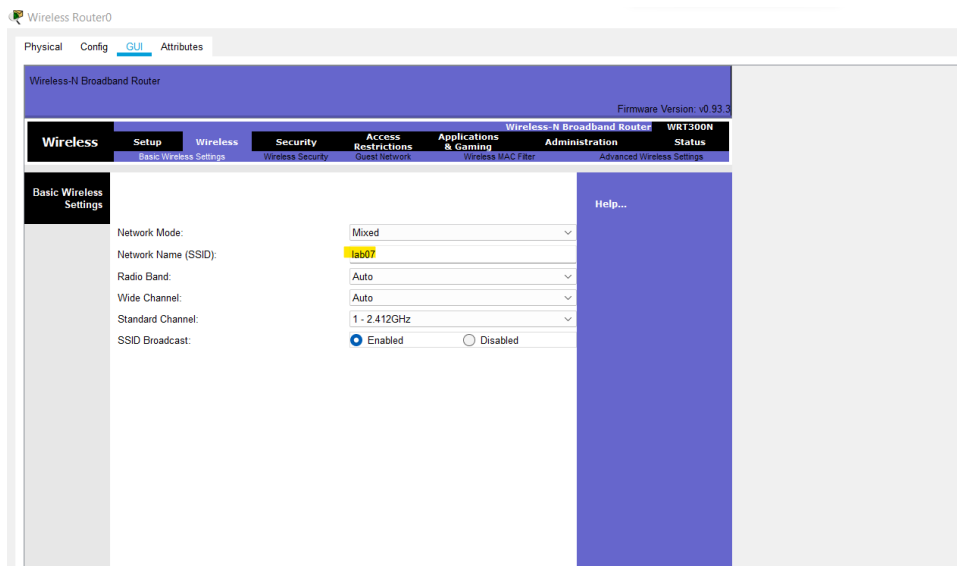
Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 14ms, Maximum = 34ms, Average = 25ms

C:\>
```

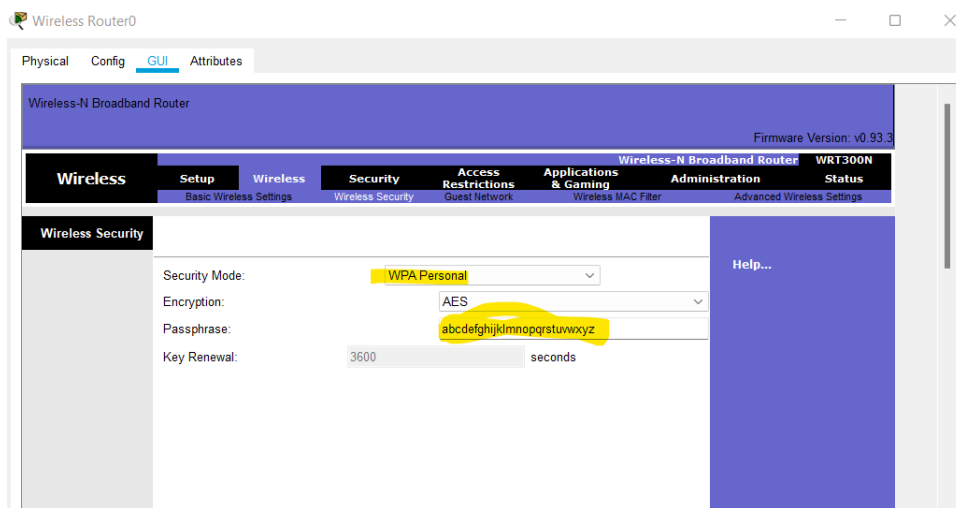
Step4: Adding security for wireless LAN access

There is no security we have added. Any device can connect to this router without need of any password. To add security go into the wireless router **GUI ->**

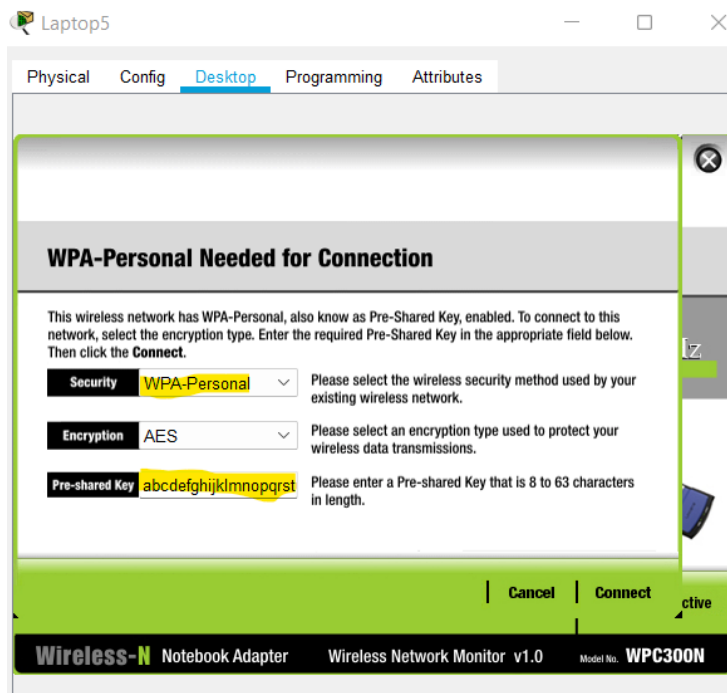
Wireless. Under the Basic Wireless Settings sub tab, change the default wireless SSID to any name of your choice. I have named mine 'myLAN'. After this, don't forget to Save settings.



Now go under the wireless tab you will see wireless security change the security mode to WPA personal, then set passphrase field to a password of your choice. Scroll down and save.



Now laptop will be disconnected from router. To connect them again. Go to the **Desktop->PC Wireless**. Then click on connect and you will see the lab07 in available networks. Click on connect and then provide the passphrase that you just entered in previous step.



The laptop will be connected to wireless router successfully.

Internet Setup:

Issue the following commands in the wireless router CLI.

```
Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int FastEthernet
Router(config)#int FastEthernet 0/0
Router(config-if)#ip add 155.21.21.0
% Incomplete command.
Router(config-if)#ip add 155.21.21.0 255.255.255.0
Bad mask /24 for address 155.21.21.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#int Fa
Router(config-if)#int FastE
Router(config-if)#int FastEthernet 0/1
Router(config-if)#ip add 200.0.0.1 255.255.255.0
Router(config-if)#no shutdown

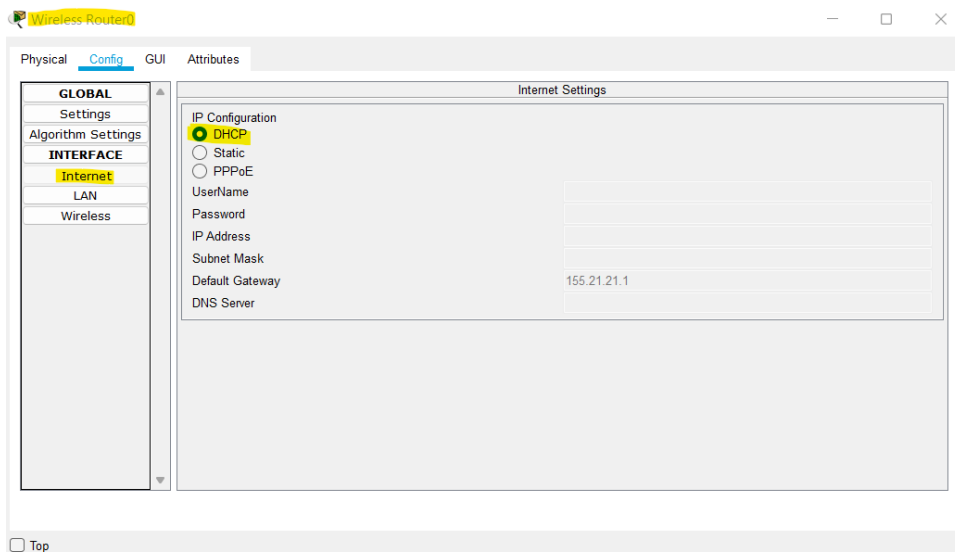
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Router(config-if)#exit
Router(config)#ip dhcp pool mypool
Router(dhcp-config)#net 155.21.0.0 255.255.0.0
Router(dhcp-config)#default-router 155.21.21.1
Router(dhcp-config)#dns-server
Router(dhcp-config)#dns-server 0.0.0.0
Router(dhcp-config)#
```

Ctrl+F6 to exit CLI focus

Now make the internet interface a DHCP client by enabling DHCP on it.



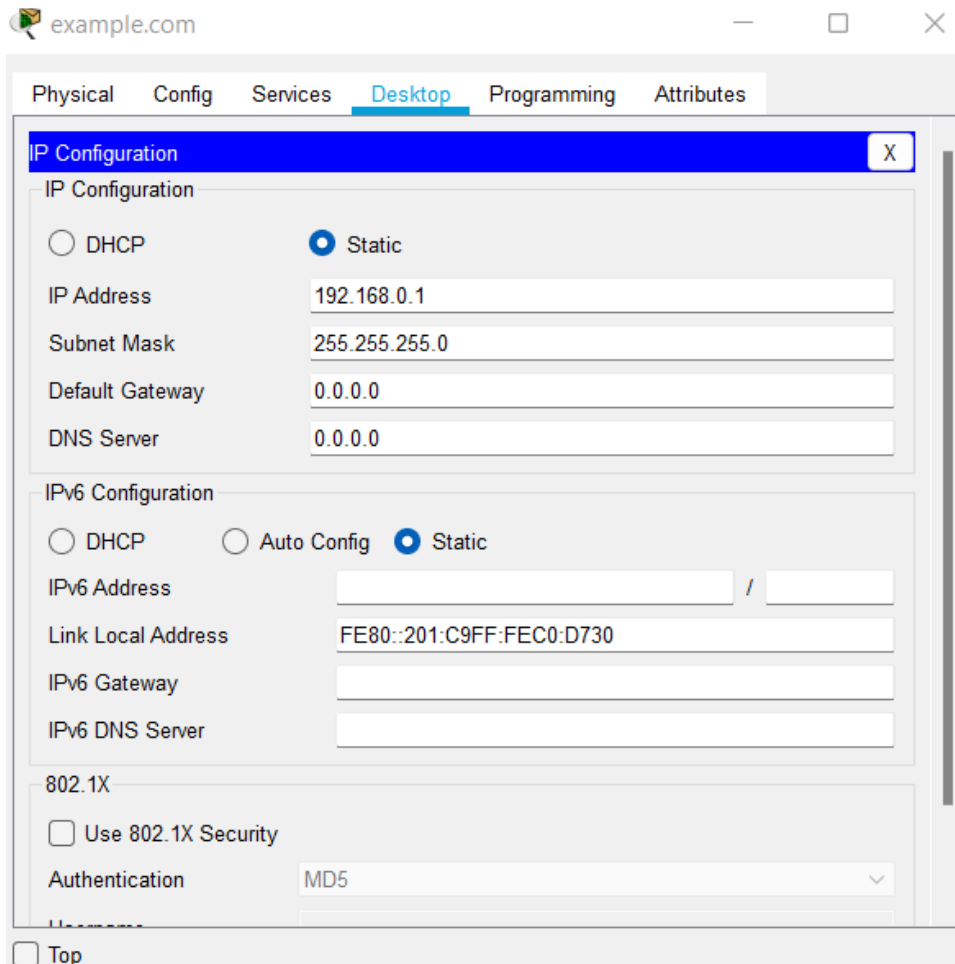
To verify DHCP configuration, click on the wireless router icon, then go to Config tab. Pick DHCP. The interface is now configured with an IP address from the pool set in the ISP router.

Next, we have to configure static or dynamic routes in the ISP router for the devices in the wireless LAN to gain access to the internet server:

Here is a static route:

=> ISP_ROUTER(config)#ip route 192.168.0.0 255.255.255.0 fa0/0

Lastly, assign an IP address to the internet server (if you hadn't done so), then try to reach the server from a host in the LAN.



The screenshot shows a web-based configuration interface for a network device. The top navigation bar includes tabs for Physical, Config, Services, Desktop (selected), Programming, and Attributes. Below the navigation bar, there is a section titled 'IP Configuration' with a close button (X). This section contains two sub-sections: 'IP Configuration' and 'IPv6 Configuration'. In the 'IP Configuration' sub-section, the 'Static' radio button is selected, and the fields for IP Address (192.168.0.1), Subnet Mask (255.255.255.0), Default Gateway (0.0.0.0), and DNS Server (0.0.0.0) are filled. In the 'IPv6 Configuration' sub-section, the 'Static' radio button is also selected, and the fields for IPv6 Address, Link Local Address (FE80::201:C9FF:FEC0:D730), IPv6 Gateway, and IPv6 DNS Server are present. Below these, there is a section for '802.1X' configuration, which includes a checkbox for 'Use 802.1X Security' and a dropdown menu for 'Authentication' set to 'MD5'. At the bottom left, there is a 'Top' link.

Let's access the server through the Admin PC. Open the web browser and type the IP address of the server in the search bar. Provide the password that you have added in the authentication of the access router. For me the username = admin and password = admin. Because I have not changed the username and password.

Physical Config **Desktop** Programming Attributes

Web Browser X

< > URL Go Stop

Authorization ? X

User Name:

Password:

Cancel OK

Physical Config **Desktop** Programming Attributes

Web Browser X

< > URL

Wireless-N Broadband Router Firmware Version: v6.93.5

Setup Setup Wireless Security Access Restrictions Applications & Gaming Wireless & Broadband Internet Administration WLT/JOHN Status

Internet Setup

Internet Connection type: Automatic Configuration - DHCP

Optional Settings (required by some internet service providers):

Host Name:

Domain Name:

MTU: Size: 1500

Network Setup

Router IP: IP Address: Subnet Mask:

DHCP Server Settings: DHCP Server: ☒ Enabled ☐ Disabled DHCP Reservation

Start IP Address:

Maximum number of Users:

IP Address Range: -

Client Lease Time: minutes (0 means one day)

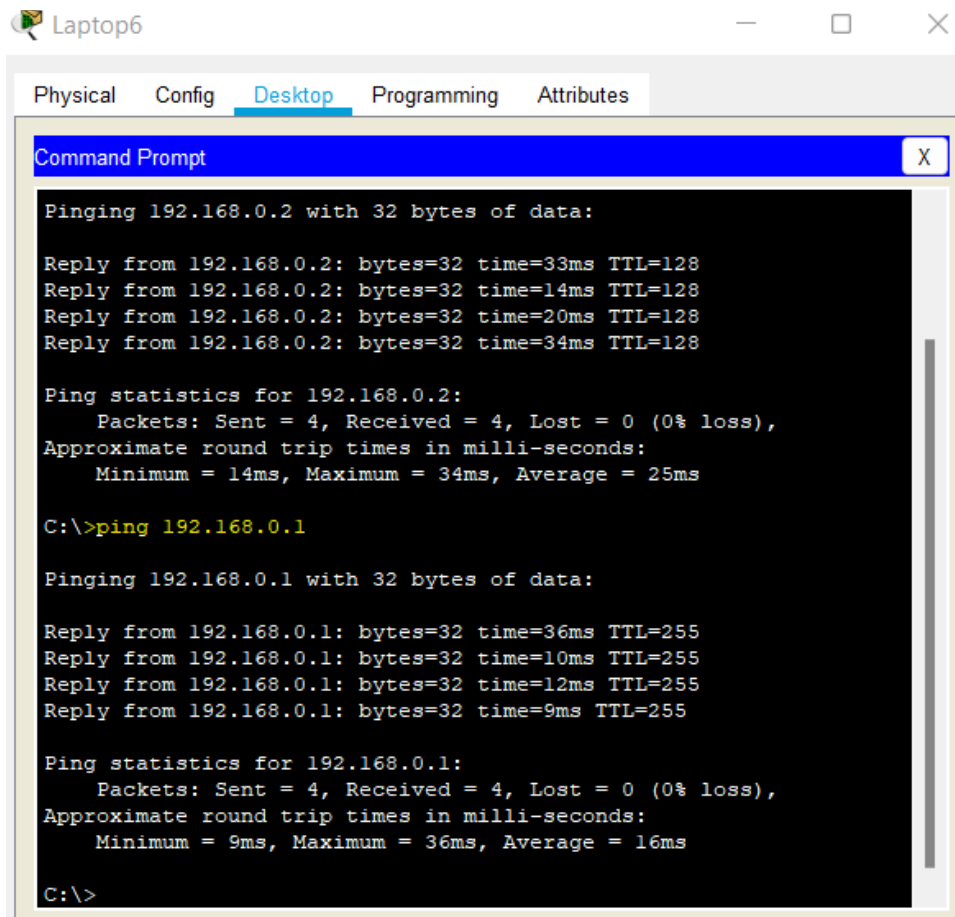
Static DNS 1:

Static DNS 2:

Static DNS 3:

You can ping the server from Laptop1. Ping should succeed. The ip address of the server is “192.168.0.1”. Open the command prompt of the Laptop 0 and issue the following command.

=> ping 192.168.0.1



The screenshot shows a Command Prompt window titled "Command Prompt" with a close button (X) in the top right corner. The window is part of a larger application with tabs labeled "Physical", "Config", "Desktop", "Programming", and "Attributes", where "Desktop" is currently selected. The Command Prompt displays the output of two ping commands. The first command is a ping to 192.168.0.2, which shows four successful replies with varying round-trip times (33ms, 14ms, 20ms, 34ms) and a TTL of 128. The statistics for 192.168.0.2 show 4 packets sent, 4 received, 0% loss, and an average round-trip time of 25ms. The second command is a ping to 192.168.0.1, which also shows four successful replies with round-trip times of 36ms, 10ms, 12ms, and 9ms, and a TTL of 255. The statistics for 192.168.0.1 show 4 packets sent, 4 received, 0% loss, and an average round-trip time of 16ms. The prompt "C:\>" is visible at the bottom.

```
Pinging 192.168.0.2 with 32 bytes of data:

Reply from 192.168.0.2: bytes=32 time=33ms TTL=128
Reply from 192.168.0.2: bytes=32 time=14ms TTL=128
Reply from 192.168.0.2: bytes=32 time=20ms TTL=128
Reply from 192.168.0.2: bytes=32 time=34ms TTL=128

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 14ms, Maximum = 34ms, Average = 25ms

C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time=36ms TTL=255
Reply from 192.168.0.1: bytes=32 time=10ms TTL=255
Reply from 192.168.0.1: bytes=32 time=12ms TTL=255
Reply from 192.168.0.1: bytes=32 time=9ms TTL=255

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 9ms, Maximum = 36ms, Average = 16ms

C:\>
```