



AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH

Faculty of Engineering

Lab Report

Course Title:	COMPUTER NETWORKS		
Course Code:	COE3206	Section:	E
Semester:	Fall 2025-26	Degree Program:	BSc in CSE
Course Teacher:	DR. RAJARSHI ROY CHOWDHURY		

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1.	MD.MAHABUBUR RAHAMAN SIAM	23-51706-2	BSc in CSE	
2.	MOSTOFA SEUM	23-50299-1	BSc in CSE	

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FACULTY COMMENTS	Marks Obtained	
	Total Marks	

LAB-1

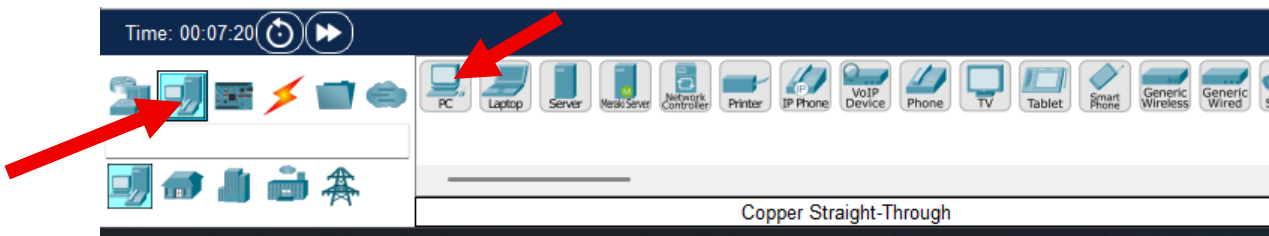
- **PC to PC Connection**

Required Devices

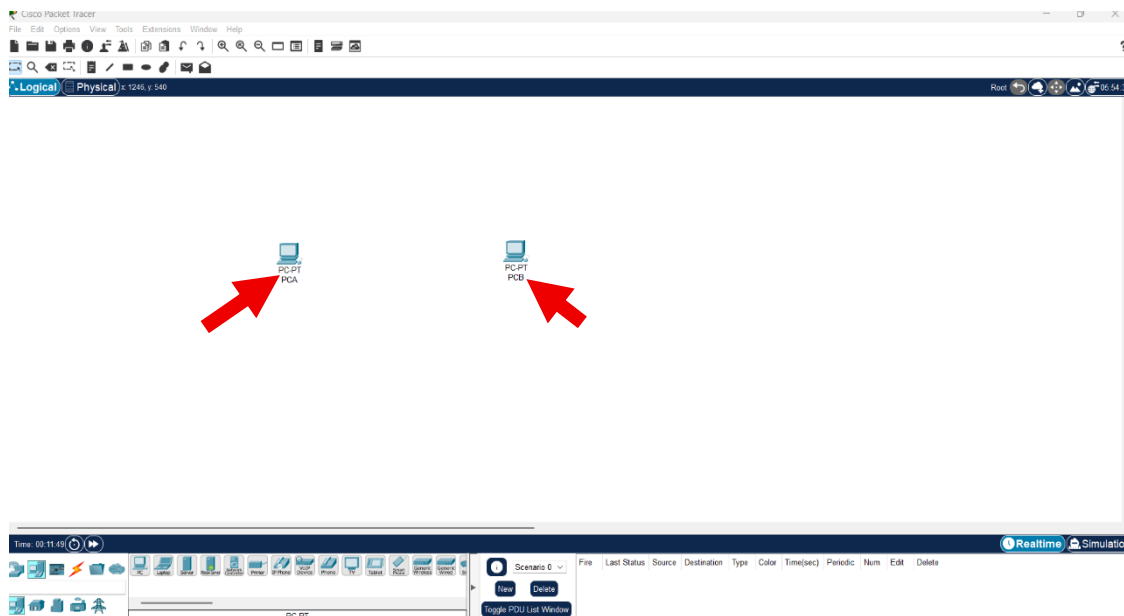
- 2 PCs
- 1 Copper Cross-Over Cable

Step 1: Add Devices

1. Open **Cisco Packet Tracer**.
2. Go to the **End Devices** section.

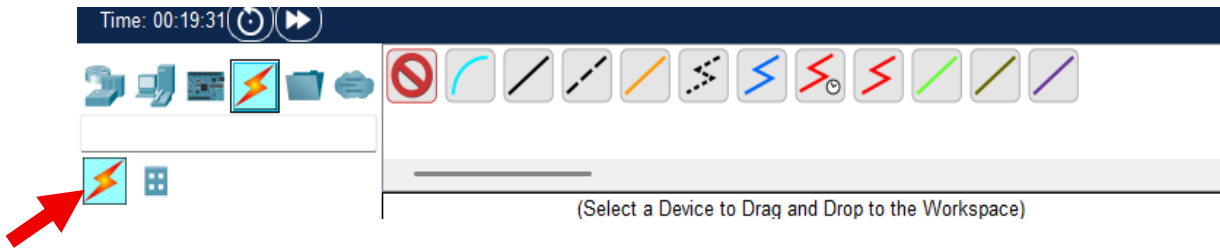


3. Drag and drop **two PCs** onto the workspace.



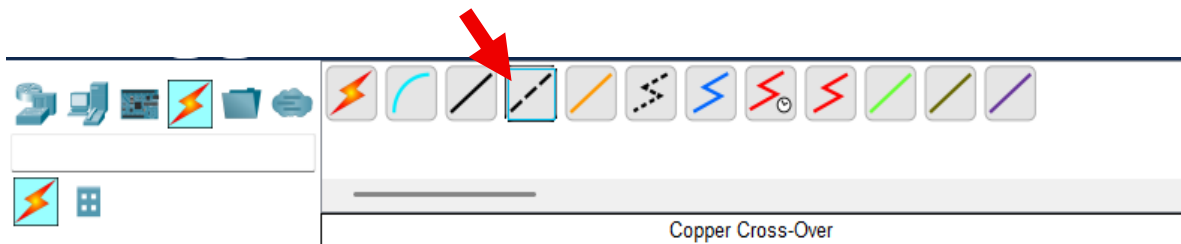
Step 2: Choose Connection

1. Click on the **Connections** icon (lightning bolt symbol).



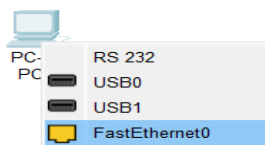
2. Select **Copper Cross-Over Cable**.

Cross-over cables are used for direct **PC-to-PC** connections.

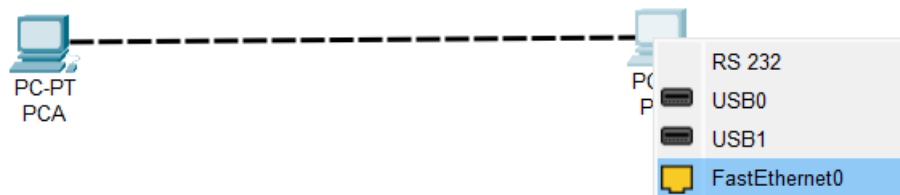


Step 3: Connect the PCs

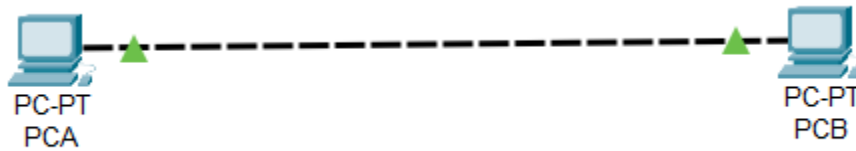
1. Click on **PCA**, then select **FastEthernet0**.



2. Click on **PCB**, then select **FastEthernet0**.

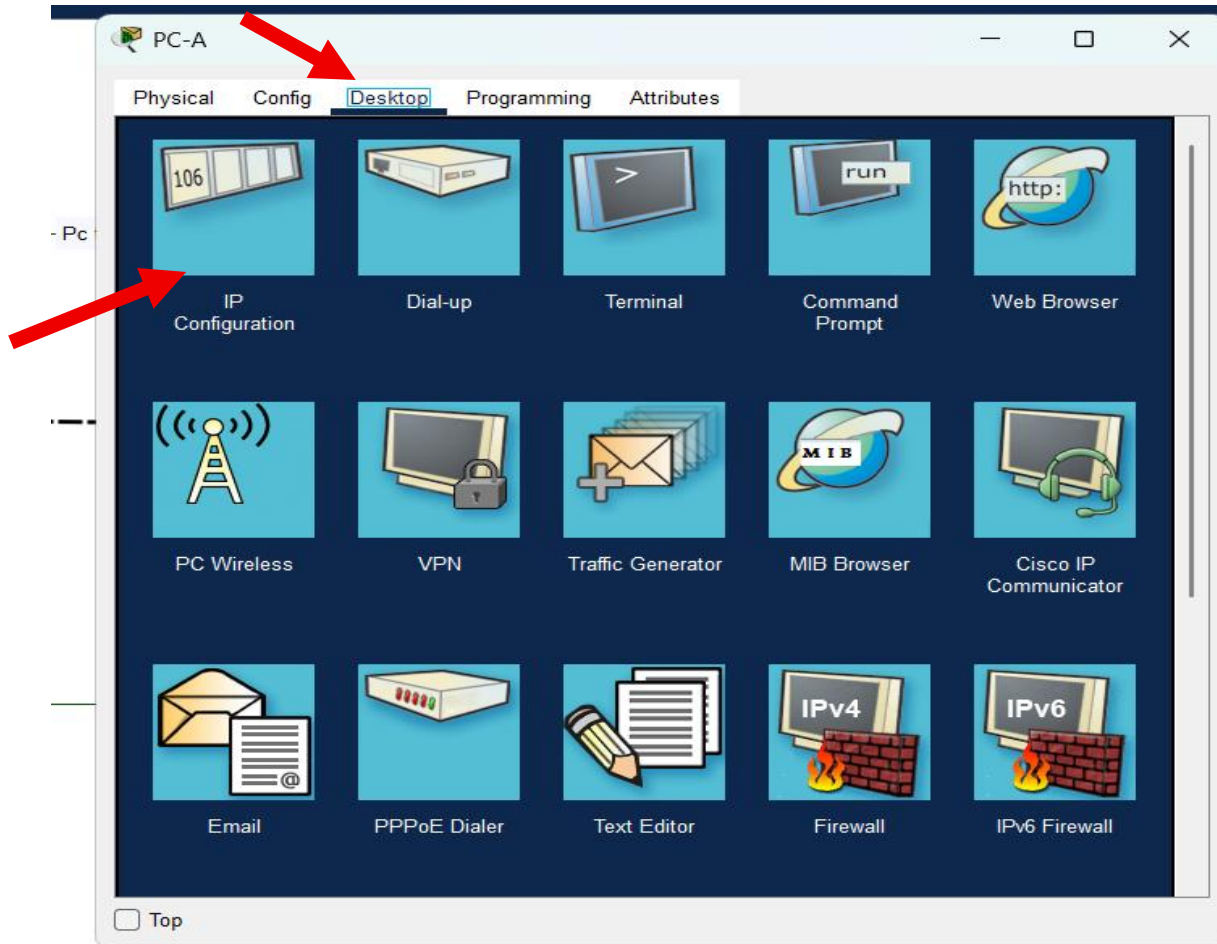


3. A line will appear connecting both PCs.



Step 4: Assign IP Addresses

1. Click **PCA** → **Desktop** → **IP Configuration** → **Static** → **IPv4** (as like picture below)
 - IP Address: 192.168.10.1
 - Subnet Mask: 255.255.255.0



2. Click **PCB** → **Desktop** → **IP Configuration (As like PCA)**

- IP Address: 192.168.10.2
- Subnet Mask: 255.255.255.0

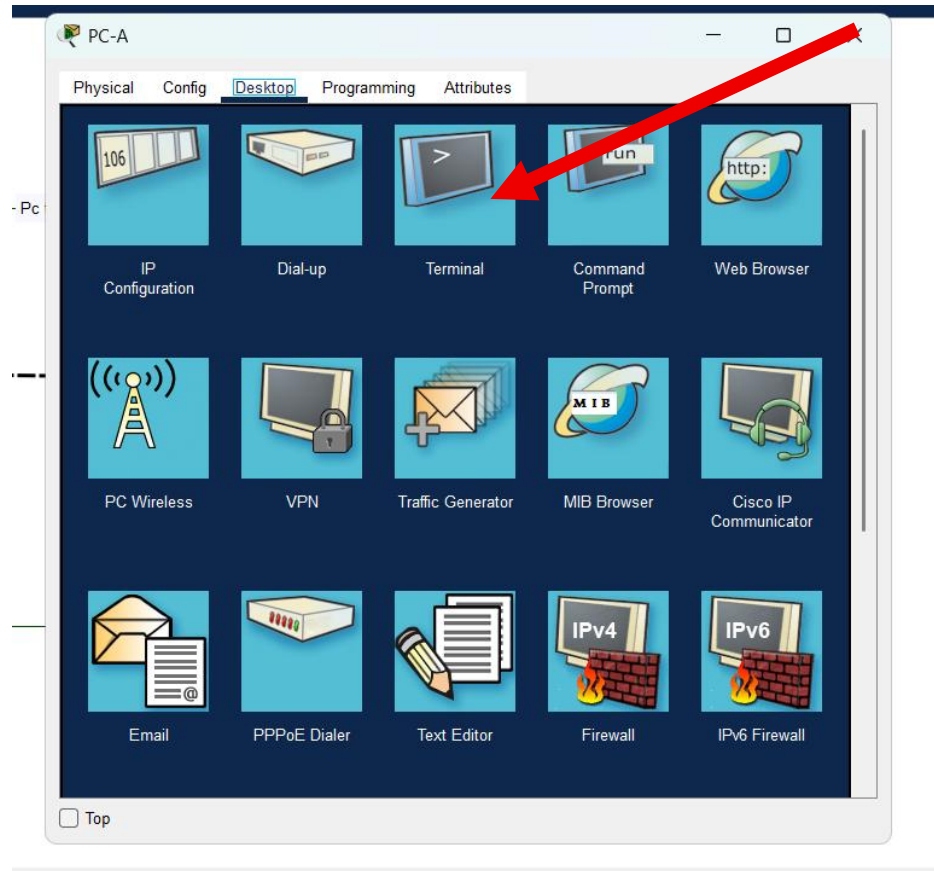
The screenshot shows the 'PC-A' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is expanded, showing settings for the 'FastEthernet0' interface. Two red arrows point to the 'Static' radio button and the 'IPv4 Address' field. The 'IPv4 Address' field contains '192.168.10.1' and the 'Subnet Mask' field contains '255.255.255.0'. The 'IPv6 Configuration' section is also visible, with 'Static' selected. The '802.1X' section is at the bottom, with 'Use 802.1X Security' unchecked and 'Authentication' set to 'MD5'. A 'Top' button is at the bottom left.

Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.10.1
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::20A:41FF:FE3C:D77E
Default Gateway	
DNS Server	
802.1X	
<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

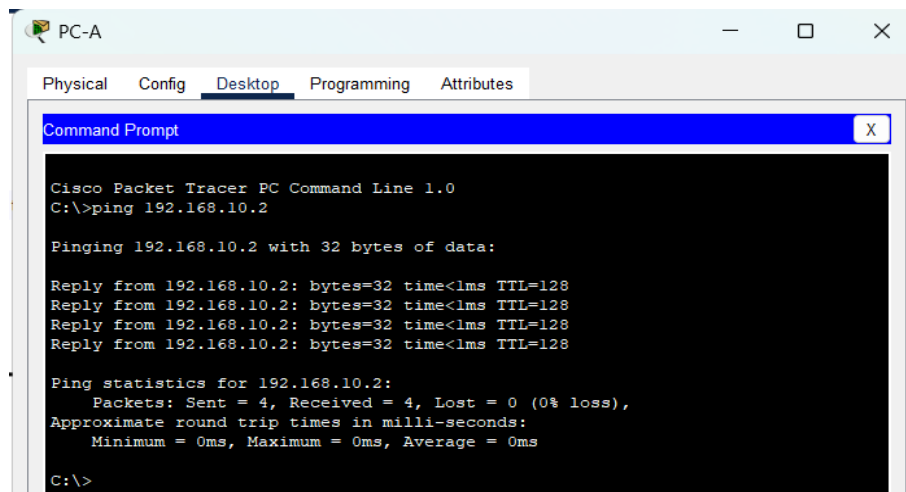
☐ Top

Step 5: Test the Connection (Ping Test)

1. Click **PCA** → **Desktop** → **Command Prompt**

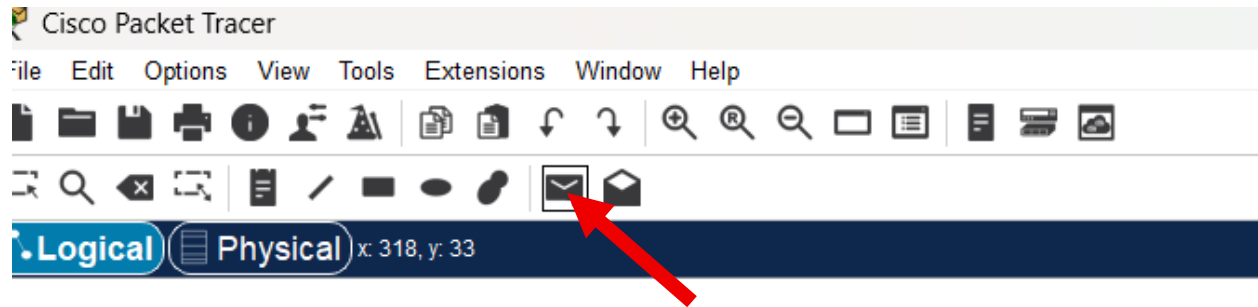


2. Type the following command and press Enter:
3. ping 192.168.10.2 (as like picture below)
4. If the connection is successful, you will see a message like: (as like picture below)

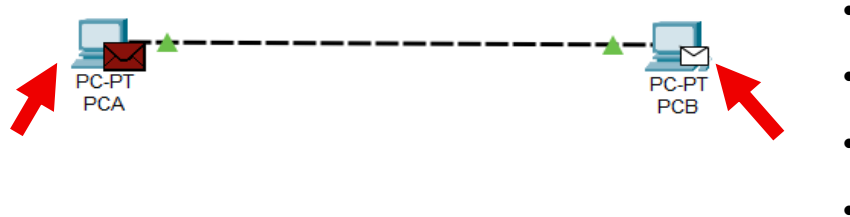


Step 6: Add a Simple PDU (Packet)

- Click on the **Add Simple PDU (envelope icon)** from the toolbar.



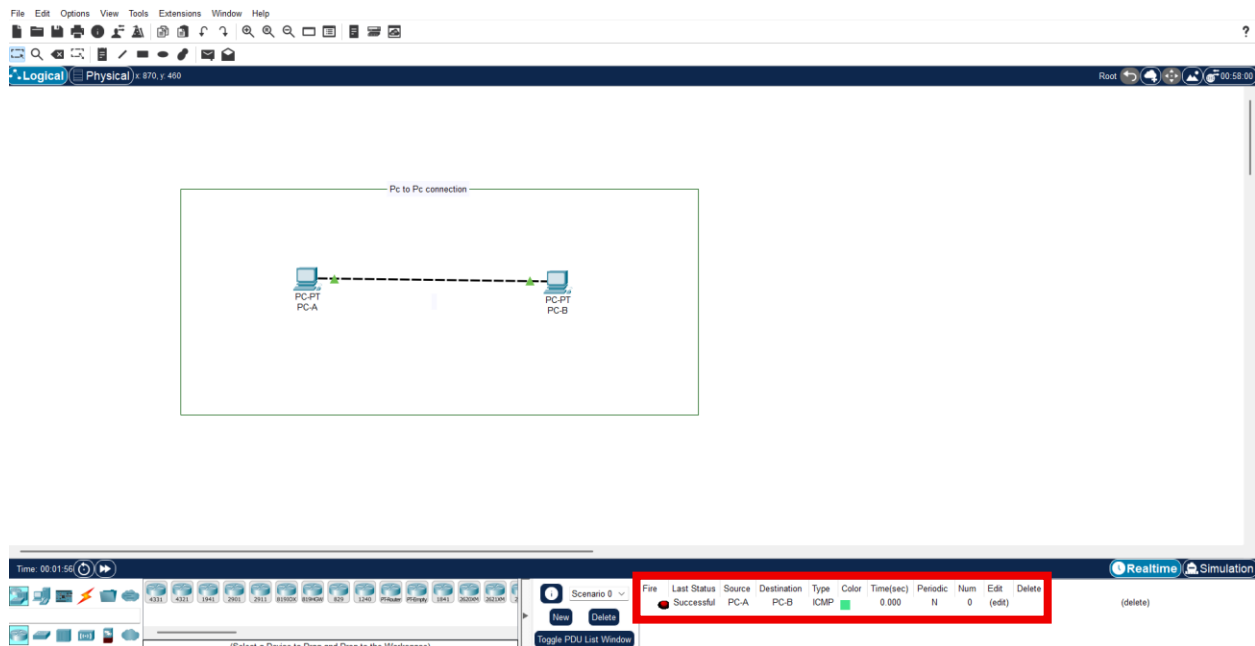
- Click **PCA** (source), then click **PCB** (destination).



- Status will display **“Successful”** if the packet reaches PCB correctly.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PCA	PCB	ICMP		0.000	N	0	(edit)	(delete)

Final picture of completed lab task1:



LAB-1.1

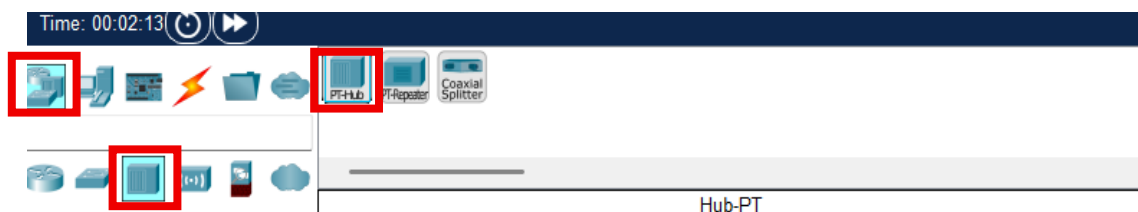
Multiple PCs connected through one hub

Network Components

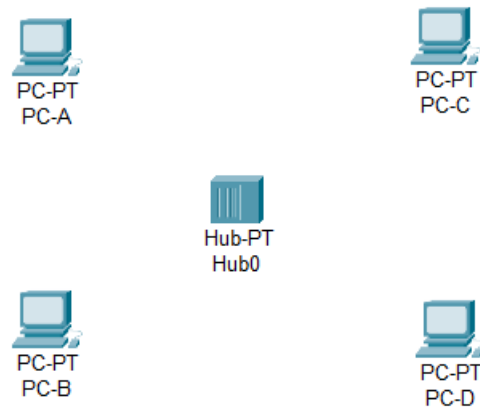
- 1 Hubs (Hub0)
- 4 PCs (PC-A, PC-B, PC-C, PC-D)
- Straight-Through Cables (for PC/Hub connections)

Step 1: Add Devices

1. Add device as like lab 1
2. Add a hub : Network Devices -> Hubs -> Pt-Hub



3. Drag and drop one hub on the workspace.

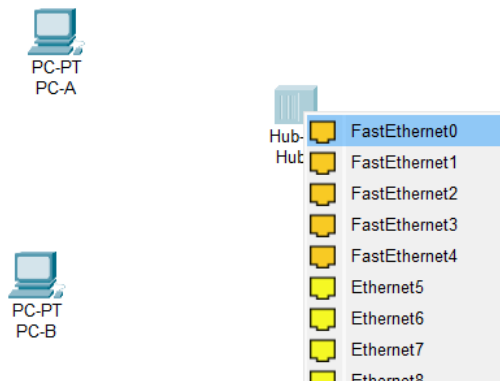


Step 2 :Connect the devices

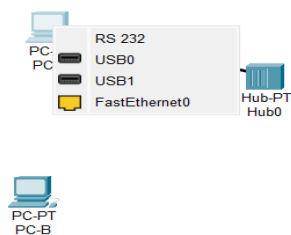
- **Hub0 to PC-A :**

1.select the Copper Straight cable as like lab 1

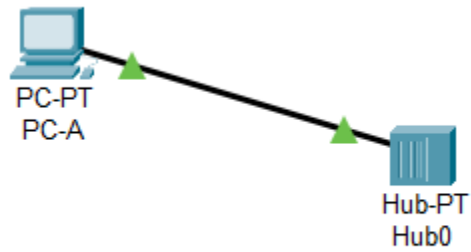
2.Then select the Hub0 ->FastEthernet-0(as like picture below)



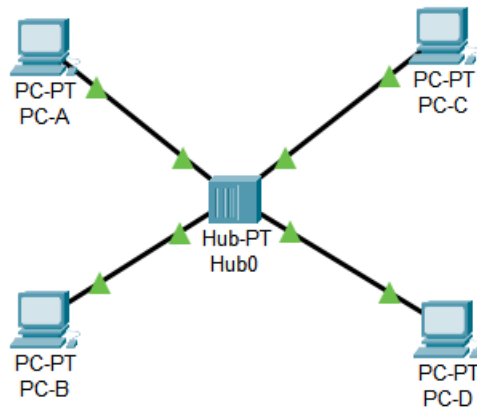
3. Then select the PC-A-> FastEthernet0



4.Connection established between PC-A And Hub0



5.Follow Step 1-4 To connect All the Pc to Hub



Device Name	IP Address	Subnet Mask
PC-A	192.168.10.1	255.255.255.0
PC-B	192.168.10.2	255.255.255.0
PC-C	192.168.10.3	255.255.255.0
PC-D	192.168.10.4	255.255.255.0

Step 3: Assign IP Addresses

1. On each PC/Laptop, open:
Desktop → IP Configuration (As like lab 1)
2. Assign the IP addresses listed in the table above

Step 4: Add a Simple PDU (Packet)


1. Select **Add Simple PDU** (envelope icon).



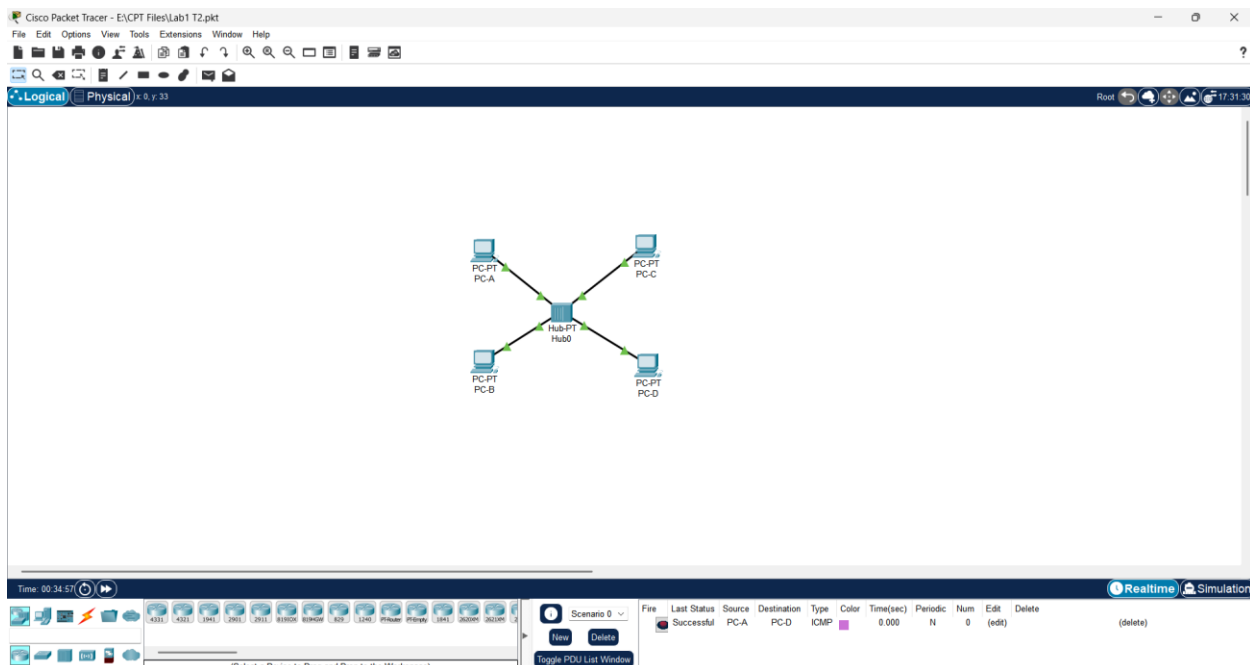
3. Click on **PC-A**, then on **PC-D** as Like **Lab-1**
4. Observe the envelope (packet) moving through:
5. **PC-A → Hub0 → PC-D**

- The **Event List** showed:

Successful → if the packet reaches PC-D correctly.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC-A	PC-D	CMP		0.000	N	0	(edit)	(delete)

Final picture of completed lab task1.1:

The screenshot shows the Cisco Packet Tracer interface. The main workspace displays a network topology with four PCs (PC-A, PC-B, PC-C, PC-D) connected to a central hub (Hub0). The 'Logical' tab is selected. At the bottom, the 'Event List' window is open, showing a single event: a successful packet transfer from PC-A to PC-D. The event details include the source (PC-A), destination (PC-D), type (ICMP), color (purple), time (0.000), and status (Successful). The 'Simulation' button is visible in the bottom right corner of the Event List window.

LAB-1.2

- Multiple PCs connected through two hubs

Network Components

- 2 Hubs (Hub0 and Hub1)
- 5 PCs (PC-A, PC-B, PC-C, PC-D, PC-E)
- 1 Laptop (Laptop-A)
- Straight-Through Cables (for PC/Hub connections)
- Crossover Cable (for Hub-to-Hub connection)

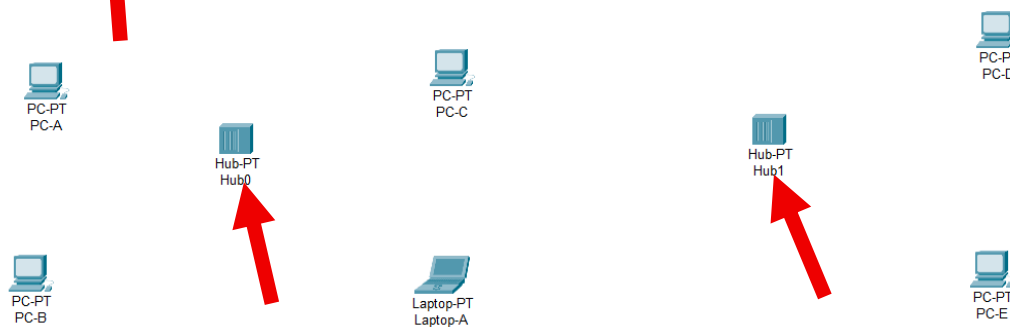
Step 1: Add Devices

1. Add device as like lab 1

2. Add a hub : Network Devices -> Hubs -> Pt-Hub

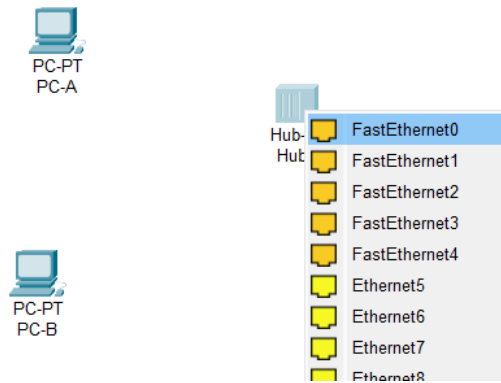


3. Drag and drop two hubs on the work space

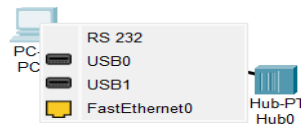


Step 2 :Connect the devices

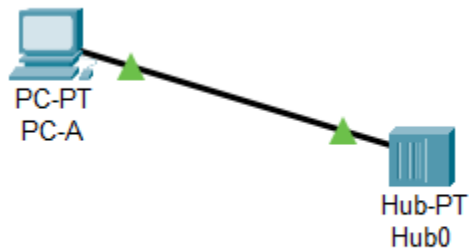
- Hub0 to PC-A :
 1. select the Copper Straight cable as like lab 1
 2. Then select the Hub0 -> FastEthernet-0



3. Then select the PC-A-> FastEthernet0



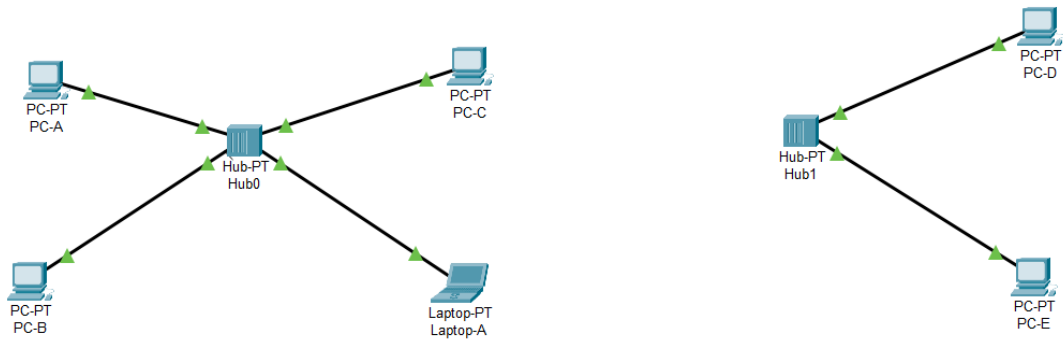
4. Connection established between PC-A And Hub0



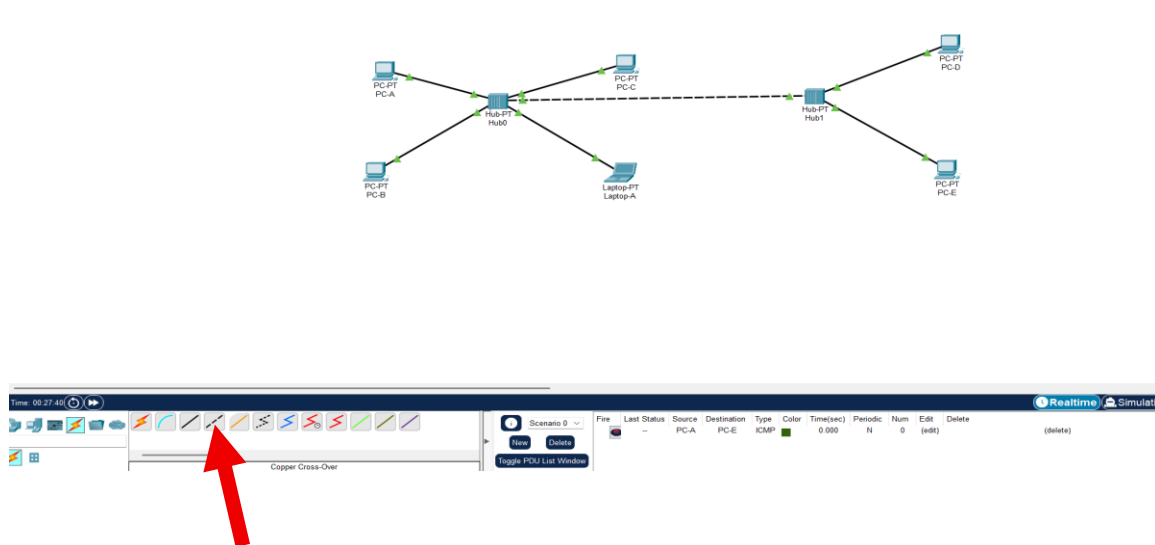
5. Follow Step 1-4 To connect All the Pc to Hub

6. Hub0 connects PC-A, PC-B, PC-C, Laptop-A.

7. Hub1 connects PC-D and PC-E.



- **Hub0** and **Hub1** are interconnected using a **crossover cable** As Like **LAB-1**, forming a single extended network segment.



Device Name	IP Address	Subnet Mask
PC-A	192.168.10.1	255.255.255.0
PC-B	192.168.10.2	255.255.255.0
PC-C	192.168.10.3	255.255.255.0
Laptop-A	192.168.10.4	255.255.255.0
PC-D	192.168.10.5	255.255.255.0
PC-E	192.168.10.6	255.255.255.0

Step 2: Assign IP Addresses

6. On each PC/Laptop, open:
Desktop → IP Configuration (As like lab 1)
7. Assign the IP addresses listed in the table above

Step 3: Add a Simple PDU (Packet)

1. Select **Add Simple PDU (envelope icon)**.

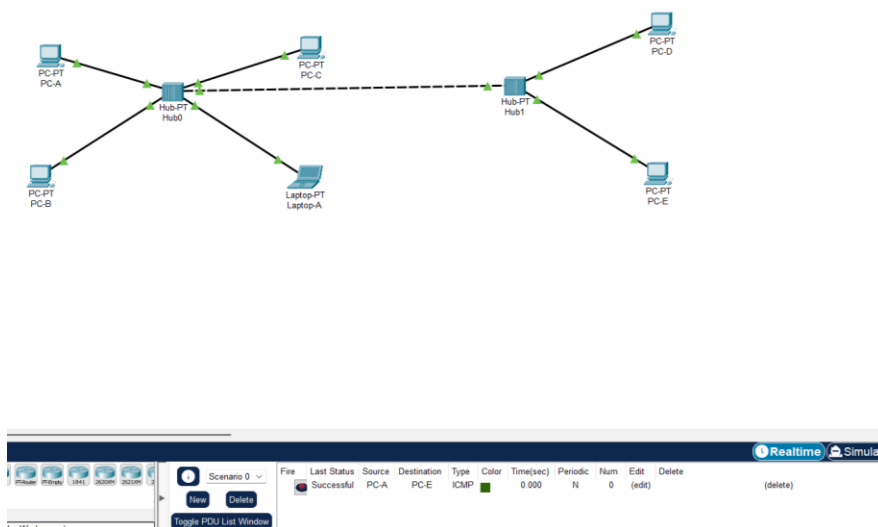


8. Click on **PC-A**, then on **PC-E** as Like **Lab-1**
 9. Observe the envelope (packet) moving through:
 10. **PC-A → Hub0 → Hub1 → PC-E**
- The **Event List** showed:

11. **Successful** → if the packet reaches PC-E correctly.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC-A	PC-E	ICMP		0.000	N	0	(edit)	(delete)

Final picture of completed lab task1.2:



LAB-2

- Switch-to-Switch Connection via Bridge

Network Components

- **2 Switches (2960-24TT)**
- **1 Bridge**
- **3 PCs** (PC A, PC B, PC C)
- **1 Laptop** (Laptop A)
- **Straight-Through Cables**

Network Topology Description

- **Switch0** connects **PC A** (192.168.10.1) and **Laptop A** (192.168.10.2).
- **Switch1** connects **PC B** (192.168.10.3) and **PC C** (192.168.10.4).
- Both switches are connected via **Bridge (Bridge0)** to enable communication between the two LAN segments.

Step 1: Add Devices and Connect

1. Add Devices:

Add and Connect all device as like lab(1-1.1)

- Place **Switch0, Switch1, Bridge0, PC A, PC B, PC C, and Laptop A.**
- Connect **PC A** and **Laptop A** to **Switch0** using straight-through cables.
- Connect **PC B** and **PC C** to **Switch1** using straight-through cables.
- Connect **Switch0** and **Switch1** through **Bridge0**.

2. Ensure All Devices are Powered On:

- Check that all devices are turned on in Packet Tracer.

Step 2: Assign IP Addresses

Assign IP addresses to each device as shown below. All devices will be part of the same network (192.168.10.0/24) and **to configure follow the lab 1.**

1. PC A → Desktop → IP Configuration

- **IP Address:** 192.168.10.1
- **Subnet Mask:** 255.255.255.0

2. Laptop A → Desktop → IP Configuration

- **IP Address:** 192.168.10.2
- **Subnet Mask:** 255.255.255.0

3. PC B → Desktop → IP Configuration



- **IP Address:** 192.168.10.3
- **Subnet Mask:** 255.255.255.0

4. PC C → Desktop → IP Configuration

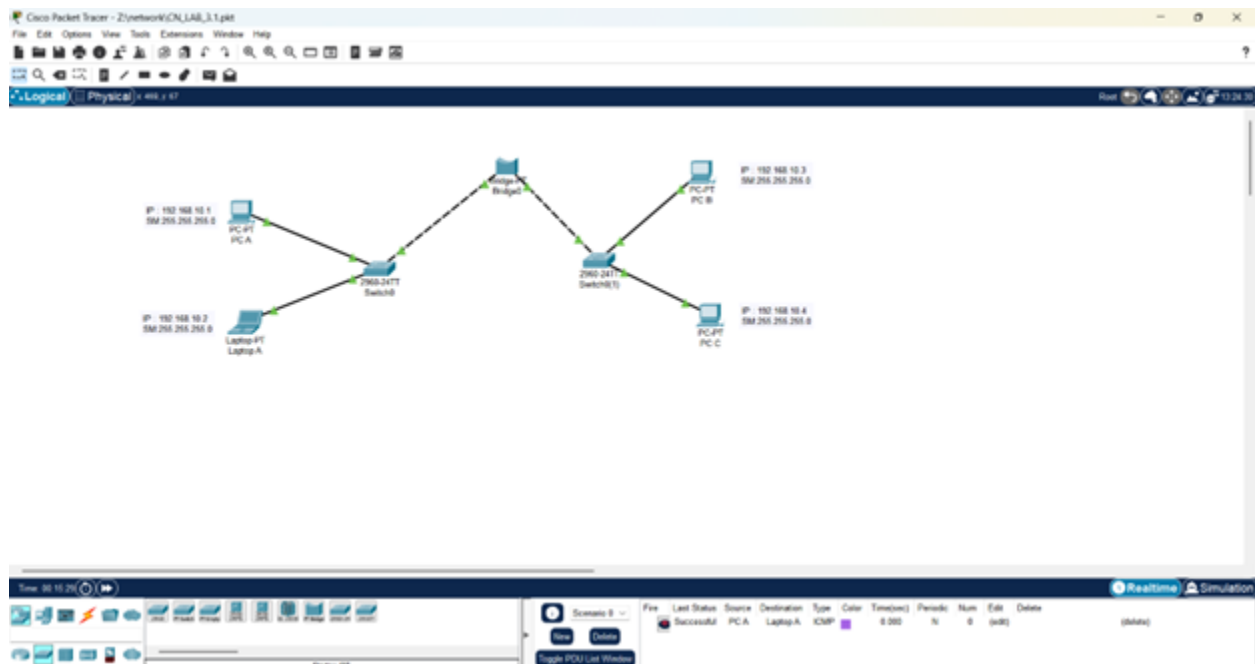
- **IP Address:** 192.168.10.4
- **Subnet Mask:** 255.255.255.0

Step 3: Packet Transfer

1. Click **Add Simple PDU** (envelope icon) **as like lab1.**
2. Select **PC A** as the source and **Laptop A** as the destination.
3. All devices across the two switches can successfully communicate through the bridge. The packet transfer will show as successful, indicating that IP configuration and connectivity are correct.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PCA	LaptopA	ICMP		0.000	N	0	(edit)	(delete)

Final picture of completed lab task 2:



LAB-3

- Multiple devices (PCs and a laptop) across two different subnets using a router and switches.

Network Components

- **1 Router (2621XM)**
- **2 Switches (2960-24TT)**
- **4 PCs (PC0, PC0(1), PC1, PC1(1))**
- **1 Laptop (Laptop0)**
- **Straight-Through Cables**

Network Topology Description

- **Switch0** connects **PC0** (192.168.10.2) and **Laptop0** (192.168.10.3).
- **Switch1** connects **PC0(1)** (192.168.11.3) and **PC1(1)** (192.168.11.4).
- **Router0** connects the two switches to route traffic between the networks 192.168.10.x and 192.168.11.x.
- The router has two IP addresses for routing: one for the 192.168.10.x network (192.168.10.1) and one for the 192.168.11.x network (192.168.11.1).

Step 1: Add Devices and Connect as like lab 1 &2

1. Add Devices:

- Place **Router0**, **Switch0**, **Switch1**, **PC0**, **PC0(1)**, **PC1**, **PC1(1)**, and **Laptop0**.
- Connect **PC0** and **Laptop0** to **Switch0** using straight-through cables.
- Connect **PC0(1)** and **PC1(1)** to **Switch1** using straight-through cables.
- Connect **Switch0** and **Switch1** to **Router0** using straight-through cables.

Step 2: Assign IP Addresses and Gateway(As like lab 1)

Assign IP addresses to each device and configure the gateway as follows:

1. PC0 → Desktop → IP Configuration

- **IP Address:** 192.168.10.2
- **Subnet Mask:** 255.255.255.0
- **Gateway:** 192.168.10.1

2. Laptop0 → Desktop → IP Configuration

- **IP Address:** 192.168.10.1
- **Subnet Mask:** 255.255.255.0
- **Gateway:** 192.168.10.1

3. PC0(1) → Desktop → IP Configuration

- **IP Address:** 192.168.11.3
- **Subnet Mask:** 255.255.255.0
- **Gateway:** 192.168.11.1

4. PC1(1) → Desktop → IP Configuration

- **IP Address:** 192.168.11.4
- **Subnet Mask:** 255.255.255.0
- **Gateway:** 192.168.11.1

Step 3: Assign IP Address and Subnet Mask to FastEthernet0/0 (follow the picture)

- **IPv4 Address:** 192.168.10.1
- **Subnet Mask:** 255.255.255.0

These settings are shown in image and are correct for the **192.168.10.x** network.

1. In the **Config** tab for **FastEthernet0/0**, you can see the **IP Configuration** section.
2. Enter the following:

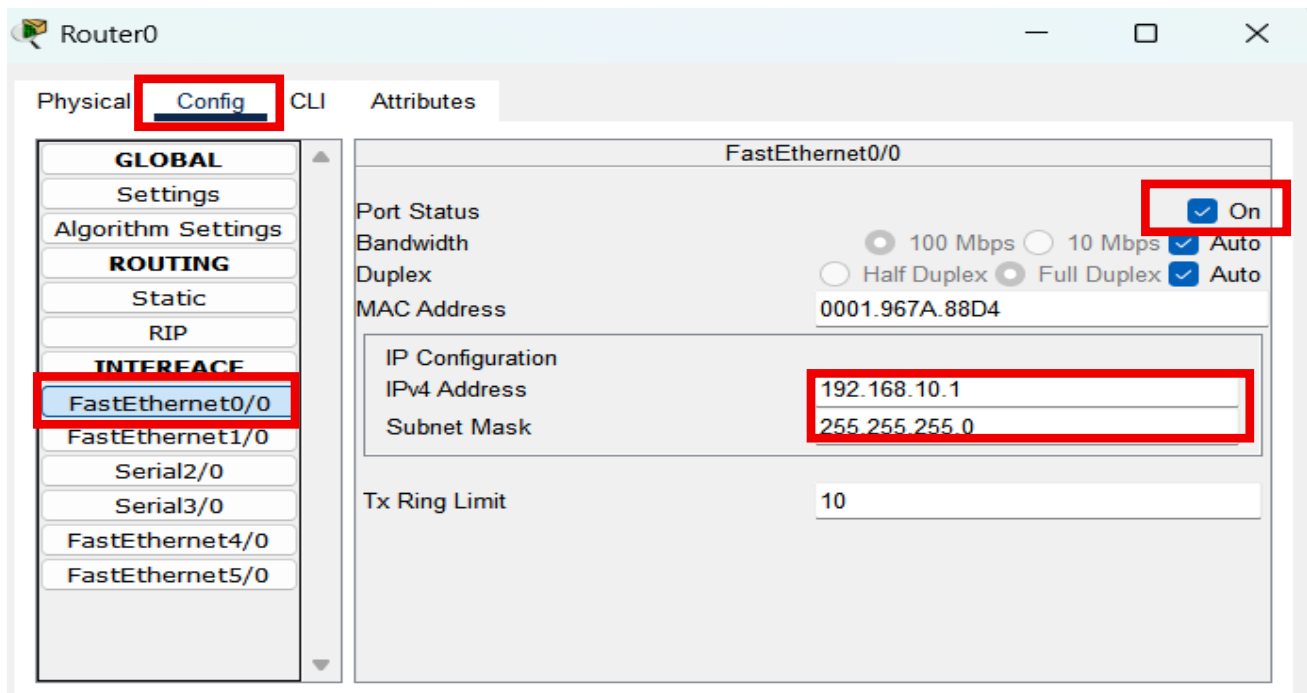
- **IPv4 Address:** 192.168.10.1
- **Subnet Mask:** 255.255.255.0

This step configures the **FastEthernet0/0** interface with the correct IP address for the **192.168.10.x** network.

3. Ensure the **Port** is Enabled

- In the same section, ensure the **Port Status** is set to **On** (enabled).

This ensures that the interface is active and ready to pass traffic.



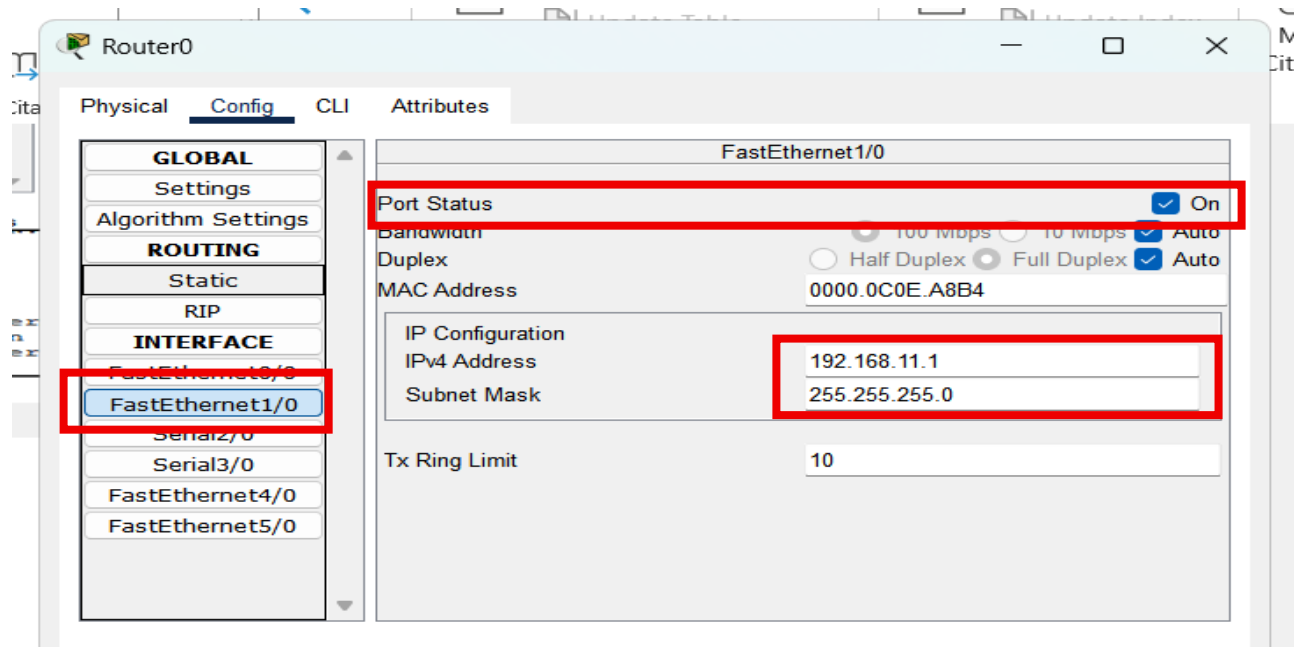
Step-by-Step Configuration for Router Interface (FastEthernet1/0) (follow the picture)

1. Assign IP Address and Subnet Mask to FastEthernet1/0

- **IPv4 Address:** 192.168.11.1
- **Subnet Mask:** 255.255.255.0

These settings will be used to configure the **FastEthernet1/0** interface for the **192.168.11.x** network.

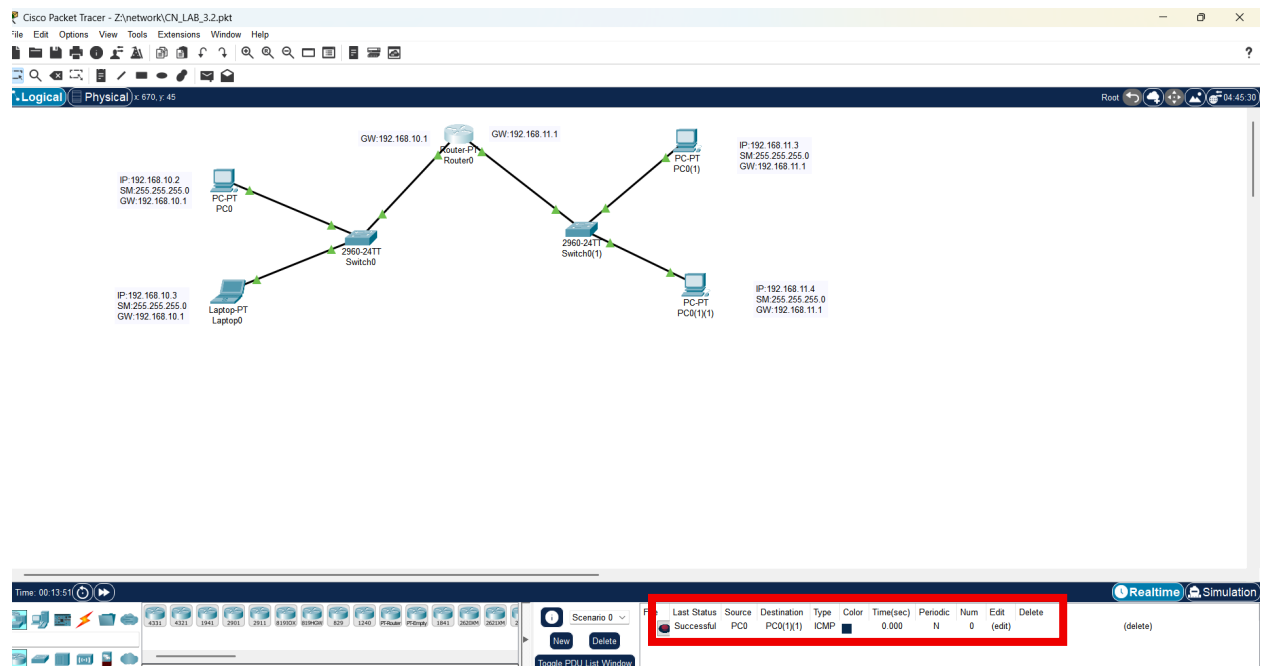
1. In the **Config** tab for **FastEthernet1/0**, under the **IP Configuration** section:
 - **IPv4 Address:** 192.168.11.1
 - **Subnet Mask:** 255.255.255.0
2. **Ensure Port Status is Enabled:**
 - Ensure the **Port Status** is checked as **On** to enable the interface.



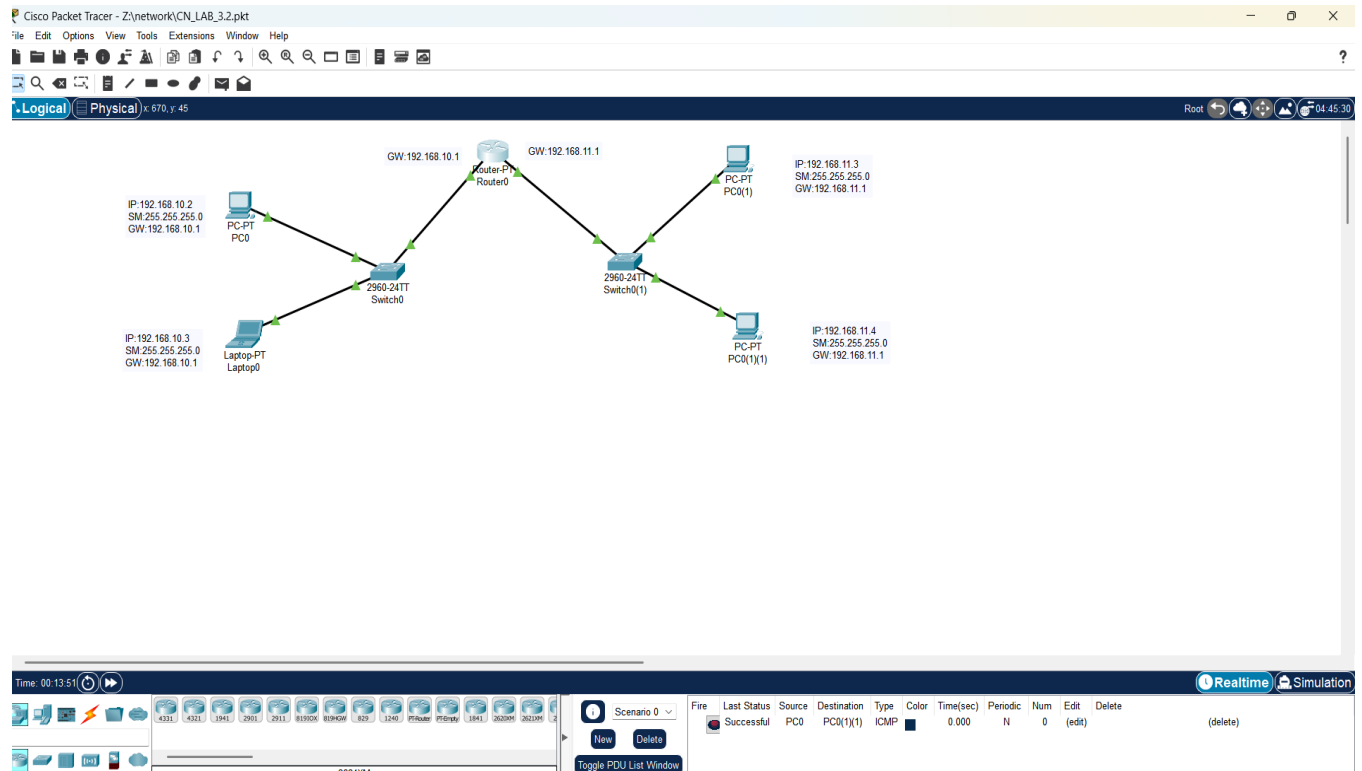
Step 4: Packet Transfer (Simulation Mode)

1. Click **Add Simple PDU** (envelope icon).
2. Select **PC0** as the source and **PC1(1)** as the destination.

The **Event List** will show the packet status as "Successful" if communication is correct.



Final picture of completed lab task3:



LAB-4

- To configure **Server0** to act as a **DHCP Server** and automatically assign IP addresses to devices in the network.

Network Components

- **Server0** configured with DHCP
- **Router1** and **Switch0** connected to various devices (PC0, Laptop0, etc.)

Step 1: Router1 Configuration

The Configuration of Router Ip as like **Lab3**

Step 2: Enable DHCP Service on Server0(follow the picture)

1. **Select Server0** in Packet Tracer.
2. Go to the **Services** tab.

3. In the **DHCP** section, ensure that the **Service** is set to **On**.

Server0

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 192.168.10.1

DNS Server: 0.0.0.0

Start IP Address: 192.168.10.2

Subnet Mask: 255.255.255.0

Maximum Number of Users: 5

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.16...	0.0.0.0	192.16...	255.25...	5	0.0.0.0	0.0.0.0

☐ Top

Step 2: Configure DHCP Settings

1. Pool Name:

- Set the pool name as serverPool (as like picture below).

Server0

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 192.168.10.1

DNS Server: 0.0.0.0

Start IP Address: 192.168.10.2

Subnet Mask: 255.255.255.0

Maximum Number of Users: 5

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.16...	0.0.0.0	192.16...	255.25...	5	0.0.0.0	0.0.0.0

2. Default Gateway:

Set the **Default Gateway** to 192.168.10.1. This is typically the **Router1** IP address for **Network 192.168.10.x**.

The screenshot shows the 'Server0' configuration window with the 'Services' tab active. The 'DHCP' service is configured for the 'FastEthernet0' interface. The 'Default Gateway' field is highlighted with a red box and set to 192.168.10.1. The 'DNS Server' is set to 0.0.0.0. The 'Start IP Address' is 192.168.10.2, and the 'Subnet Mask' is 255.255.255.0. The 'Maximum Number of Users' is 5. The 'TFTP Server' and 'WLC Address' are both set to 0.0.0.0. A table at the bottom lists the DHCP pool configuration.

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.10.1	0.0.0.0	192.168.10.2	255.255.255.0	5	0.0.0.0	0.0.0.0

3. DNS Server:

Set the **DNS Server** to 0.0.0.0 (if you don't have a DNS server in the network or leave it empty).

The screenshot shows the 'Server0' configuration window with the 'Services' tab active. The 'DHCP' service is configured for the 'FastEthernet0' interface. The 'DNS Server' field is highlighted with a red box and set to 0.0.0.0. The 'Default Gateway' is set to 192.168.10.1. The 'Start IP Address' is 192.168.10.2, and the 'Subnet Mask' is 255.255.255.0. The 'Maximum Number of Users' is 5. The 'TFTP Server' and 'WLC Address' are both set to 0.0.0.0. A table at the bottom lists the DHCP pool configuration.

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.10.1	0.0.0.0	192.168.10.2	255.255.255.0	5	0.0.0.0	0.0.0.0

4. Start IP Address:

- Set the **Start IP Address** to 192.168.10.2. This will be the first address assigned in the DHCP pool.

Server0

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 192.168.10.1

DNS Server: 0.0.0.0

Start IP Address : 192 168 10 2

Subnet Mask: 255 255 255 0

Maximum Number of Users : 5

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.16...	0.0.0.0	192.16...	255.25...	5	0.0.0.0	0.0.0.0

☐ Top

5. Subnet Mask:

- Set the **Subnet Mask** to 255.255.255.0. This is the subnet mask for both **192.168.10.x** and **192.168.2.x** networks.

6. Maximum Number of Users:

- Set the **Maximum Number of Users** to 5 (or adjust this according to how many devices you want to support in the DHCP pool).

Server0

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 192.168.10.1

DNS Server: 0.0.0.0

Start IP Address : 192 168 10 2

Subnet Mask: 255 255 255 0

Maximum Number of Users : 5

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

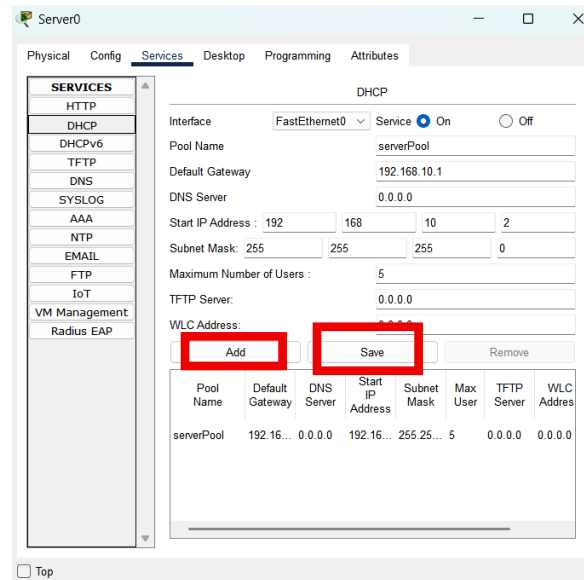
Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.16...	0.0.0.0	192.16...	255.25...	5	0.0.0.0	0.0.0.0

☐ Top

Step 3: Save the Configuration

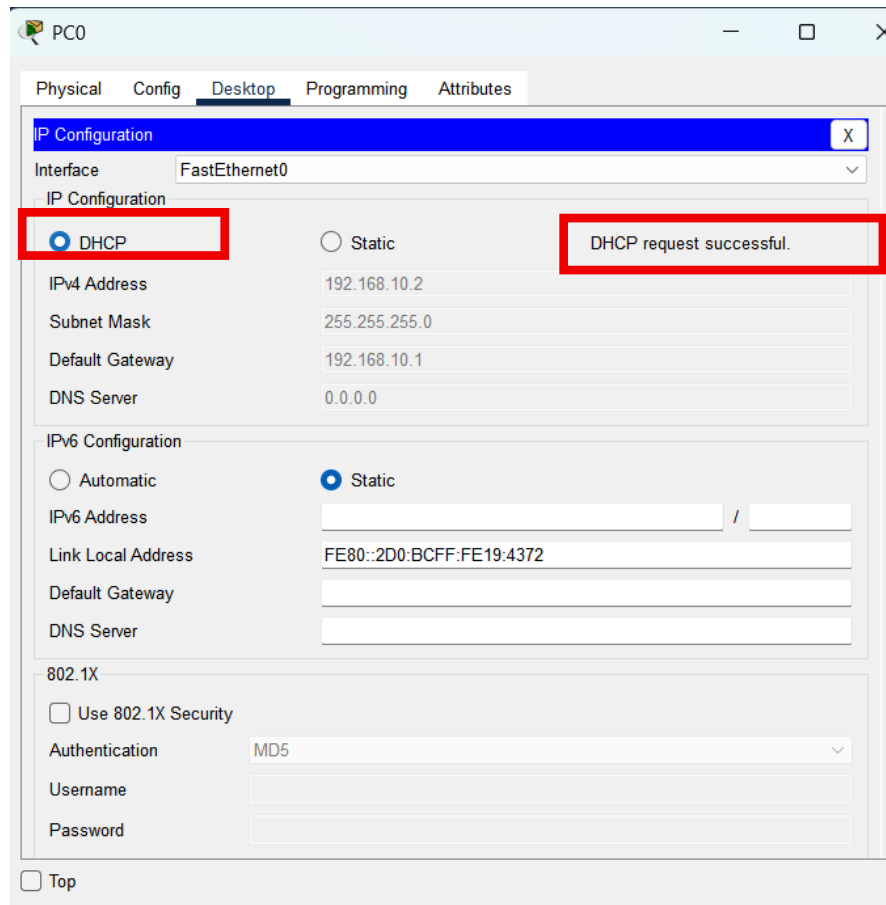
1. Click on the **Add & Save** button at the bottom of the DHCP configuration window.



Step 4: Test the DHCP Configuration

Once **DHCP** is enabled on **Server0**, any device connected to the network that is configured to obtain an IP address automatically (via **DHCP**) should receive an IP from the configured pool.

1. **Configure Devices to Use DHCP:**
 - For **PC0**, **Laptop0**, and any other device that needs an IP address:
 1. Click on the device (e.g., **PC0**).
 2. Go to **Desktop → IP Configuration**. (as like lab 1)
 3. Select **DHCP** to obtain the IP address automatically.



2. Verify the DHCP Lease:

- After setting the devices to **DHCP**, they should automatically receive an IP address within the configured pool (e.g., 192.168.10.2, 192.168.10.3, etc.).

PC0

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

DHCP

Static

DHCP request successful.

IPv4 Address

192.168.10.2

Subnet Mask

255.255.255.0

Default Gateway

192.168.10.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

/

Link Local Address

FE80::2D0:BCFF:FE19:4372

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

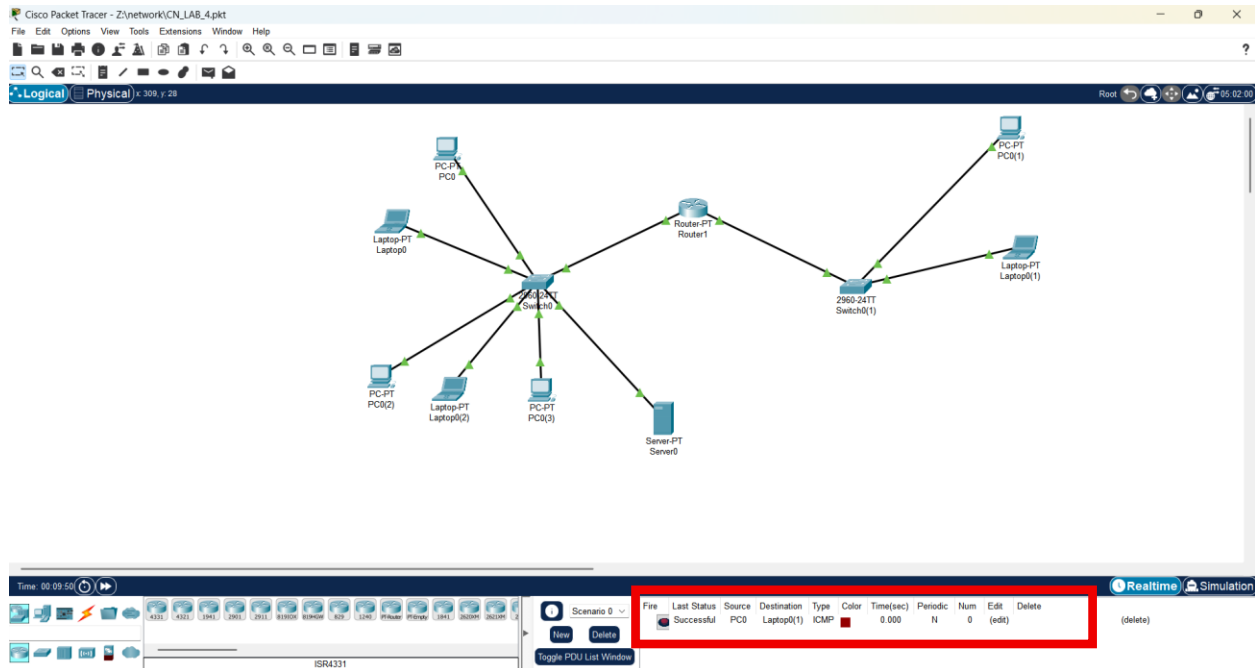
Username

Password

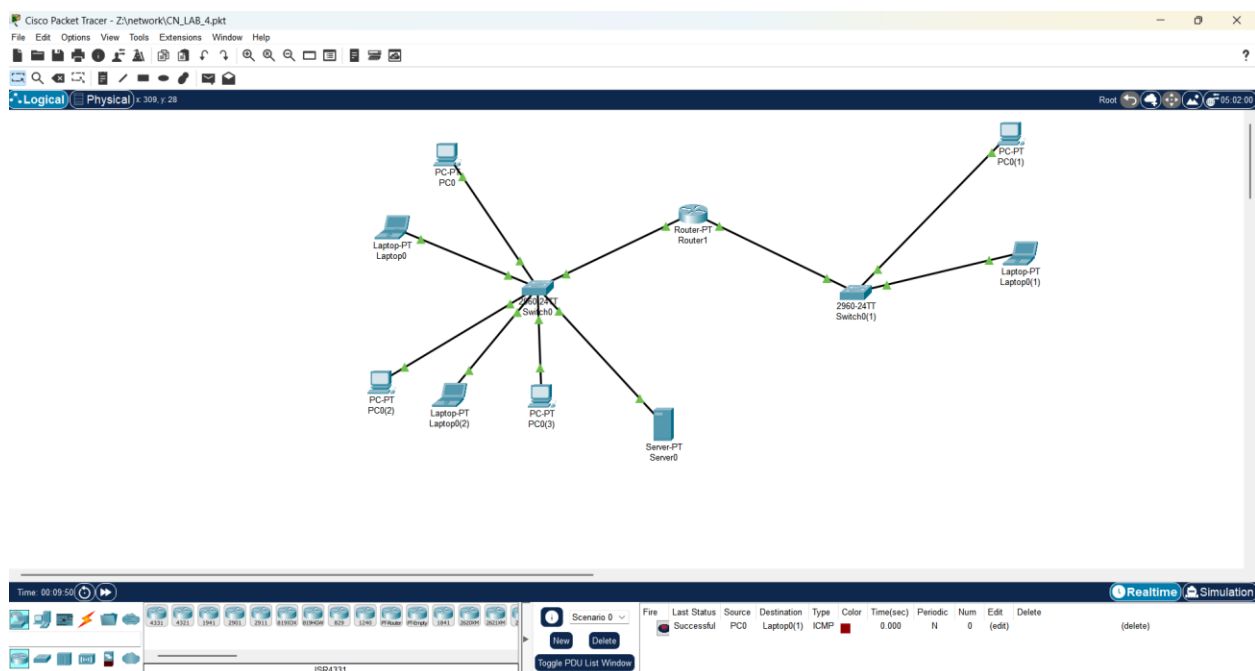
Top

Step 5: Verify Connectivity

Send packet as like **lab 1**.



Final picture of completed lab task 4 :



LAB-4.1

- Wireless Router in Cisco Packet Tracer, allowing seamless communication between wireless devices and devices connected through wired connections (like switches and routers).

Network Components

1. Switches: 2x 2960-24TT
2. Router: 2x Router PT (Router0 and Wireless Router0)
3. PCs: 3x PC (PC0, PC1, PC2)
4. Laptops: 3x Laptop (Laptop0, Laptop1, Laptop2)
5. Wireless Router: 1x WRT300N Wireless Router0

Network Topology Description

1. Router0 (IP: 192.168.10.1) connects PC0 (IP: 192.168.10.2) and Laptop0 (IP: 192.168.10.3) via Switch0.
2. Router0 (IP: 192.168.11.1) is connected to Wireless Router0 via a direct link.
3. Wireless Router0 connects to PC1 (IP: 192.168.11.4), Laptop1 (IP: 192.168.11.2), and Laptop2 (IP: 192.168.11.3) wirelessly.
4. PC2 (IP: 192.168.11.5) is also connected to Wireless Router0.

Step 1: Device Connections (Follow lab 1&1.2)

- All The Connection procedure should be as like Lab 1 &1.2
- PC0 and Laptop0 are connected to Switch0 via Copper Straight-Through cables.
- Switch0 is connected to Router0 (FastEthernet0/1) via Copper Straight-Through cable.
- Router0 (FastEthernet0/1) is connected to Wireless Router0 using a Copper Straight-Through cable.
- Wireless Router0 connects wirelessly to PC1, Laptop1, and Laptop2.
- PC2 is connected to the wireless network of Wireless Router0.

Step 2: Configuring the Routers As like Lab3

1. Router0 Configuration:

- FastEthernet0/0: IP Address: 192.168.10.1, Subnet Mask: 255.255.255.0
- FastEthernet1/0: IP Address: 192.168.11.1, Subnet Mask: 255.255.255.0
- Routing Configuration: Ensure Router0 is configured to route between the 192.168.10.x and 192.168.11.x networks.

Step 3: Configure Wireless Security

Go to Wireless tab:

- SSID: siam
- Authentication: WEP
- Password/WEP key: 1234567890

Wireless Router0

Physical **Config** GUI Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Internet

LAN

Wireless

Wireless Settings

SSID: siam

2.4 GHz Channel: 1 - 2.412GHz

Coverage Range (meters): 250.00

Authentication: ☒ WEP

WEP Key: 1234567890

PSK Pass Phrase

RADIUS Server Settings

IP Address

Shared Secret

Encryption Type: 40/64-Bits (10 Hex digits)

Step 4: Configure the Wireless Router's Internet Settings

1. in the **Config** tab, click on **Internet** settings.

Wireless Router0

Physical **Config** GUI Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Internet

LAN

Wireless

Internet Settings

IP Configuration: ☒ Static

User Name

Password

IPv4 Address

Subnet Mask

Default Gateway: 192.168.11.1

DNS Server

2. Set the **Internet Connection Type** to **Static IP**.

Wireless Router0

Physical Config GUI Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Internet

LAN

Wireless

Internet Settings

IP Configuration

☐ DHCP

☒ Static

☐ PPPoE

UserName

Password

IPv4 Address

Subnet Mask

Default Gateway

DNS Server

192.168.11.1

3. Assign a **Default Gateway** (it will typically be the IP of **Router0** or internet gateway, which is 192.168.11.1).

Wireless Router0

Physical Config GUI Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Internet

LAN

Wireless

Internet Settings

IP Configuration

☐ DHCP

☒ Static

☐ PPPoE

UserName

Password

IPv4 Address

Subnet Mask

Default Gateway

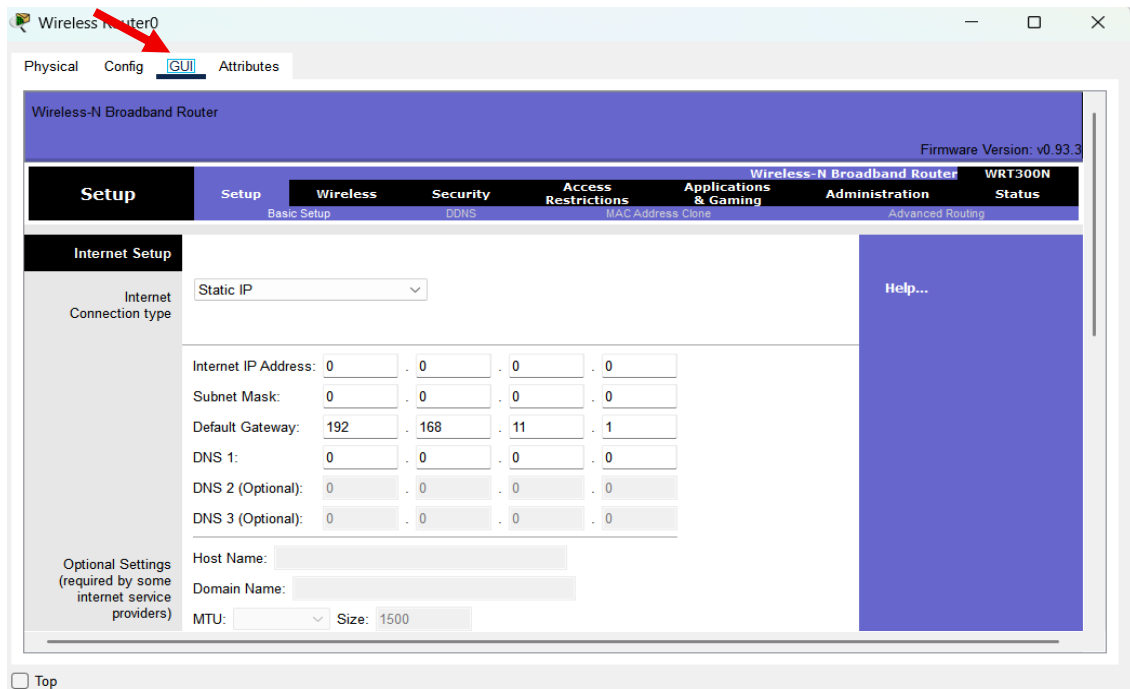
DNS Server

192.168.11.1

4. Leave the **Internet IP Address** and other settings as 0.0.0.0, unless you have a specific internet connection configuration.

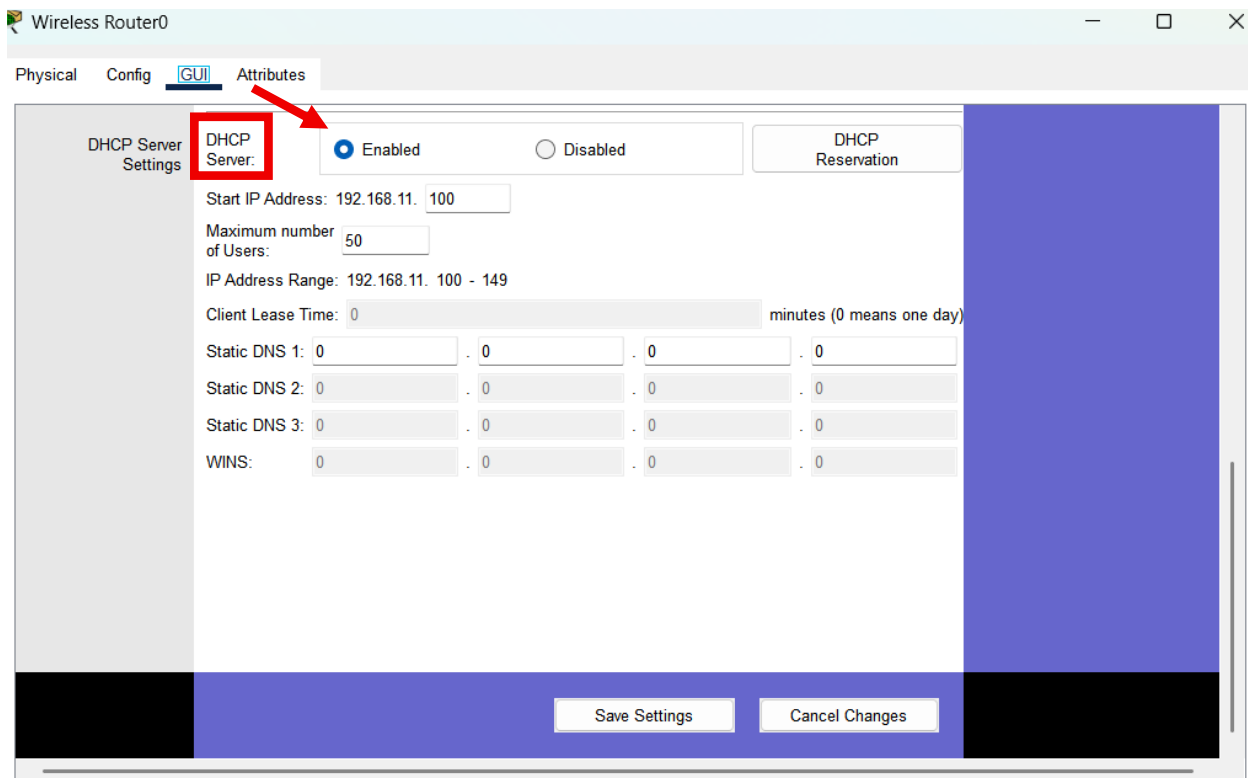
Step 5: Configure the DHCP Server

1. Click on the **GUI** tab.



The screenshot shows the 'Wireless Router0' configuration window. The 'GUI' tab is selected and highlighted with a red arrow. The interface displays the 'Internet Setup' section with various fields for IP configuration. The 'Internet Connection type' is set to 'Static IP'. The 'Internet IP Address' is 0.0.0.0, 'Subnet Mask' is 0.0.0.0, and 'Default Gateway' is 192.168.11.1. There are also fields for DNS 1, DNS 2 (Optional), and DNS 3 (Optional), all set to 0.0.0.0. A 'Host Name' field is empty, and a 'Domain Name' field is also empty. The 'MTU' is set to 1500. A 'Help...' button is visible on the right side of the configuration area.

2. Under **DHCP Server Settings**, enable the DHCP service by clicking on **Enabled**.



The screenshot shows the 'Wireless Router0' configuration window with the 'GUI' tab selected. The 'DHCP Server Settings' section is visible, and the 'DHCP Server' checkbox is checked, indicating it is 'Enabled'. A red arrow points to the 'Enabled' radio button. The 'Start IP Address' is 192.168.11.100, and the 'Maximum number of Users' is 50. The 'IP Address Range' is 192.168.11.100 - 149. The 'Client Lease Time' is 0 minutes (0 means one day). There are fields for Static DNS 1, Static DNS 2, Static DNS 3, and WINS, all set to 0.0.0.0. At the bottom, there are 'Save Settings' and 'Cancel Changes' buttons.

3. Set up the **DHCP Pool**:

- **Start IP Address:** 192.168.11.100
- **End IP Address:** 192.168.11.149
- **Subnet Mask:** 255.255.255.0

Wireless Router0

Physical Config **GUI** Attributes

DHCP Server Settings

DHCP Server: ☒ Enabled ☐ Disabled

DHCP Reservation

Start IP Address: 192.168.11. 100

Maximum number of Users: 50

IP Address Range: 192.168.11. 100 - 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

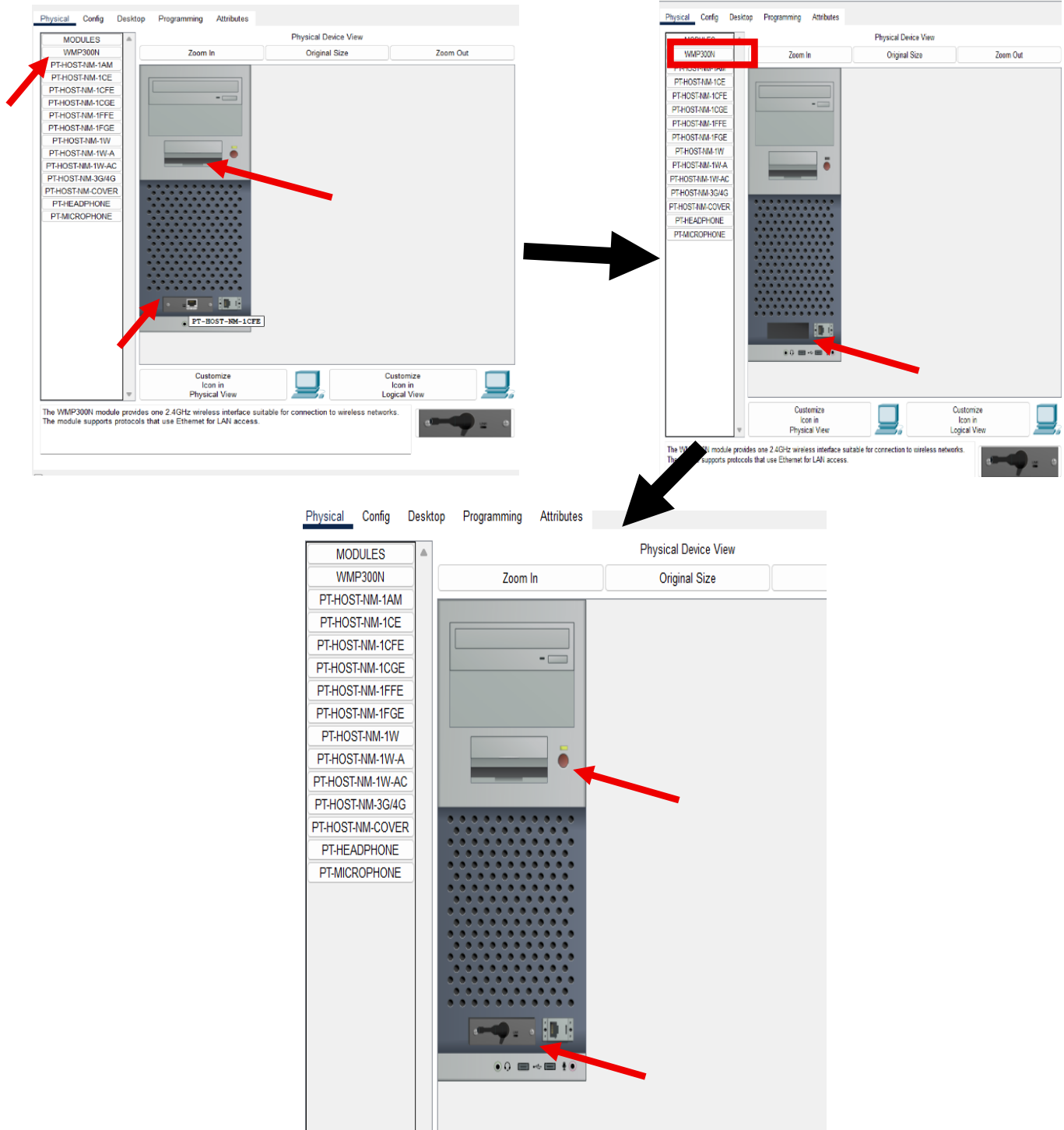
Save Settings Cancel Changes

4.close the **tab**

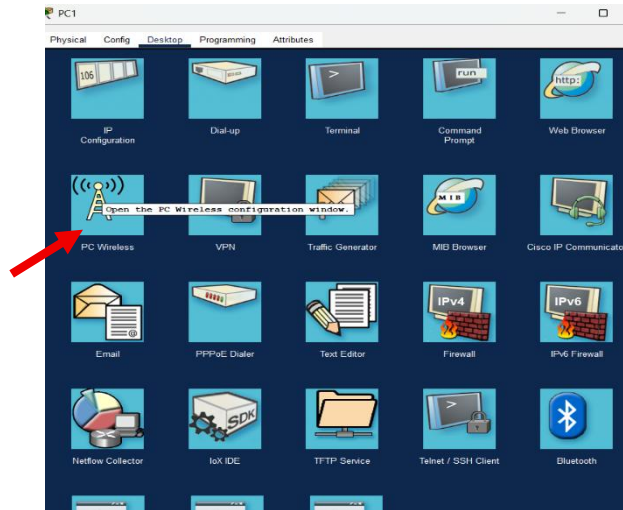
Step 6: Configure IP Addresses

For each *Laptop / PC wireless*: as like the picture

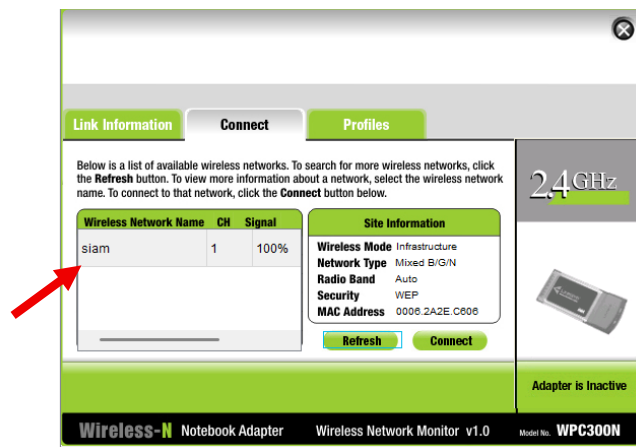
1. Click the device->physical->power off module->Drag the port to open->select the wpm 300N and drop to the port->Turn on the pc



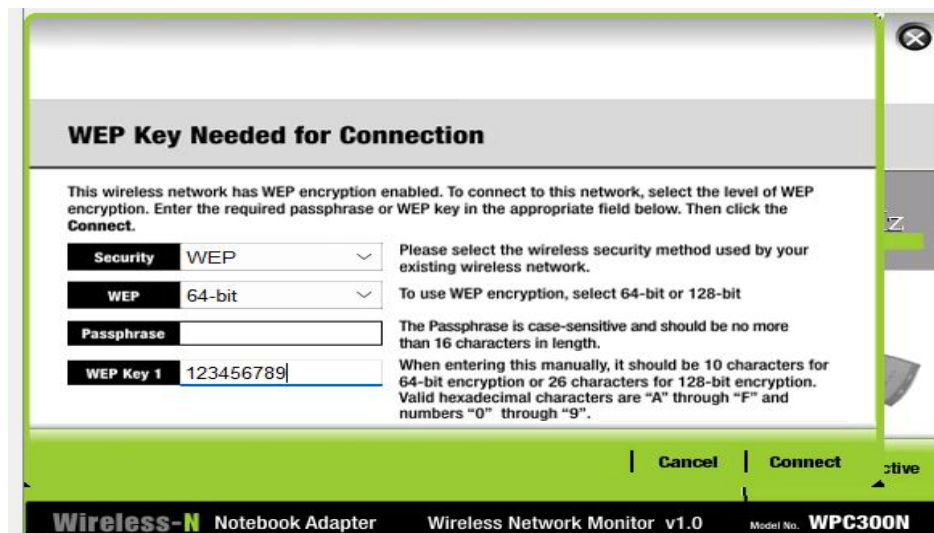
2. Go to Desktop → PC Wireless / Laptop Wireless



3. Select the SSID shown



4. Enter the WiFi password-> Click Connect



5.click link information to show successful connection



Step 7: Set Wireless Devices to DHCP (Automatic IP) --(As Like lab 4)

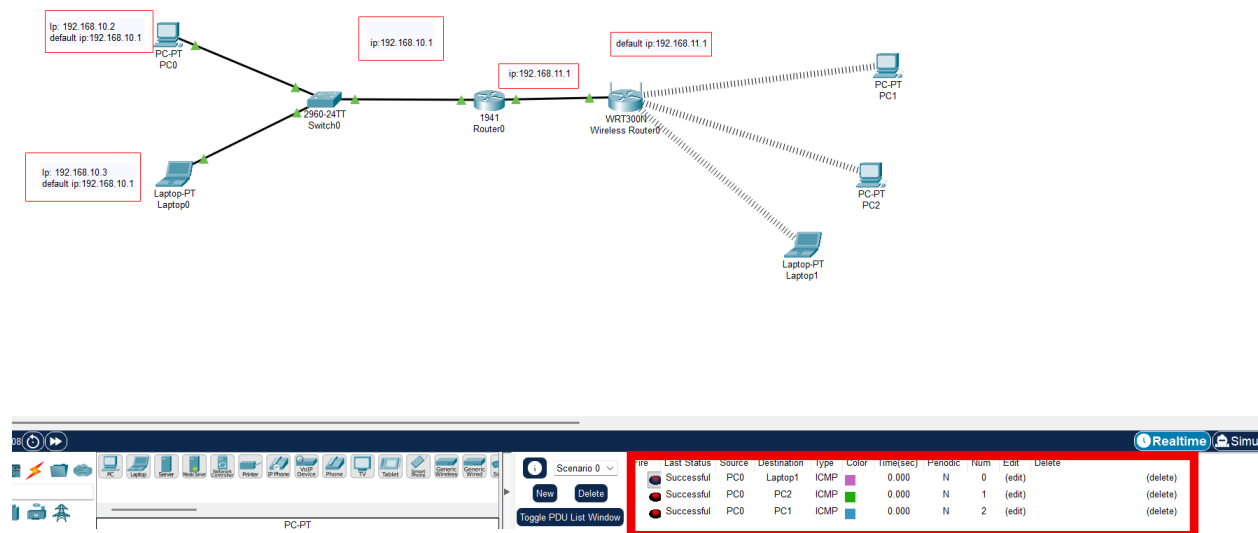
On each wireless device:

1. Desktop → IP Configuration
2. Select DHCP

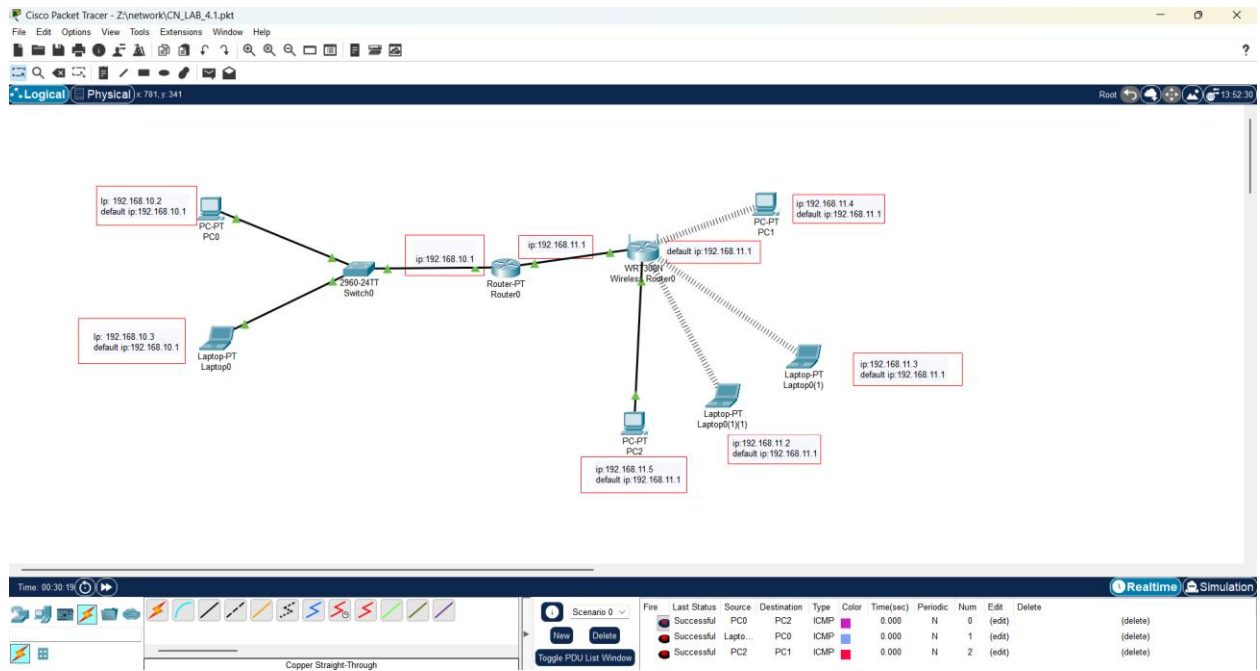
The device will automatically receive:

- IP (192.168.11.x)

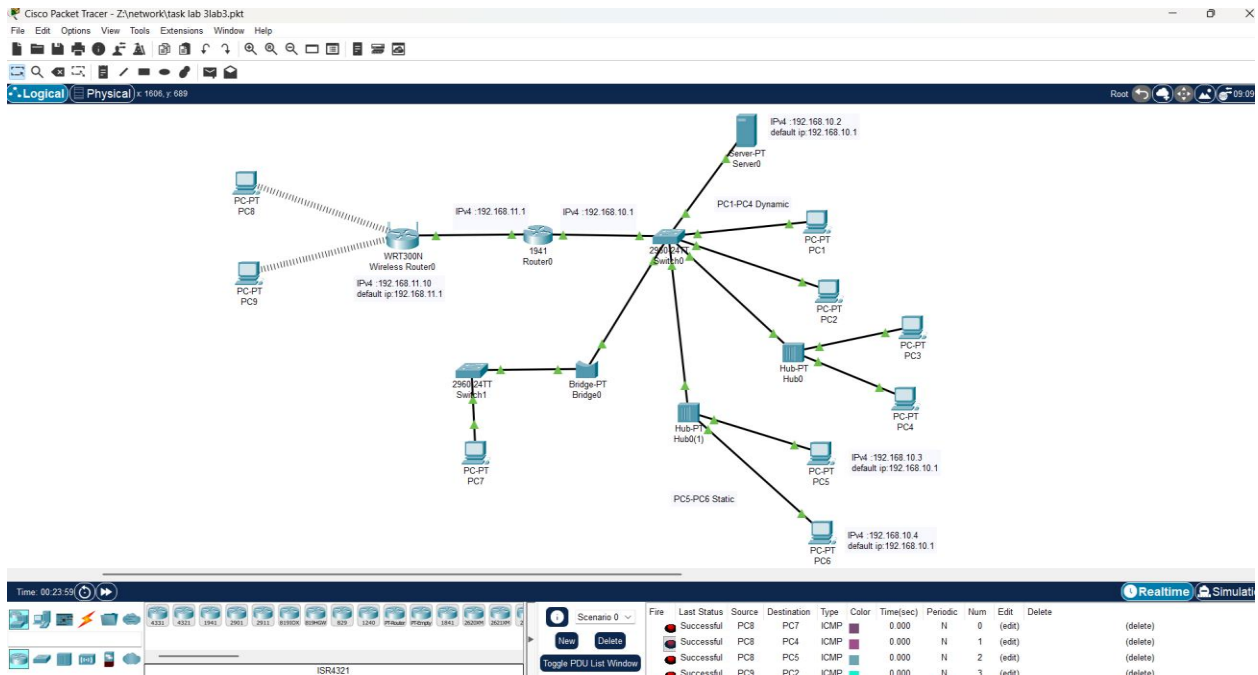
Step8 : Transfer a packet as like lab 1



Final picture of completed lab task4.1:



LAB-4(Task)



Devices Used

- WRT300N Wireless Router
- Cisco 1941 Router
- 2960-24TT Switch
- Laptops/PCs
- Bridge
- Hubs
- Server Pt

Network Topology Description

1. Router0 (IP: 192.168.10.1) connects Server0 ,PC1(DHCP) and PC2(DHCP) via Switch0 refer to picture
2. Router0 (IP: 192.168.10.1) connects PC3(DHCP),PC4(DHCP) Via Switch0-> Hub0 refer to picture
3. Router0 (IP: 192.168.10.1) connects PC5(192.168.10.3),PC6(192.168.10.4) Via Switch0-> Hub0(1) refer to picture.
4. Router0 (IP: 192.168.10.1) connects PC7 (DHCP)via Switch0->Bridge0->Switch1

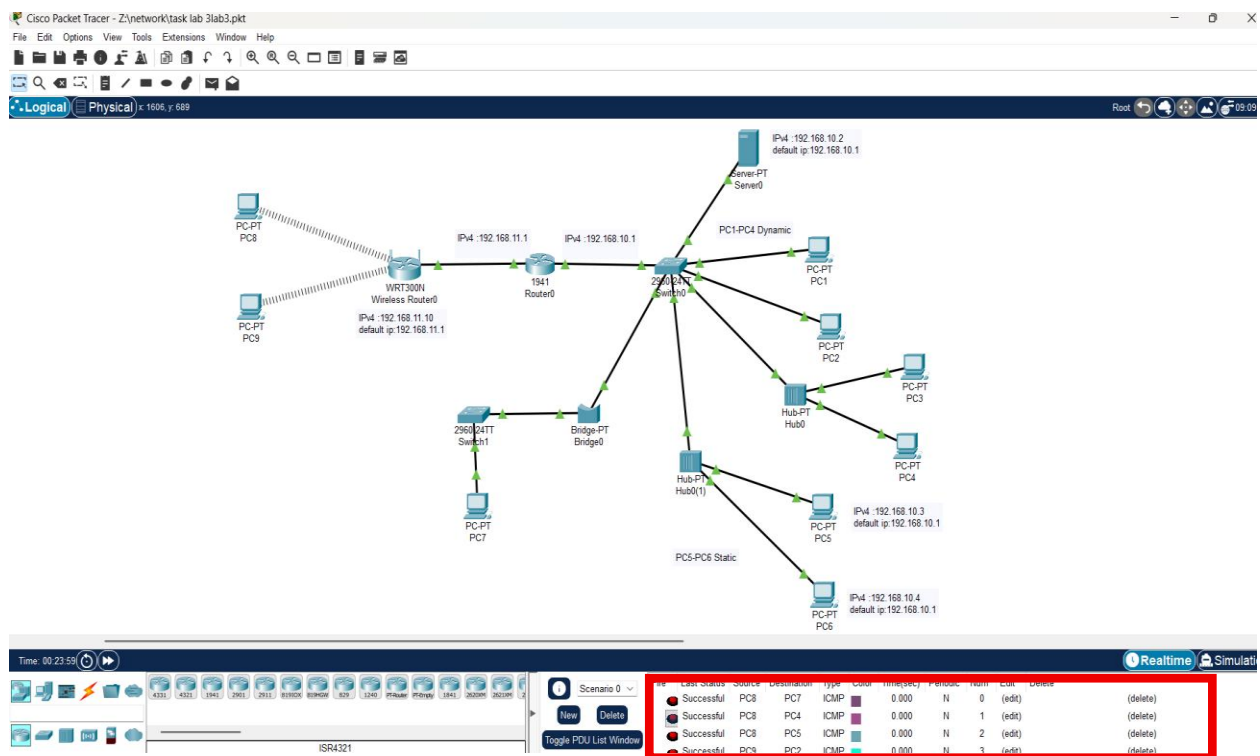
- Router0 (IP: 192.168.11.1) is connected to Wireless Router0 via a direct link.
- Wireless Router0 connects to PC8(DHCP), PC9 (DHCP) wirelessly.
- As mention in the picture pc 1-4 Dynamic & pc 5-6 static

SetUp:

- All Add device, Connectivity & ip configuration as like Lab 1-4
- Router setup from the Lab3
- Router to Wireless from lab 4.1
- Setup DHCP as like 4
- PC DHCP IP configuration from lab4.
- Static Ip configuration from lab 1
- Switch to Pc From Lab 2

Packet Transfer :

After complete the packet transfer as like lab1 it shows successful as like picture below.



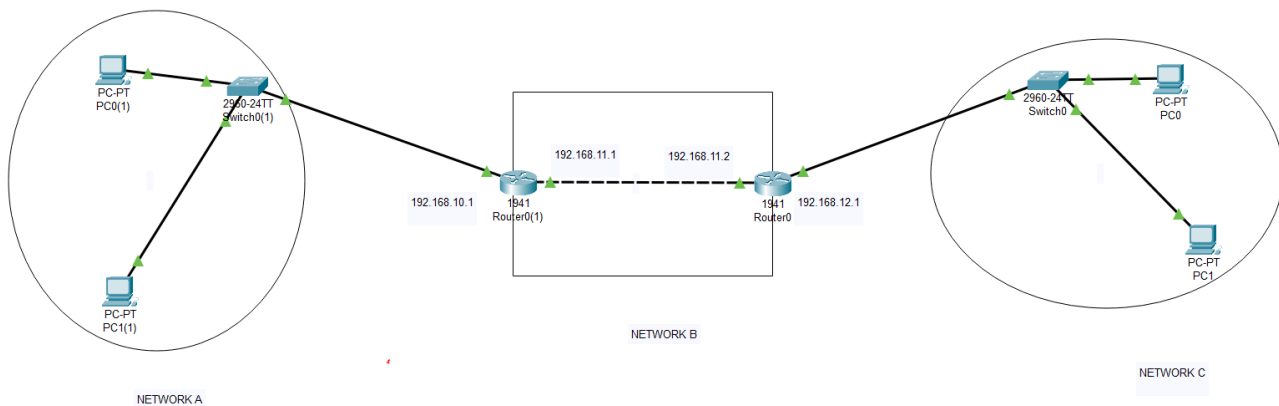
LAB-5

• ROUTER TO ROUTER CONNECTION

Devices Used

- Cisco 1841 Router
- 2960-24TT Switch
- Laptops/PCs

Network Topology: As Shown in the picture below



IP:

PC0->192.168.12.2, PC1(1)->192.168.12.3

PC0(1)->192.168.10.2, PC1(1)->192.168.10.3

Router0(1) Port0->192.168.10.1 & Port1->192.168.11.1,

Router0 Port0->192.168.12.1 & Port1->192.168.11.2,

Setup:

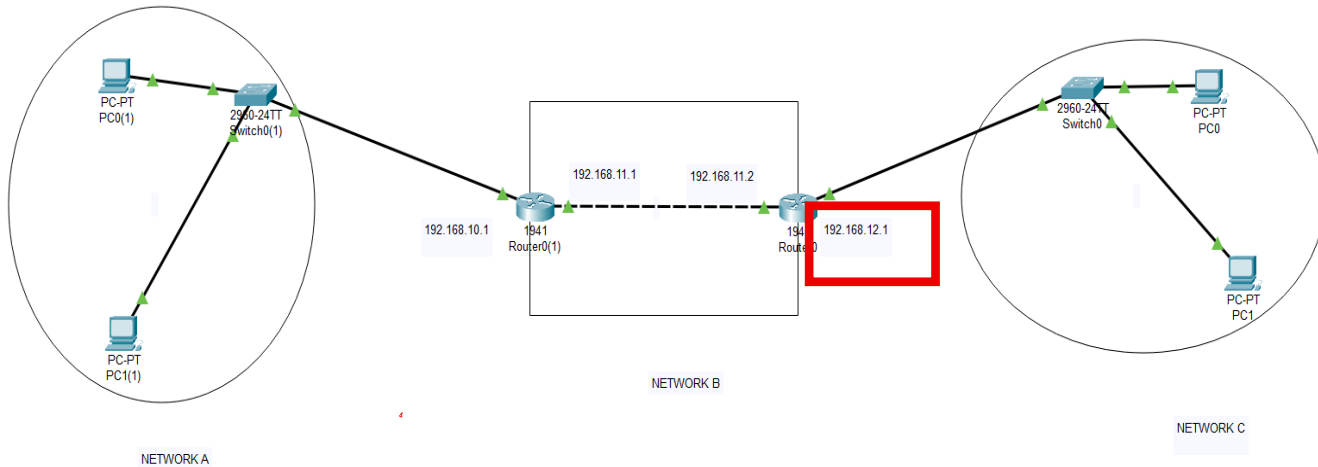
- All Add device, Connectivity , ip configuration & gateway configuration as like Lab 1-4
- Router setup from the Lab3.

ROUTER TO ROUTER:

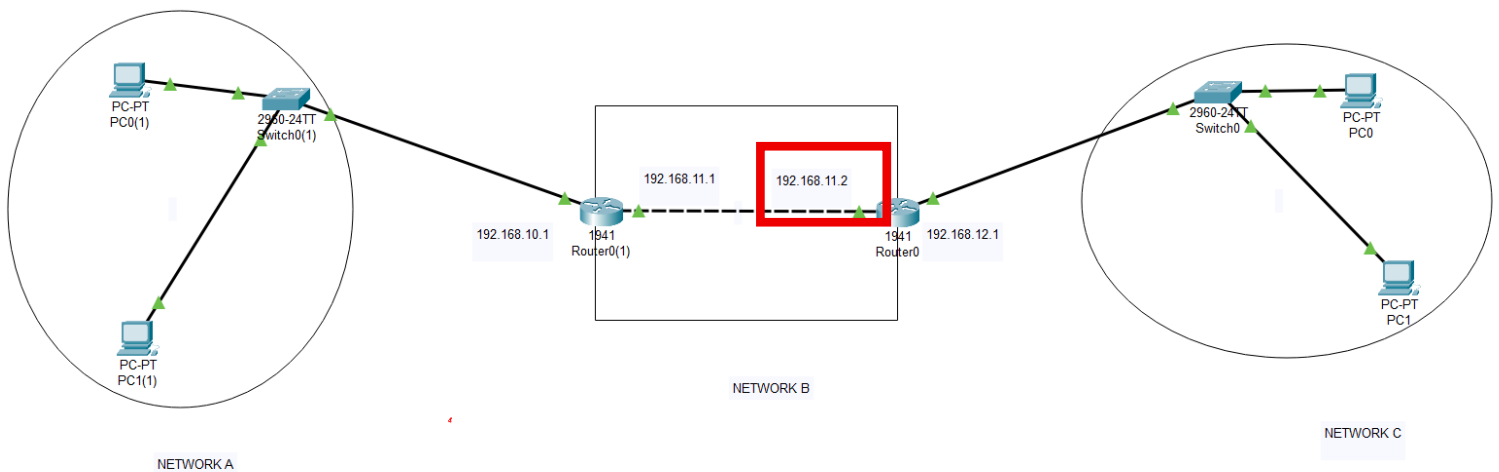
Step 1: Setup Router 0(1)

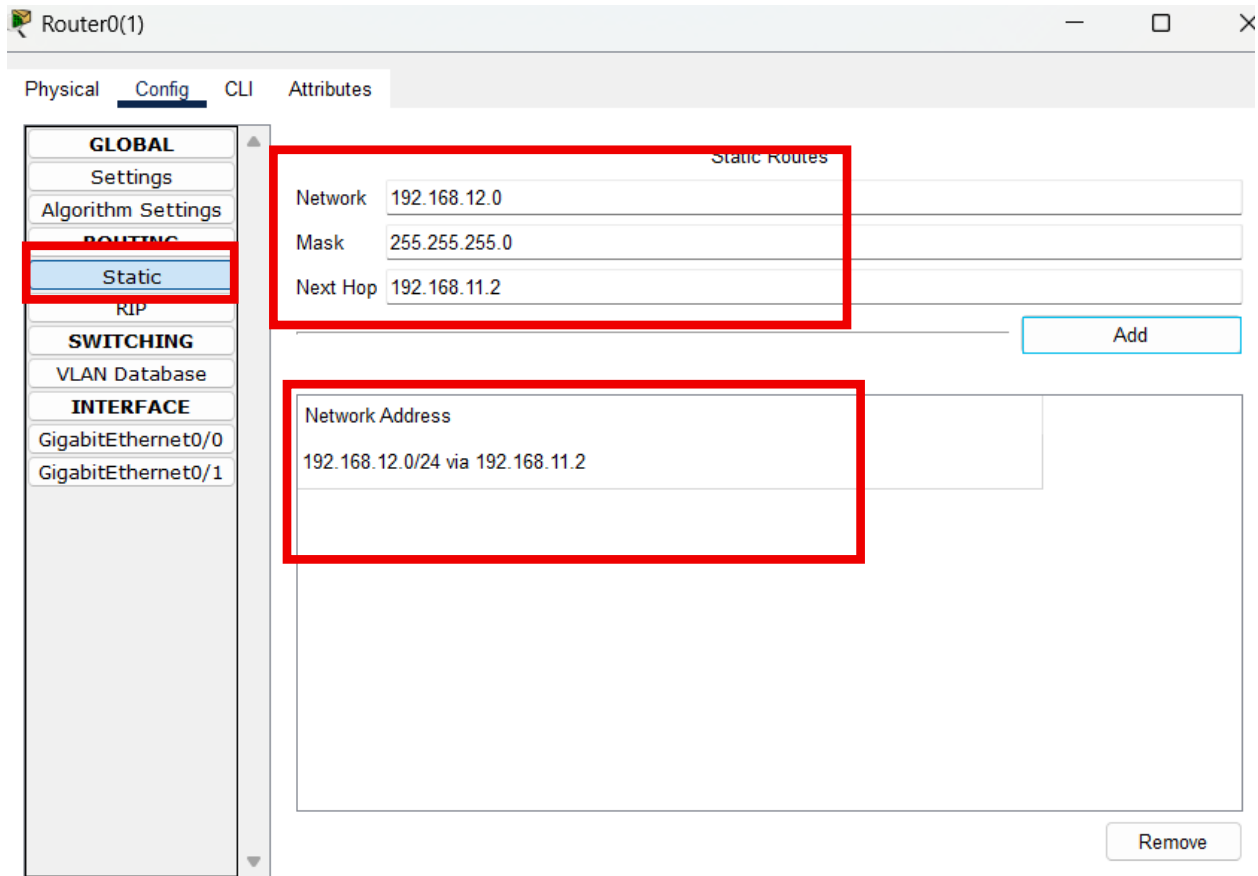
For network and Host IP as like picture below then -> Static->Network(Which network you want access->mask(255.255.255.0)->Next Hop->Click Add

Network:



Next Hop:



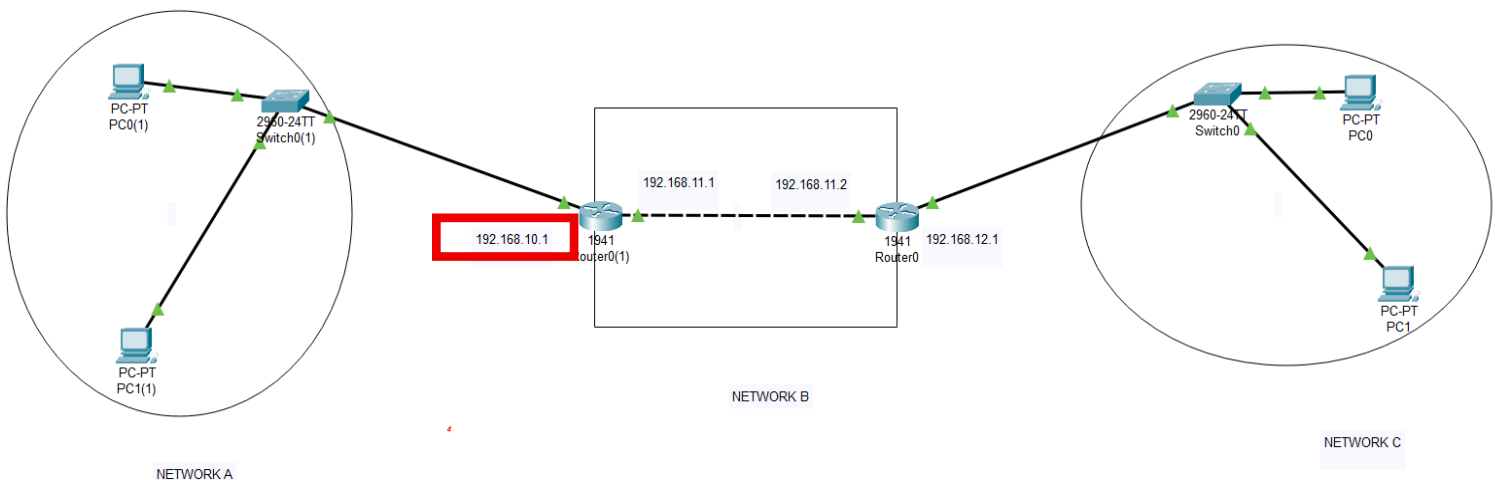


Equivalent IOS Commands

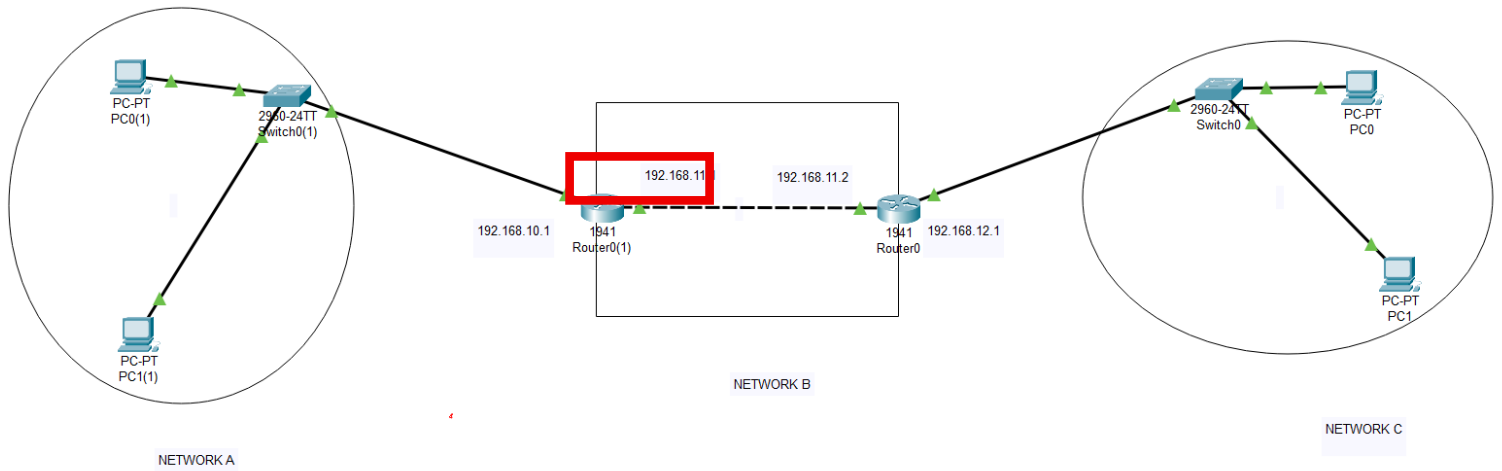
Step 1: Setup Router 0

For network and Hope IP as like picture below then -> Static->Network(Which network you want access->mask(255.255.255.0)->Next Hop->Click Add

Network:



Next Hop:



Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Static Routes

Network	192.168.10.0
Mask	255.255.255.0
Next Hop	192.168.11.1

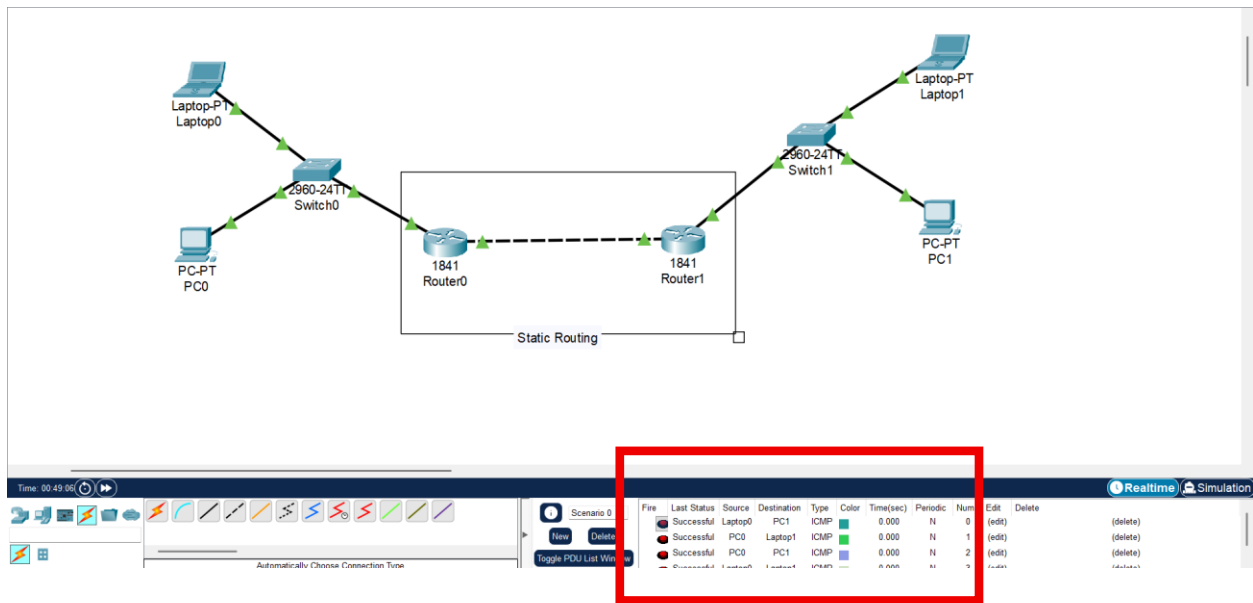
Add

Network Address

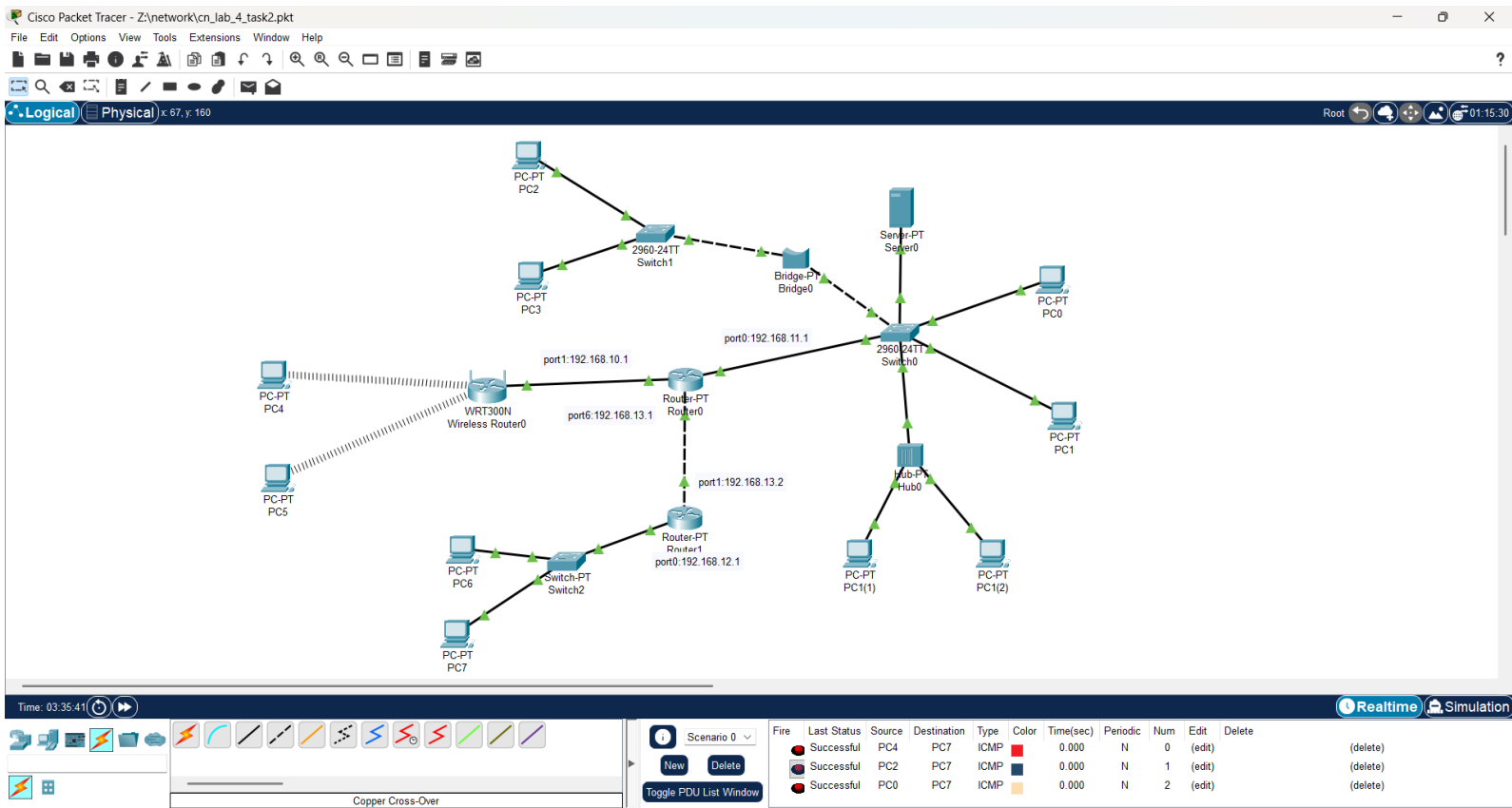
Remove

Packet Transfer :

After complete the packet transfer as like lab1 it shows successful



LAB-5(TASK)



Network Devices

The following devices are present in the diagram:

- **Routers (3):**
 - Router0
 - Router1
 - Wireless Router0 (WRT300N) - This device functions as a **wireless access point, switch, and router**.
- **Switches (3):**
 - Switch0 (2960-24TT)
 - Switch1 (2960-24TT)
 - Switch2

- **Hub (1):**
 - Hub0 (Hub-PT)
- **End Devices (11):** These are the devices used by end-users.
 - PCs (PC0 through PC7, PC1(1), PC1(2), PC2, PC3)
- **Server (1):**
 - Server0 (Server-PT)
- **Bridge (1):**
 - Bridge0 (Bridge-PT)

Types of Connections and Subnetworks

All Add device, Connectivity , ip configuration & gateway configuration as like **Lab 1-4**

The connections define the different subnetworks and how they are linked:

1. Wired Connections

- **Straight-Through Cable :** Used to connect **dissimilar** devices, like a **PC to a Switch** (e.g., PC0 to Switch0), or a **Router to a Switch** (e.g., Router0 to Switch0).
- **Crossover Cable (Dashed Green Line):** Used to connect **similar** devices, like a **Switch to a Switch** (e.g., Switch1 to Bridge0) or **Router to a Router** (e.g., Router0 to Router1).
- **Copper Coaxial Cable (Solid Black Line):** Used to connect **Hub to PC** (e.g., Hub0 to PC1(1)) or **Hub to Switch** (e.g., Hub0 to Switch0). *Note: In Packet Tracer, the specific line appearance may vary, but the context indicates the type of connection.*

2. Wireless Connections

- **Wireless Router0 to PC4 and PC5.** This indicates that these PCs are communicating wirelessly with the access point functionality of the router.

3. Subnetworks/Segments

The diagram shows several distinct network segments, often defined by the main **Switch** or **Router**:

- **Segment 1 (Switch0):** Connects **PC0, PC1, Server0, Hub0, Router0, and Bridge0.**
- **Segment 2 (Switch1):** Connects **PC2, PC3, and Bridge0.**

- **Segment 3 (Hub0):** A shared segment connecting **PC1(1)** and **PC1(2)** back to Switch0.
- **Segment 4 (Wireless Router0/LAN):** Connects **PC4** and **PC5** wirelessly, and **Router0** via a wired connection.
- **Segment 5 (Router1/Switch2):** Connects **PC6**, **PC7**, and **Router0**.

All Add device, Connectivity , ip configuration & gateway configuration as like Lab 1-4

Device	Interface	Connected To	IP Address / Configuration
Router0	Port to Switch2/Router1		
(e.g., Fa0/1)	192.168.12.1	(Static IP, Default Gateway for PC6 & PC7)	PC6 To
Switch2/Router1's network	192.168.12.2	(Static IP)	PC7 To Switch2/Router1's
network	192.168.12.3	(Static IP)	All Other End Devices Various
Switches/Hubs/Wireless	DHCP	(Auto-Assigned)	

Setup:

1. Router Configuration as like **LAB 3**
2. Server as like **LAB 4**
3. Wireless Router as like **LAB 4.1**
4. PC Configuration as like **LAB 1 & LAB 4**
5. Hub Connection as like **Lab 1.1 & 1.2**
5. Switch, Bridge Connection as like **Lab 2**
6. Router to Router as Like **Lab 5**

Packet Transfer :

Transfer packet as like Lab 1 and show the successful to verify the network work perfectly

