

Star Topology

- One central device: Switch
- End Device: PCs or Laptop
- Cables: Copper Straight Through

Star Topology

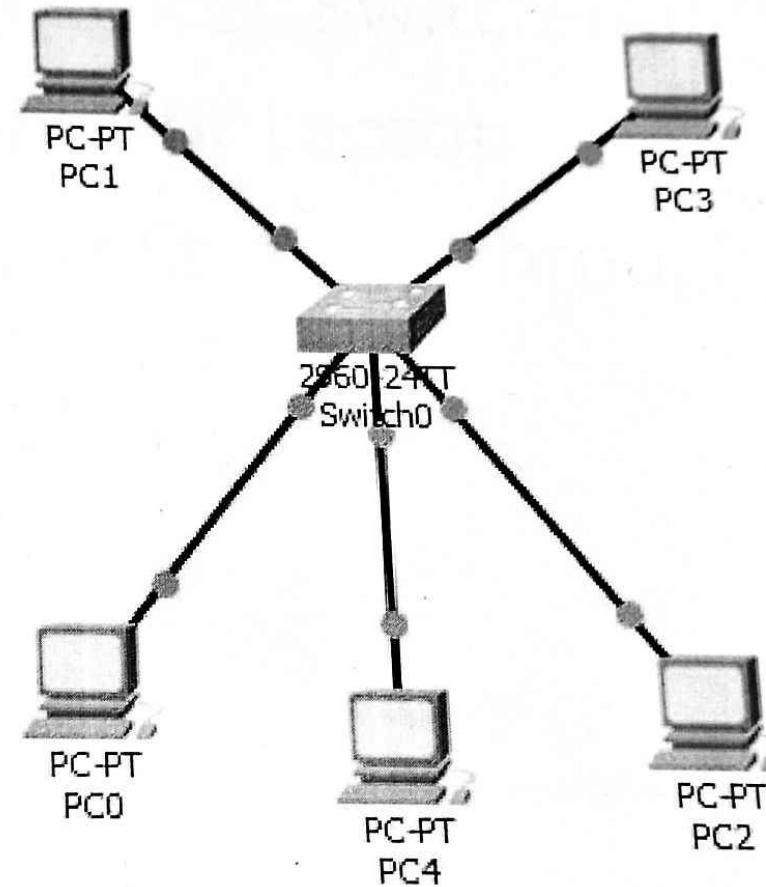
Step1: Drag a switch from network device switch to logical space

Step2: Drag PCs or Laptop from end devices to logical space

Step3: Select Copper Straight Through cable from cables to connect the end devices to Switch

Step4: Wait for connections to be established

Star Topology



Bus Topology

- Networking Device: Switch-Multiple
- End Device: PCs or Laptop
- Cables: Copper Straight Through and Copper Cross Over

Bus Topology

Step1: Drag multiple switch from network device switch to logical space

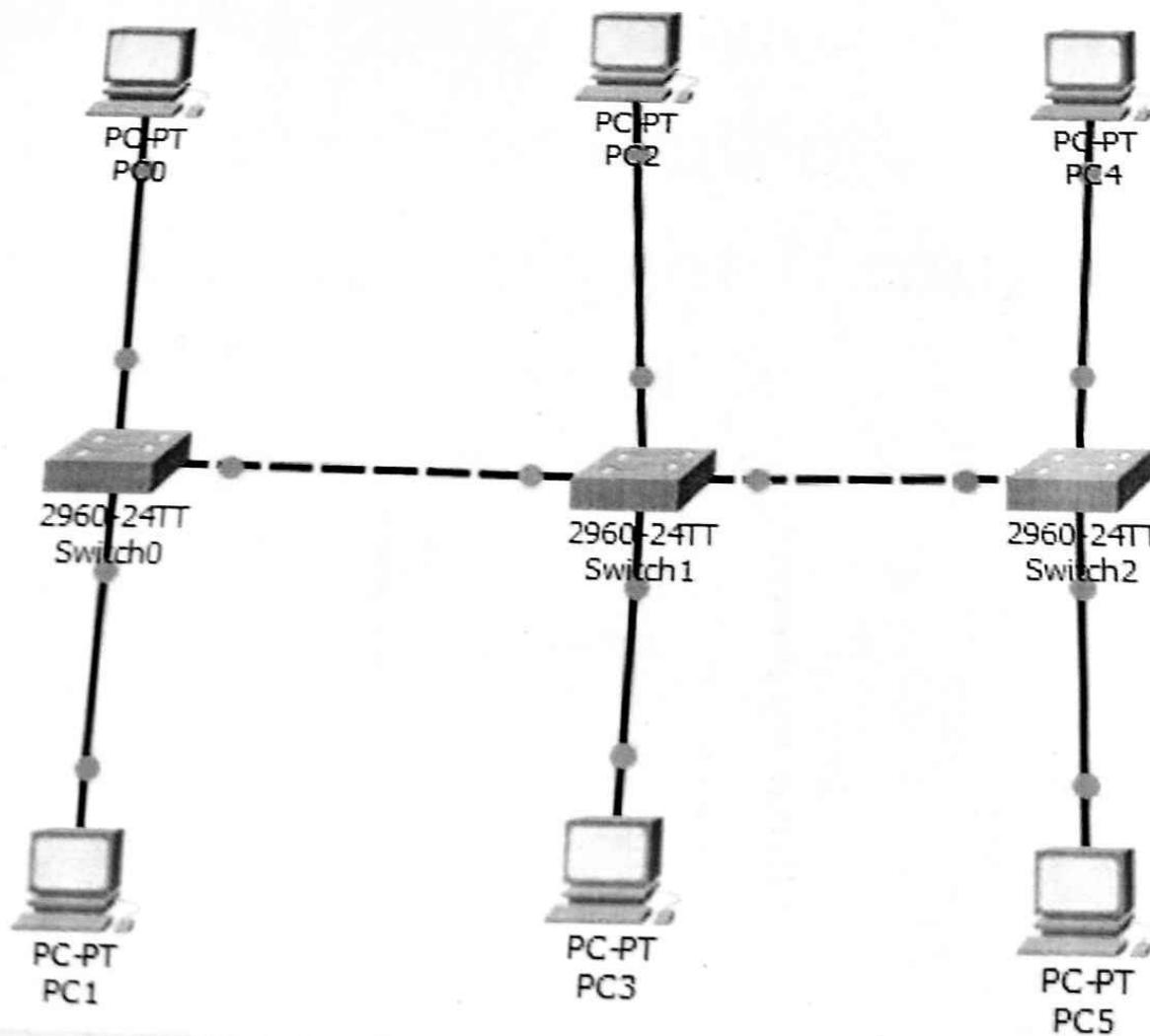
Step2: Drag PCs or Laptop from end devices to logical space

Step3: Select Copper Straight Through cable from cables to connect the end devices to Switch

Step4: Select Copper Cross Over cable from cables to connect the Switch with other Switch

Step4: Wait for connections to be established

Bus Topology



Ring Topology

- Networking Device: Switch-Multiple
- End Device: PCs or Laptop
- Cables: Copper Straight Through and Copper Cross Over

Ring Topology

Step1: Drag multiple switch from network device switch to logical space

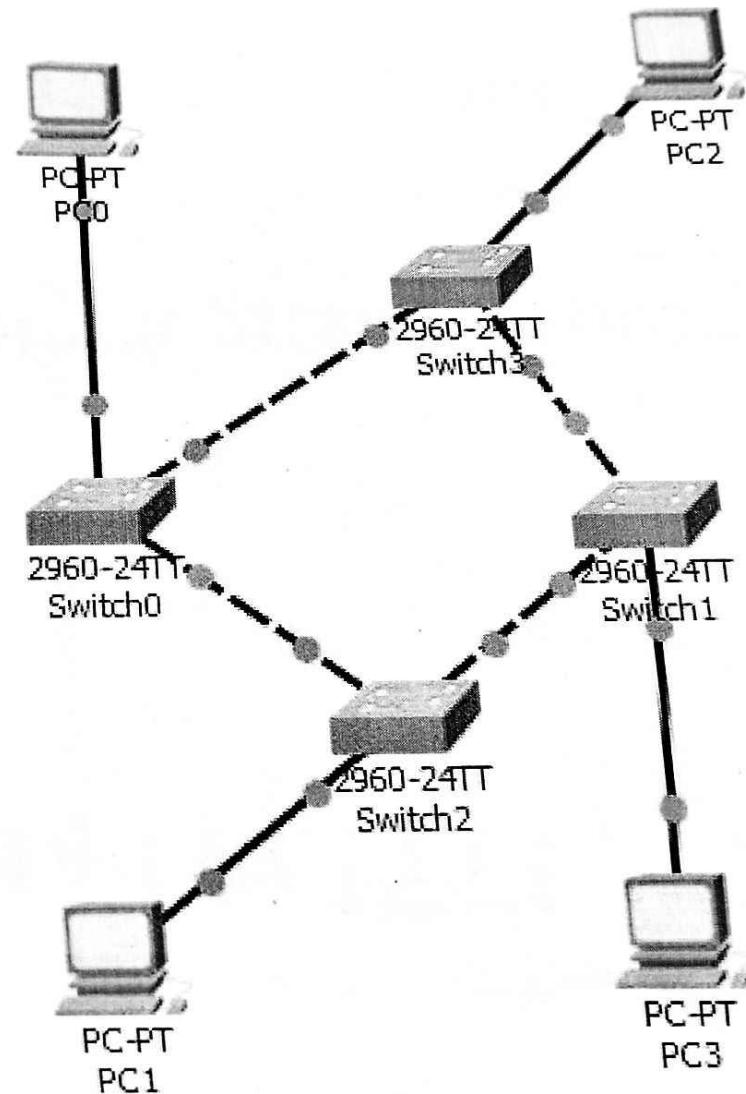
Step2: Drag PCs or Laptop from end devices to logical space

Step3: Select Copper Straight Through cable from cables to connect the end devices to Switch

Step4: Select Copper Cross Over cable from cables to connect the Switch with other Switch

Step4: Wait for connections to be established

Ring Topology



Tree Topology

- Networking Device: Switch-Multiple
- End Device: PCs or Laptop
- Cables: Copper Straight Through and Copper Cross Over

Tree Topology

Step1: Drag multiple switch from network device switch to logical space

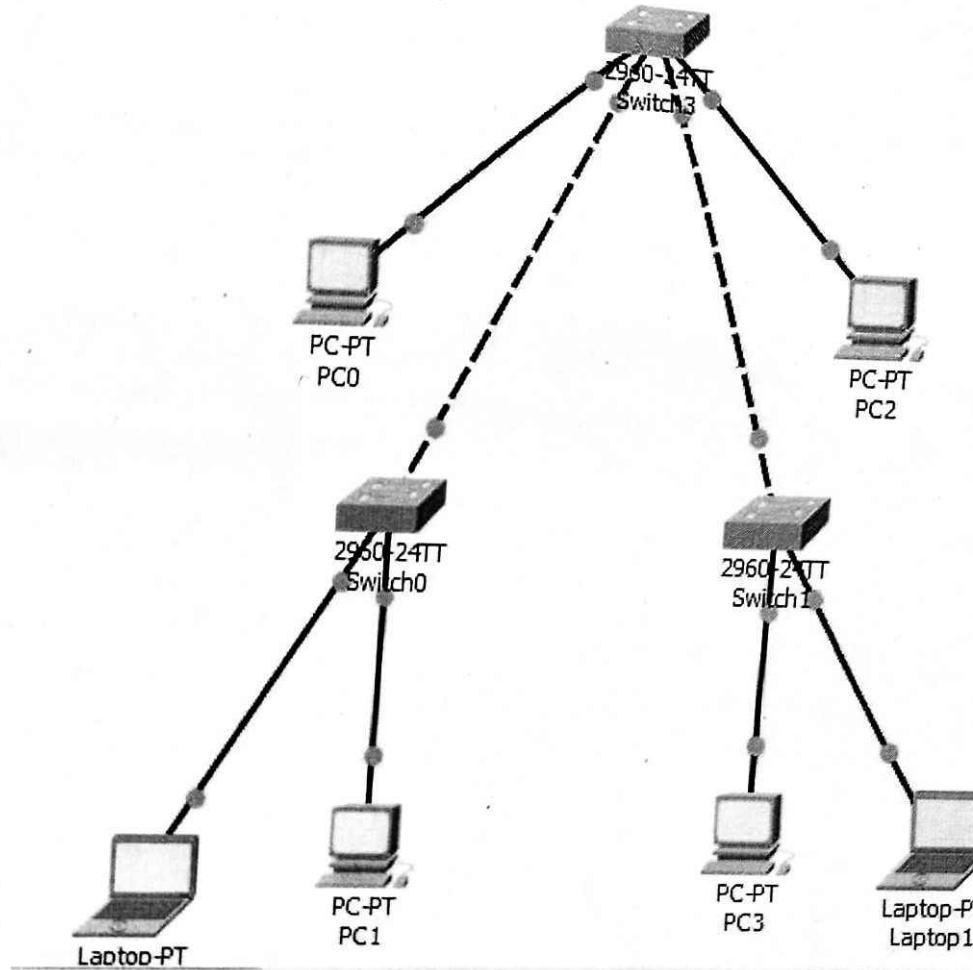
Step2: Drag PCs or Laptop from end devices to logical space

Step3: Select Copper Straight Through cable from cables to connect the end devices to Switch

Step4: Select Copper Cross Over cable from cables to connect the Switch with other Switch

Step4: Wait for connections to be established

Tree Topology





- Now assign IPs to each PC starting from 192.168.1.1 to 192.168.1.4
- Now try to ping one PC from another

```

Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Reply from 192.168.1.3: bytes=32 time=1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>

```

- Eg- I have pinged PC1 from PC2
- Now click on stimulation button and then show all/none then edit filters and select ICMP and close it
- Now click simple PDU button and select sender and

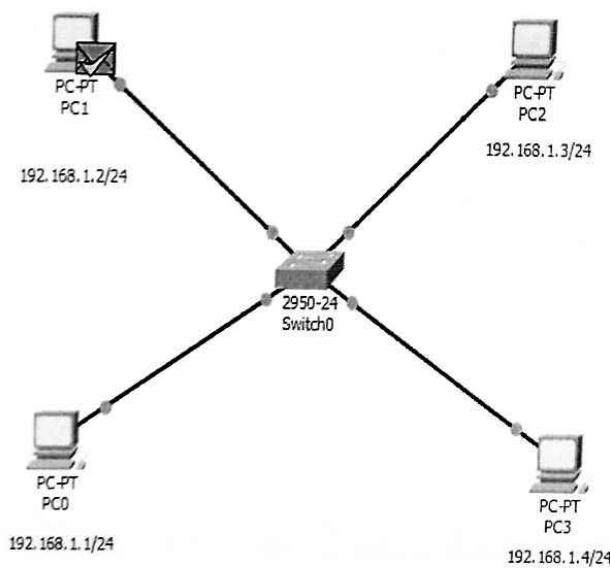
receiver

- Eg - I have selected PC1 as sender and PC3 as receiver

- Now play the control and watch packet moving in the network
- You will notice packet going to destination from the source and acknowledgment coming back

Simulation Panel					
Event List					
Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.000	--	PC1	ICMP	
	0.004	--	PC1	ICMP	
	0.005	PC1	Switch0	ICMP	
	0.006	Switch0	PC3	ICMP	
	0.007	PC3	Switch0	ICMP	
	0.008	Switch0	PC1	ICMP	

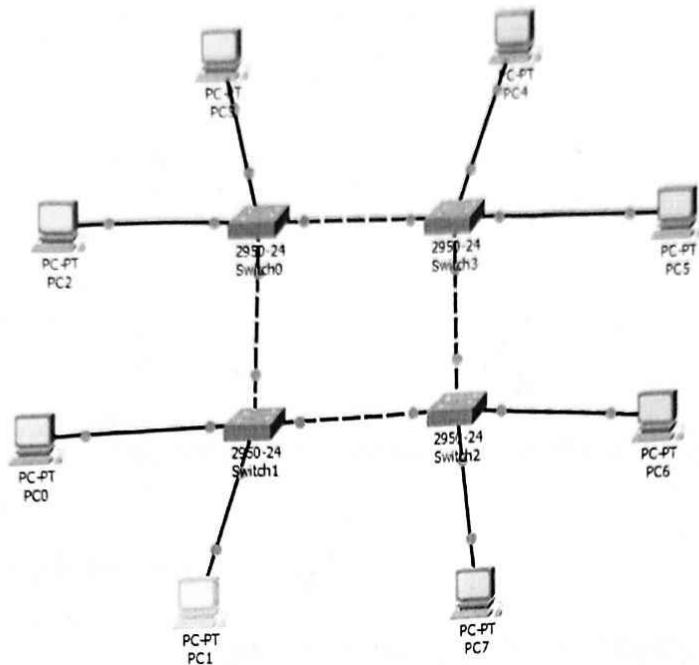
Reset Simulation Constant Delay Captured to: 1029.834 s



2. Ring Topology: -

- Drag 8 PCs from End Devices block
- Drag 4 Switches from Network Devices block

- Now connect the switches as a ring and each PC with one switch as in fig below



- Now assign IPs to each PC starting from 192.168.1.1 to 192.168.1.8
- Now click on stimulation button and then show all/none then edit filters and select ICMP and close it
- Now click simple PDU button and select sender and receiver
- Eg- I have selected PC8 as sender and PC5 as receiver

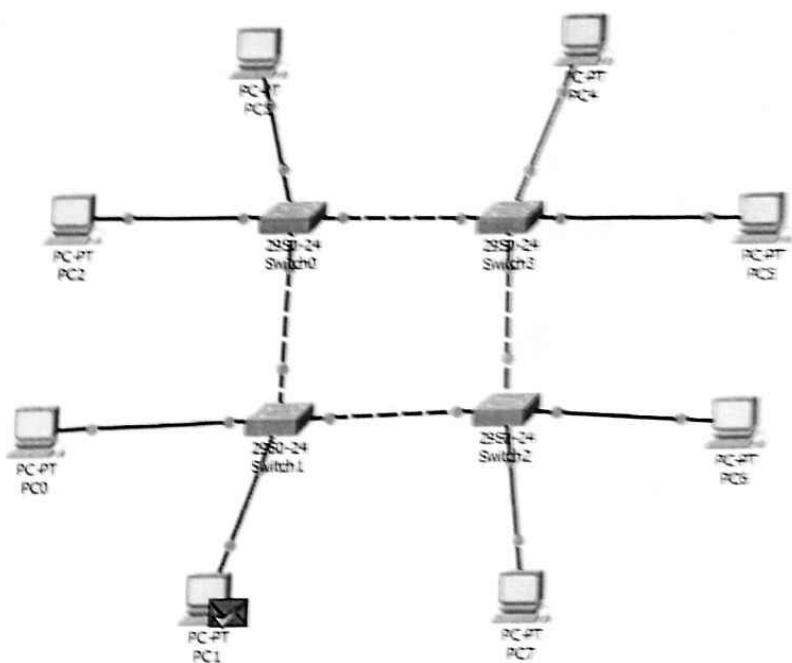
- Now play the control and watch packet moving in the network

Event List					
VIS.	Time(sec)	Last Device	At Device	Type	Info
	0.000	-	PC1	ICMP	
	0.001	PC1	Switch1	ICMP	
	0.002	Switch1	Switch0	ICMP	
	0.003	Switch0	Switch3	ICMP	
	0.004	Switch3	PCS	ICMP	
	0.005	PCS	Switch3	ICMP	
	0.006	Switch3	Switch0	ICMP	
	0.007	Switch0	Switch1	ICMP	
●	0.008	Switch1	PC1	ICMP	

Captured to:
368.992 s

Constant Delay

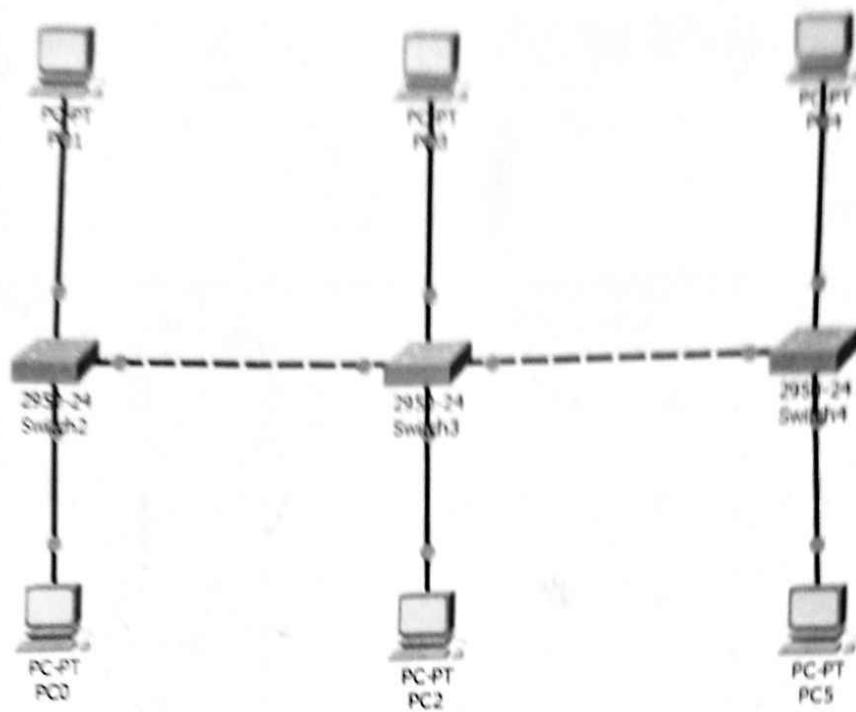
- You will notice packet going to destination from the source and acknowledgment coming back



3. Bus Topology: -

- Drag 6 PCs from End Devices block

- Drag 3 Switches from Network Devices block
- Now connect the switches in the same line and each PC with one switch
as in fig below
- Now assign IPs to each PC starting from 192.168.1.1 to 192.168.1.6



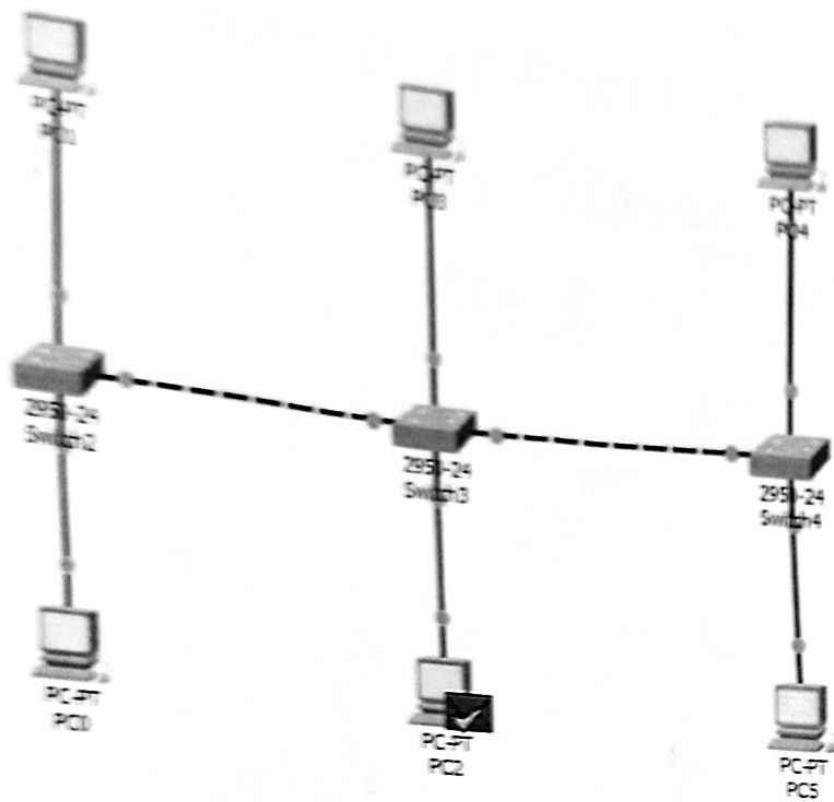
- Now click on stimulation button and then show all/none then edit filters and select ICMP and close it
- Now click simple PDU button and select sender and receiver
- Eg - I have selected PC2 as sender and PC4 as receiver
- Now play the control and watch packet moving in the network
- You will notice packet going to destination from the source and

Event List					
Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.000	--	PC2	ICMP	[redacted]
	0.006	--	PC2	ICMP	[redacted]
	0.007	PC2	Switch3	ICMP	[redacted]
	0.008	Switch3	Switch4	ICMP	[redacted]
	0.009	Switch4	PC4	ICMP	[redacted]
	0.010	PC4	Switch4	ICMP	[redacted]
	0.011	Switch4	Switch3	ICMP	[redacted]
	0.012	Switch3	PC2	ICMP	[redacted]

Constant Delay

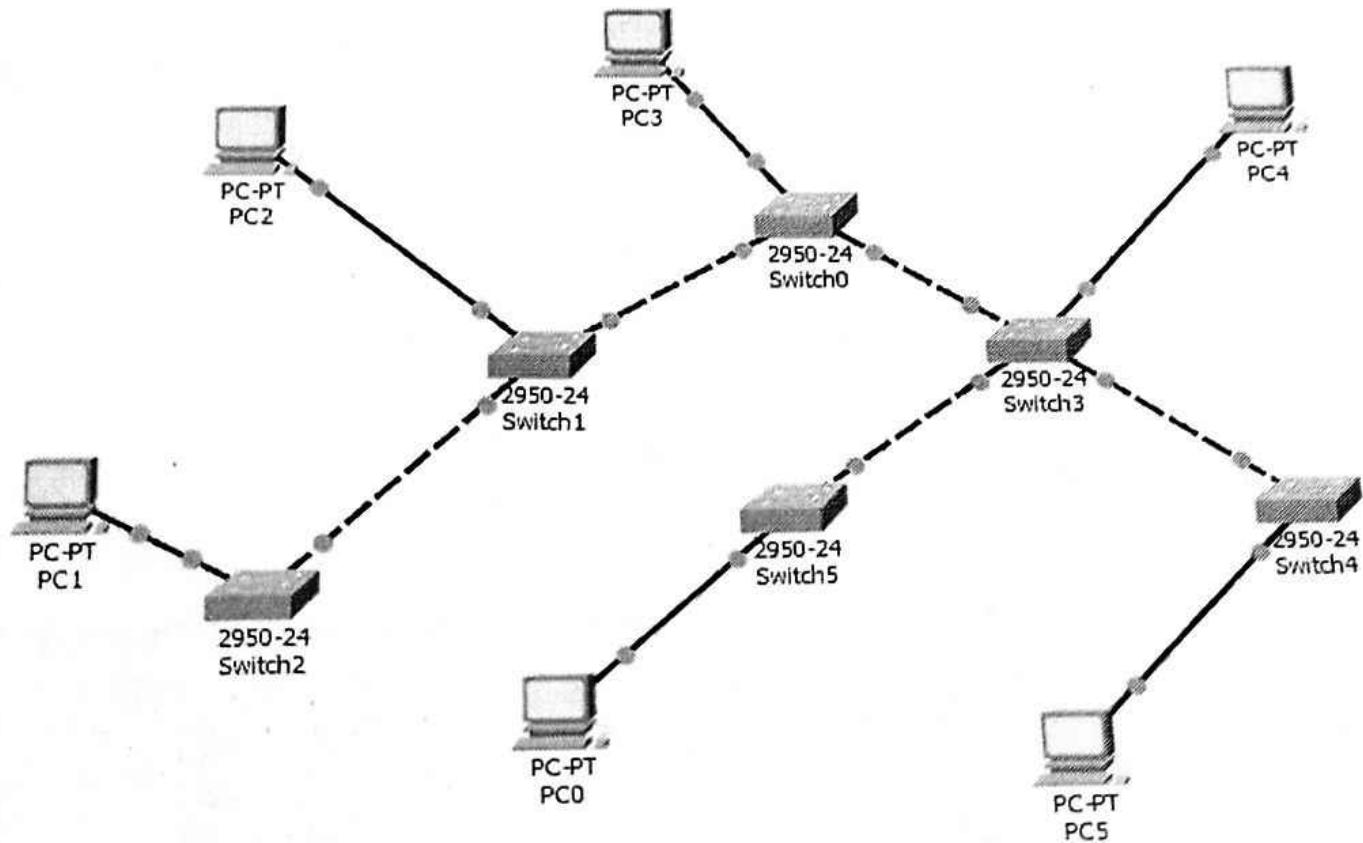
Captured to:
540.421 s

acknowledgment coming back



4. Tree Topology: -

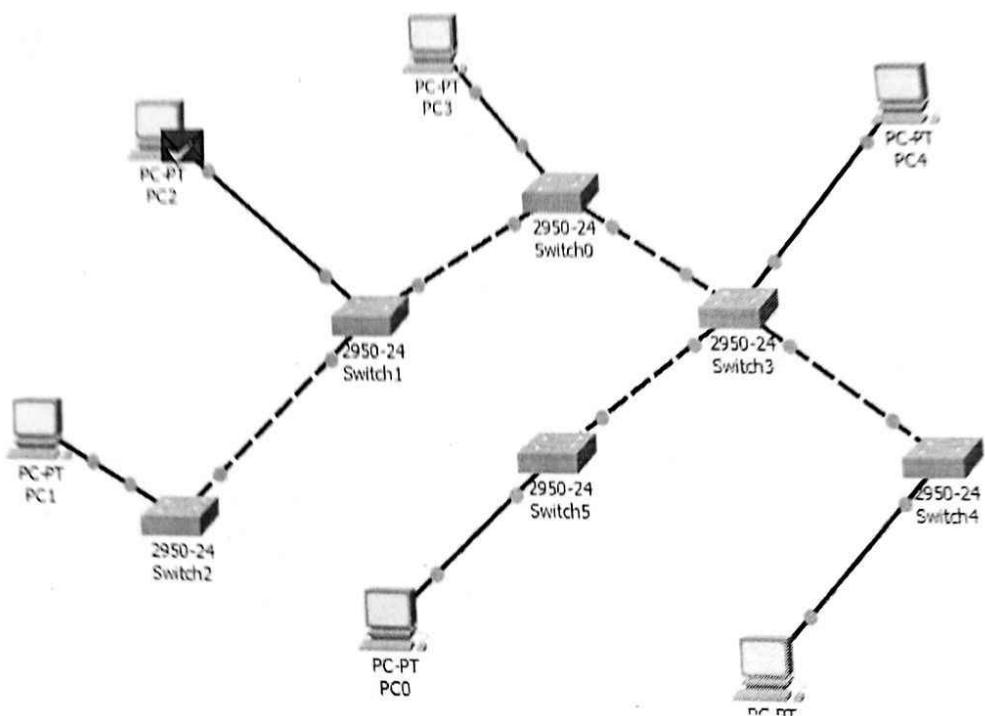
- Drag 6 PCs from End Devices block
- Drag 6 Switches from Network Devices block
- Now connect the switches in the form of tree and each PC with one switch as in fig below
- Now assign IPs to each PC starting from 192.168.1.1 to 192.168.1.6



- Now click on simulation button and then show all/filter then edit filters and select ICMP and close it
- Now click simple PDU button and select sender and receiver
- Eg - I have selected PC3 as sender and PC5 as receiver
- Now play the control and watch packet moving in the network
- You will notice packet going to destination from the source and acknowledgment coming back

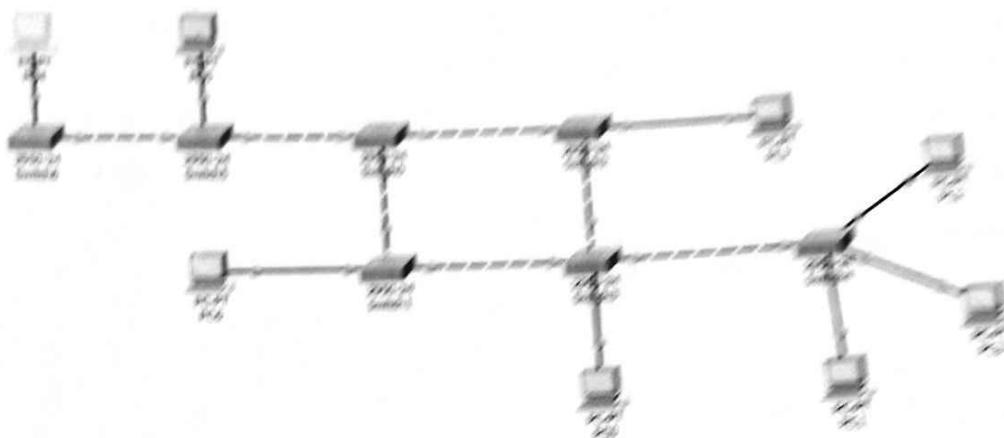
Event List					
No.	Time(sec)	Last Device	At Device	Type	Info
0.002	Switch1	Switch0	ICMP		
0.003	Switch0	Switch3	ICMP		
0.004	Switch3	Switch4	ICMP		
0.005	Switch4	PC5	ICMP		
0.006	PC5	Switch4	ICMP		
0.007	Switch4	Switch3	ICMP		
0.008	Switch3	Switch0	ICMP		
0.009	Switch0	Switch1	ICMP		
0.010	Switch1	PC2	ICMP		

Reset Simulation Constant Delay Captured to: 150.011 s



⑥ Hybrid 'topology':-

- Drag 8 PCs from End Devices block
- Drag 4 Switches from Network Devices block
- Now connect the switches and PCs as in fig below



- Now assign IPs to each PC starting from 192.168.1.1 to 192.168.1.8
- Now click on stimulation button and then show all/none then edit filters and select ICMP and close it
- Now click simple PDU button and select sender and receiver
- Eg - I have selected PC1 as sender and PC4 as receiver
- Now play the control and watch packet moving in the network
- You will notice packet going to destination from the source and acknowledgment coming back

Event List

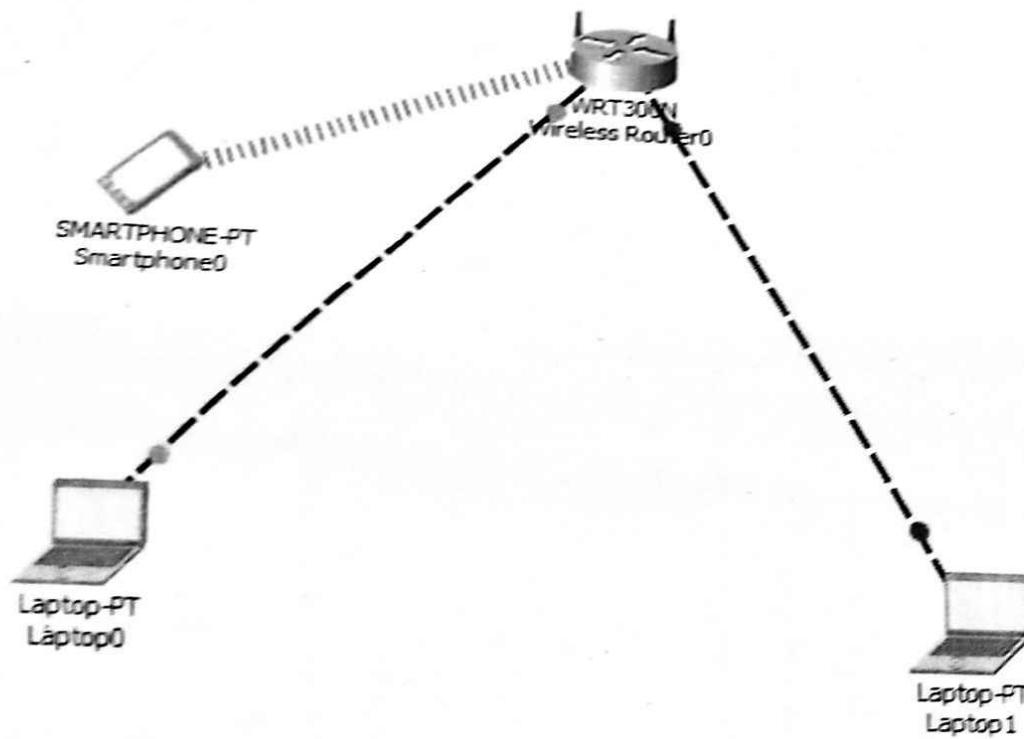
Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.020	Switch5	Switch6	ICMP	
	0.021	Switch6	PC4	ICMP	
	0.022	PC4	Switch6	ICMP	
	0.023	Switch6	Switch5	ICMP	
	0.024	Switch5	Switch0	ICMP	
	0.025	Switch0	Switch1	ICMP	
	0.026	Switch1	Switch3	ICMP	
	0.027	Switch3	Switch4	ICMP	
◀	0.028	Switch4	PC1	ICMP	

Reset Simulation Constant DelayCaptured to:
291.464 s

Wireless Connections

- Networking Device: Wireless Router
- End Device: Smart Devices or Laptop or Wireless Tablet
- Cables: Copper Cross Over

Wireless Connections

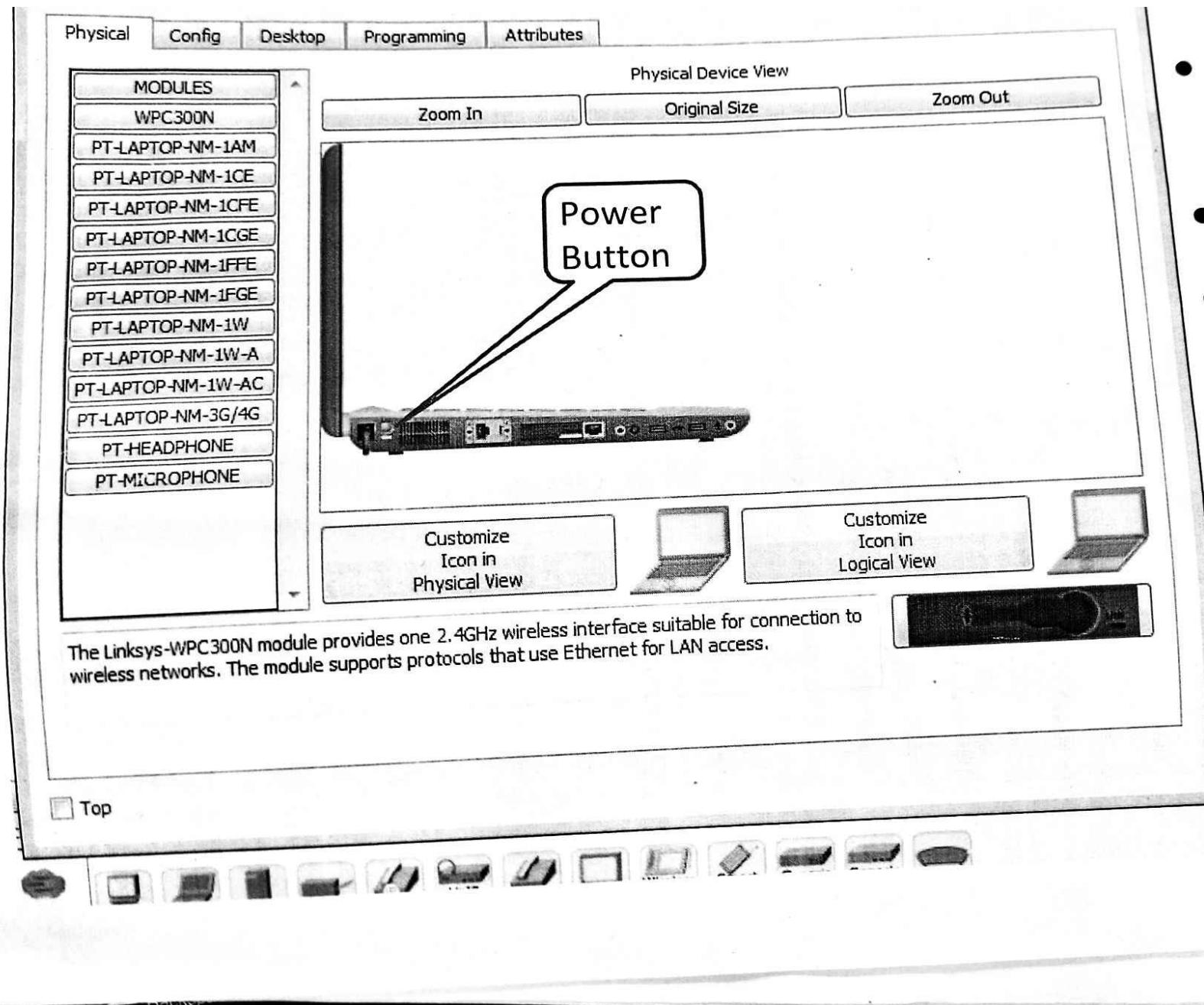


Step1: Drag Wireless Router from network device switch to logical space

Step2: Drag Wireless Devices or Laptop from end devices to logical space

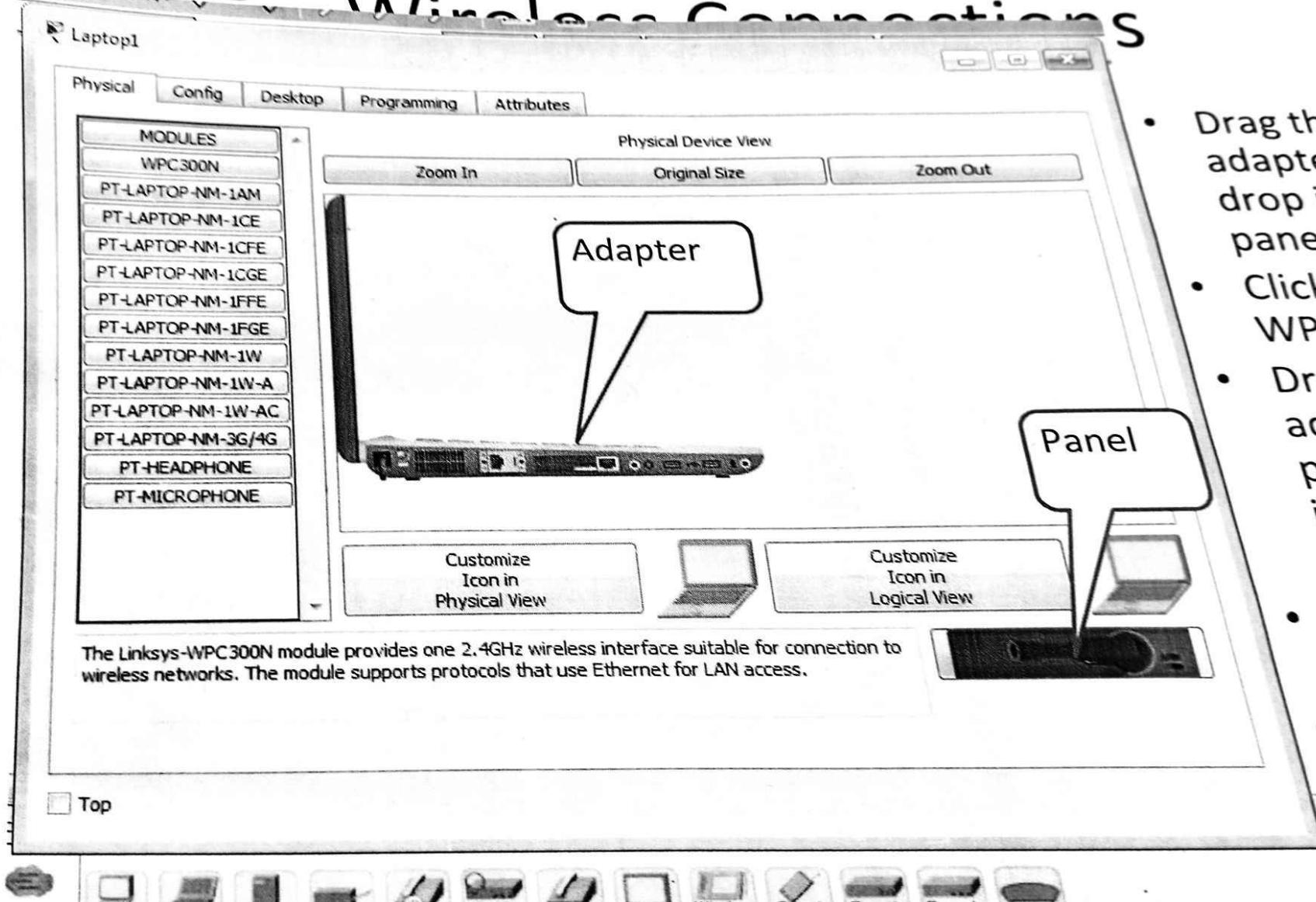
Step3: Select Copper Cross Over cable from cables to connect the end devices to Switch

Step4: Wait for connections to be established



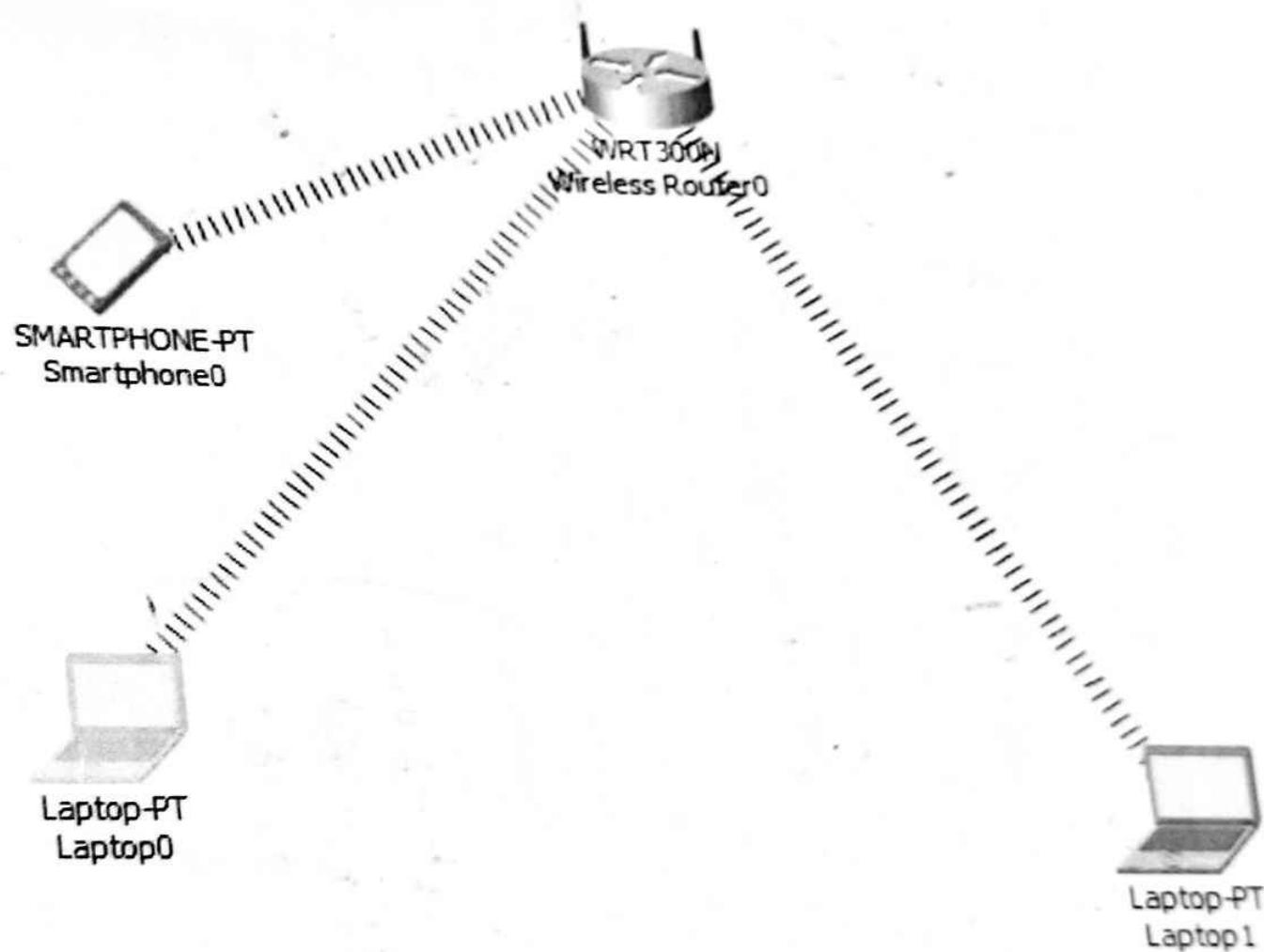
- Click on Laptop
- physical
- Zoom out
- Switch off the power of Laptop

Wireless Connections



- Drag the adapter and drop it to the panel
- Click on WPC300N
- Drag the adapter from panel and drop it to the adapter place
- Power on the Laptop
- Repeat step for second Laptop

Wireless Connections



HTTP Server

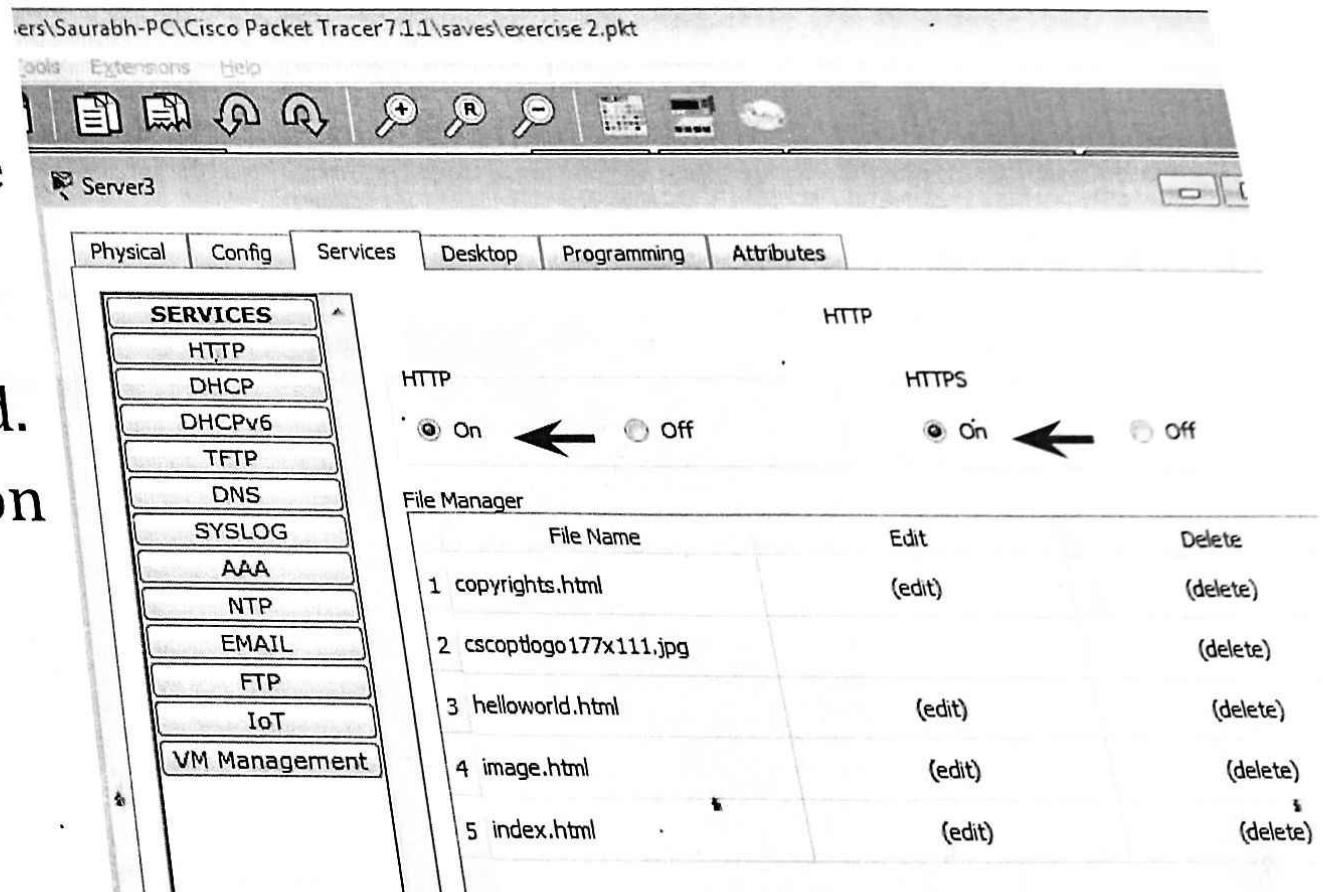
- A **HTTP server** is a computer that runs websites.
- It's a computer program that distributes web pages as they are requisitioned.

To Create a HTTP Server

- Click on the Server3 linked to fa0/1
 - Click on the Desktop tab.
 - Click on the IP Configuration icon.
 - Click on the IP Address dialog box.
 - Type in 10.0.0.10 as the address and press enter.
 - A default value of 255.0.0.0 should appear in the Subnet Mask field.
 - Type 10.0.0.1 as the default gateway and press enter.
 - Type 192.168.1.8 as the DNS and press enter.

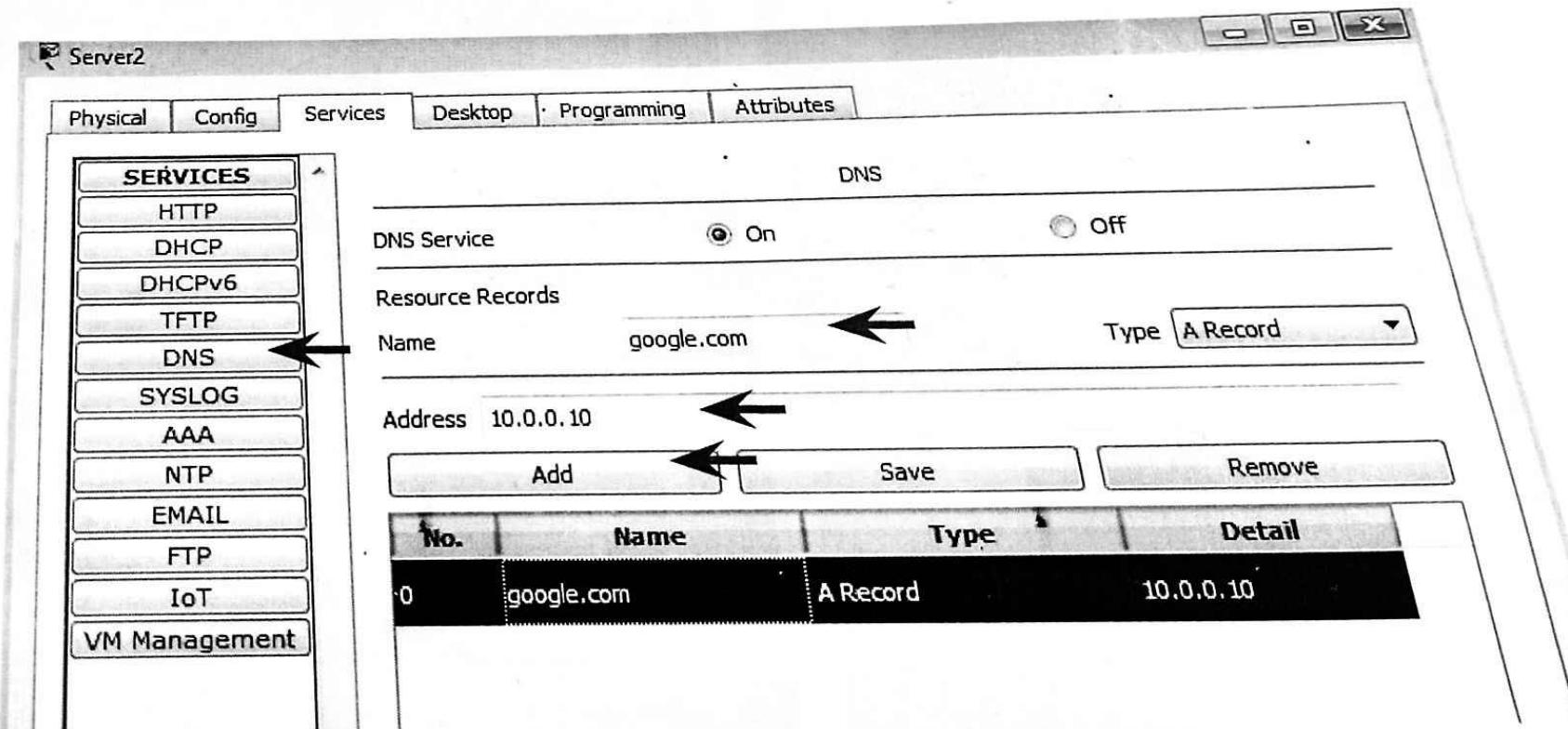
To Create a HTTP Server

- Click on the Service Tab
- Select HTTP service
- Check whether both HTTP and HTTPS are enabled.
- To Create record on DNS Server



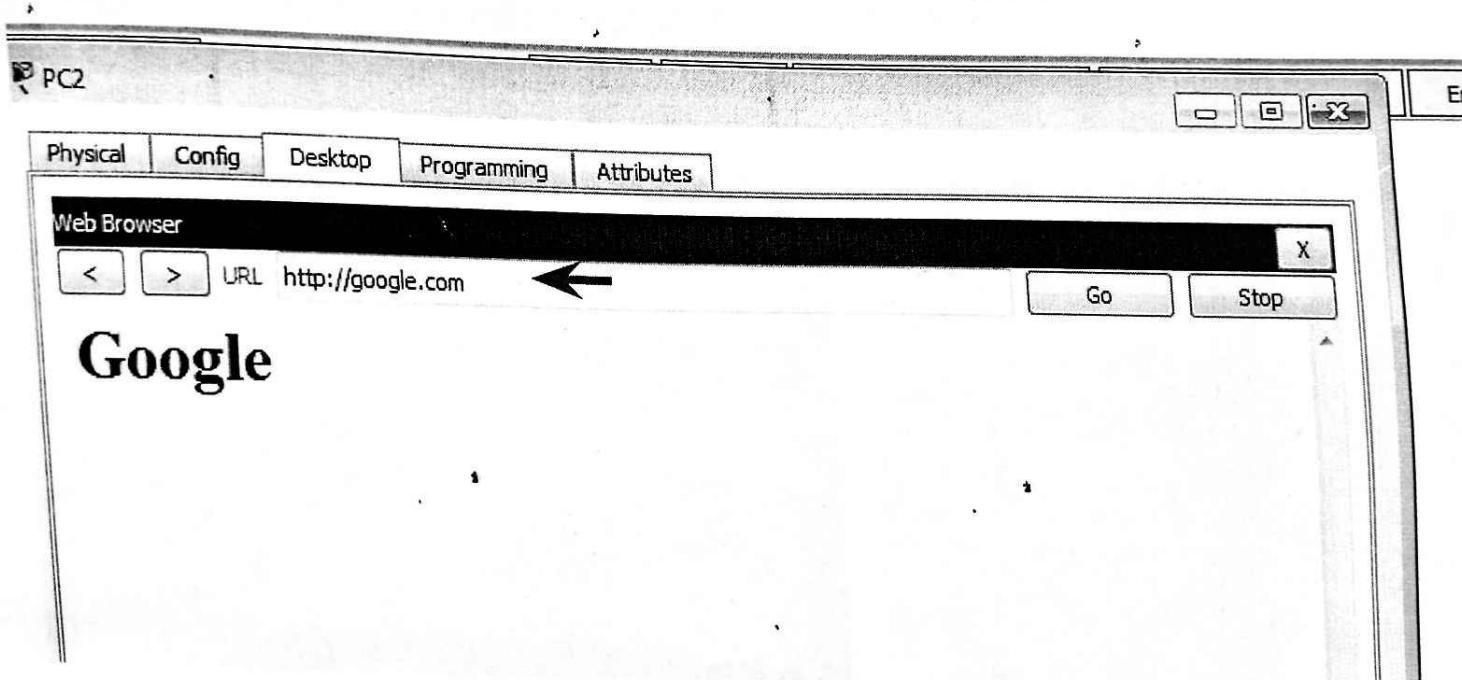
To Create a HTTP Server

- Click on the Server0 (DNS Server)
- Select the service tab and Select DNS service
 - Add a name (google.com) in name and Add a 10.0.0.10 in address
 - And then click on Add

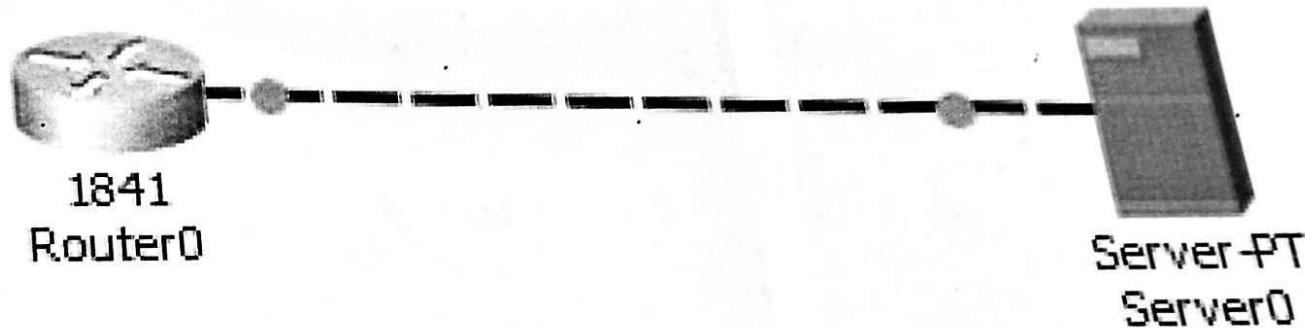


To Create a HTTP Server

- Click on the PC
 - Click on the Desktop tab and Click on the Web Browser icon.
 - In URL type: google.com
 - We are done with HTTP/HTTPS server



Network Time Protocol(NTP) Server

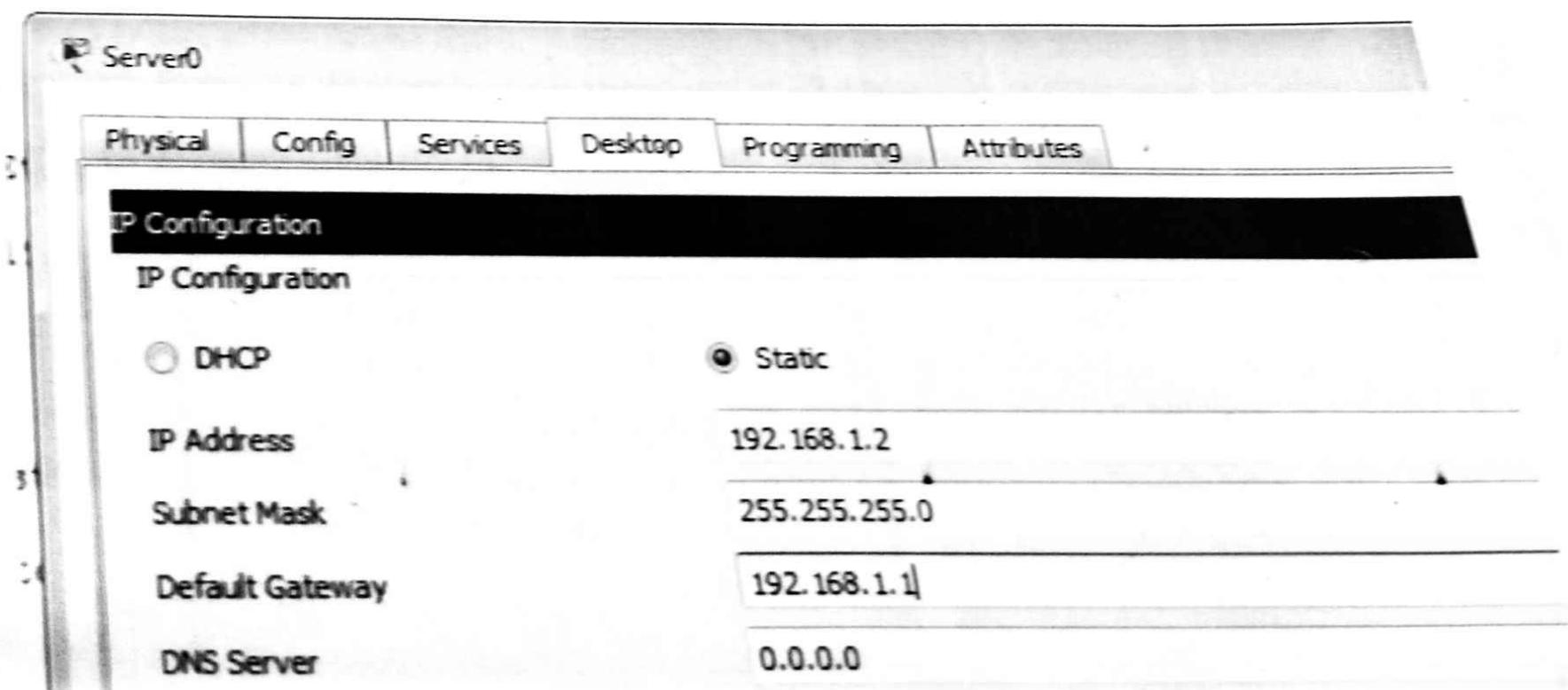


Network Time Protocol(NTP) Server

- Click on the Router and type
- **no]: no**
- **Router>en**
- **Router#conf t**
- **Router(config)#int fa0/0**
- **Router(config-if)#ip address 192.168.1.1
255.255.255.0**
- **Router(config-if)#no sh**
- **Router(config-if)#end**
- **Router#**

Network Time Protocol(NTP) Server

- Assign the IP to the server



Network Time Protocol(NTP) Server

Click on the router and type

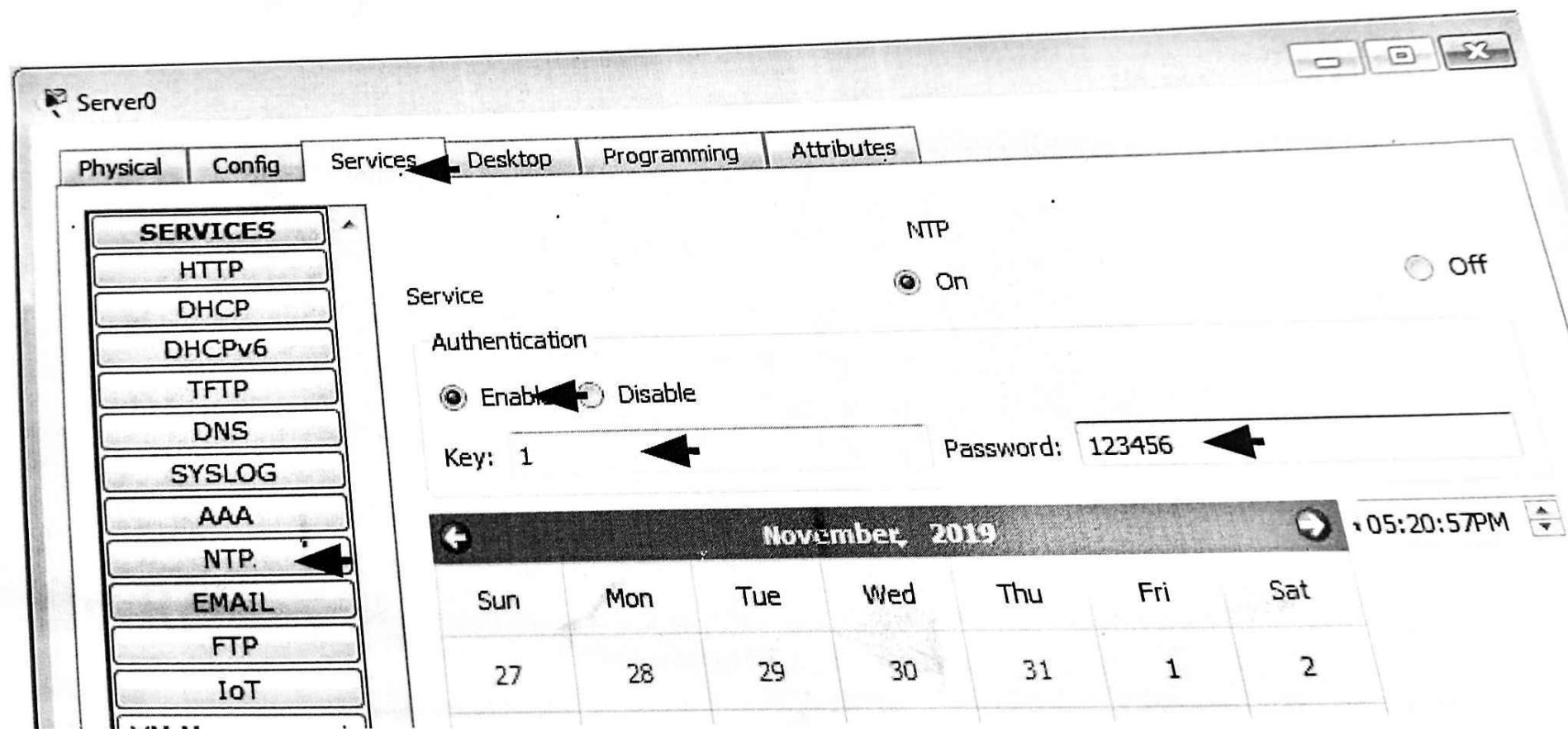
- **Router#show clock**

*0:4:50.440 UTC Mon Mar 1 1993 (please note)

- **Router#**

Network Time Protocol(NTP) Server

- Click on server and NTP service

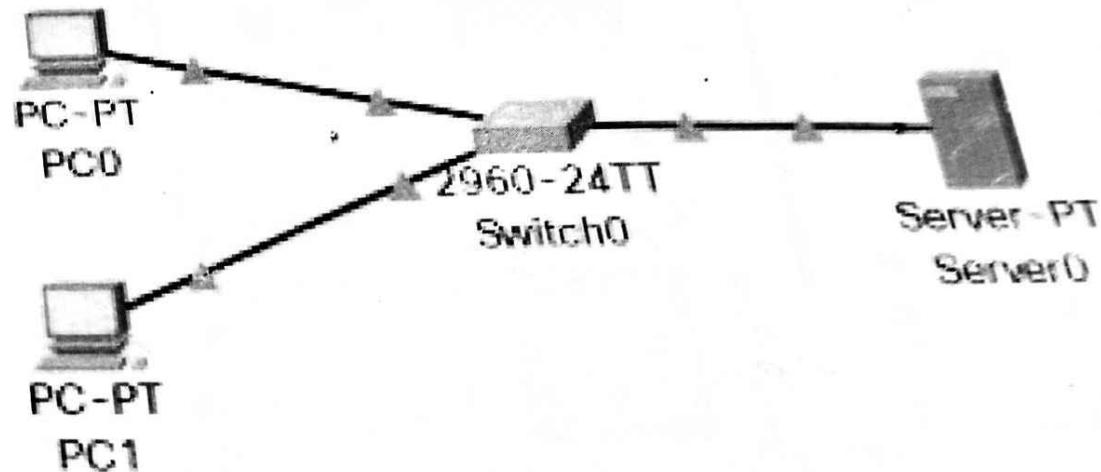


Network Time Protocol(NTP) Server

- **Router(config)#ntp ?**
 - **Router(config)#ntp server 192.168.1.2**
 - **Router(config)#ntp authentication-key 1 ?**
 - md5 MD5 authentication
 - **Router(config)#ntp authentication-key 1 md5 123456**
 - **Router(config)#ntp update-calendar**
 - **Router(config)#end**
 - **Router#show clock**
- *0:10:37.310 UTC Mon Mar 1 1993 {compare with previous time}
- **Router#**

To Simulate

In this activity you will construct a simple Packet Tracer network and complete basic configuration of end devices



Steps to be followed

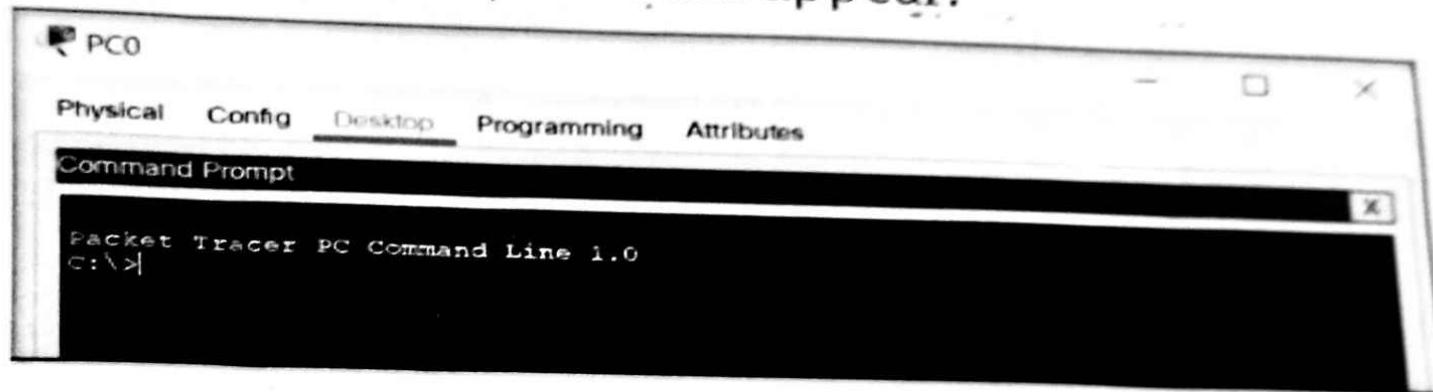
- Once the link lights all turn green, click on Server0. Then configure it as follows:
 - Click on the Desktop tab.
 - Click on the IP Configuration icon.
 - Click on the IP Address dialog box.
 - Type in 192.168.1.1 as the address and press enter.
 - A default value of 255.255.255.0 should appear in the Subnet Mask field.
 - Nothing else in this dialog box needs to be configured, so click the “X” in the upper right corner to close the IP Configuration window. g. Click the red “X” in the upper right corner to close the Server0 window.

Steps to be followed

- Click on PC0. Then configure it as follows:
 - Click on the Desktop tab.
 - Click on the IP Configuration icon.
 - Click on the IP Address dialog box.
 - Type in 192.168.1.2 as the address and press enter.
 - A default value of 255.255.255.0 should appear in the Subnet Mask field.
 - Nothing else in this dialog box needs to be configured, so click the “X” in the upper right corner to close the IP Configuration window

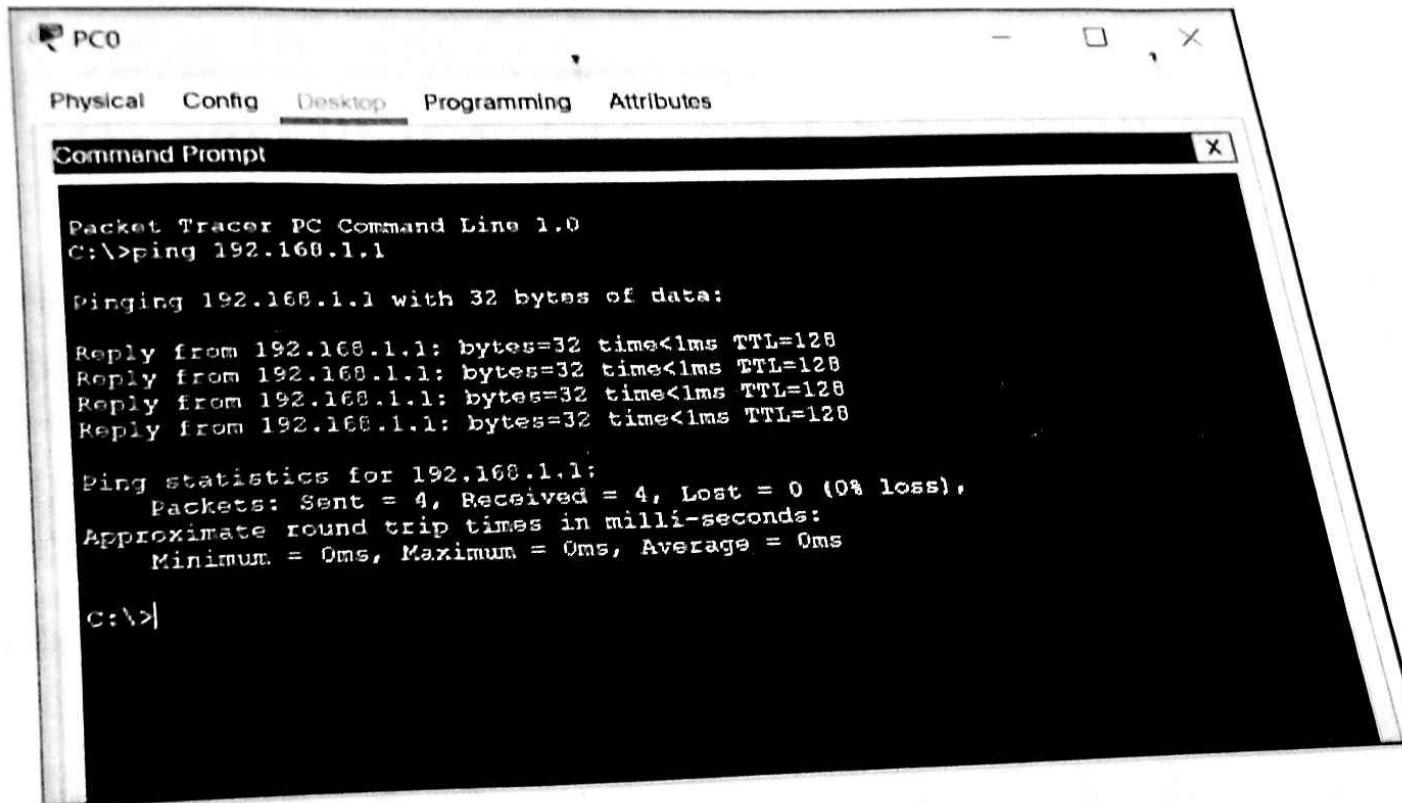
Steps to be followed

- Click on the icon labeled Command Prompt and the following prompt should appear:



- Type the following command in the prompt: ping 192.168.1.1 and press enter.
- If you have done everything correctly, reply should come
- Your output could vary a little but the reply statements should be there. If the replies are not there, try redoing the device configuration to this point

Steps to be followed



- Click the “X” next to the Command Prompt title bar.
- Click the red “X” in the upper right corner to close the PC0 window

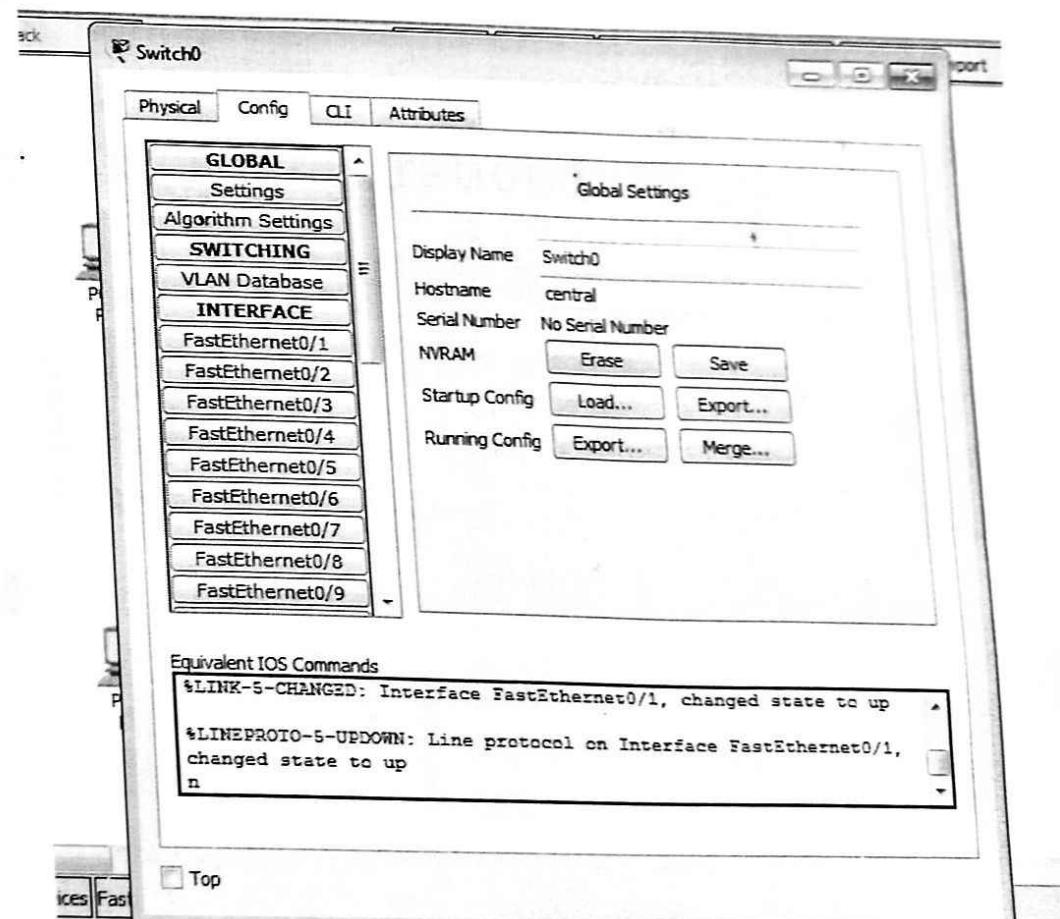


Steps to be followed

- Repeat the same configuration and ping steps from #3 on PC1, except use 192.168.1.3 as the IP address. The results should be the same.

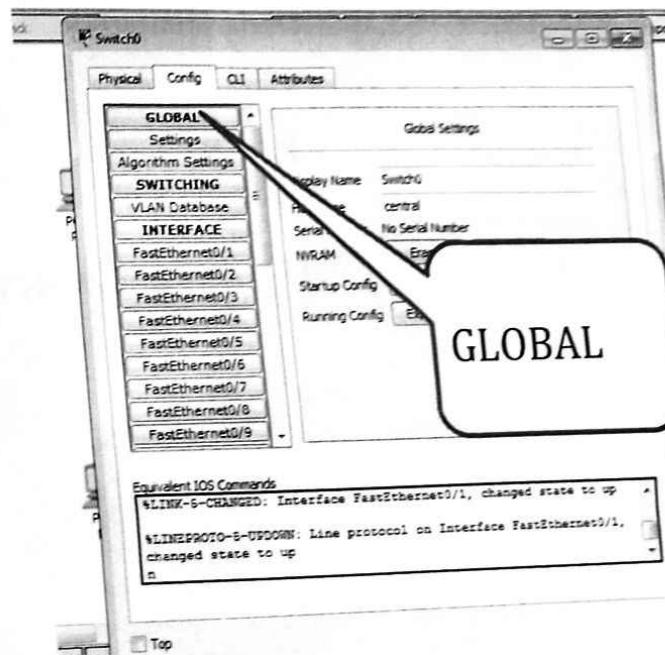
Configure Switch

- Click on Switch0, then click on the Config tab.
- Clicking on the Config tab shows a list of components that can be configured on this device.



Configure Switch

- The Global Settings tab allows a user to change the name of a device that displays in the workspace.
- It also allows for changing the internal name shown at the command line prompt as well as buttons for saving, loading, exporting, and erasing configuration files.



Configure Switch

- Double click in the Hostname dialog box highlighting the word Switch, type Central and press enter. Packet Tracer will display the IOS commands necessary to accomplish the name change in the Equivalent IOS Commands box.
- The commands displayed should be as follows:
 - Switch>enable
 - Switch#configure terminal
 - Enter configuration commands, one per line.
 - End with CNTL/Z.
 - Switch(config)#hostname Central Central(config)#[/li>

Configure Switch

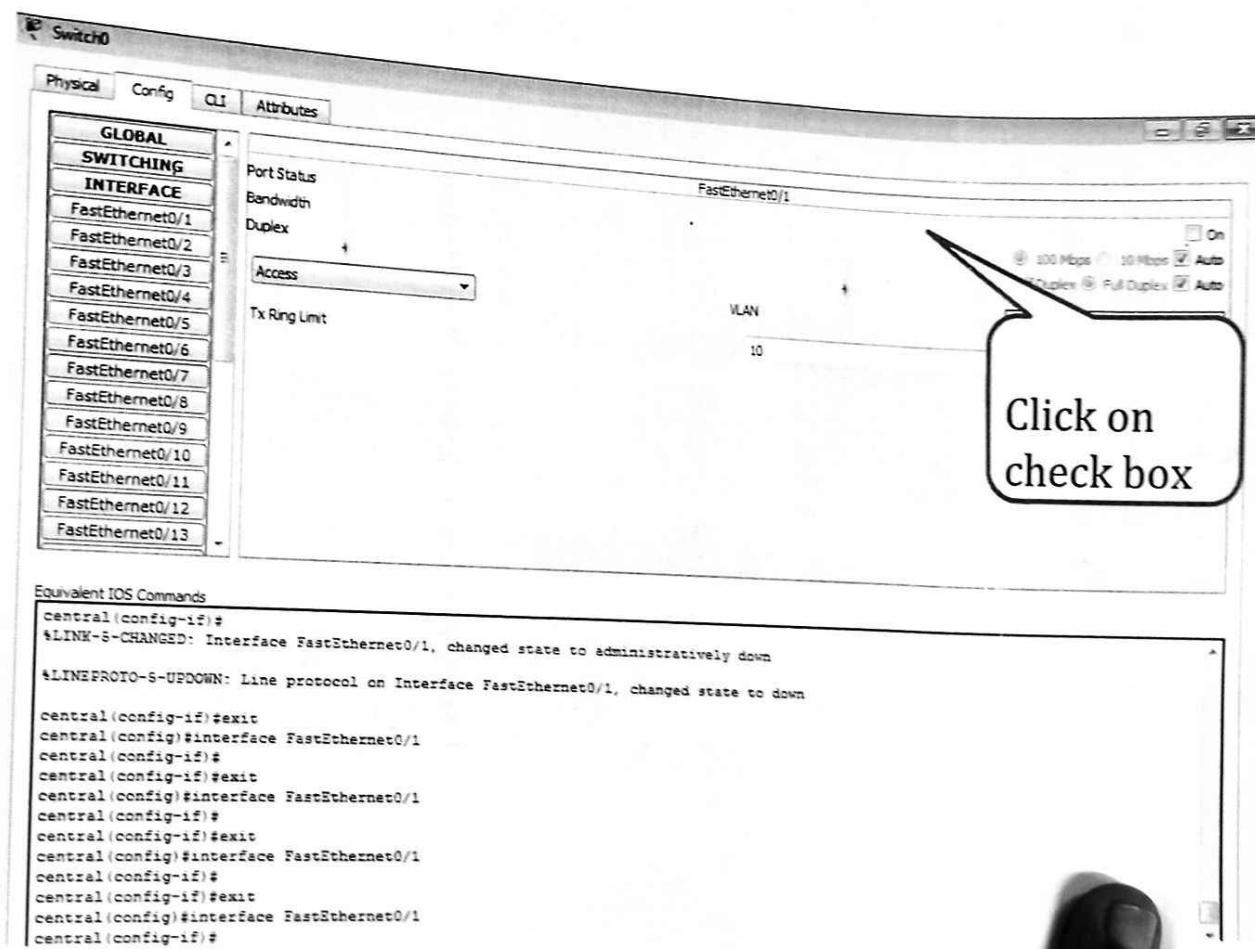
- Clicking on the FastEthernet0/1 label will bring up an Ethernet interface to be configured.
- Notice the Equivalent IOS Commands box below. It shows a command of “interface FastEthernet0/1” which would have been the command used to select the interface from the CLI.
- Select the CLI tab to switch to the CLI interface. Notice that the same commands that were in the Equivalent IOS Commands box are listed in the CLI window.
- Click right beside the command prompt at the bottom of the list that looks like this: “Central(config-if) #”
- Then type shutdown , and press enter twice

Configure Switch

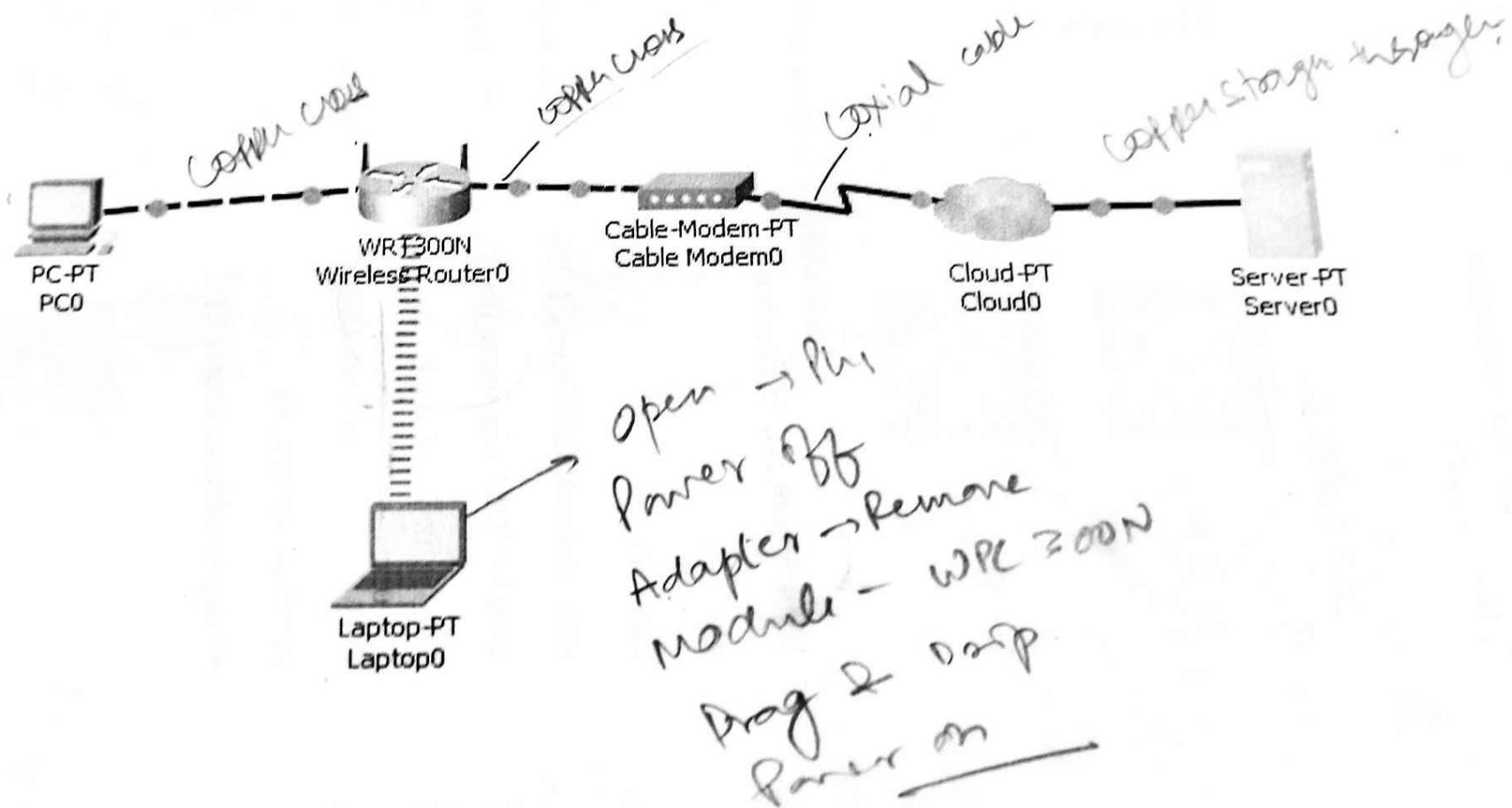
- Central(config-if)#shutdown
- Central(config-if)#
- %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down
- %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
- Central(config-if)#
- Notice how the link lights for the connection between PC0 and Switch0 are red.

Configure Switch

- To up the link
- Type no shutdown on CLI
OR



Create a Simple Network Using Packet Tracer



Create a Simple Network Using Packet Tracer

- End Devices: PC, Laptop, Server
- Network Devices: Wireless Router, Cloud, Cable Modem
- Cable: Copper Cross Over, Coaxial, Copper Straight Through

Cables

Create a Simple Network Using Packet Tracer

Step1: Drag multiple switch from network device switch to logical space

Step2: Drag PCs or Laptop from end devices to logical space

Step3: Select cable from cables to devices as shown in figure

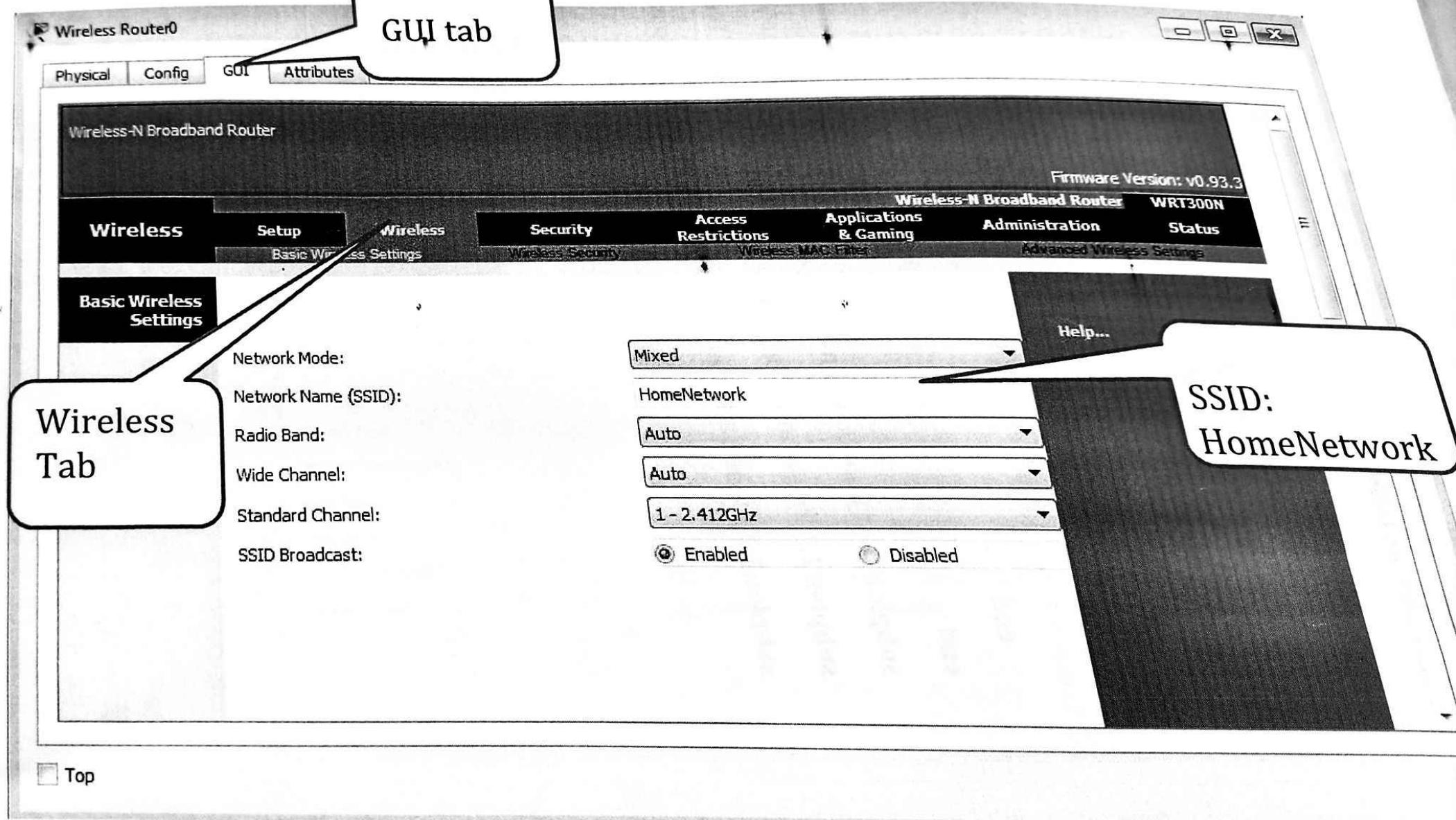
Step4: Wait for connections to be established

Create a Simple Network Using Packet Tracer

- **Configure the wireless router**

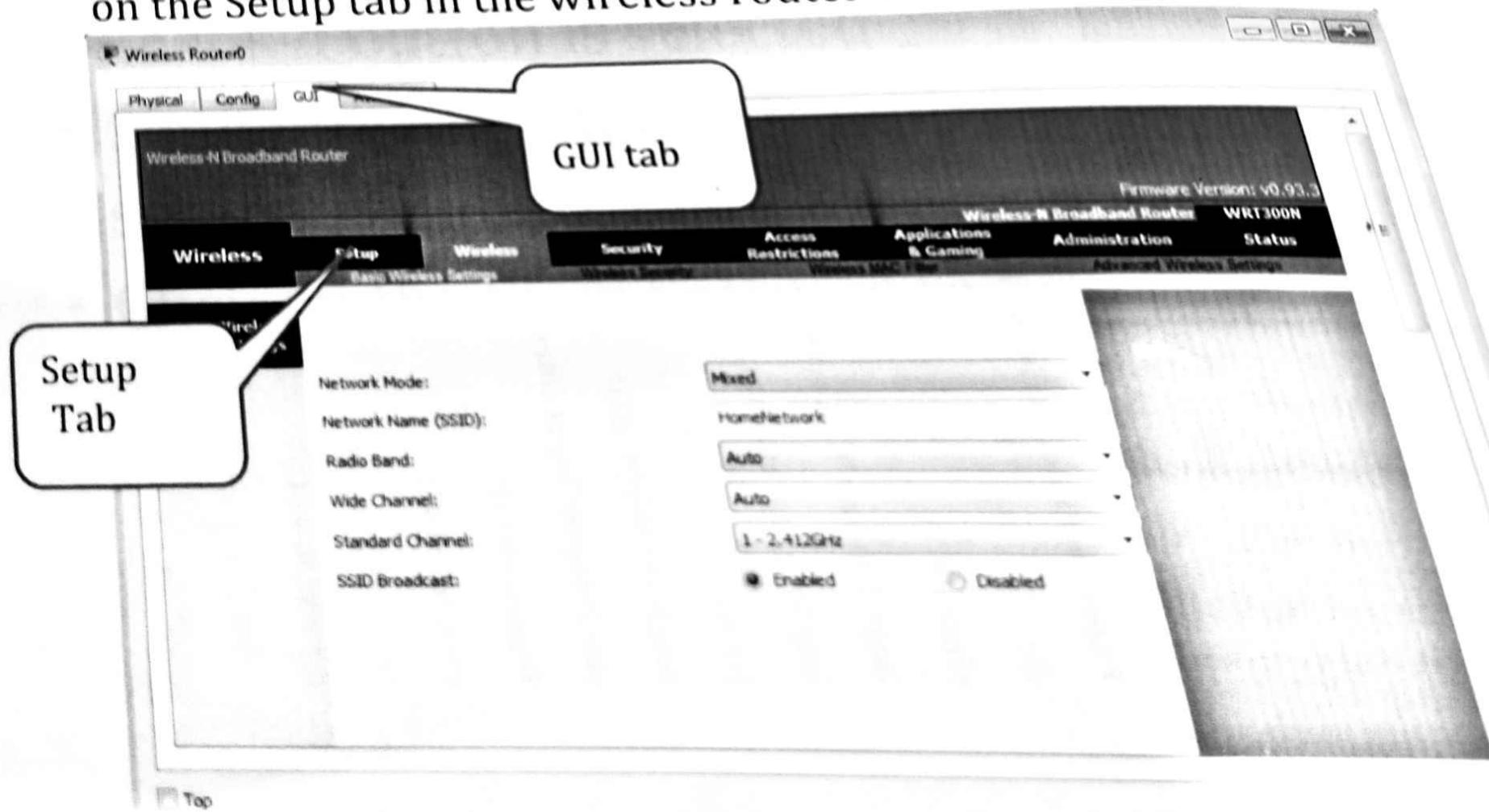
- Create the wireless network on the wireless router
 - Click on the Wireless Router
 - In the wireless router configuration window, click on the GUI tab to view configuration options for the wireless router.
 - Next, click on the Wireless tab in the GUI to view the wireless settings.
 - The only setting that needs to be changed from the defaults is the Network Name (SSID). Here, type the name “HomeNetwork” as shown in the figure.

Create a Simple Network Using Packet Tracer



Create a Simple Network Using Packet Tracer

- Configure the Internet connection on the wireless router Click on the Setup tab in the wireless router GUI.



Create a Simple Network Using Packet Tracer

- In the DHCP Server settings verify that the Enabled button is selected
- Configure the static IP address of the DNS server as 208.67.220.220
- Click on the Save Settings tab.

Create a Simple Network Using Packet Tracer

Network Setup

Router IP	IP Address:	192 . 168 . 0 . 1
DHCP Server Settings	Subnet Mask:	255.255.255.0
DHCP Server:	<input checked="" type="radio"/> Enabled	<input type="radio"/> Reservation
Start IP Address: 192.168.0. 100		
Maximum number of Users: 50		
IP Address Range: 192.168.0. 100 - 149		
Client Lease Time: 0 minutes (0 means one day)		
Static DNS 1:	208 . 67 . 220 . 220	
Static DNS 2:	0 . 0 . 0 . 0	
Static DNS 3:	0 . 0 . 0 . 0	
WINS:	0 . 0 . 0 . 0	

DNS IP

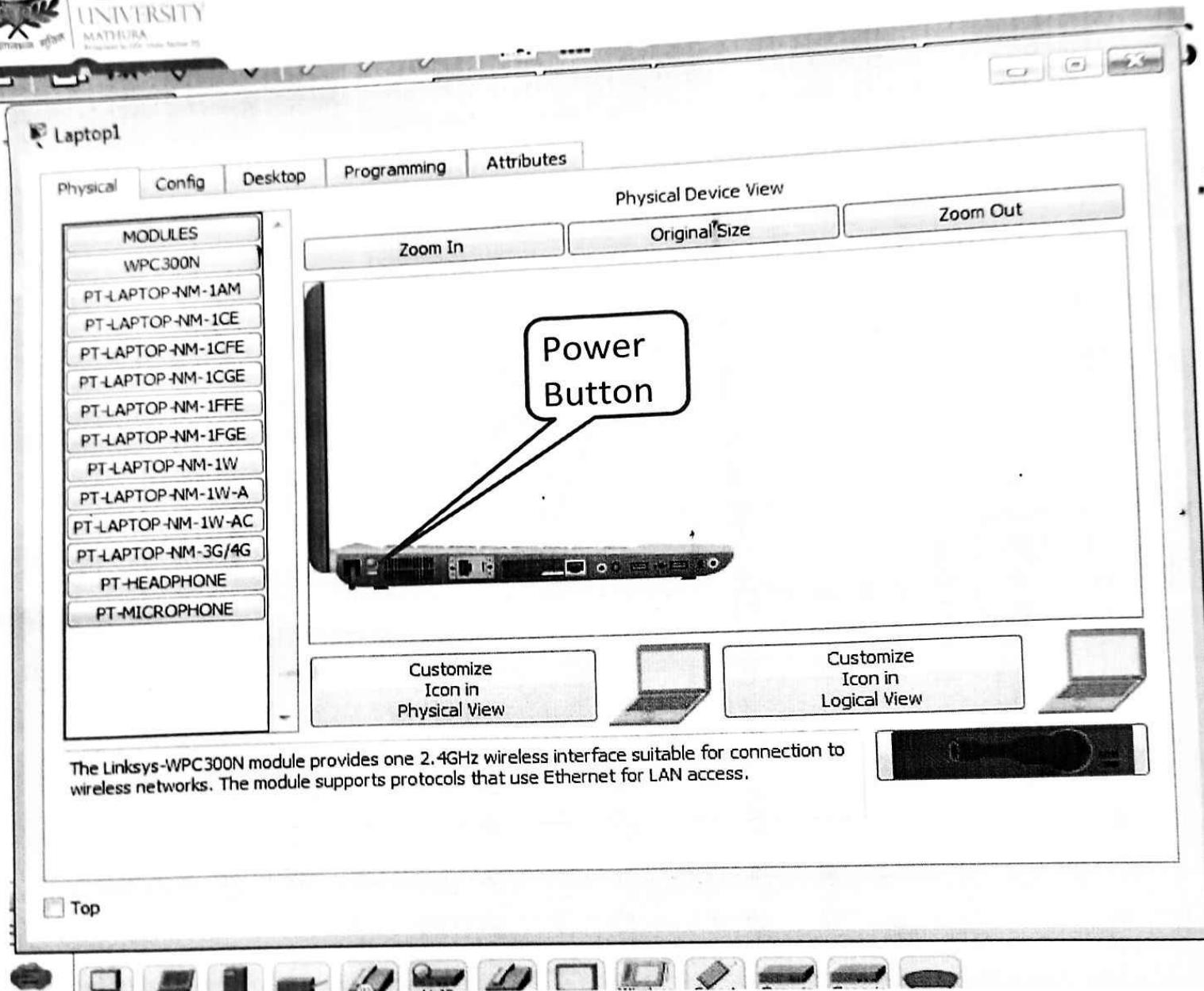
DHCP Enable

SAVE

Save settings **Cancel Changes**

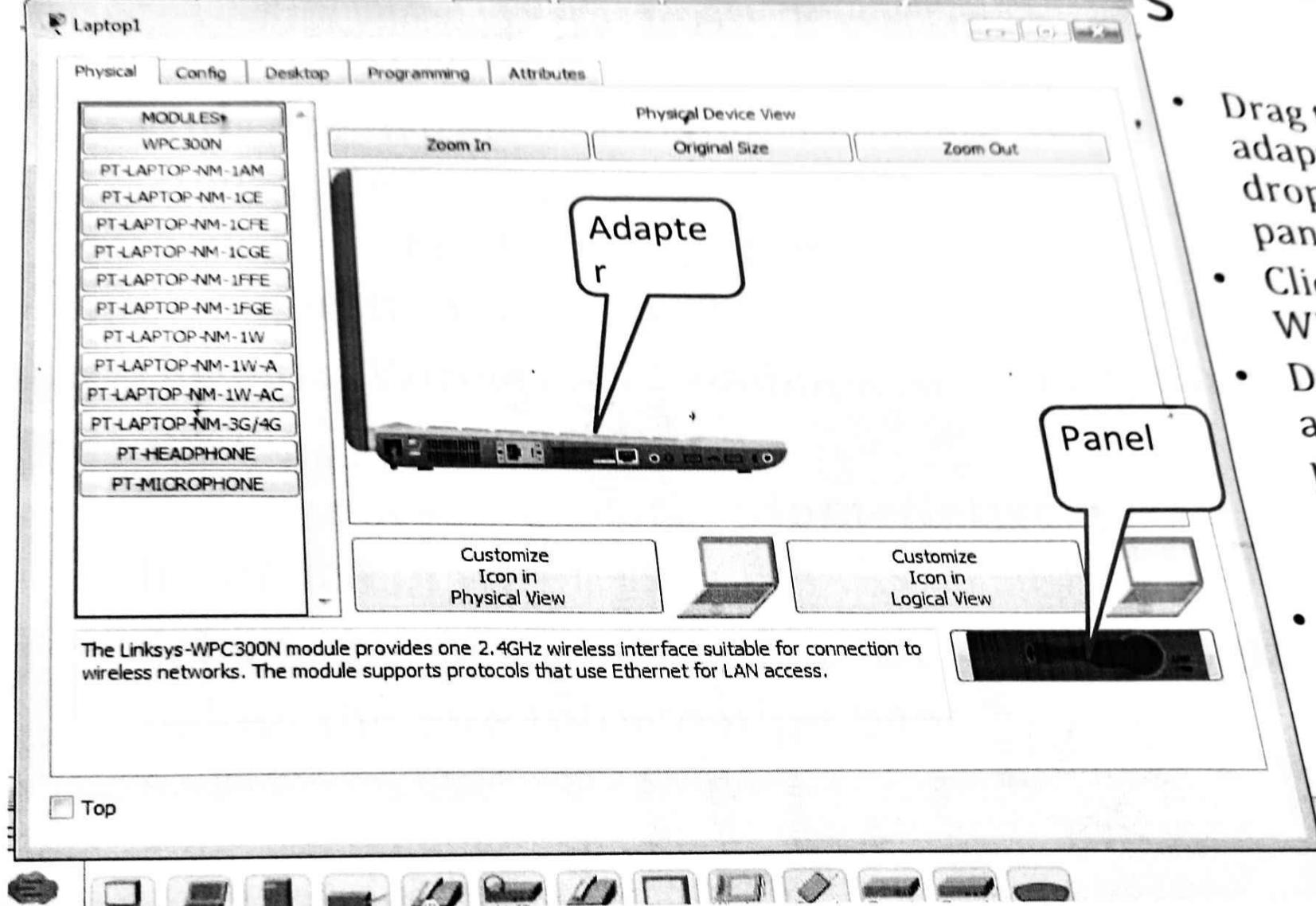
Create a Simple Network Using Packet Tracer

- **Configure the laptop**
 - Click on the Laptop icon on the Logical workspace
 - Select the Physical tab.
 - In the Physical tab you will need to remove the Ethernet copper module and replace it with the Wireless WPC300N module.



- Click on Laptop physical
- Zoom out
- Switch off the power of Laptop

Wireless Connections

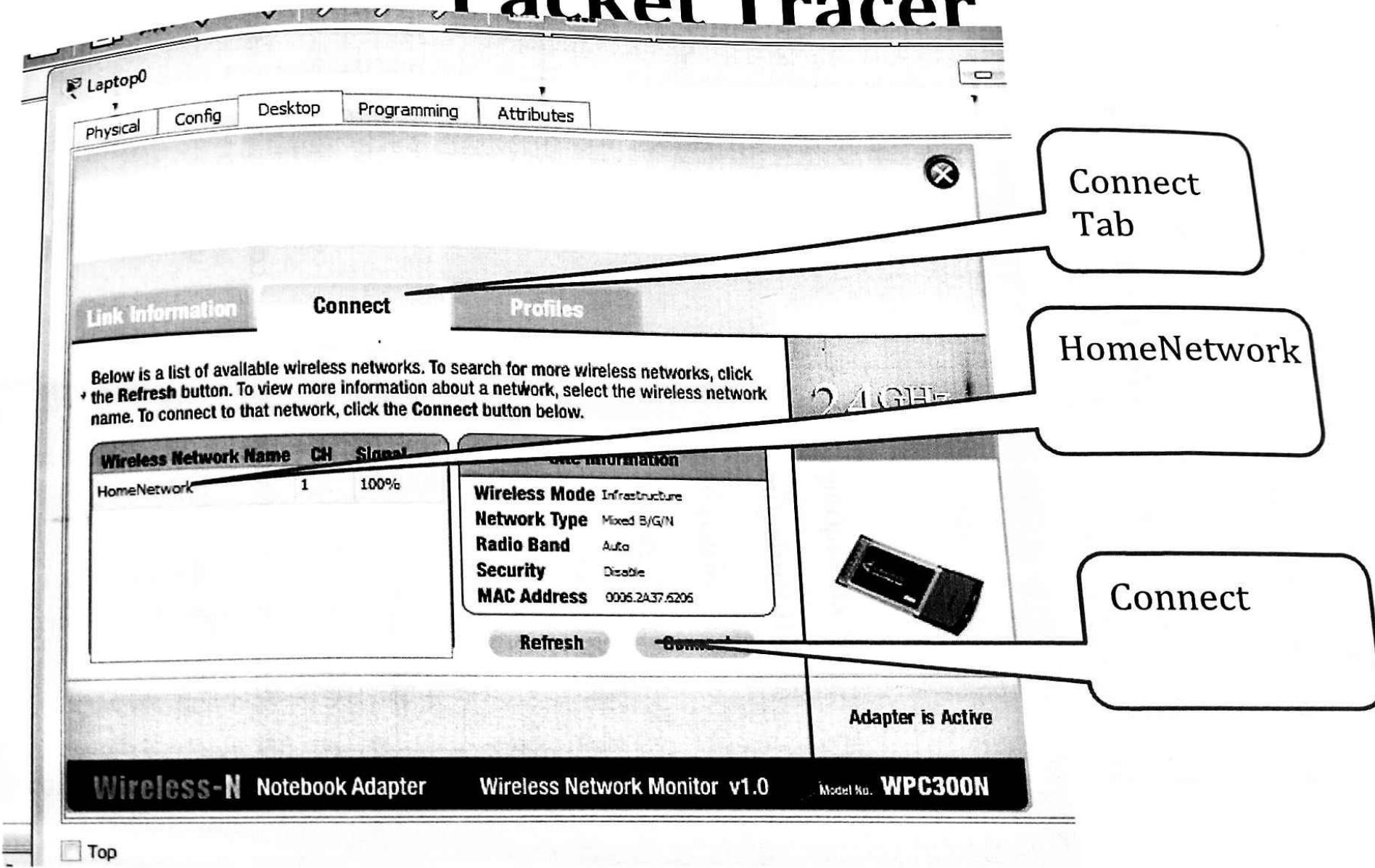


- Drag the adapter and drop it to the panel
- Click on WPC300N
- Drag the adapter from panel and drop it to the adapter place
- Power on the Laptop
- Repeat step for second Laptop

Create a Simple Network Using Packet Tracer

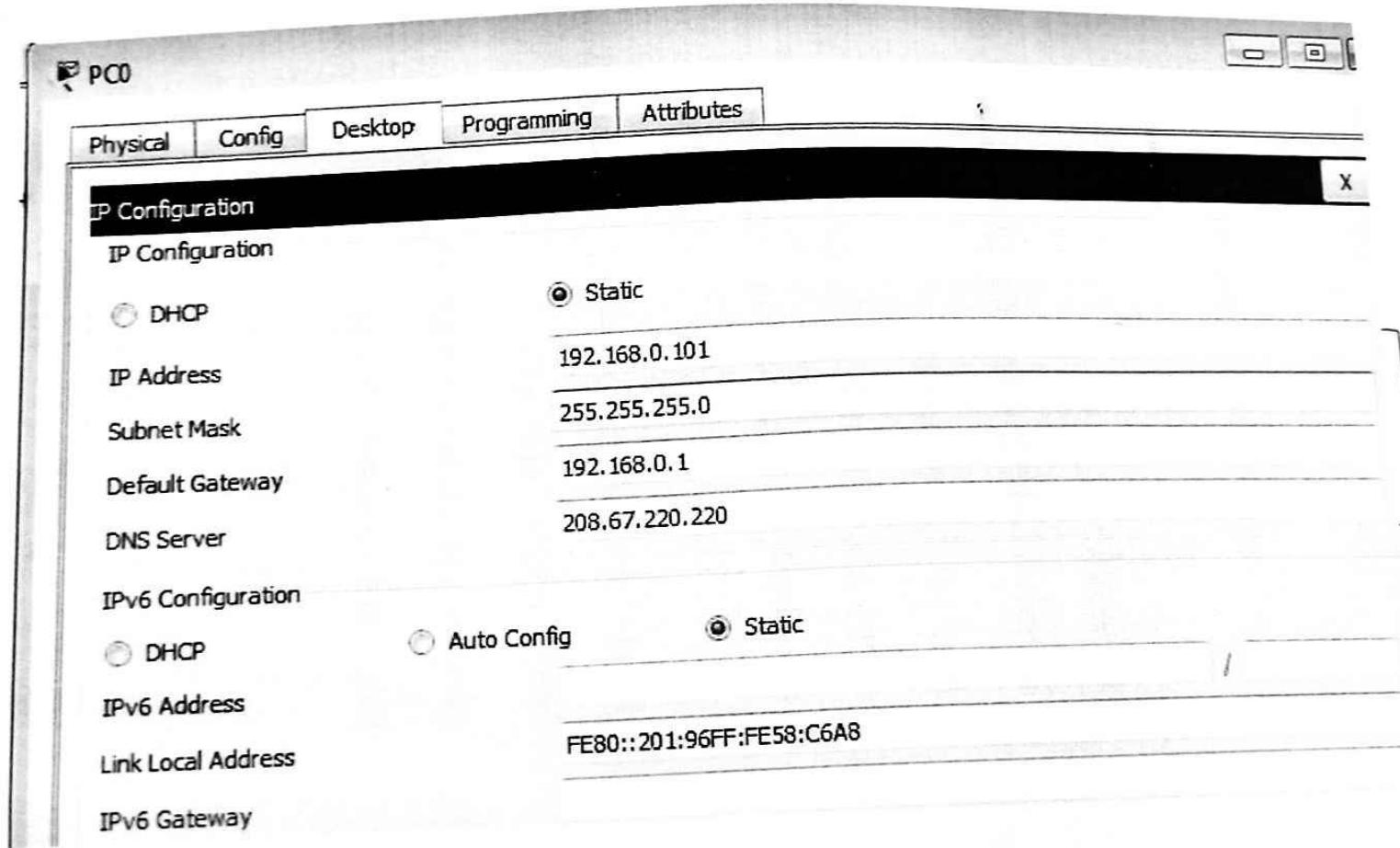
- With the wireless module installed, the next task is to connect the laptop to the wireless network.
- Click on the **Desktop tab** at the top of the Laptop configuration window and select the **PC Wireless icon**.
- Once the Wireless-N Notebook Adapter settings are visible, select the **Connect tab**.
- The wireless network “**HomeNetwork**” should be visible in the list of wireless networks as shown in the figure.
- Select the network, and click on the Connect tab found below the Site Information pane

Create a Simple Network Using Packet Tracer



Create a Simple Network Using Packet Tracer

- **Configure the PC**
- Click on the PC icon on the Logical workspace
- Select the Desktop tab and then the IP Configuration icon

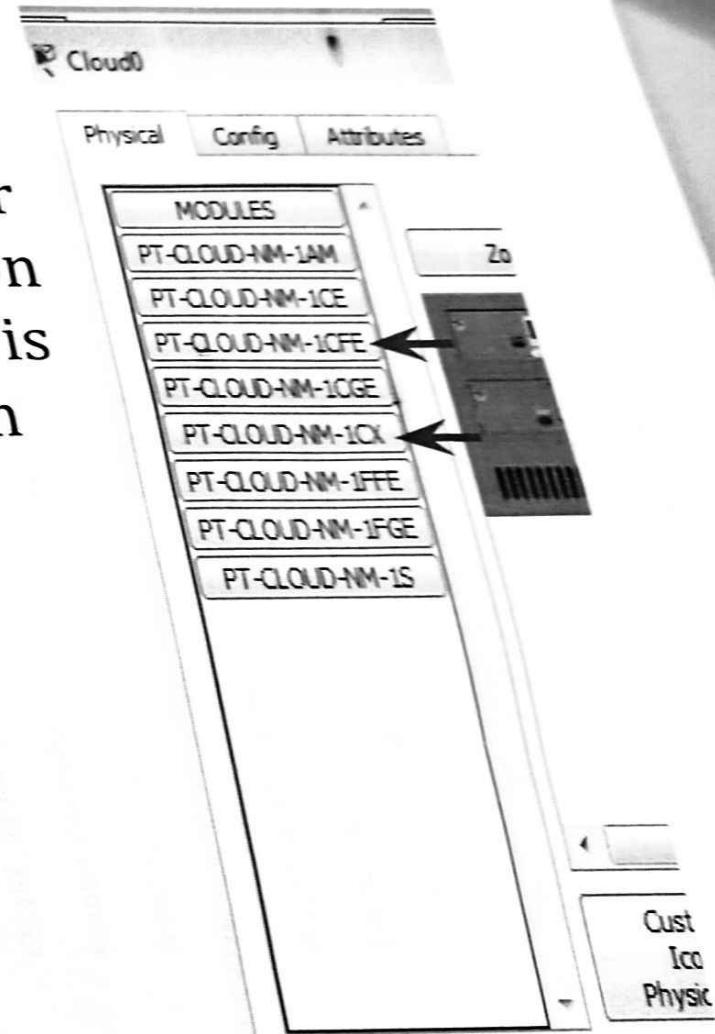


Assign the
following IP

Create a Simple Network Using Packet Tracer

- **Configure the Internet cloud.**

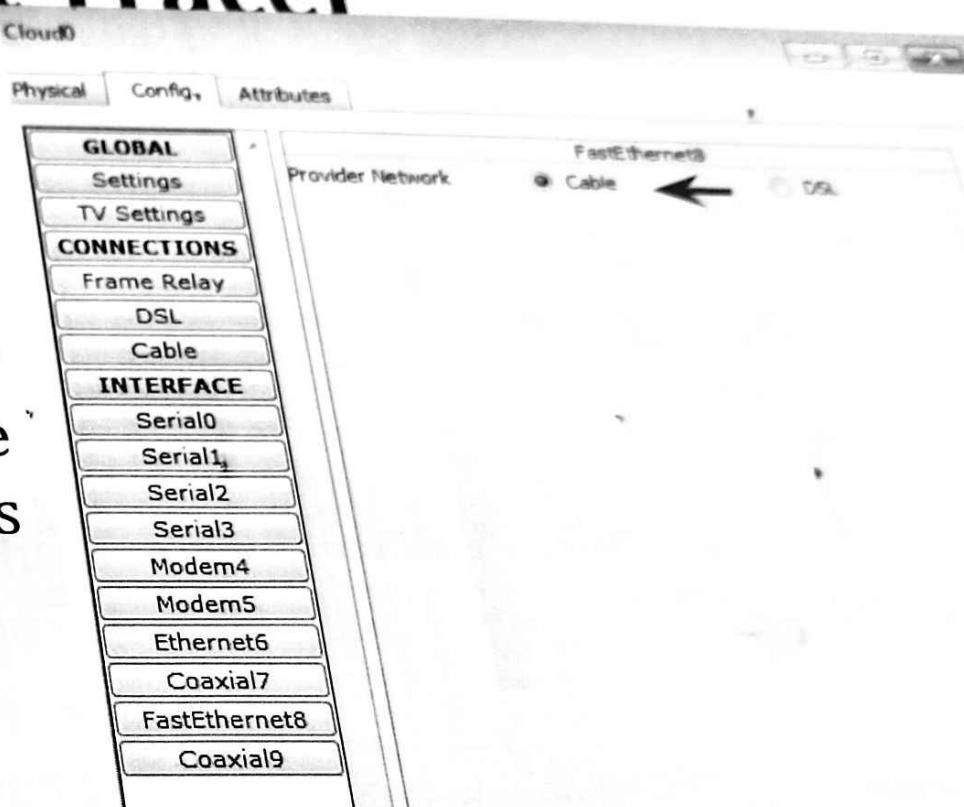
- a. Install network modules if necessary
 - The **PT-CLOUD-NM-1AM** which is for the cable modem service connection and the **PT-CLOUD-NM-1CFE** which is for a copper Ethernet cable connection



The PT-CLOUD-NM-1AM card features

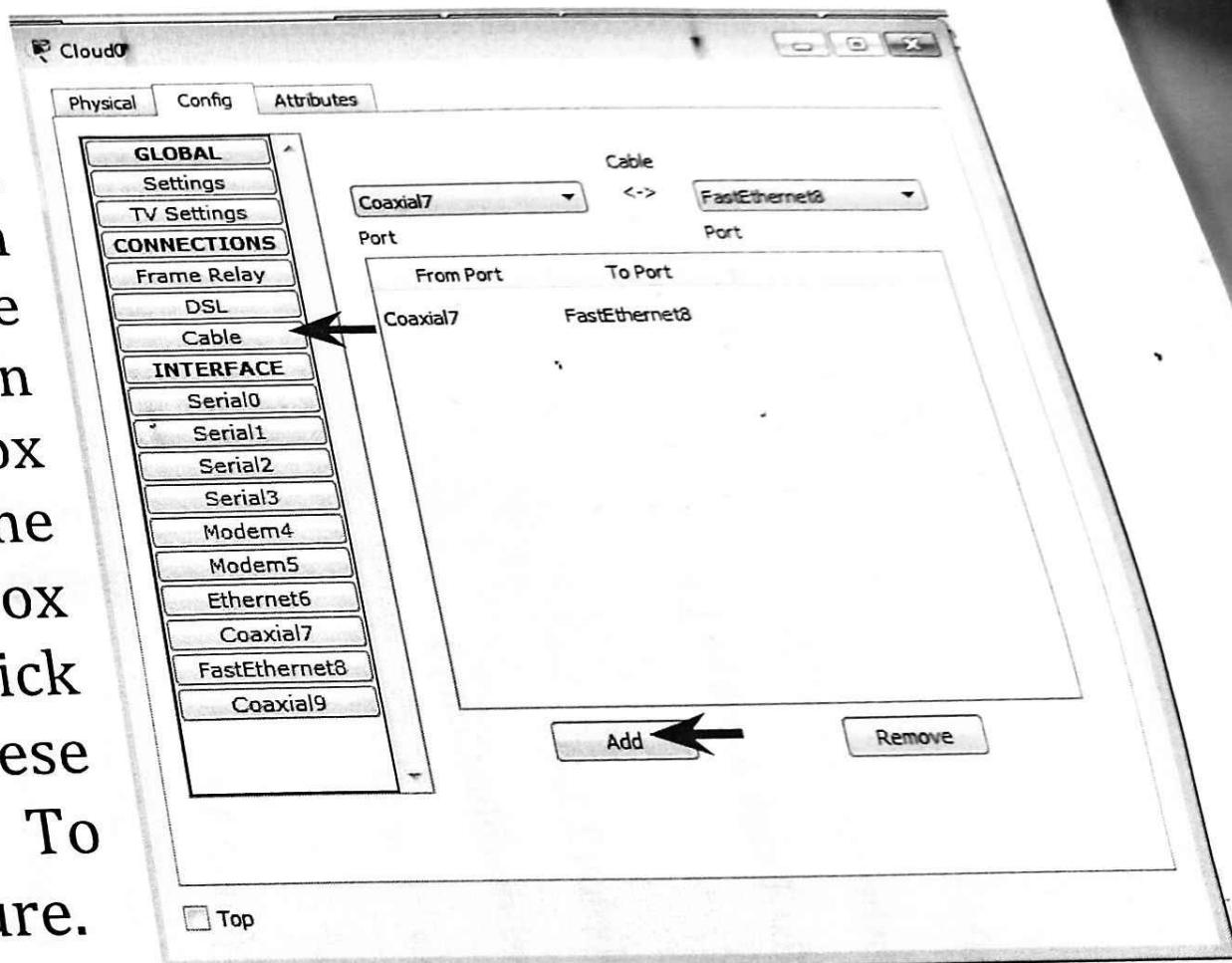
Create a Simple Network Using Packet Tracer

- While still in the Config tab click Ethernet under INTERFACE in the left pane. In the Ethernet configuration window select Cable as the Provider Network as shown in the figure.



Create a Simple Network Using Packet Tracer

- Identify the From and To Ports
- Click on the Config tab in the Cloud device window. In the left pane click on Cable under CONNECTIONS. In the first drop down box choose Coaxial and in the second drop down box choose Ethernet then click the Add button to add these as the From Port and To Port as shown in the figure.





Create a Simple Network Using Packet Tracer

Configure the server

- Configure the server as a DHCP server
- Click on the server icon on the Logical workspace
- Select the Services tab.
- Select DHCP from the SERVICES list in the left pane.
- In the DHCP configuration window, configure a DHCP as shown in the figure with the following settings.
- Click On to turn the DCHP service on
- Pool name: serverpool
- Default Gateway: 208.67.220.220
- DNS Server: 208.67.220.220
- Starting IP Address: 208.67.220.1
- Subnet Mask 255.255.255.0
- Maximum number of Users: 50 Click save to add the pool

Physical Config

Services

Desktop

Programming

Attributes

SERVICES	
HTTP	
DHCP	On
DHCPv6	
TFTP	
DNS	
SYSLOG	
AAA	
NTP	
EMAIL	
FTP	
IoT	
VM Management	

Interface

DHCP

FastEthernet0

Service On Off

Pool Name

serverPool

Default Gateway

208.67.220.220

DNS Server

208.67.220.220

Start IP Address : 208

67

220

0

Subnet Mask: 255

255

255

0

Maximum Number of Users :

50

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 Jser	TFTP Server	WLC Address
serverPool	208.67....	208.67....	208.67....	255.255....	50	0.0.0.0	0.0.0.0

Assign the following

IP