

Subject: Computer Networks	
Name of the Student:	
Class:	Roll no:
PRN:	
Date of Performance:	Date of Submission:
Examined by:	

EXPERIMENT NO.1

TITLE: Implementation of LAN using suitable multiuser Windows operating System and demonstrating client-server and peer to peer mode of configuration.

OBJECTIVE: Demonstrating client-server and peer to peer mode of configuration

AIM: Implementation of LAN using suitable multiuser Windows operating System and demonstrating client-server and peer to peer mode of configuration.

SOFTWARE USED: command Prompt, Cisco packet Tracer 6.2

Theory:

A LAN is a computer network that consists of access points, cables, routers, and switches that enable devices to connect to web servers and internal servers within a single building, campus, or home network, and to other LANs via Wide Area Networks (WAN) or Metropolitan Area Network (MAN). Devices on a LAN, typically personal computers and workstations, can share files and be accessed by each other over a single Internet connection.

A router assigns IP addresses to each device on the network and facilitates a shared Internet connection between all the connected devices. A network switch connects to the router and facilitates communication between connected devices, but does not handle Local Area Network IP configuration or sharing Internet connections. Switches are ideal tools for increasing the number of LAN ports available on the network.

PART 1

Procedure : Peer to peer connection:

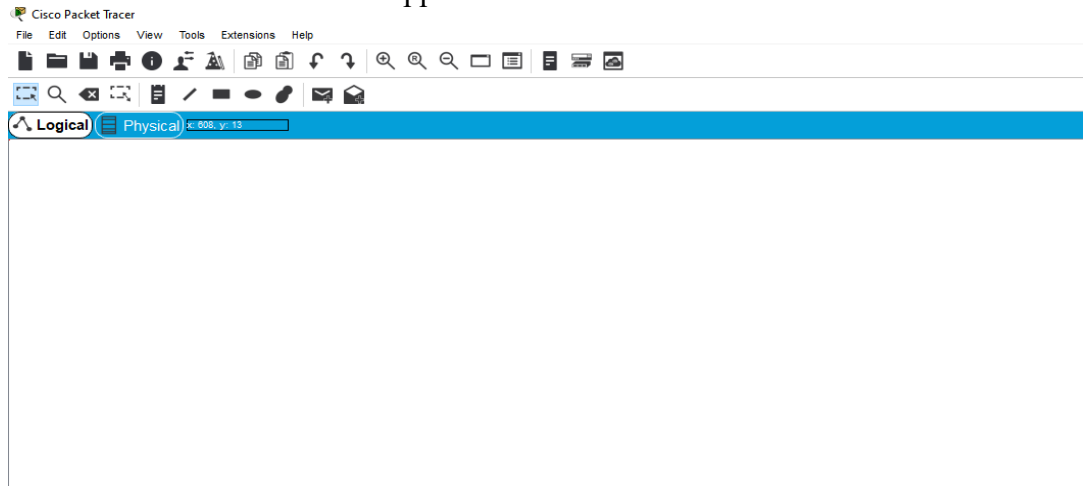
Follow the below steps to initiate the setup for the connection:

Step 1: Download [Cisco Packet Tracer](#).

Step 2: Run and install the setup (You can be requested to log in to your Cisco Networking Academy Account or you can also log in as a guest).

Step 3: After the installation procedure has completed this display (below) will appear when you

run the Cisco Packet Tracer-Start the application.



Cisco Packet Tracer

Implementation:

Follow the below steps to implement the connection:

Step 1: From the bottom toolbar, click on '**End Devices**' and select '**PC**' and then click on the screen (for two PC's do this step twice).



Bottom toolbar->End devices->PC

This is how it will appear on the screen



Step 2: Now to connect the PC's, we require a wire; we use cross-over wire to connect similar devices.

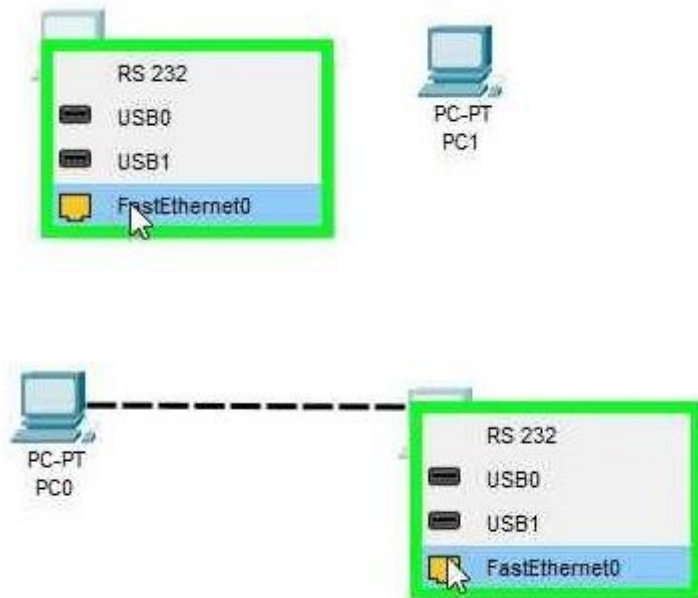
Select Connections from the bottom toolbar, and select cross-over wire (that is the fourth wire).



A **Cross-Over Wire** is largely used to connect the computing gadgets, additionally, cross wire cables are used to connect devices of equal type.

Step 3: After selecting the wire click on the computer on the screen(here PC0) and select FastEthernet0.

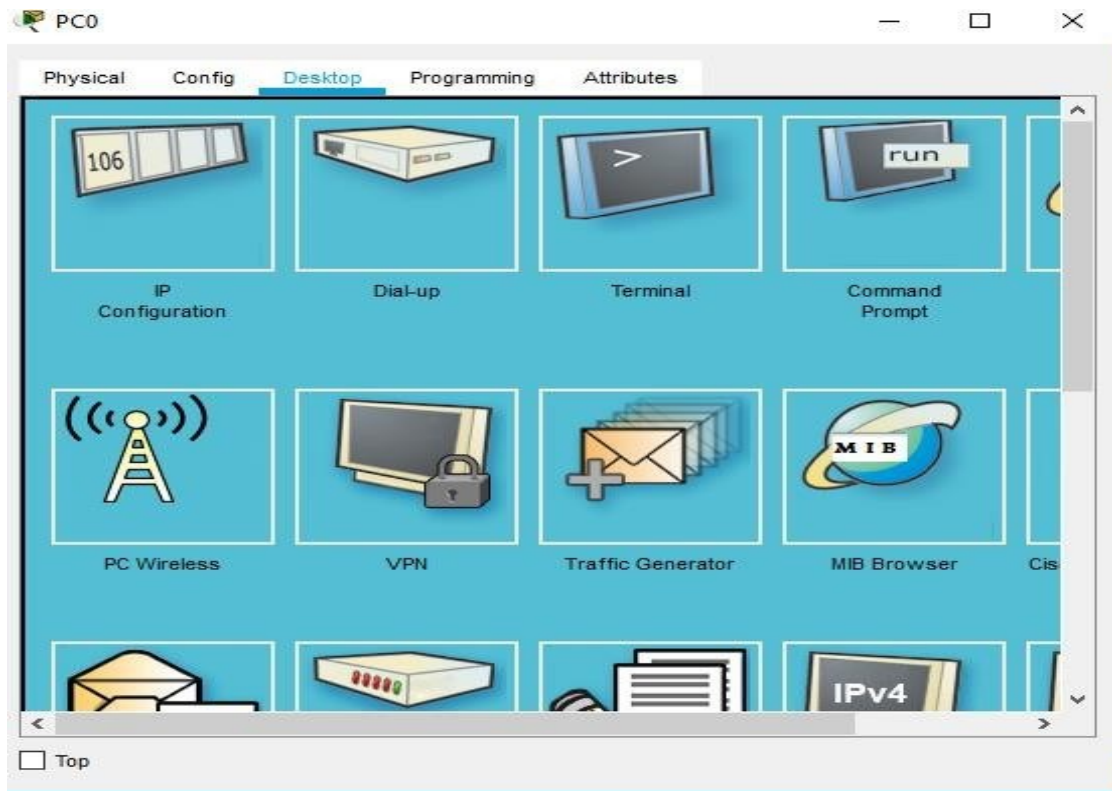
Then, drag the wire to the other pc (here PC1) and do the same.



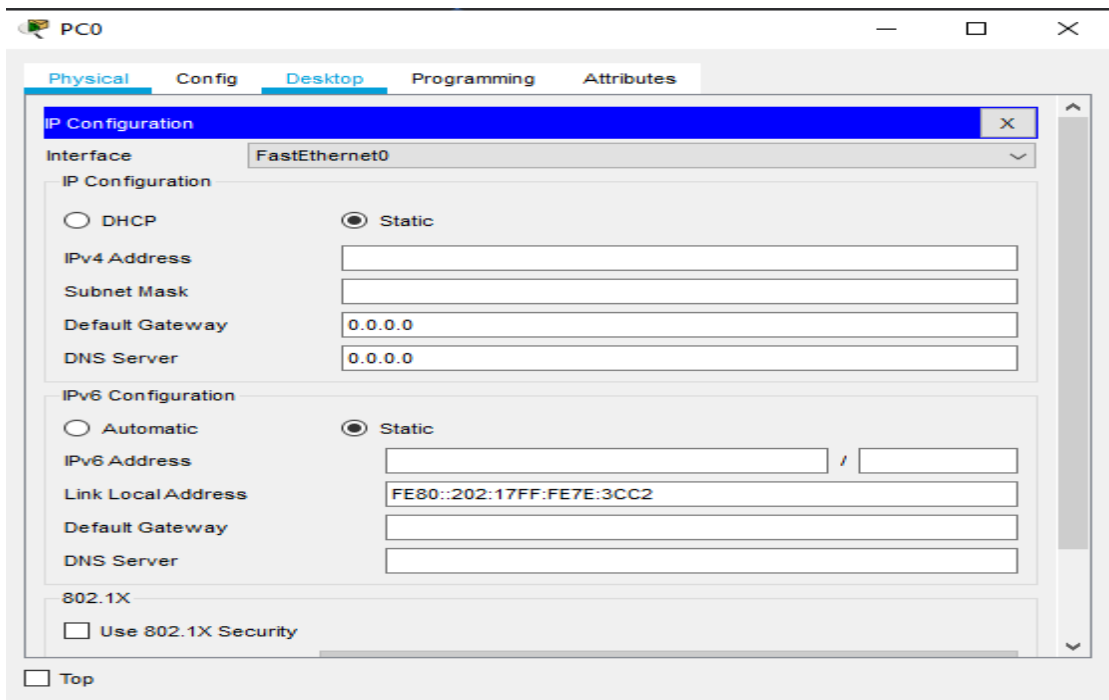
Step 4: Now, we will assign the IP address to both the PCs (PC0 & PC1).

An **IP address** (Internet Protocol) is nothing but the numerical designation of the devices connected to the network, that use the Internet protocol as a communication medium.

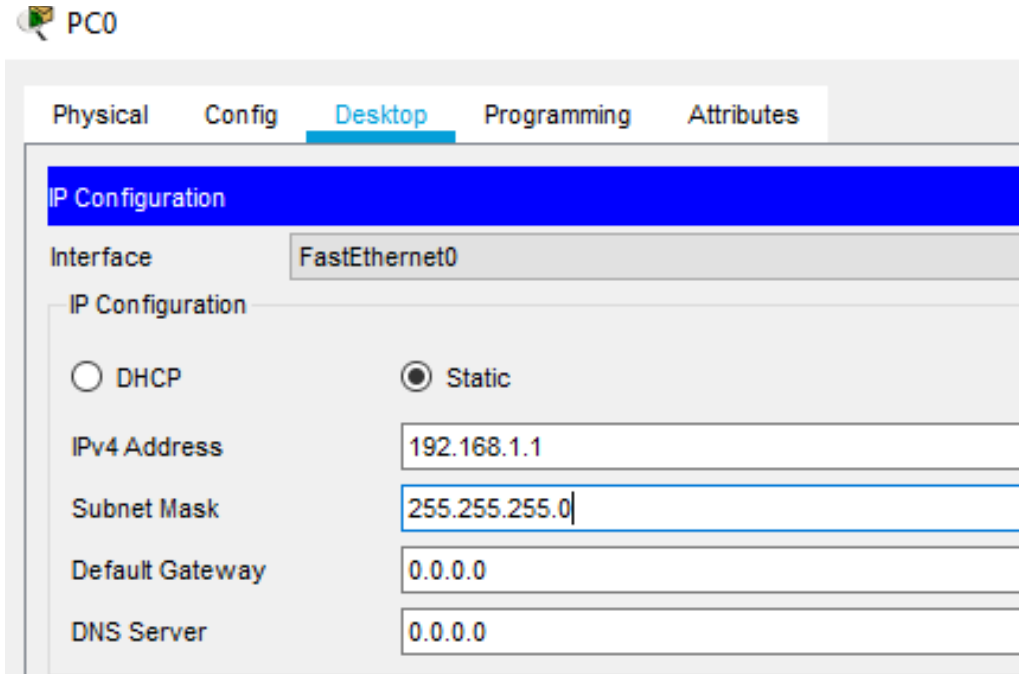
Click on PC0. A dialog box will appear on the screen, select Desktop and then select IP configuration :



After clicking on IP configuration this is what will appear



Now in IPv4 Address, write 192.168.1.1, Subnet mask will be 255.255.255.0

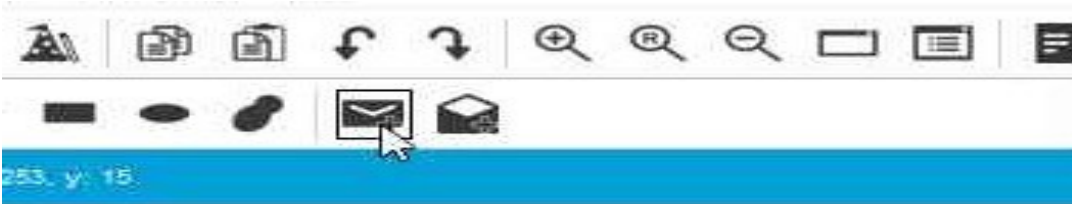


Similarly, assign 192.168.1.2 to PC1

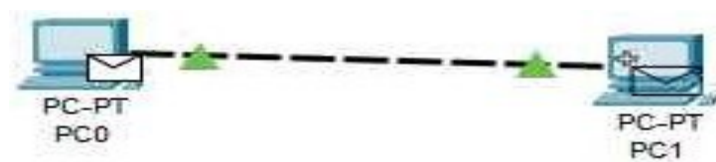
We have successfully connected two computers.

Now to check this, we will transfer data from one computer to another and check whether the transfer is successful or not. To do so follow the below steps:

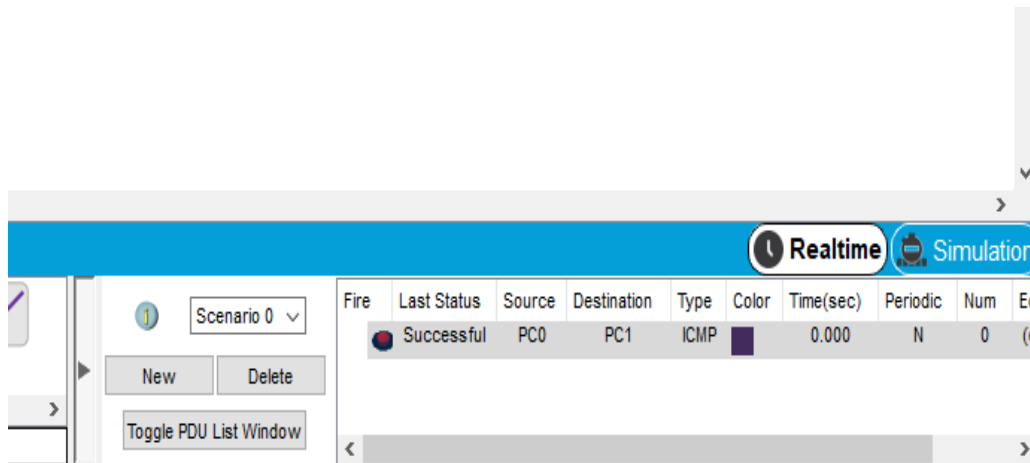
Step 1: From the Secondary Toolbar at the top, select 'Add sample PDU' that is the second last icon.



Step 2: Now click on PC0 and then PC1.



Now if in Real time box- PDU list window it shows successful, that means all the connections are correct and the data transfer is successful

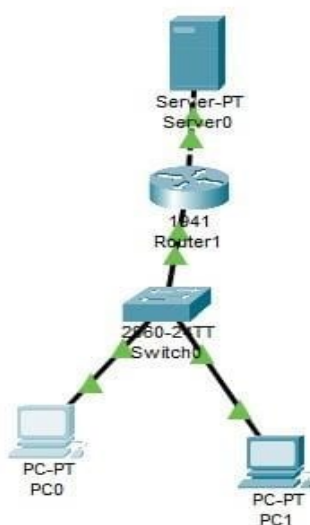


You have successfully connected two computers (peer to peer) , using the virtual program CiscoPacket Tracer.

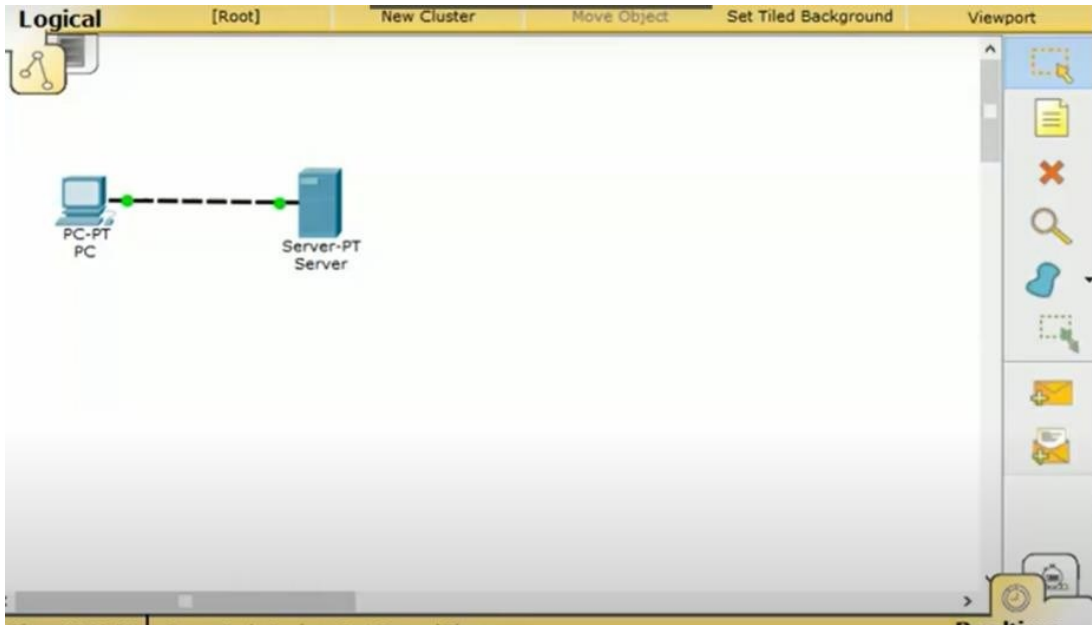
PART 2:

Simple server-client configuration

In a small network generally, there stays one server and one and more clients. Desktop PCs or Laptop PCs can be used as client. The client generally request service from the server and server serves that request as per requested. The server can be different types like web server, mail server, DNS server, File transfer server or file server etc. Here In this we'll just learn about the simple client and server network by building them and analyze the client server architecture



Step 1 : Open the Packet tracer Drag a PC(Desktop/Laptop) and Server. Connect them using proper cable. Generally, the connecting cable is used as copper cross-over cable.



Step 2 : After that implement IP address in both of them. For PC you can enter the following IP address:

IP address: 192.168.1.1

Subnet mask: 255.255.255.0

Default Gateway: 192.168.1.254

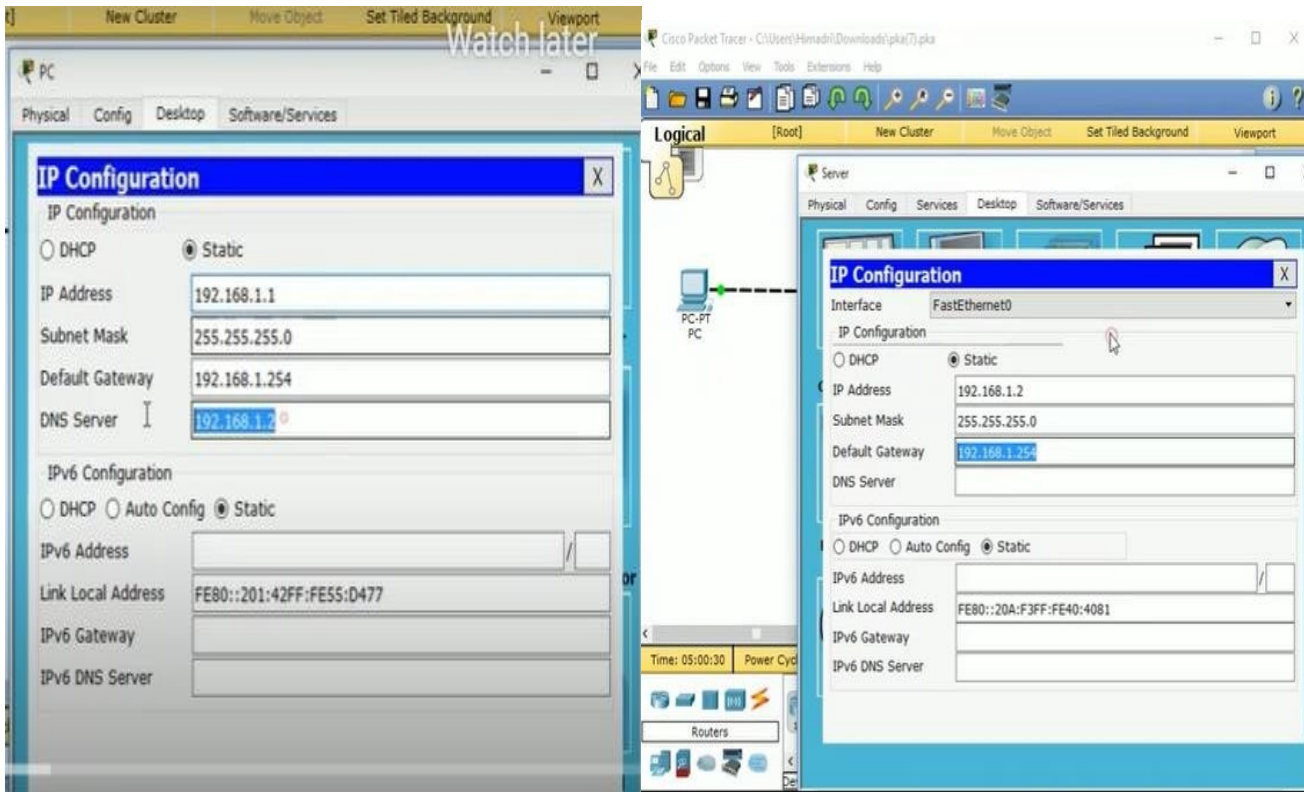
DNS server: 192.168.1.2

Now for server you we here we've used this configuration: IP

address: 192.168.1.2

Subnet mask: 255.255.255.0

Default gateway: 192.168.1.254



Now just take a message envelope (close message envelope) and check the connection, by placing the message in two PC. If there is successful message shown the right bottom of the PC, then you can say that, the connection is OK. Also, you can ping IP address from PC to check the connection.

Now we'll look for the packet at the real time simulation mode. It is necessary to realize the client server network architecture. Just click the "Simulation", which stays by the side of "Real time". After the click the option Auto Capture / Play. Now through this you can be able to see the packet traveling path of this network server.

PDU Information at Device: PC

OSI Model Outbound PDU Details

At Device: PC
Source: PC
Destination: Server

In Layers	Out Layers
Layer7	Layer7
Layer6	Layer6
Layer5	Layer5
Layer4	Layer4
Layer3	Layer3: IP Header Src. IP: 192.168.1.1, Dest. IP: 192.168.1.2 ICMP Message Type: 8
Layer2	Layer2: Ethernet II Header 0001.4255.D477 >> 000A.F340.4081
Layer1	Layer1: Port(s): FastEthernet0

1. The Ping process starts the next ping request.
2. The Ping process creates an ICMP Echo Request message and sends it to the lower process.
3. The source IP address is not specified. The device sets it to the port's IP address.
4. The device sets TTL in the packet header.
5. The destination IP address is in the same subnet. The device sets the next-hop to destination.

Time: 05:17:52.765 Power Cycle Dev

Challenge Me << Previous Layer Next Layer >>

PDU Information at Device: PC

OSI Model Outbound PDU Details

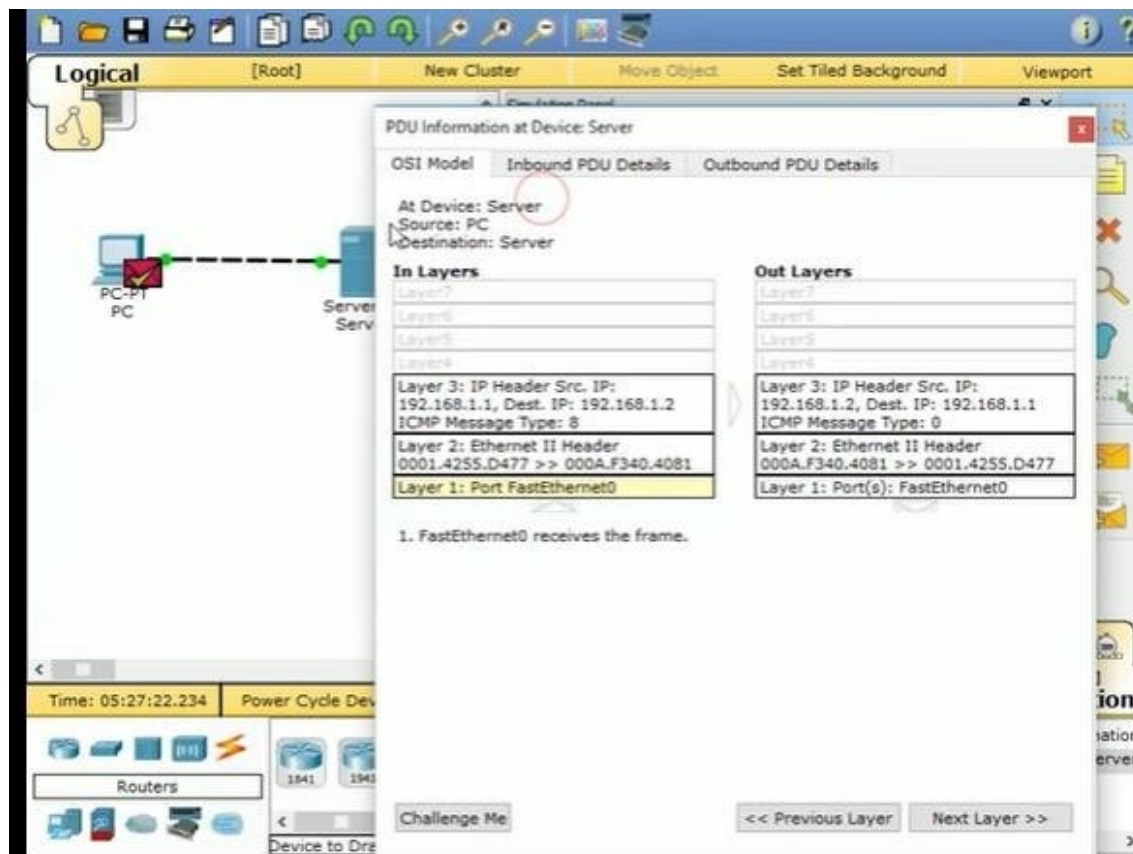
At Device: PC
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In Layers	Out Layers
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Conclusion: