

Experiment 4B

PART A

To implement basic connection establishment by using Packet Tracer Software

A.1—Aim:

The purpose of this session is to implement the basic connection and sending echo messages from one device to another using packet tracer software

A.2--- Prerequisite:

Understanding the basic knowledge of connecting devices

A.3--- Outcome:

After successful completion of this experiment students will be able to:

- Interact the basic interface of the Packet tracer software

A.4--- Procedure:

Task:

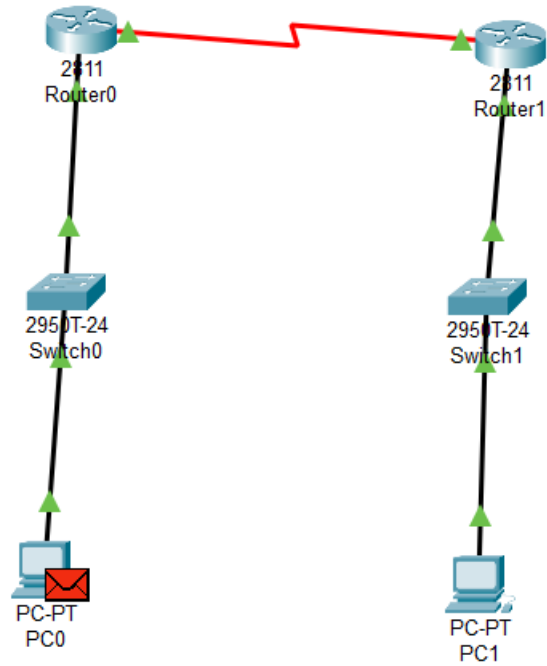
1. To connect client to server
2. See the simulation of sent and received packet using general and complex PDU
3. Check the OSI layers of the packet
4. Observe the output and complete PART B of lab manual
5. Save and close the file and name it as **EXP4_ your Roll no.**

PART - B

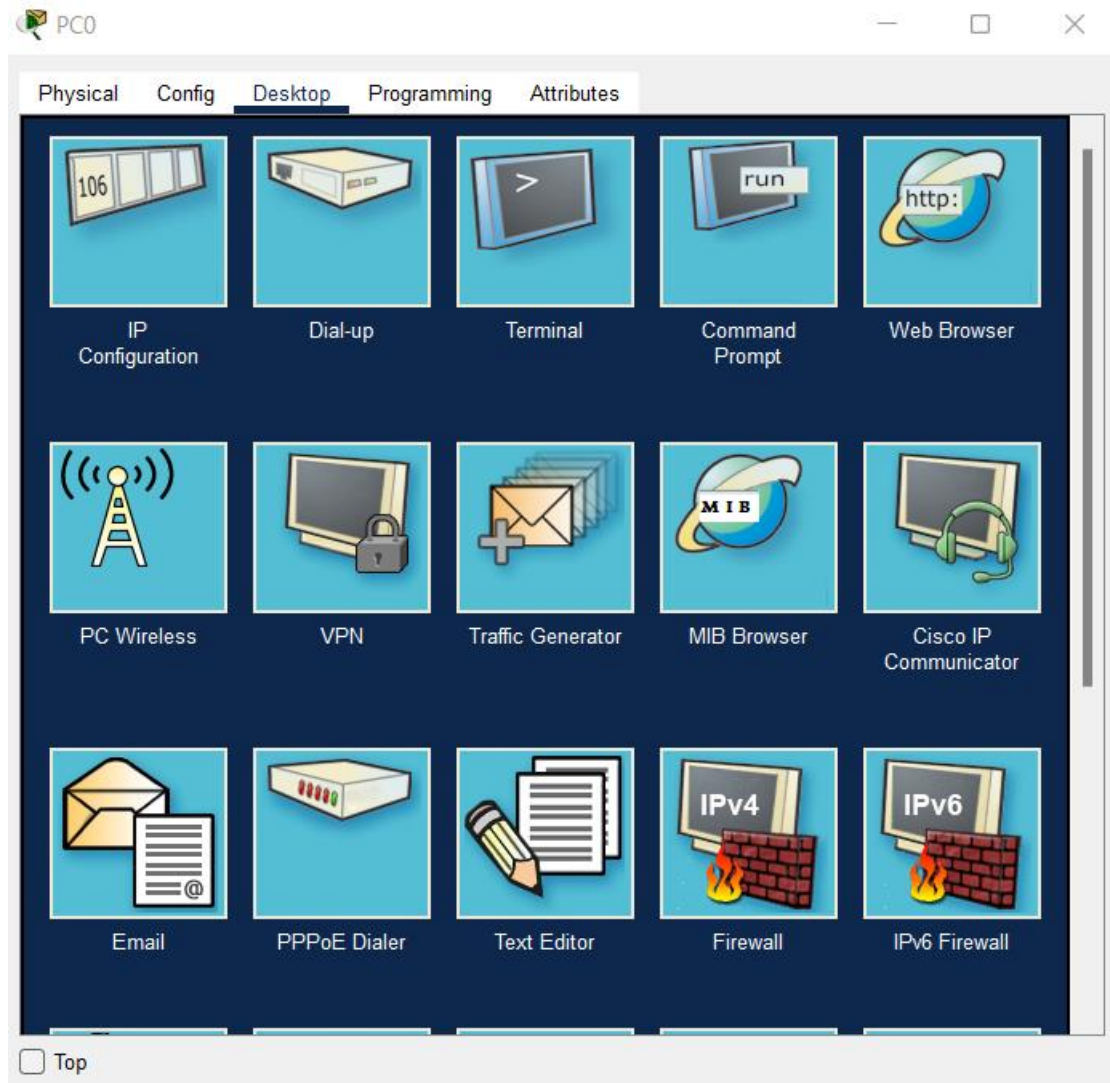
Roll. No. A016	Name: Varun Mahendra Khadayate
Class B.Tech CsBs	Batch: 1
Date of Experiment: 29-01-2022	Date of Submission:05-02-2022

B.1: Procedure of performed experiment

1. In Cisco Packet Tracer, create a connection in Logical Mode.



2. Click on both the PC simultaneously and click on Desktop and select IP Configuration, a new box will open. In that box under the IP Configuration section, assign the IP addresses as 192.168.10.1 and 192.168.20.1 respectively of both the PC. Also add the default gateway as the IP Addresses of Router0 and Router1 respectively as 192.168.10.2 and 192.168.20.2.



PC0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.10.1

Subnet Mask 255.255.255.0

Default Gateway 192.168.10.2

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::210:11FF:FE8E:35EE

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

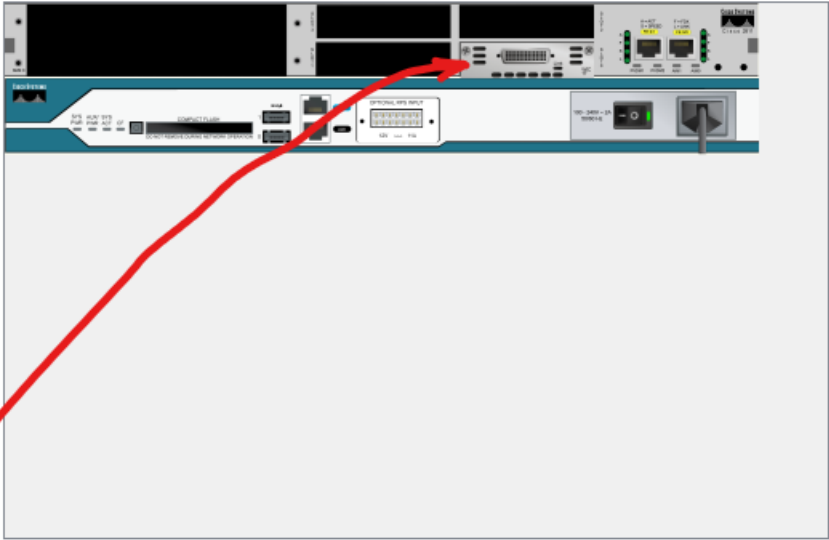
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- Now configure the two Routers by adding a serial port and adding their respective IP Addresses as 192.168.30.1 and 192.168.30.2 respectively.

Physical Config CLI Attributes

Physical Device View

Zoom In Original Size Zoom Out



Customize Icon in Physical View Customize Icon in Logical View

The NM-1E features a single Ethernet port that can connect a LAN backbone which can also support either six PRI connections to aggregate ISDN lines, or 24 synchronous/asynchronous ports.

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Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Serial0/0/0

FastEthernet0/0

IP Configuration

IPv4 Address192.168.10.2

Subnet Mask255.255.255.0

Tx Ring Limit10

Port Status☒ On

Bandwidth☒ 100 Mbps ☐ 10 Mbps☒ Auto

Duplex☐ Half Duplex ☒ Full Duplex☒ Auto

MAC Address0006.2AE4.CB01

Equivalent IOS Commands

```
Router(config)#router rip
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

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Physical **Config** CLI Attributes

GLOBAL	Serial0/0/0	
Settings		
Algorithm Settings		
ROUTING		
Static		
RIP		
SWITCHING		
VLAN Database		
INTERFACE		
FastEthernet0/0		
FastEthernet0/1		
Serial0/0/0		

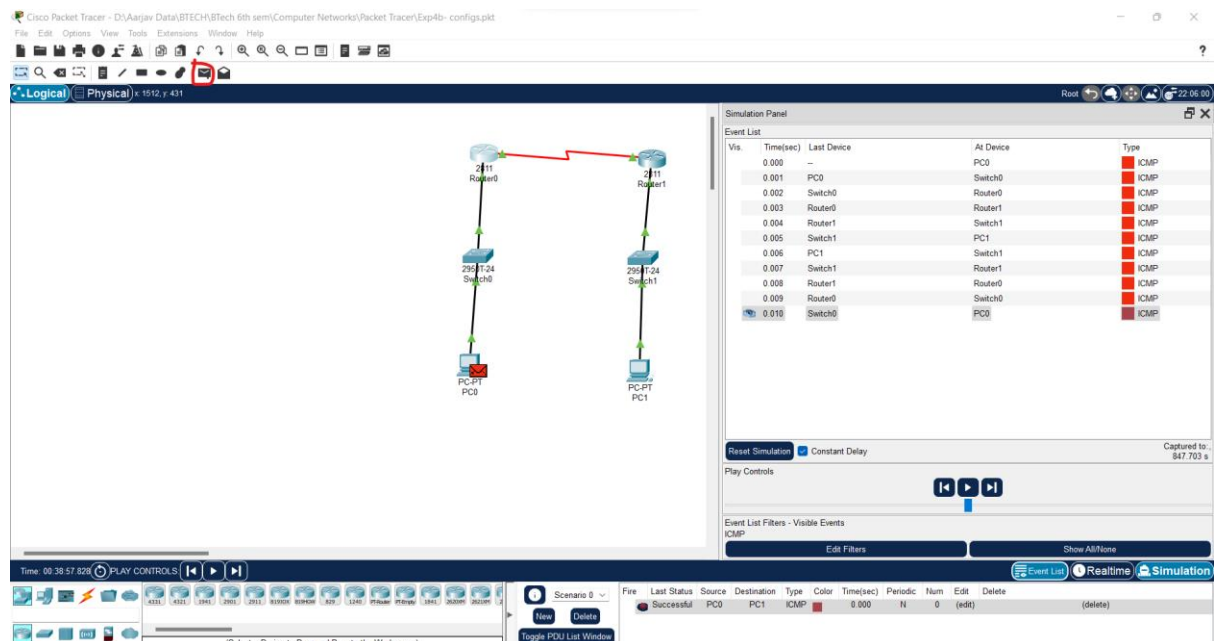
Port Status	<input checked="" type="checkbox"/> On
Duplex	<input type="radio"/> Full Duplex
Clock Rate	128000
IP Configuration	
IPv4 Address	192.168.30.1
Subnet Mask	255.255.255.0
Tx Ring Limit	
	10

Equivalent IOS Commands

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
```

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- Now from the task bar select the 'Add simple PDU' button and select PC0 one by one and start the simulation to see the message parsing.



B.2: Observations and Learning's:

Initial State:

message is at PC0 and the parsing has not been started yet. There is only out layer because the message will be outgoing and nothing is coming in.

Layer 1:

shows the port connection (i.e., FastEthernet0) from where the message will be transferred.

Layer 2:

the MAC addresses have been determined and the flow is built.

Layer 3:

destination and source IP Addresses have been mentioned.

PDU Information at Device: PC0

OSI Model Outbound PDU Details

At Device: PC0
Source: PC0
Destination: PC1

In Layers

Layer7
Layer6
Layer5
Layer4
Layer3
Layer2
Layer1

Out Layers

Layer7
Layer6
Layer5
Layer4
Layer 3: IP Header Src. IP: 192.168.10.1, Dest. IP: 192.168.20.1 ICMP Message Type: 8
Layer 2: Ethernet II Header 0010.118E.35EE >> 0006.2AE4.CB01
Layer 1: 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 192.168.20.1 is not in the same subnet and is not the broadcast address.
6. The default gateway is set. The device sets the next-hop to default gateway.

PC0 to Switch0:

Now the message is transferred to switch from the FastEthernet0 port, message from PC0 will be coming in and later the message will be going out so both In and Out layers will be used.

In Layer 1:

message coming in through FastEthernet0/1.

In Layer 2:

Mac address flow is shown from PC0 to switch0.

Out Layer 1:

message will be going out from FastEthernet 0/2.

Out Layer 2:

Mac addresses flow is setup from switch0 to PC1.

PDU Information at Device: Switch0

OSI Model Inbound PDU Details Outbound PDU Details

At Device: Switch0
Source: PC0
Destination: PC1

In Layers

Layer7
Layer6
Layer5
Layer4
Layer3
Layer 2: Ethernet II Header 0010.118E.35EE >> 0006.2AE4.CB01
Layer 1: Port FastEthernet0/1

Out Layers

Layer7
Layer6
Layer5
Layer4
Layer3
Layer 2: Ethernet II Header 0010.118E.35EE >> 0006.2AE4.CB01
Layer 1: Port(s): FastEthernet0/2

1. FastEthernet0/1 receives the frame.

Switch0 to Router0:

Now FastEthernet0/2 of Switch0 transfers the message to Router0, in layers show 3 layers for incoming message, Out Layers shows 3 layers for the message going to Router1.

In Layer1:

Message arrived at FastEthernet0/0 port of Router0 from Switch0.

In Layer2:

Mac addresses connection shown.

In Layer3:

Flow of message from source to Router in IP Addresses.

Out Layer1:

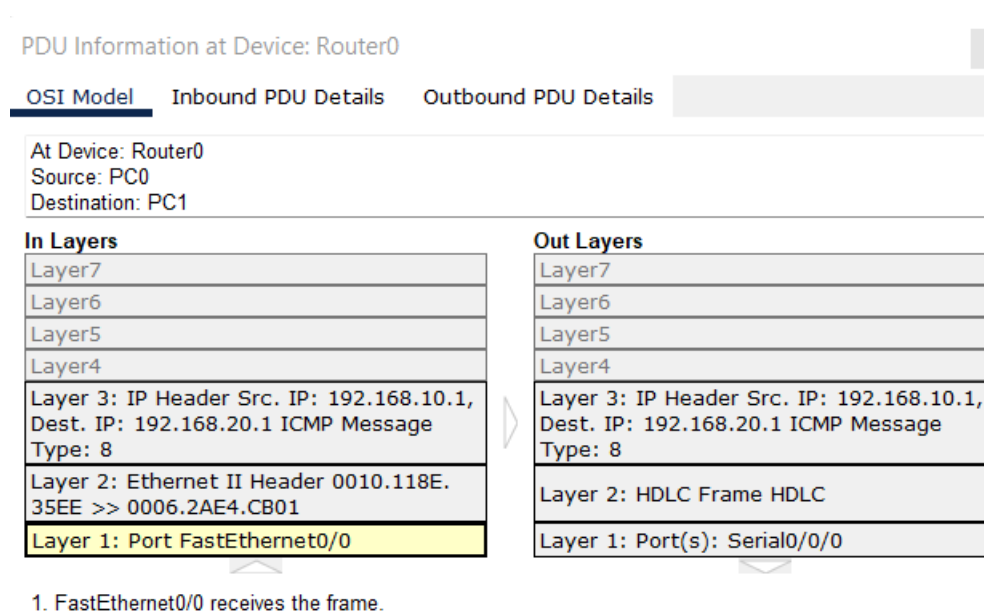
Message will be transferred to Serial0/0/0 port of Router1.

Out Layer2:

Mac addresses connection built between Router0 to Router1

Out layer3:

The source and destination for message determined.



Router0 to Router1:

Now Serial0/0/0 of Router0 transfers the message to Router1, in layers show 3 layers for incoming message, Out Layers shows 3 layers for the message going Switch1.

In Layer1:

Message arrived at Serial0/0/0 port of Router1 from Router0.

In Layer2:

Mac addresses connection shown.

In Layer3:

Flow of message from source to Router in IP Addresses.

Out Layer1:

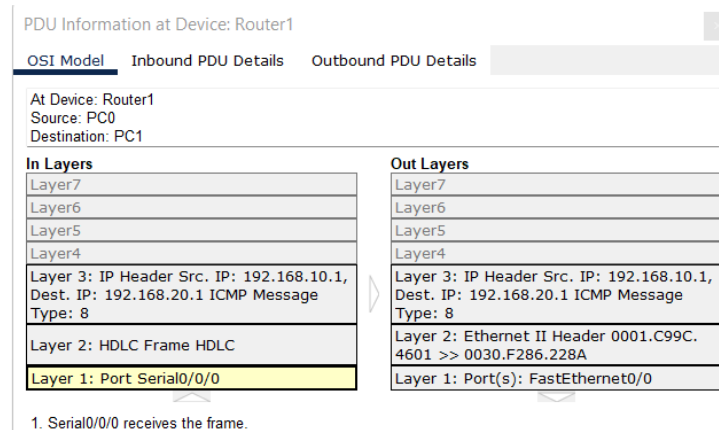
Message will be transferred to FastEthernet0/0 port of Switch1.

Out Layer2:

Mac addresses connection built between Router1 and Switch1.

Out layer3:

The source and destination for message determined.



Router1 to Switch1:

Now Serial0/0/0 of Router1 transfers the message to Switch1, in layers show 2 layers for incoming message, Out Layers shows 2 layers for the message going to Switch1.

In Layer1:

Message arrived at fastethernet0/2 port of Switch1 from Router1.

In Layer2:

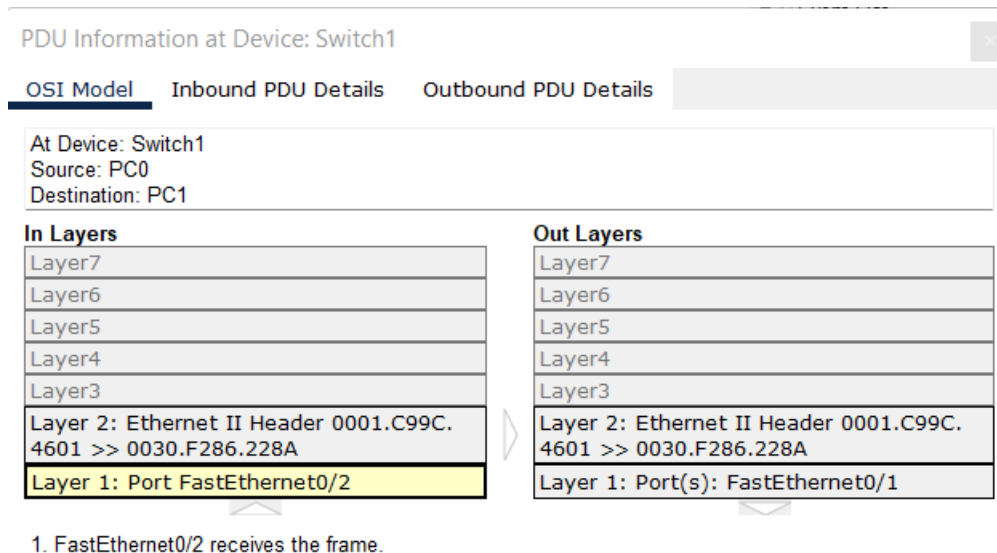
Mac addresses connection shown.

Out Layer1:

Message will be transferred to fastethernet0/1 port of PC1.

Out Layer2:

Mac addresses connection built between Switch1 to PC1



Switch1 to PC1:

The message has reached its destination i.e., PC1 from Switch1, In Layers shows 3 layers for incoming message and Out Layers shows the 3 Layers for message going back to source.

In Layer1:

Message arrived at fastethernet0 port of PC1 from Switch1.

In Layer2:

Mac addresses connection shown.

In Layer3:

Flow of message from Switch1 to PC1 in IP Addresses.

Out Layer1:

Message will be transferred to fastethernet0 port of Switch1.

Out Layer2:

Mac addresses connection built between PC1 to Switch1

Out layer3:

The source and destination for message determined.

PDU Information at Device: PC1

OSI Model Inbound PDU Details Outbound PDU Details

At Device: PC1
Source: PC0
Destination: PC1

In Layers

Layer7
Layer6
Layer5
Layer4
Layer 3: IP Header Src. IP: 192.168.10.1, Dest. IP: 192.168.20.1 ICMP Message Type: 8
Layer 2: Ethernet II Header 0001.C99C. 4601 >> 0030.F286.228A
Layer 1: Port FastEthernet0

Out Layers

Layer7
Layer6
Layer5
Layer4
Layer 3: IP Header Src. IP: 192.168.20.1, Dest. IP: 192.168.10.1 ICMP Message Type: 0
Layer 2: Ethernet II Header 0030.F286.228A >> 0001.C99C.4601
Layer 1: Port(s): FastEthernet0

1. FastEthernet0 receives the frame.

The message will flow from PC1 to Switch1 then from both Router1 and Router0 and finally to PC0 and layers will be built similar to the above fashion

B.3: Conclusion:

We were able to configure PC and Router and simulate a message transfer from one PC to another.