For CN LAB on 10/8/2023

Demonstrate the TTL/ Life of a Packet

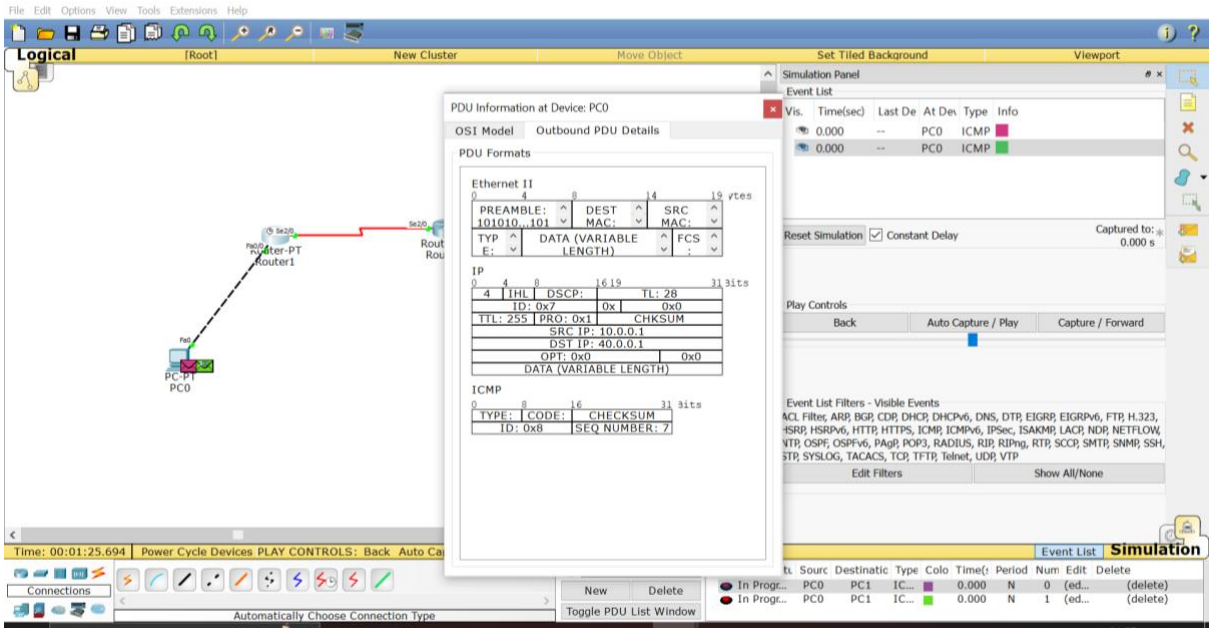
Create a topology as shown below with two PCs and three routers.

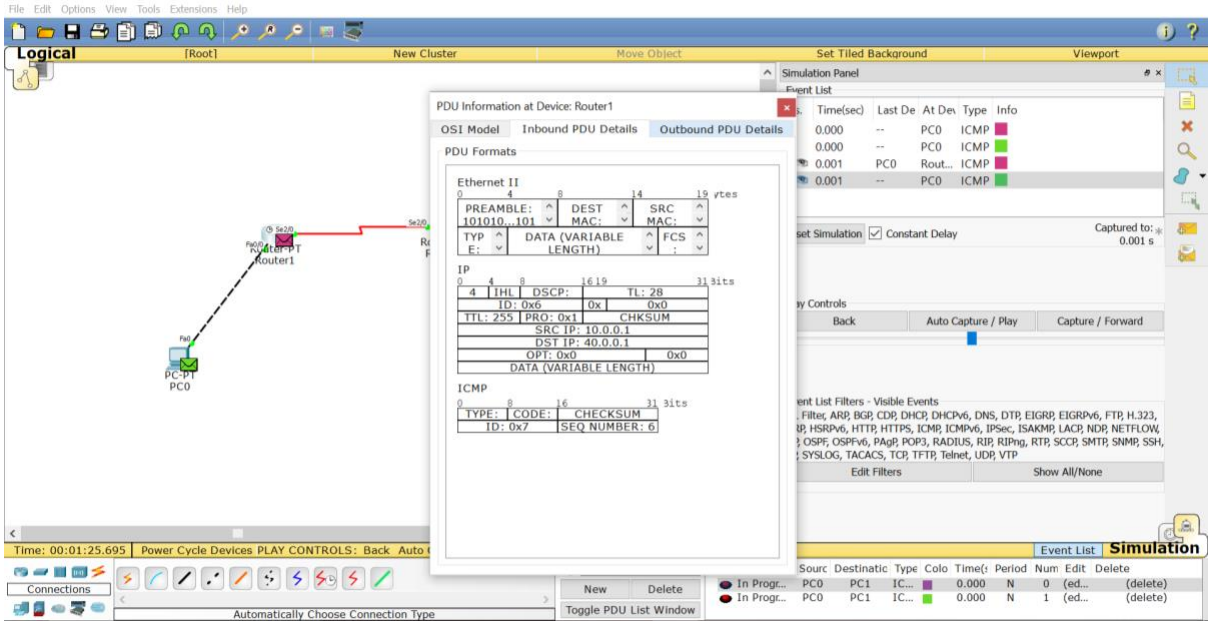
Configure the devices as per static / default / dynamic routing.

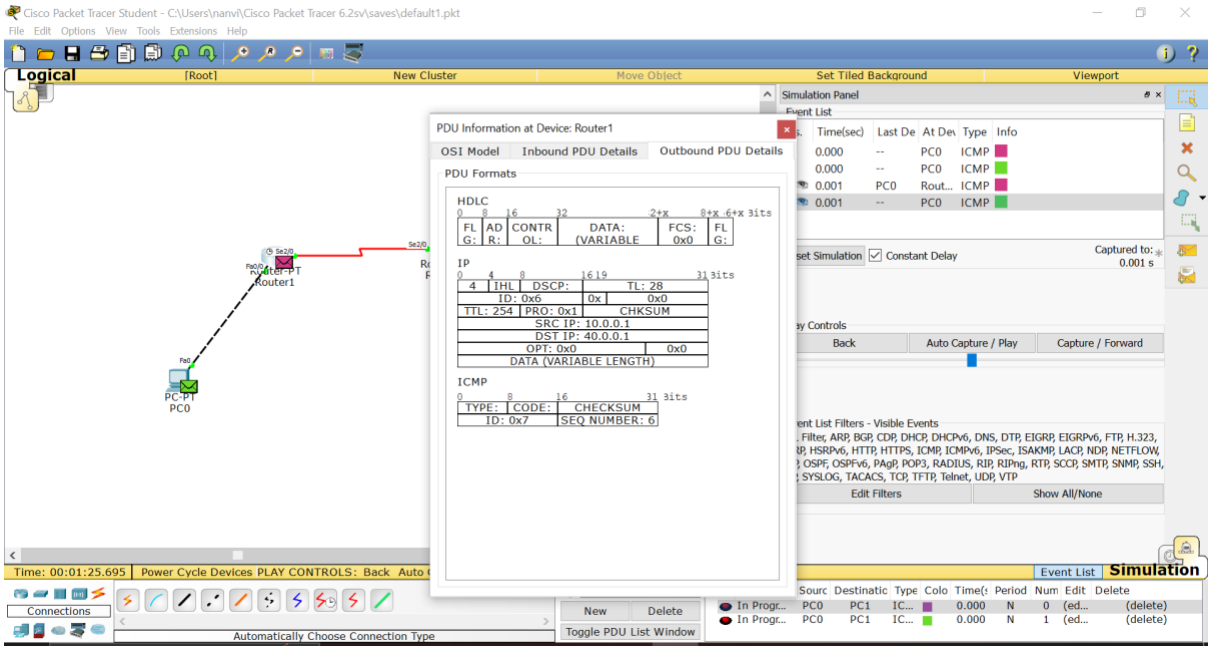
In the simulation mode, send a simple PDU from one PC to another.

Use capture button to capture every transfer.

Click on the PDU during every transfer to see the Inbound and outbound PDU details. Observe that there is a difference of 1 in TTL when it crosses every router.




File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
PDU Information at Device: Router1
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
Ethernet II
PREAMBLE: 101010...101
DEST MAC:
SRC MAC:
TYP E:
DATA (VARIABLE LENGTH)
FCS :
IP
4 IHL DSCP: TL: 28
ID: 0x6 0x 0x0
TTL: 255 PRO: 0x1 CHKSUM
SRC IP: 10.0.0.1
DST IP: 40.0.0.1
OPT: 0x0 0x0
DATA (VARIABLE LENGTH)
ICMP
TYPE: CODE: CHECKSUM
ID: 0x7 SEQ NUMBER: 6
Simulation Panel
Event List
Time(sec) Last De At De Type Info
0.000 -- PC0 ICMP
0.000 -- PC0 ICMP
0.001 PC0 Rout... ICMP
0.001 -- PC0 ICMP
Constant Delay
Captured to: 0.001 s
Back
Auto Capture / Play
Capture / Forward
Edit Filters
Show All/None
Router1
PC-PT PC0
Time: 00:01:25.695
Power Cycle Devices PLAY CONTROLS: Back
Event List
Simulation
Connections
Automatically Choose Connection Type
New
Delete
Toggle PDU List Window


Cisco Packet Tracer Student - C:\Users\nanvi\Cisco Packet Tracer 6.2sv\saves\default1.pkt
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
PDU Information at Device: Router1
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
FL G:
AD R:
CONTR OL:
DATA: (VARIABLE
FCS: 0x0
FL G:
IP
4 IHL DSCP: TL: 28
ID: 0x6 0x 0x0
TTL: 254 PRO: 0x1 CHKSUM
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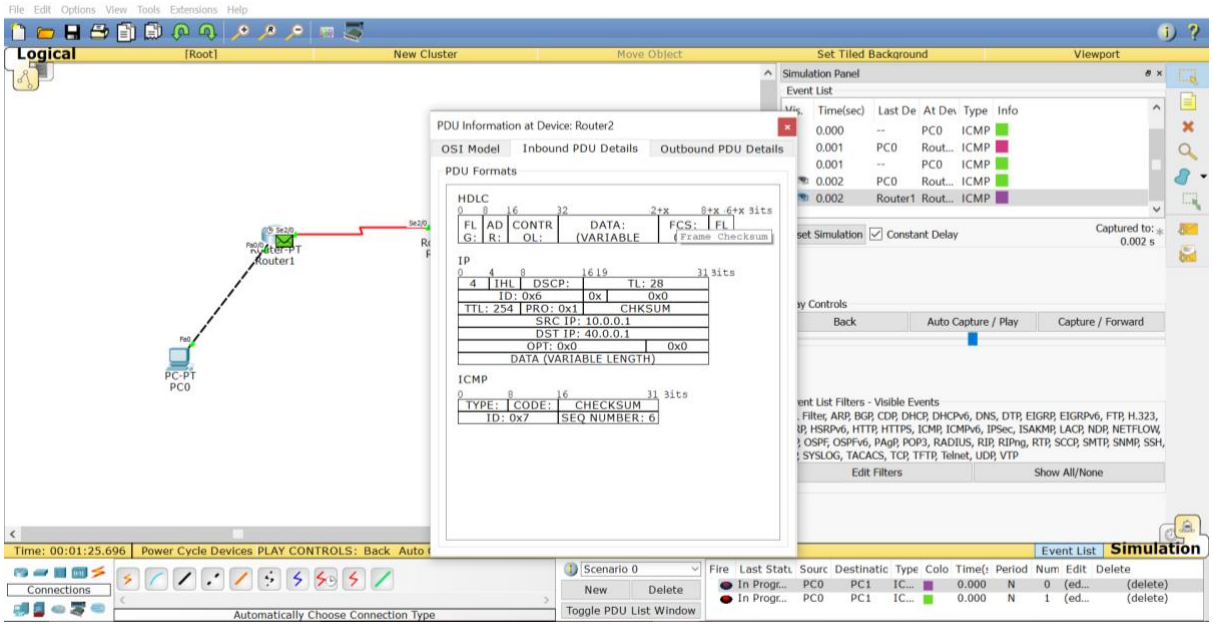
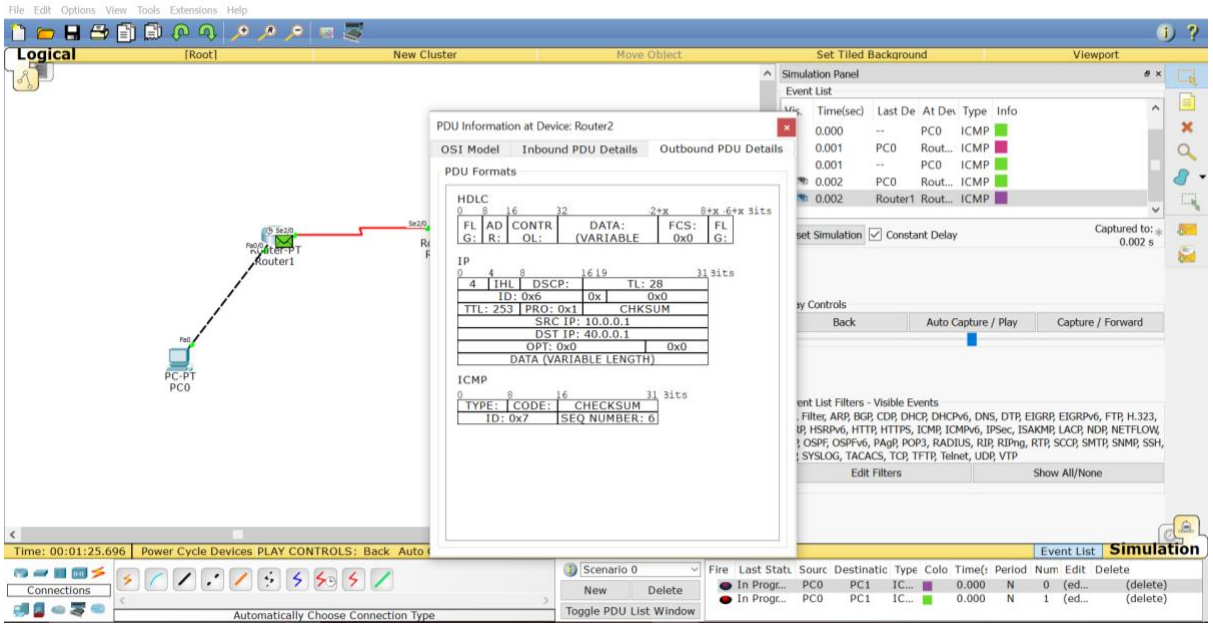

File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Simulation Panel
Event List
PDU Information at Device: Router2
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
IP
ICMP
Router1
PC-PT
PC0
Time: 00:01:25.696
Power Cycle Devices PLAY CONTROLS: Back
Simulation
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window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Logical
[Root]
New Cluster
Move Object
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Viewport
Simulation Panel
Event List
PDU Information at Device: Router2
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Outbound PDU Details
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PC0
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Power Cycle Devices PLAY CONTROLS: Back
Simulation
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Scenario 0
New
Delete
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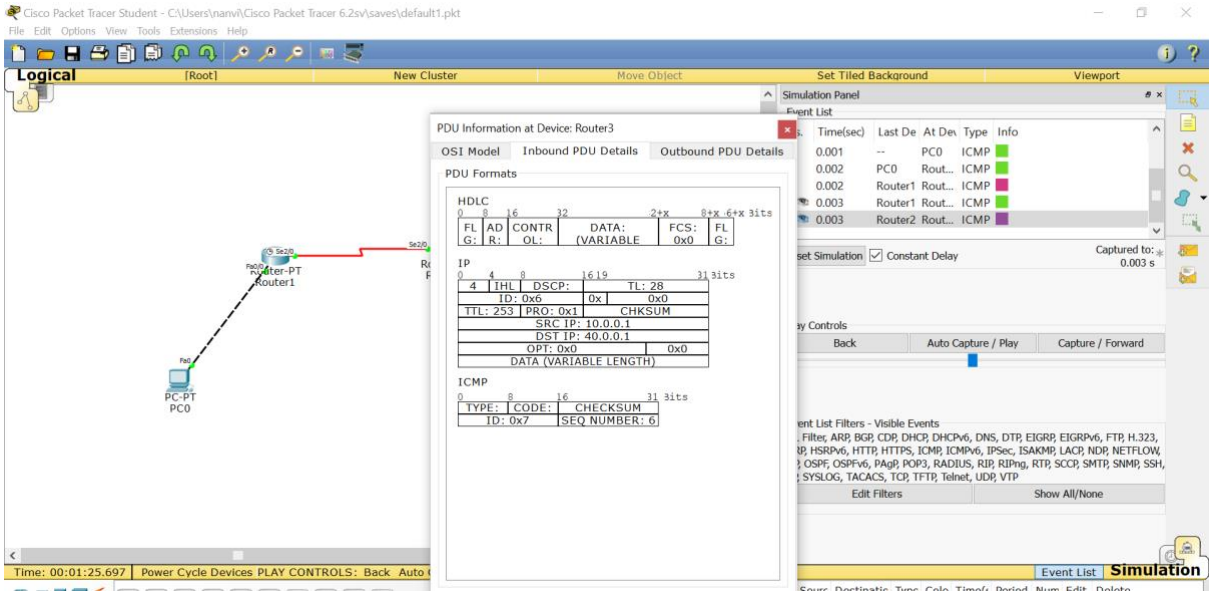
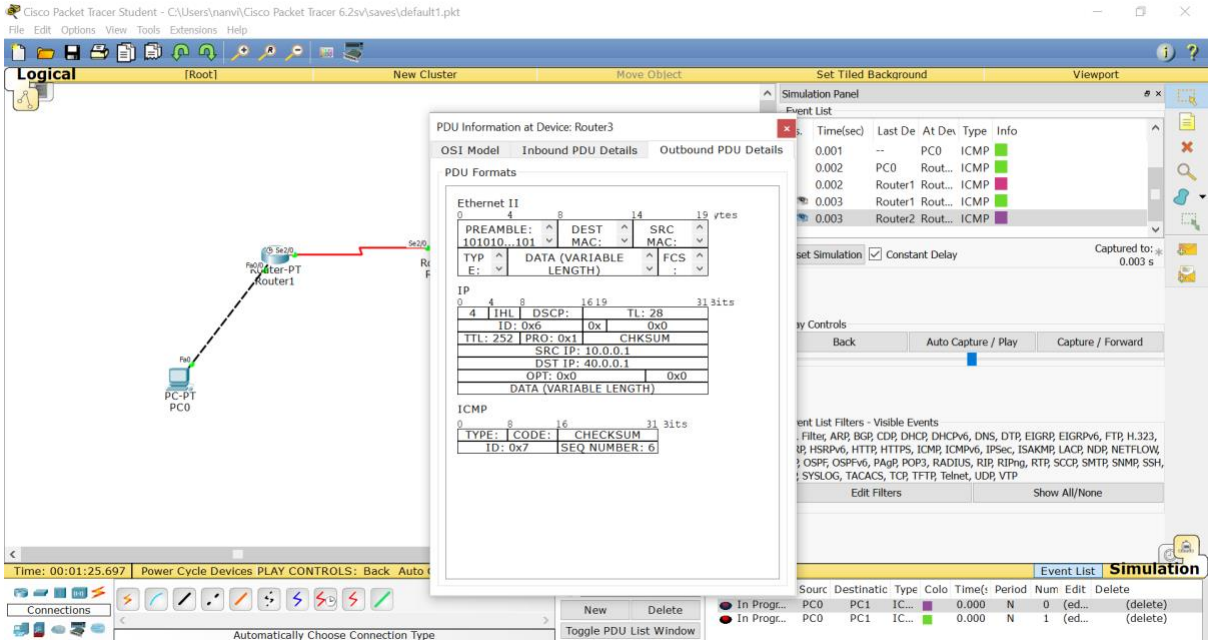

Cisco Packet Tracer Student - C:\Users\nanvi\Cisco Packet Tracer 6.2sv\saves\default1.pkt
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
PDU Information at Device: Router3
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
FL G:
AD R:
CONTR OL:
DATA: (VARIABLE
FCS: 0x0
FL G:
IP
4
IHL
DSCP:
TL: 28
ID: 0x6
0x
0x0
TTL: 253
PRO: 0x1
CHKSUM
SRC IP: 10.0.0.1
DST IP: 40.0.0.1
OPT: 0x0
0x0
DATA (VARIABLE LENGTH)
ICMP
TYPE:
CODE:
CHECKSUM
ID: 0x7
SEQ NUMBER: 6
Router-PT
Router1
PC-PT
PC0
Simulation Panel
Event List
Time(sec)
Last De
At Dev
Type
Info
0.001
PC0
ICMP
0.002
Router1
0.003
Router2
Constant Delay
Captured to:
0.003 s
Back
Auto Capture / Play
Capture / Forward
Edit Filters
Show All/None
Time: 00:01:25.697
Power Cycle Devices PLAY CONTROLS: Back
Event List
Simulation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PDU Information at Device: Router3
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Inbound PDU Details
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PDU Formats
Ethernet II
PREAMBLE: 101010...101
DEST MAC:
SRC MAC:
TYPE:
DATA (VARIABLE LENGTH)
FCS:
IP
4
IHL
DSCP:
TL: 28
ID: 0x6
0x
0x0
TTL: 252
PRO: 0x1
CHKSUM
SRC IP: 10.0.0.1
DST IP: 40.0.0.1
OPT: 0x0
0x0
DATA (VARIABLE LENGTH)
ICMP
TYPE:
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Router-PT
Router1
PC-PT
PC0
Simulation Panel
Event List
Time(sec)
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Type
Info
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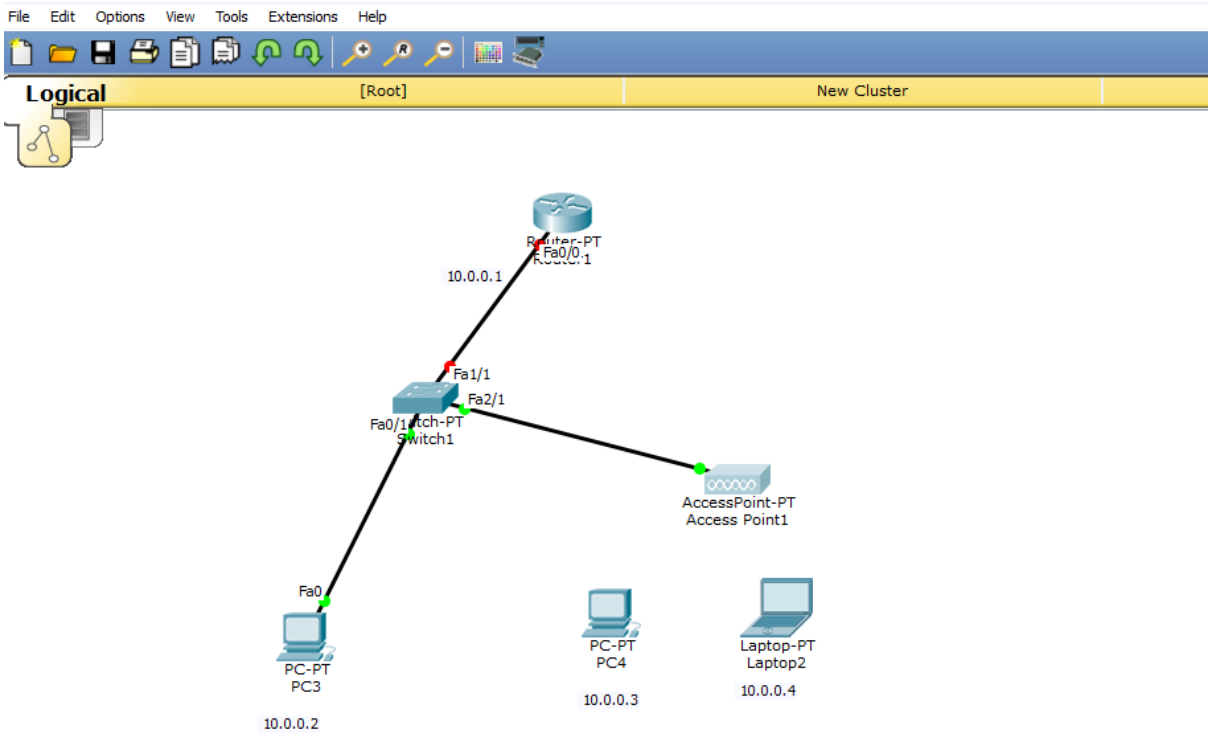
0.003
Router2
Constant Delay
Captured to:
0.003 s
Back
Auto Capture / Play
Capture / Forward
Edit Filters
Show All/None
Time: 00:01:25.697
Power Cycle Devices PLAY CONTROLS: Back
Event List
Simulation
Connections
Automatically Choose Connection Type
New
Delete
Toggle PDU List Window
Source
Destination
Type
Color
Time(s)
Periodic
Num
Edit
Delete
In Progress
PC0
PC1
ICMP
0.000
N
0
(edit)
(delete)
In Progress
PC0
PC1
ICMP
0.000
N
1
(edit)
(delete)

To construct a WLAN and make the nodes communicate wirelessly

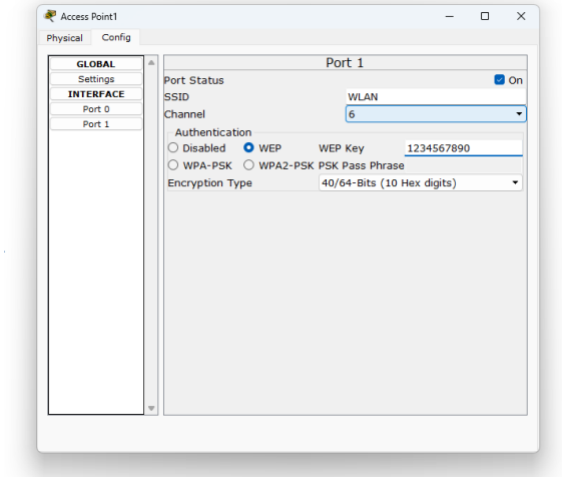


Construct the above topology

Configure PC3 and the Router1 as is normally done

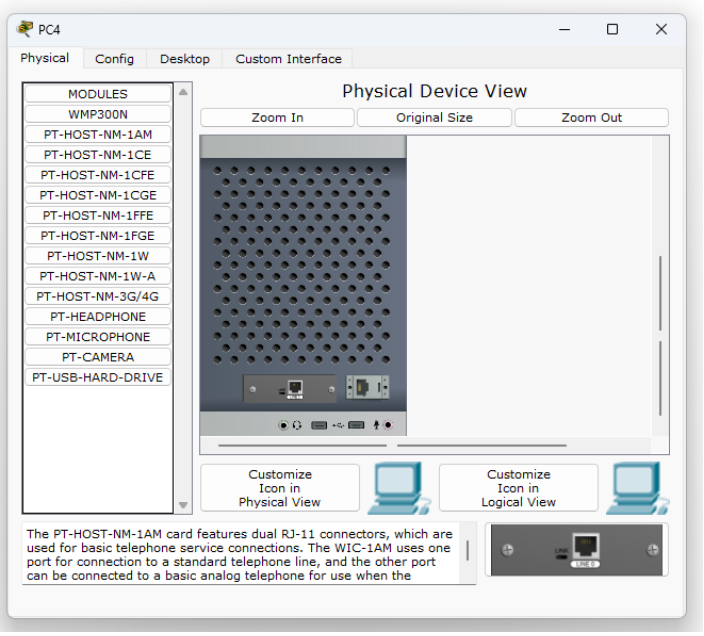
Configure Access Point1- Port1 -> SSID Name- any name(WLAN here)

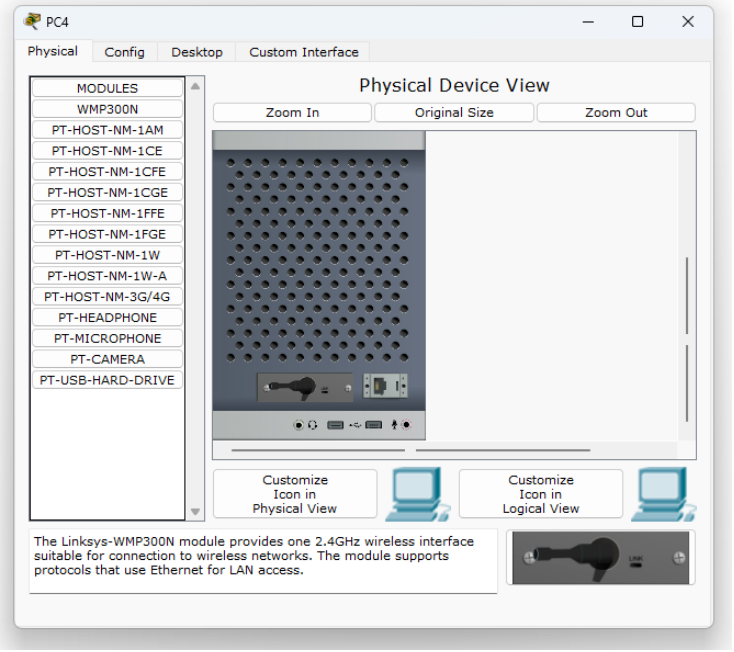
Select WEP and give any 10 digit hex key – 1234567890 here



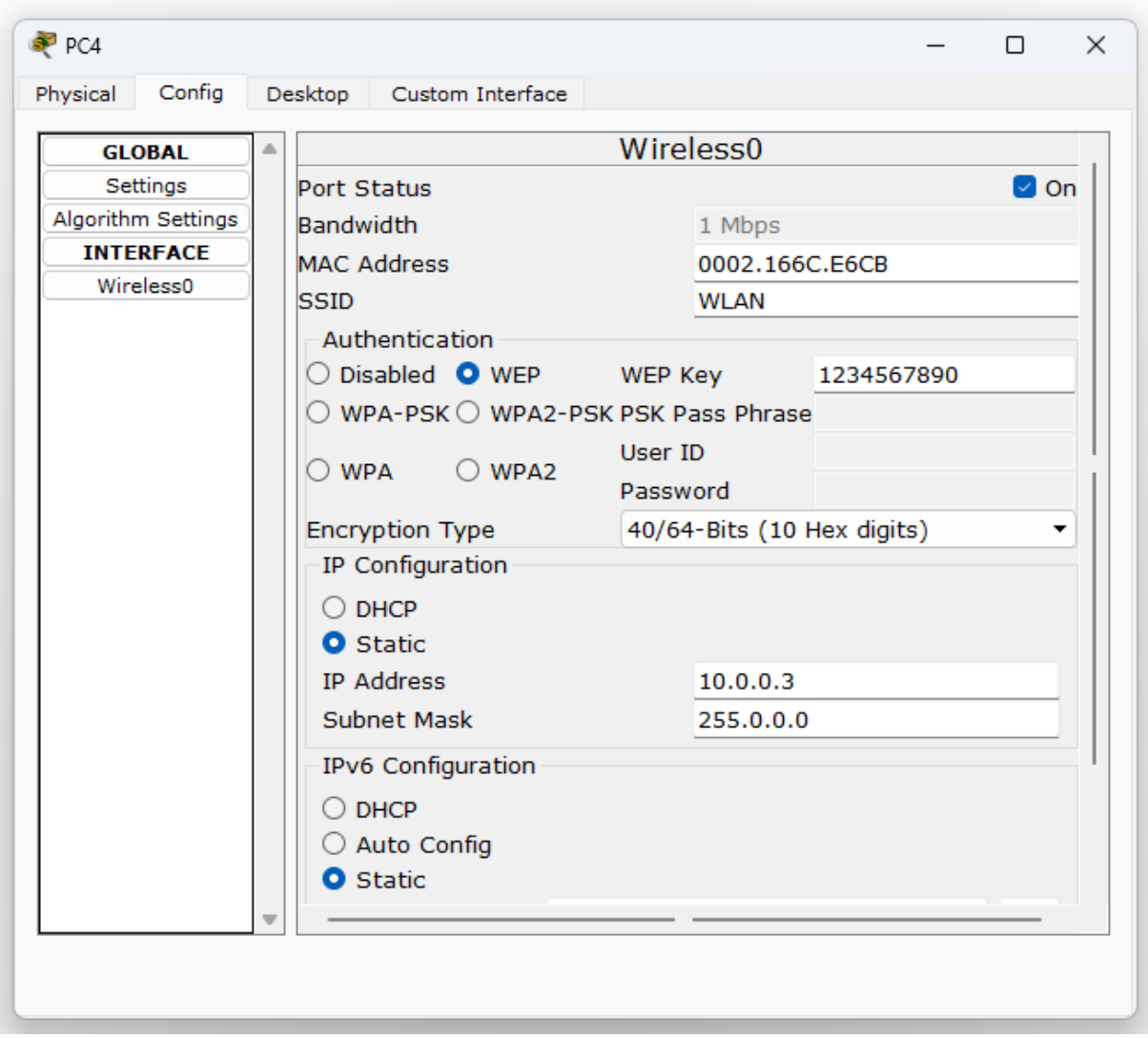
Configuring PC4 and Laptop with Wireless standards

Switch off the device. Drag the existing PT-HOST-NM-1AM to the component listed in the LHS. Drag WMP300N wireless interface to the empty port. Switch On the device.

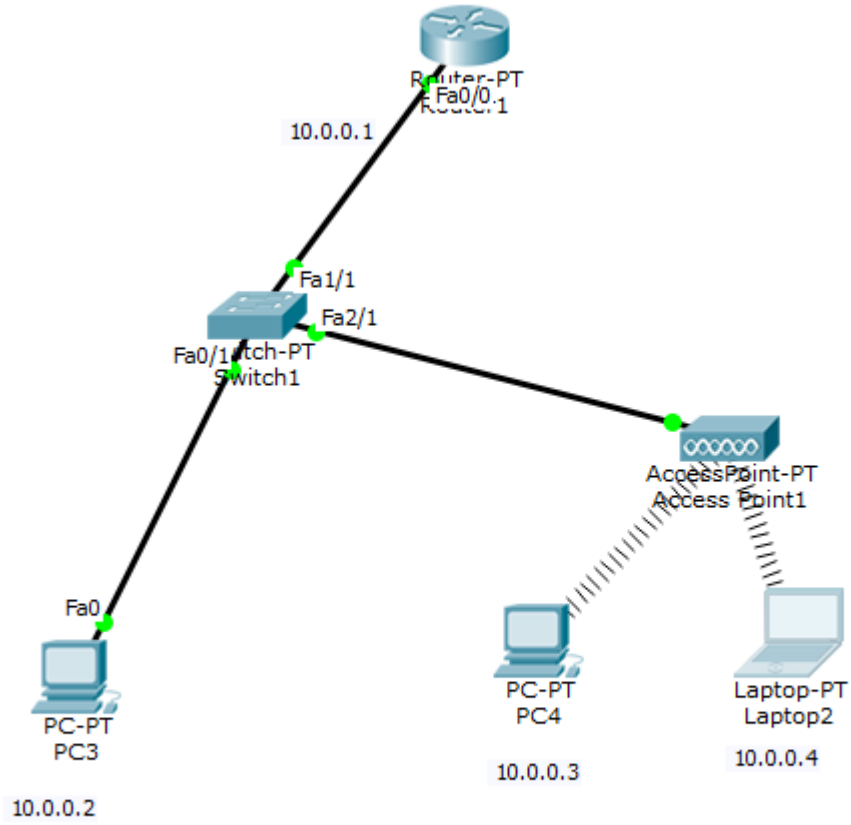




In the config tab a new wireless interface would have been added. Now configure SSID, WEP, WEP Key, IP address and **Gateway** (as normally done) to the device.


PC4
Physical
Config
Desktop
Custom Interface
GLOBAL
Settings
Algorithm Settings
INTERFACE
Wireless0
Wireless0
Port Status
On
Bandwidth
1 Mbps
MAC Address
0002.166C.E6CB
SSID
WLAN
Authentication
Disabled
WEP
WEP Key
1234567890
WPA-PSK
WPA2-PSK
PSK Pass Phrase
WPA
WPA2
User ID
Password
Encryption Type
40/64-Bits (10 Hex digits)
IP Configuration
DHCP
Static
IP Address
10.0.0.3
Subnet Mask
255.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static

Final topology on screen

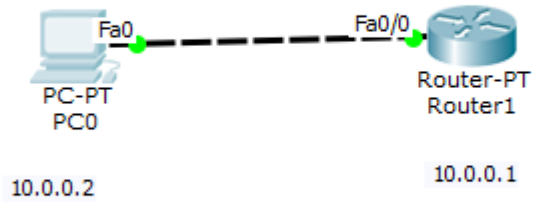


Ping from every device to every other device and see the results

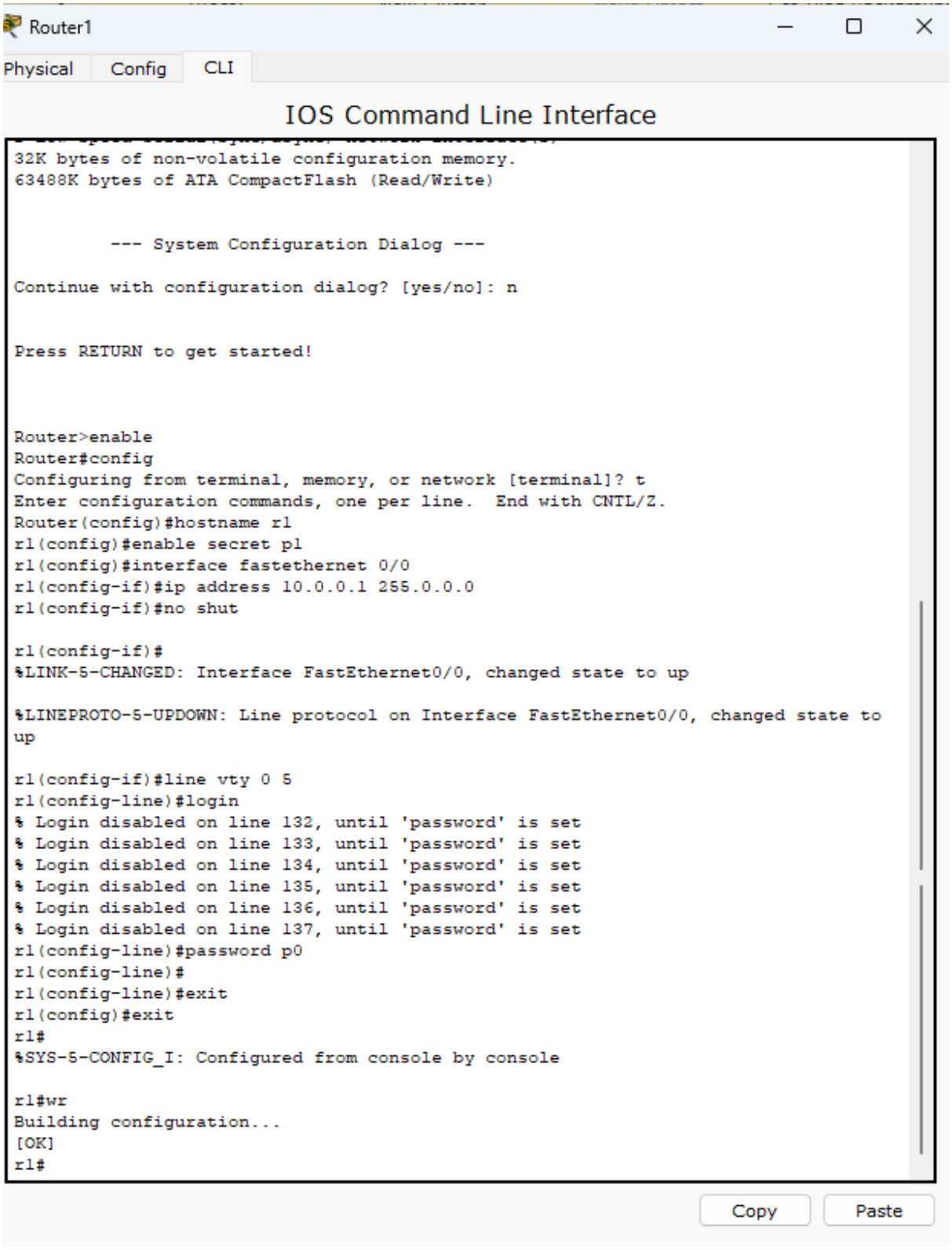
Telnet

To understand the operation of TELNET by accessing the router in server room from a PC in IT office.

Telnet, developed in 1969, is a protocol that provides a command line interface for communication with a remote device or server, sometimes employed for remote management but also for initial device setup like network hardware. Telnet stands for **Teletype Network**, but it can also be used as a verb; 'to telnet' is to establish a connection using the Telnet protocol. Telnet is a simple, text-based network protocol that is used for accessing remote computers over TCP/IP networks like the Internet.



Commands in Router



enable

config t

hostname R1

enable secret p1

interface fastethernet 0/0

ip address 10.0.0.1 255.0.0.0

no shut

line vty 0 5 --to allow virtual terminal access for 6 users

login

password p0

exit

exit

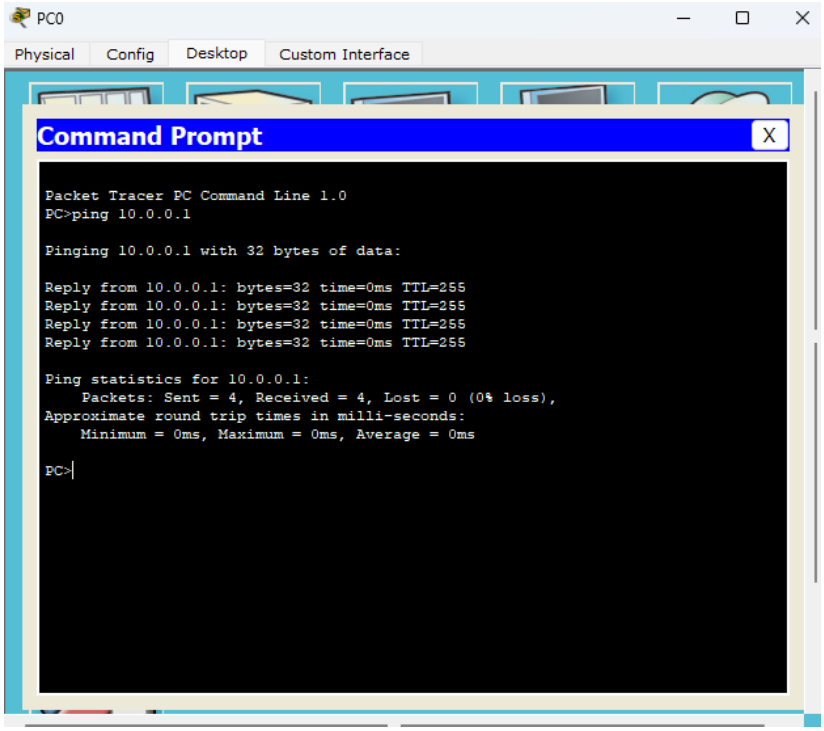
wr – to save changes in router

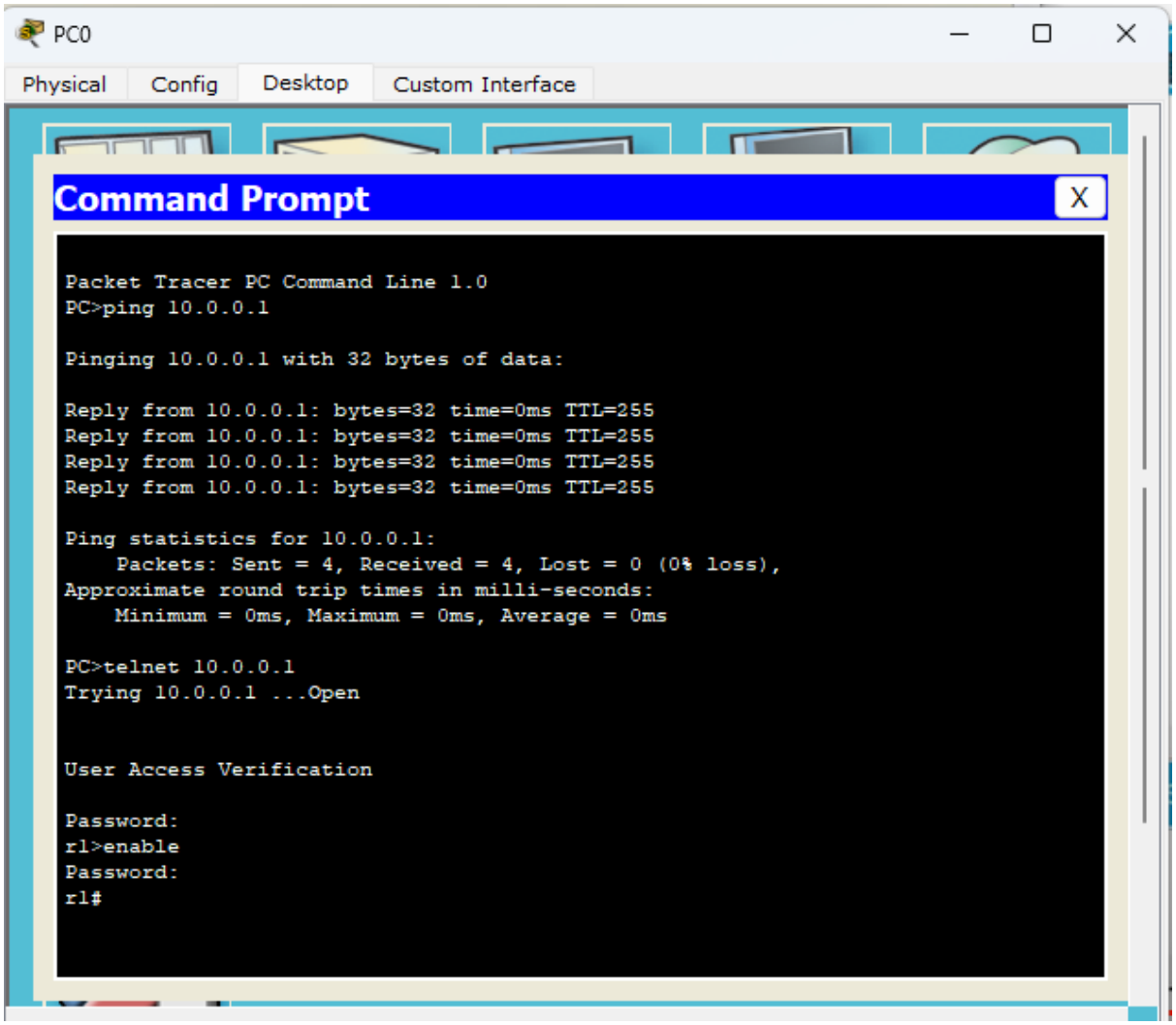
Commands in PC

In command prompt,

Ping 10.0.0.1

Ping results seen

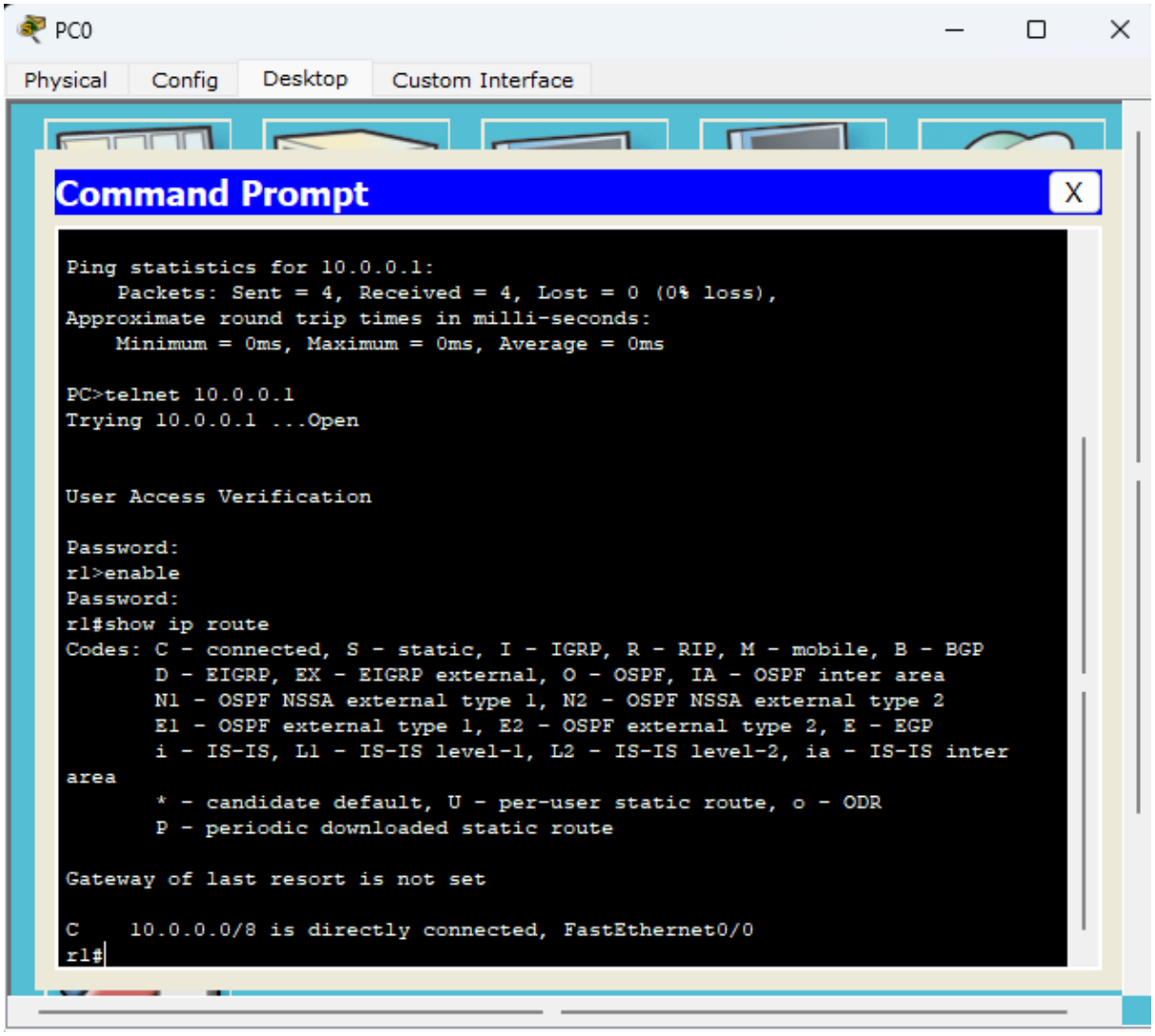




Password for User Access Verification is p0

Password for enable is p1

Accessing router CLI from PC



The admin in PC is able to run commands as run in router CLI and see the result from PC.