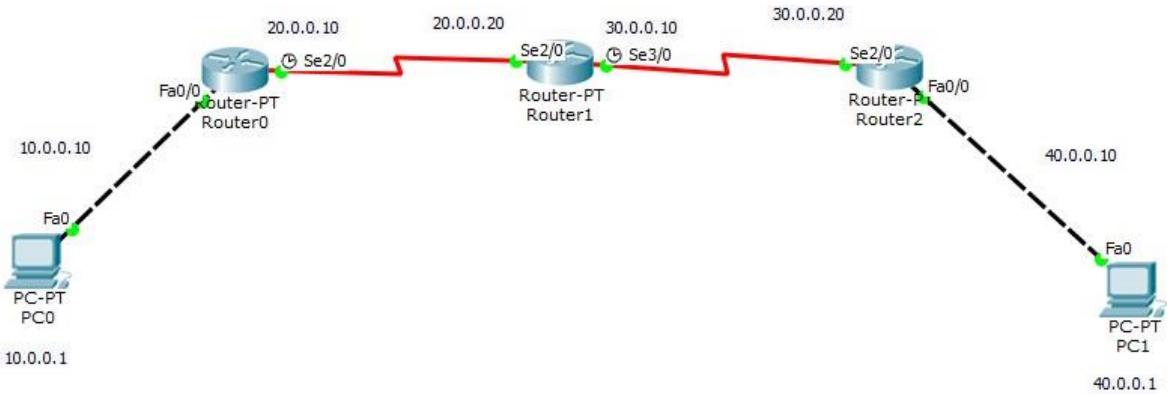
LAB 10:

Aim : Demonstrate the TTL/ Life of a Packet

Topology:

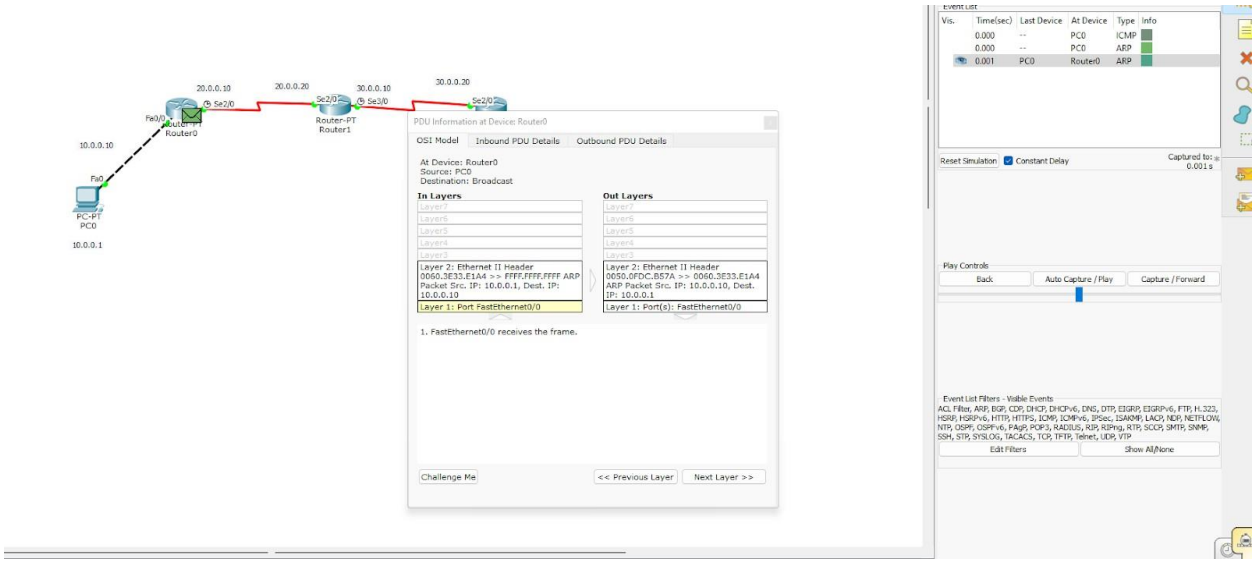


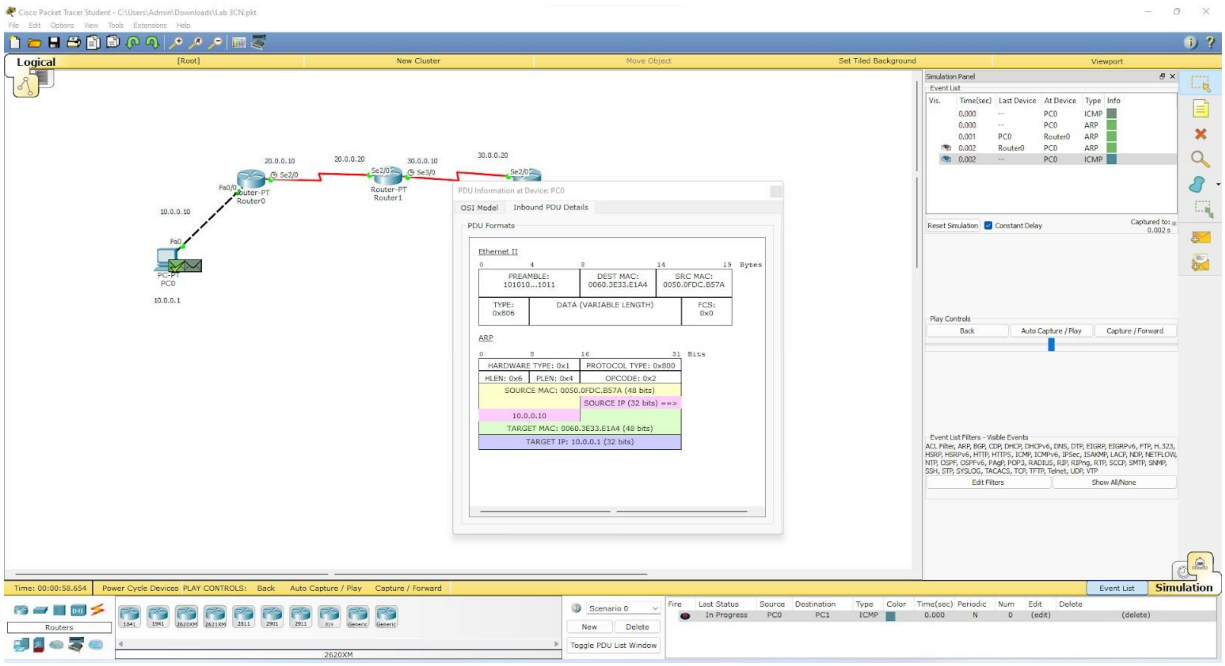
Configurations:

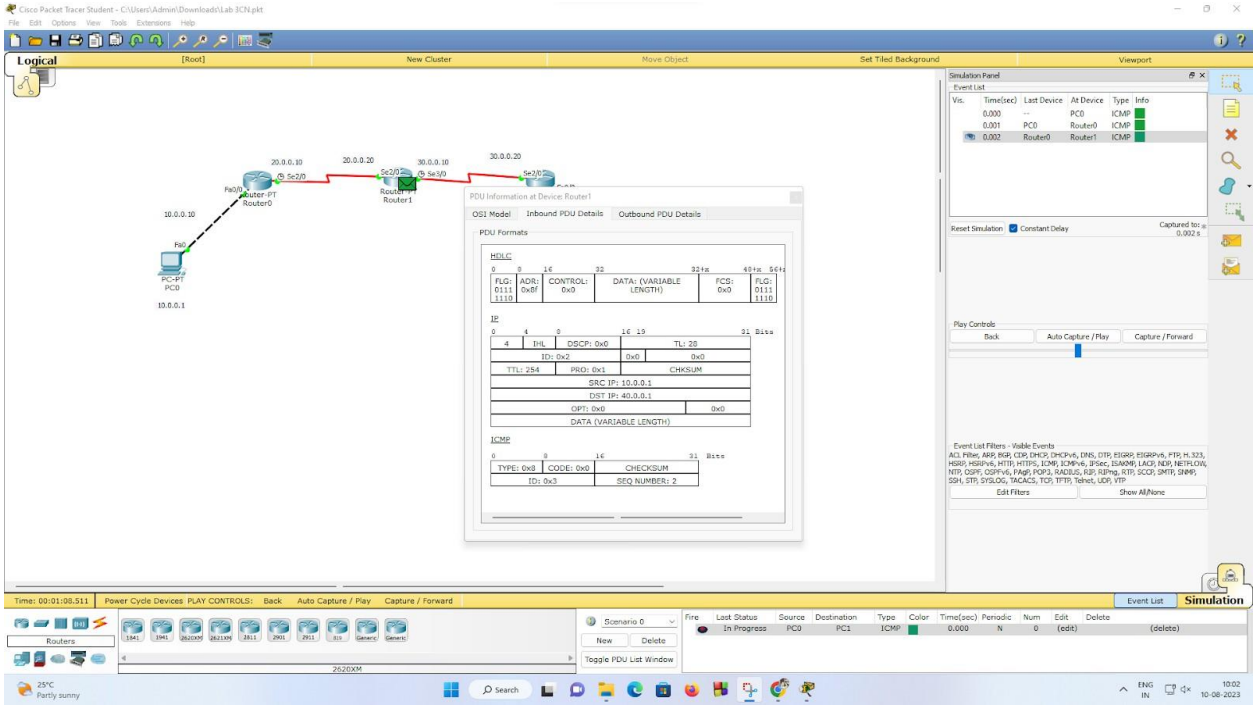
Configure the devices as per static / default / dynamic routing.
Above is done using static routing.

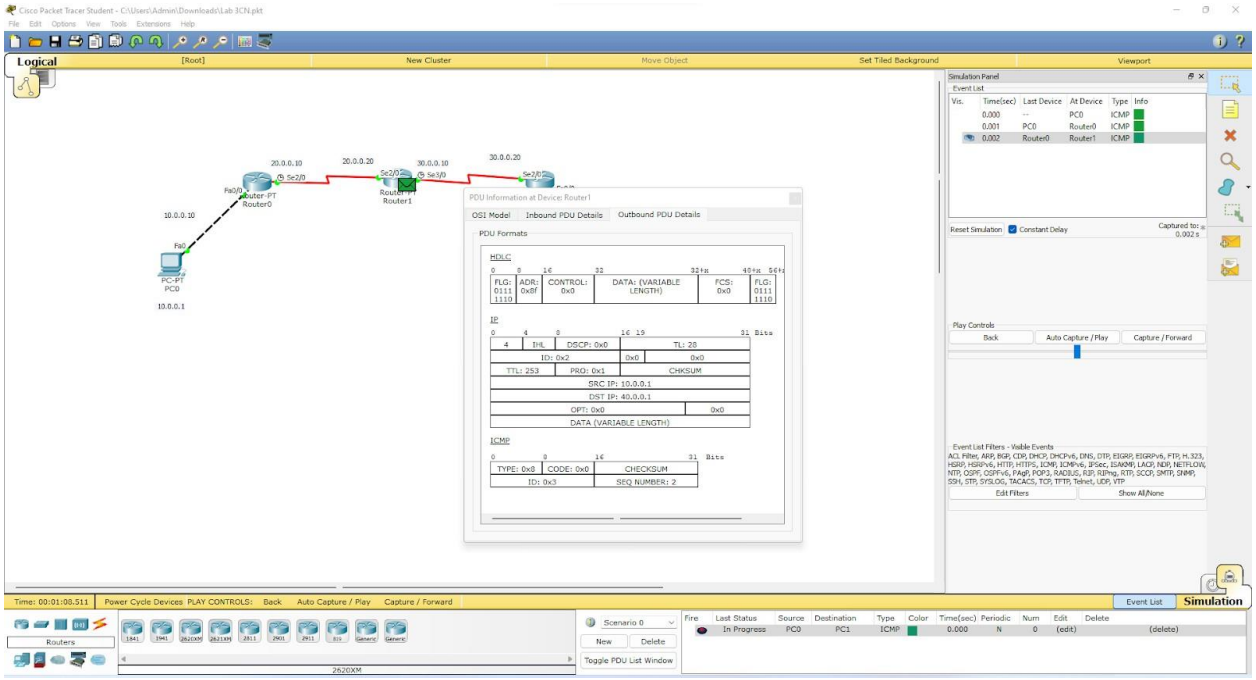
PDU Details:

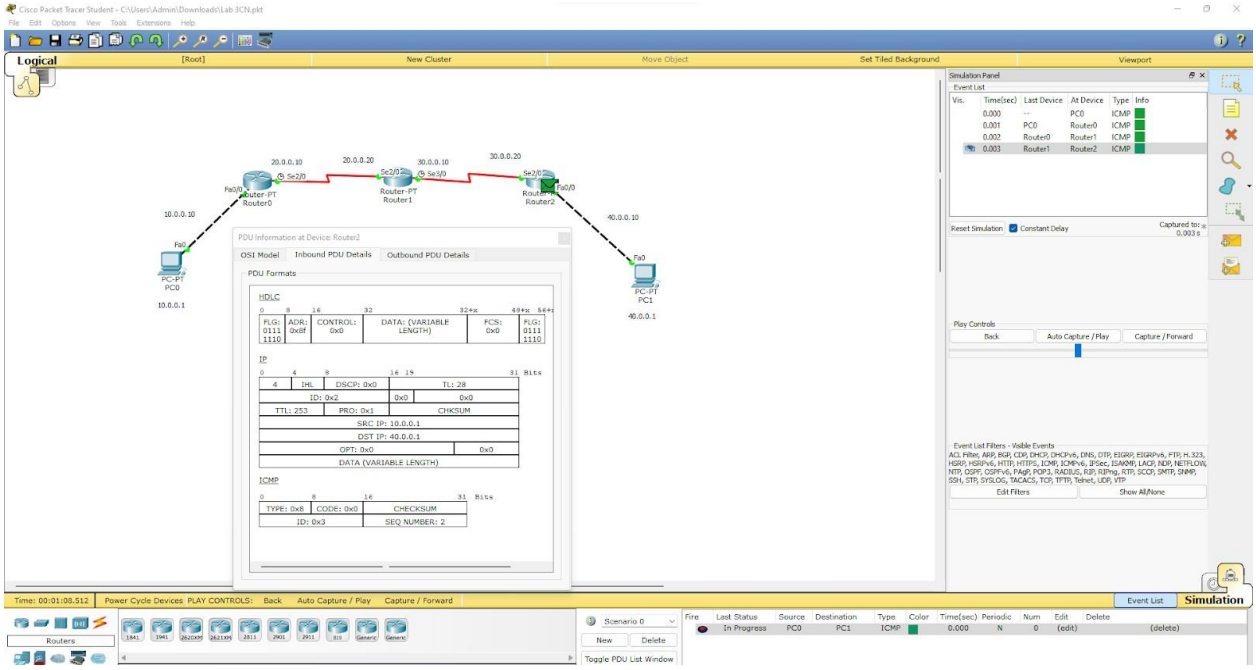
Simple PDU sent from PC0 to PC1 in simulation mode.

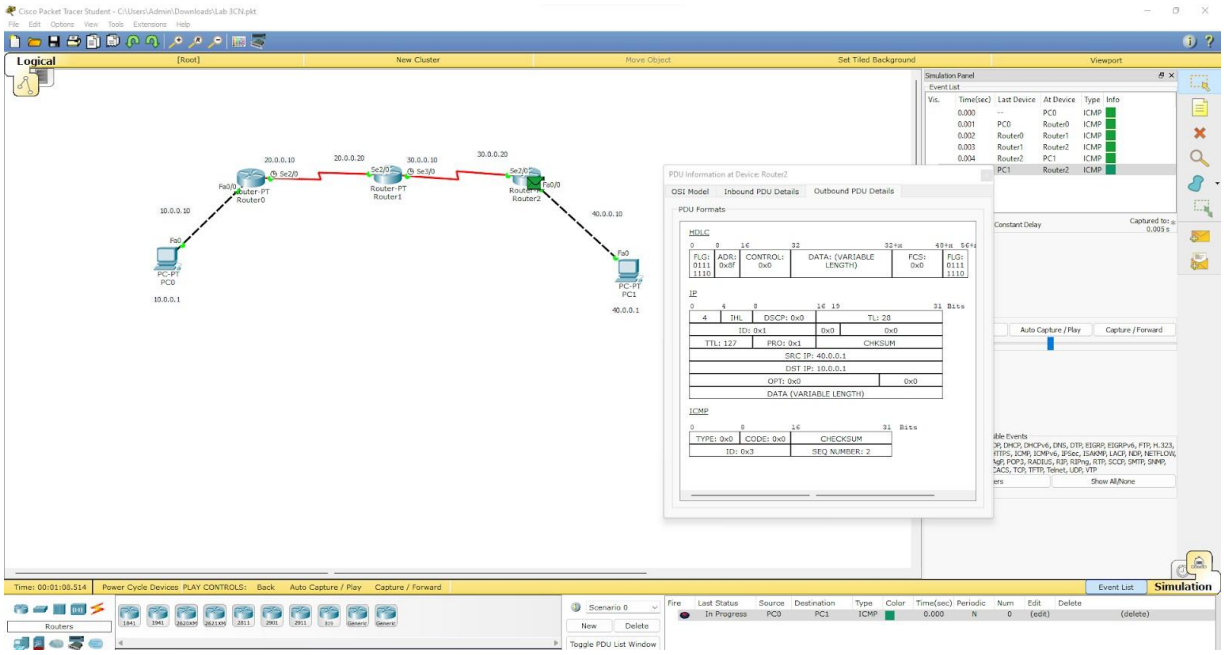


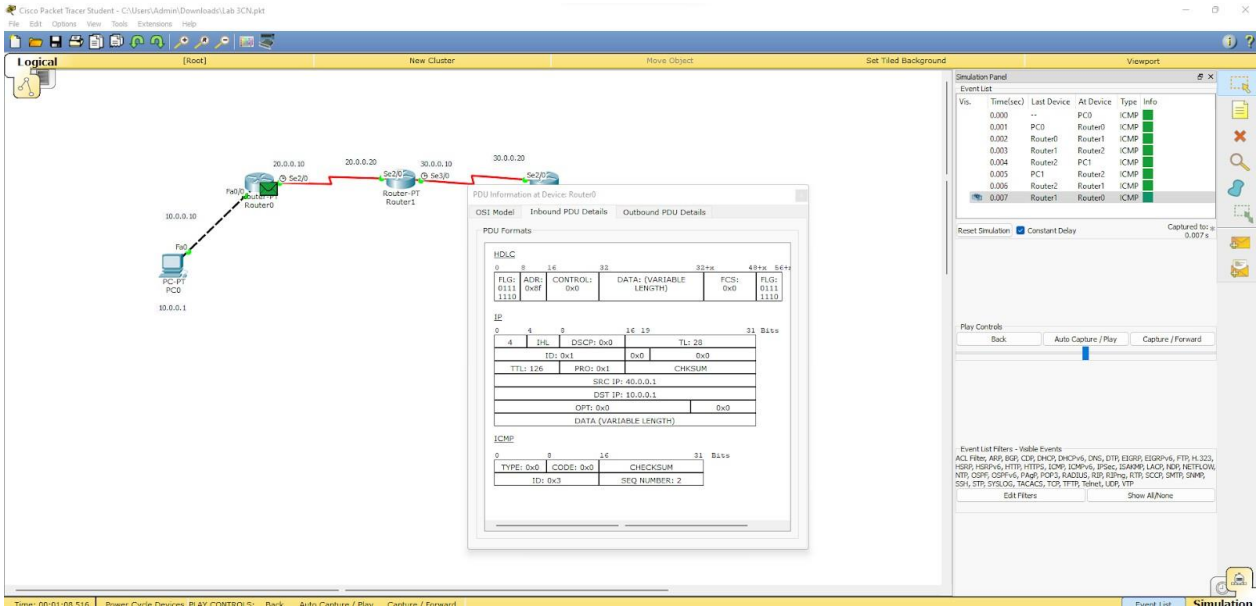


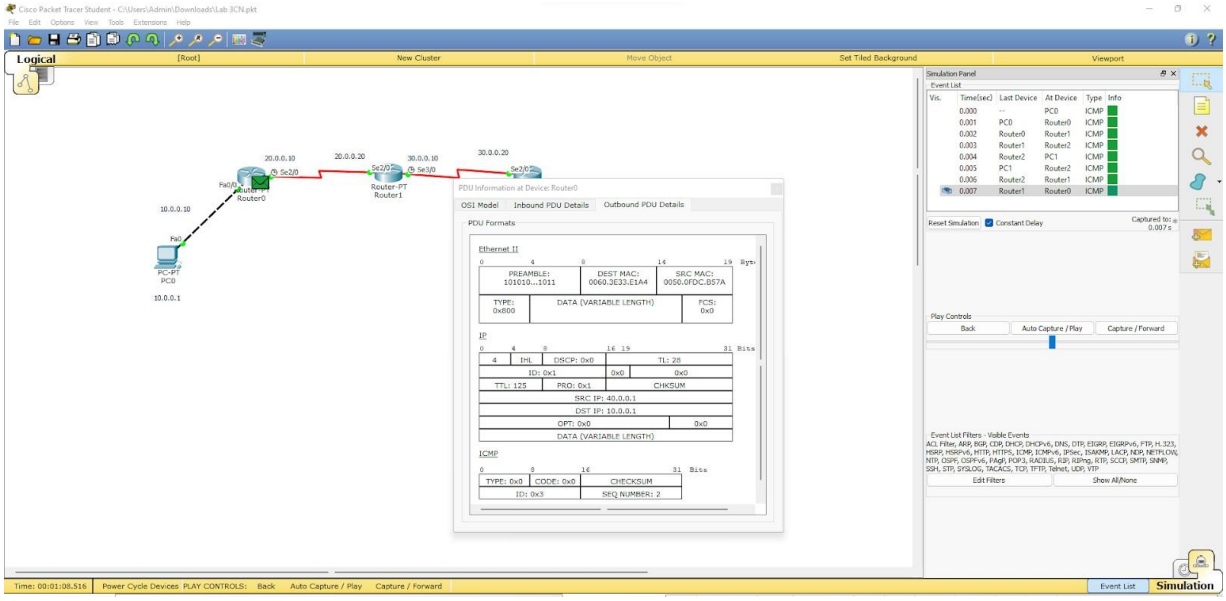

Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router-PT
Router0
Router1
PC-PT
PC0
10.0.0.1
10.0.0.10
20.0.0.10
20.0.0.20
30.0.0.10
30.0.0.20
Fa0/0
Se2/0
Se3/0
Fa0
PDU Information at Device Router1
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
IP
ICMP
Simulation Panel
Event List
Reset Simulation
Constant Delay
Play Controls
Back
Auto Capture / Play
Capture / Forward
Event List Filters - Visible Events
Edit Filters
Show All/None
Time: 00:01:08.511
Power Cycle Devices
PLAY CONTROLS:
Back
Auto Capture / Play
Capture / Forward
Event List
Simulation
Routers
2620XM
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete
In Progress
PC0
PC1
ICMP
0.000
N
0
(edit)
(delete)
25°C
Partly sunny
Search
ENG
IN
10:02
10-08-2023

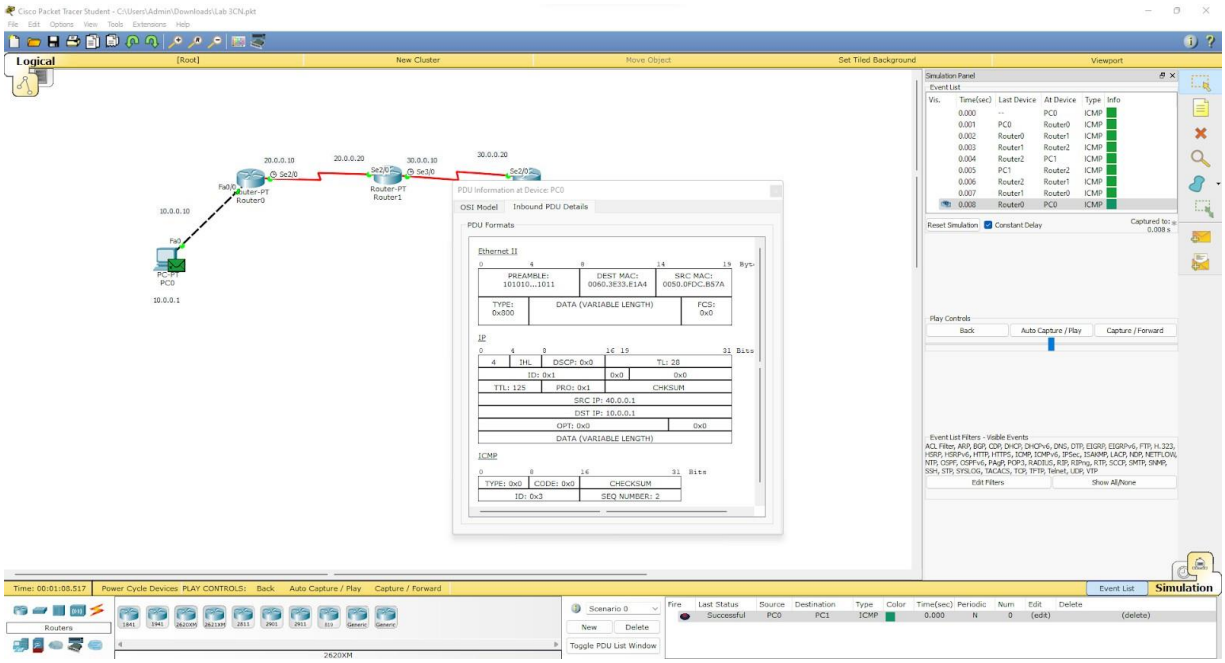

Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router-PT
Router0
Router1
PC-PT
PC0
10.0.0.1
10.0.0.10
20.0.0.10
20.0.0.20
30.0.0.10
30.0.0.20
Fa0/0
Se2/0
Se3/0
Fa0
PDU Information at Device Router1
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
IP
ICMP
Simulation Panel
Event List
Reset Simulation
Constant Delay
Play Controls
Back
Auto Capture / Play
Capture / Forward
Event List Filters - Visible Events
Edit Filters
Show All/None
Time: 00:01:08.511
Power Cycle Devices
PLAY CONTROLS:
Back
Auto Capture / Play
Capture / Forward
Event List
Simulation
Routers
2620XM
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete
In Progress
PC0
PC1
ICMP
0.000
N
0
(edit)
(delete)


Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router-PT Router0
Router-PT Router1
Router-PT Router2
PC-PT PC0
PC-PT PC1
10.0.0.10
10.0.0.1
20.0.0.10
20.0.0.20
30.0.0.10
30.0.0.20
40.0.0.10
40.0.0.1
PDU Information at Device: Router2
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
IP
ICMP
Simulation Panel
Event List
Simulation


Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router-PT Router0
Router-PT Router1
Router-PT Router2
PC-PT PC0
PC-PT PC1
10.0.0.10
10.0.0.1
20.0.0.10
20.0.0.20
30.0.0.10
30.0.0.20
40.0.0.10
40.0.0.1
PDU Information at Device: Router2
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
IP
ICMP
Simulation Panel
Event List
Simulation

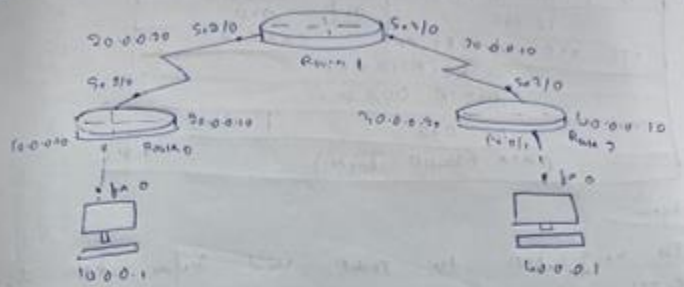

Cisco Packet Tracer Student - C:\Users\Admin\Downloads\Lab 3CN.pkt
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
20.0.0.10
20.0.0.20
30.0.0.10
30.0.0.20
Se2/0
Se3/0
Fa0/0
Router0
Router-PT
Router1
10.0.0.10
Fa0
PC-PT
PC0
10.0.0.1
PDU Information at Device: Router0
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
FLG: 0111 1110
ADR: 0x8f
CONTROL: 0x0
DATA: (VARIABLE LENGTH)
FCS: 0x0
IP
4
IHL
DSCP: 0x0
TL: 28
ID: 0x1
TTL: 126
PRO: 0x1
CHKSUM
SRC IP: 40.0.0.1
DST IP: 10.0.0.1
OPT: 0x0
DATA (VARIABLE LENGTH)
ICMP
TYPE: 0x0
CODE: 0x0
CHECKSUM
ID: 0x3
SEQ NUMBER: 2
Simulation Panel
Event List
Vis.
Time(sec)
Last Device
At Device
Type
Info
0.000 -- PC0 ICMP
0.001 PC0 Router0 ICMP
0.002 Router0 Router1 ICMP
0.003 Router1 Router2 ICMP
0.004 Router2 PC1 ICMP
0.005 PC1 Router2 ICMP
0.006 Router2 Router1 ICMP
0.007 Router1 Router0 ICMP
Reset Simulation
Constant Delay
Play Controls
Back
Auto Capture / Play
Capture / Forward
Edit Filters
Show All/None
Simulation


Cisco Packet Tracer Student - C:\Users\Admin\Downloads\Lab 3CN.pkt
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
20.0.0.10
20.0.0.20
30.0.0.10
30.0.0.20
Se2/0
Se3/0
Fa0/0
Router0
Router-PT
Router1
10.0.0.10
Fa0
PC-PT
PC0
10.0.0.1
PDU Information at Device: Router0
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
Ethernet II
PREAMBLE: 10101010...1011
DEST MAC: 0060.3E33.E1A4
SRC MAC: 0050.0FDC.B57A
TYPE: 0x800
DATA (VARIABLE LENGTH)
FCS: 0x0
IP
4
IHL
DSCP: 0x0
TL: 28
ID: 0x1
TTL: 125
PRO: 0x1
CHKSUM
SRC IP: 40.0.0.1
DST IP: 10.0.0.1
OPT: 0x0
DATA (VARIABLE LENGTH)
ICMP
TYPE: 0x0
CODE: 0x0
CHECKSUM
ID: 0x3
SEQ NUMBER: 2
Simulation Panel
Event List
Vis.
Time(sec)
Last Device
At Device
Type
Info
0.000 -- PC0 ICMP
0.001 PC0 Router0 ICMP
0.002 Router0 Router1 ICMP
0.003 Router1 Router2 ICMP
0.004 Router2 PC1 ICMP
0.005 PC1 Router2 ICMP
0.006 Router2 Router1 ICMP
0.007 Router1 Router0 ICMP
Reset Simulation
Constant Delay
Play Controls
Back
Auto Capture / Play
Capture / Forward
Edit Filters
Show All/None
Time: 00:01:08.516
Power Cycle Devices
PLAY CONTROLS:
Back
Auto Capture / Play
Capture / Forward
Event List
Simulation


Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
20.0.0.10
20.0.0.20
30.0.0.10
30.0.0.20
Se2/0
Se3/0
Fa0/0
Router-PT
Router0
Router1
10.0.0.10
Fa0
PC-PT
PC0
10.0.0.1
PDU Information at Device: PC0
OSI Model
Inbound PDU Details
PDU Formats
Ethernet II
PREAMBLE: 10101010...1011
DEST MAC: 0060.3E33.E1A4
SRC MAC: 0050.0FDC.B57A
TYPE: 0x800
DATA (VARIABLE LENGTH)
FCS: 0x0
IP
4
IHL
DSCP: 0x0
TL: 28
ID: 0x1
0x0
TTL: 125
PRO: 0x1
CHKSUM
SRC IP: 40.0.0.1
DST IP: 10.0.0.1
OPT: 0x0
DATA (VARIABLE LENGTH)
ICMP
TYPE: 0x0
CODE: 0x0
CHECKSUM
ID: 0x3
SEQ NUMBER: 2
Simulation Panel
Event List
Vis.
Time(sec)
Last Device
At Device
Type
Info
Reset Simulation
Constant Delay
Play Controls
Back
Auto Capture / Play
Capture / Forward
Edit Filters
Show All/None
Time: 00:01:05.517
Power Cycle Devices
PLAY CONTROLS:
Routers
2620XM
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Periodic
Num
Edit
Delete
Successful
PC0
PC1
ICMP
(edit)
(delete)
Simulation

Aim:- Demonstrate the TTL / Lifetime of a Packet

Procedure:-



1) Create a topology as shown above two PC's and 3 Routers
2) Set the IP address and gate way for PC's
3) Config the Routers
4) In simulation mode send a simple PDU from one PC to another
5) Use capture button to capture packets transfer
6) Click on the PDU data during packet transfer to see the inbound & outbound PDU details

Output

IP

0	4	8	16	19
4	IHL	DSCP	TL : 28	
ID 0x5			0x /	0x0
TTL 255		PRO : 01	CHKSUM	
SRC IP : 10.0.0.1				
DST IP : 10.0.0.1				
OPT 0x0				0x0
DATA (variable length)				

Observation

- The no. of hops the packet travel before being discarded as TTL
- Once TTL field is set by the sender and reduced by each router along the path to its destination.
- When ICMP message the TTL value is 0, the router discards and sends an ICMP message