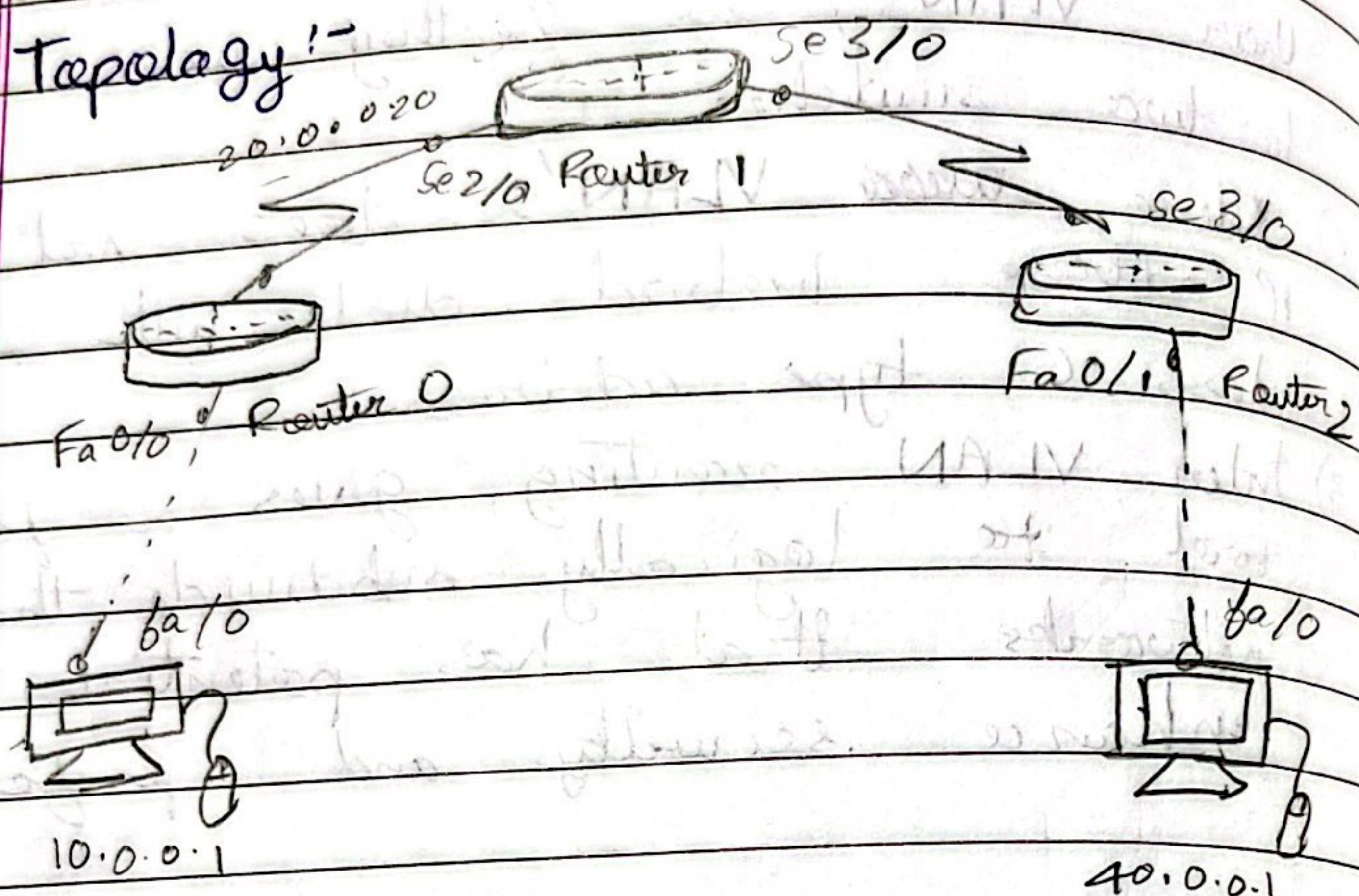


## LAB-10

Aim :-

Demonstrate the TTL / life of a packet

Topology :-



Procedure :-

- Create a topology as shown with two PC's and 3 routers
- Set IP address and gateway for both PC's
- Configure the routers either static/default routing way.
- In 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
- Click on the PDU during every transfer to see the inbound and outbound PDU details.



## Output

IP

0 4 8 16 24 32

4 IHL DSCP TL: 28

IP: 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)

## Observation :-

- The no of hops the packet before being discarded as TTL
- Datagram TTL field is set by the sender and reduced by each router along path to destination.
- The router reduces TTL value by one while forwarding the packets.
- When TTL value is 0, the router discards and sends an ICMP message

NP  
1/9/2023



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

Se2/0

Se2/0

Se3/0

Fa0/0

Fa0/0

Fa0

Fa0

PDU Information at Device: PC0

OSI Model

Outbound PDU Details

PDU Formats

Ethernet II

0481419ytes

PREAMBLE:101010...101

DEST MAC:

SRC MAC:

TYP E:

DATA (VARIABLE LENGTH)

FCS :

IP

048161931bits

4 IHL DSCP: TL: 28

ID: 0x2 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

081631bits

TYPE: CODE: CHECKSUM

ID: 0x3 SEQ NUMBER: 2

Simulation Panel

Event List

Vis. Time(sec) Last De At Dev Type Info

0.000 -- PC0 ICMP

Reset Simulation

Constant Delay

Captured t0.000

Play Controls

Back

Auto Capture / Play

Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

Edit Filters

Show All/None

Time: 00:00:24.545

Power Cycle Devices

PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Routers

1841

1941

2620XM

2621XM

2811

2901

2911

819

Generic

Generic

Scenario 0

New Delete

Fire Last Statu Sourc Destinatio Type Colo Time( Period Num Edit Delete

In Progr... PC0 PC1 IC... 0.000 N 0 (ed... (de

Scanned with CamScanner



Root

New Cluster

Move Object

Set Tiled Background

Viewport

Simulation Panel

Event List

	Time(sec)	Last De	At Dev	Type	Info
	0.000	--	PC0	ICMP	
	0.001	PC0	Rout...	ICMP	

set Simulation

☒ Constant Delay

Captu

ay Controls

Back

Auto Capture / Play

Capture / For

Event List Filters - Visible Events

Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTI

RP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, N

OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SI

SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

Edit Filters

Show All/None

Event List

S

Sourc	Destinatio	Type	Colo	Time(s)	Period	Num	Edit	Dele
						0	(ed...	

00:00:24.546

Power Cycle Devices

PLAY CONTROLS: Back Auto

Routers

1841

1941

2620XM

2621XM

2811

2901

2911

819

Generic

Generic

Router-PT Router0

Router-PT Router1

Router-PT Router2

PC-PT PC0

PC-PT PC1

Se2/0

Se3/0

Se2/0

Fa0/0

Fa0

PDU Information at Device: Router0

OSI Model

Inbound PDU Details

Outbound PDU Details

PDU Formats

HDLC

0	8	16	32	2+x	8+x	6+x	31 bits
FL	AD	CONTR	DATA:	FCS:	FL		
G:	R:	OL:	(VARIABLE	0x0	G:		

IP

0	4	8	16	19	31	31 bits
4	IHL	DSCP:	TL: 28			
ID: 0x2		0x	0x0			
TTL: 254	PRO: 0x1	CHKSUM				
SRC IP: 10.0.0.1						
DST IP: 40.0.0.1						
OPT: 0x0					0x0	
DATA (VARIABLE LENGTH)						

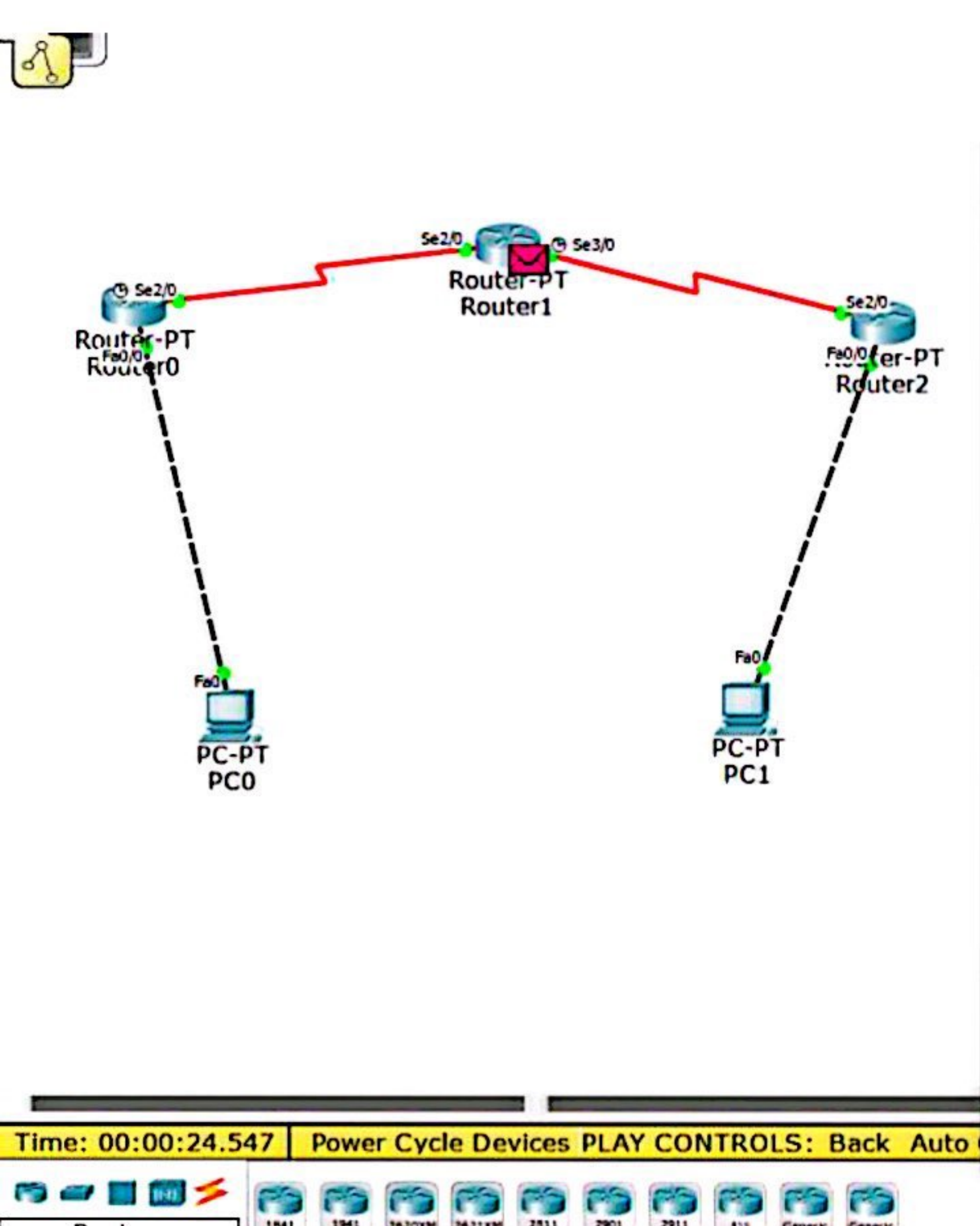
ICMP

0	8	16	31	31 bits
TYPE:	CODE:	CHECKSUM		
ID: 0x3	SEQ NUMBER: 2			

New

Delete





OSI Model	Inbound PDU Details	Outbound PDU Details
7	Application	Application
6	Presentation	Presentation
5	Session	Session
4	Transport	Transport
3	Network	Network
2	Data Link	Data Link
1	Physical	Physical

## HDLC

IP																								
0				4				8				16				19				31				bits
4		IHL		DSCP:				TL: 28																
ID: 0x2								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)																								

0	8	16	31 bits
TYPE:	CODE:	CHECKSUM	
ID: 0x3		SEQ NUMBER: 2	

set Simulation ☒ Constant Delay

### by Controls

**Back**

**Auto Capture / Play**

Capture / Forward

### Event List Filters - Visible Events

Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, IP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NETFLOW, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

## Edit Filters

Show All/None

Event List **Simula**

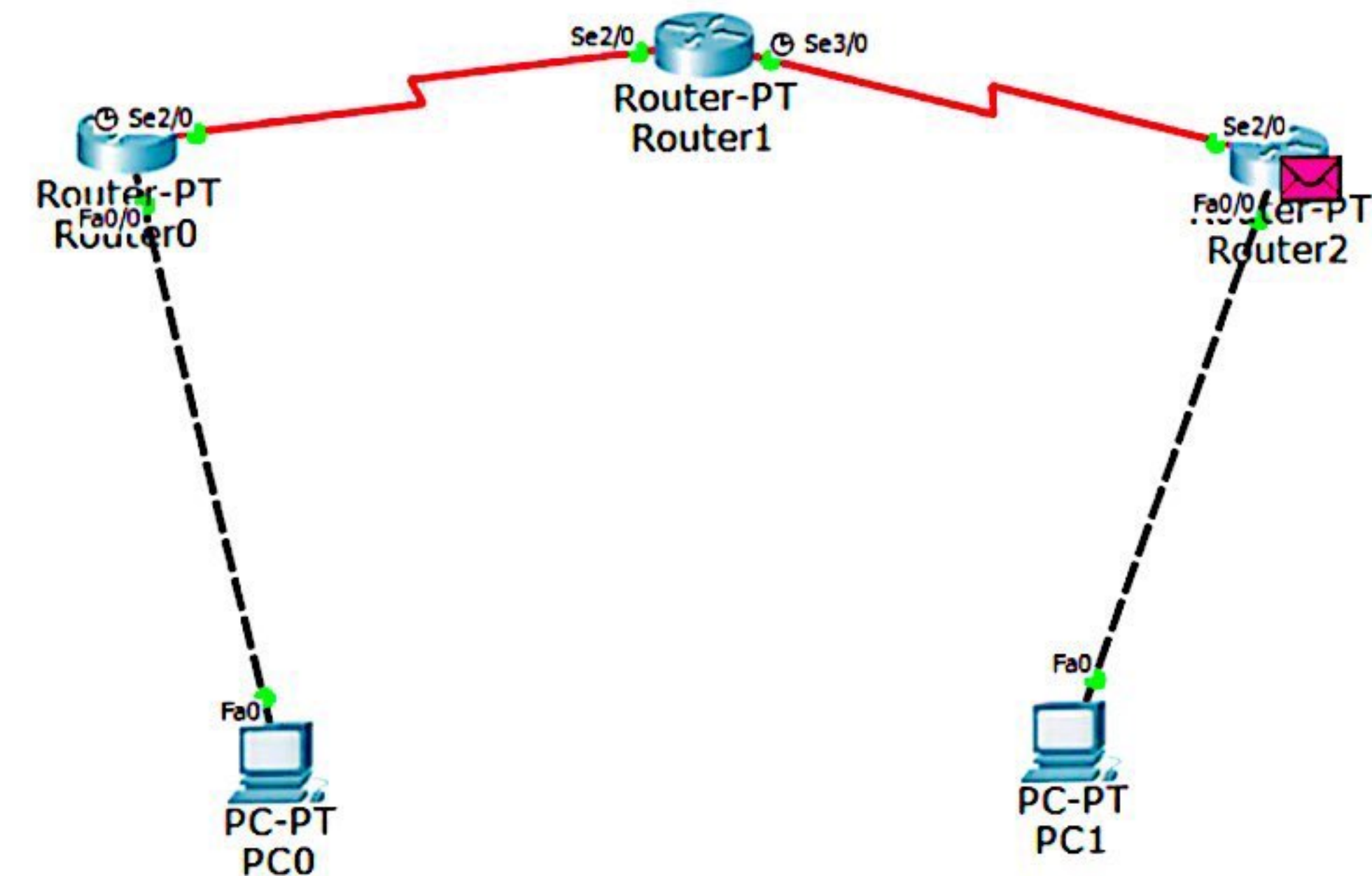
## Simula

## Scenario 0

Fire	Last Stat	Source	Destination	Type	Color	Time(s)	Period	Num	Edit	Delete
------	-----------	--------	-------------	------	-------	---------	--------	-----	------	--------

(delete





## PDU Information at Device: Router2

OSI Model    Inbound PDU Details    Outbound PDU Details

### PDU Formats

#### Ethernet II

0	4	8	14	19 bytes
PREAMBLE:	DEST MAC:	SRC MAC:		
101010...101				
TYP E:	DATA (VARIABLE LENGTH)	FCS :		

#### IP

0	4	8	16	19	31 bits
4	IHL	DSCP:	TL: 28		
ID: 0x2			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

0	8	16	31 bits
TYPE:	CODE:	CHECKSUM	
ID: 0x3		SEQ NUMBER: 2	

## Event List

s.	Time(sec)	Last De	At Dev	Type	Info
0.000	--	PC0		ICMP	
0.001	PC0	Rout...		ICMP	
0.002	Router0	Rout...		ICMP	
0.003	Router1	Rout...		ICMP	

set Simulation ☒ Constant Delay

Play Controls

Back

Auto Capture / Play

Capture / Forward

Event List Filters - Visible Events

Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NET, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

Edit Filters

Show All/None

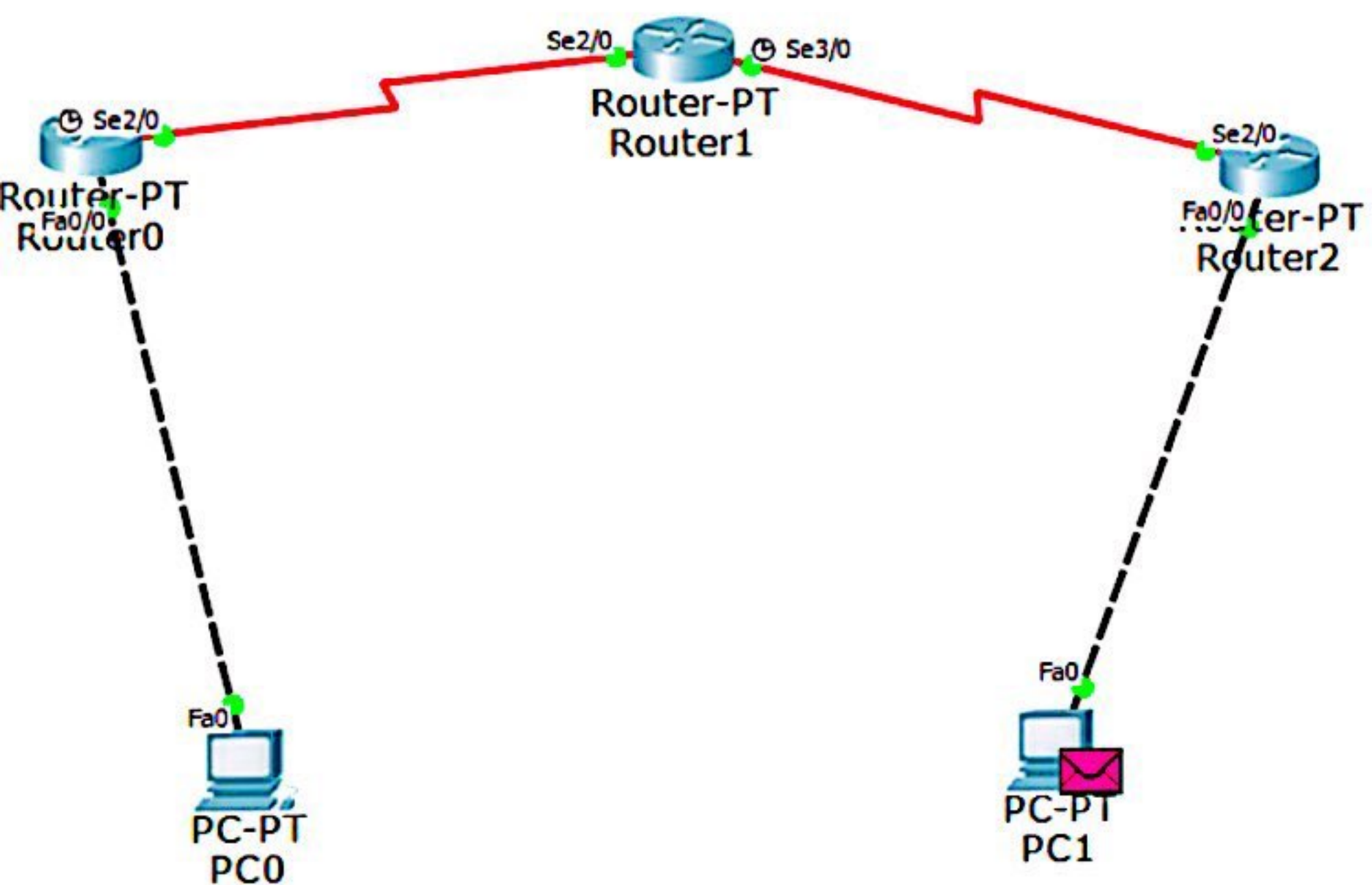
Event List

Sim

00:00:24.548 Power Cycle Devices PLAY CONTROLS: Back Auto

Scanned with CamScanner





## PDU Formats

### Ethernet II

0	4	8	14	19 ytes
PREAMBLE: 101010...101		DEST MAC:		SRC MAC:
TYPE: E:	DATA (VARIABLE LENGTH)			FCS :

### IP

0	4	8	16	19	31 bits
4	IHL	DSCP:	TL: 28		
ID: 0x1			0x	0x0	
TTL: 128	PRO: 0x1	CHKSUM			
SRC IP: 40.0.0.1					
DST IP: 10.0.0.1					
OPT: 0x0				0x0	
DATA (VARIABLE LENGTH)					

### ICMP

0	8	16	31	bits
TYPE:		CODE:		CHECKSUM
ID: 0x3		SEQ NUMBER: 2		

Vis.	Time(sec)	Last De	At Dev	Type	Info
	0.000	--	PC0	ICMP	
	0.001	PC0	Rout...	ICMP	
	0.002	Router0	Rout...	ICMP	
	0.003	Router1	Rout...	ICMP	
	0.004	Router2	PC1	ICMP	

Reset Simulation ☒ Constant Delay

Captured  
0.00

## Play Controls

Back

Auto Capture / Play

Capture / Forward

## Event List Filters - Visible Events

CL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NETF, ITP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMF, TP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

Edit Filters

Show All/None