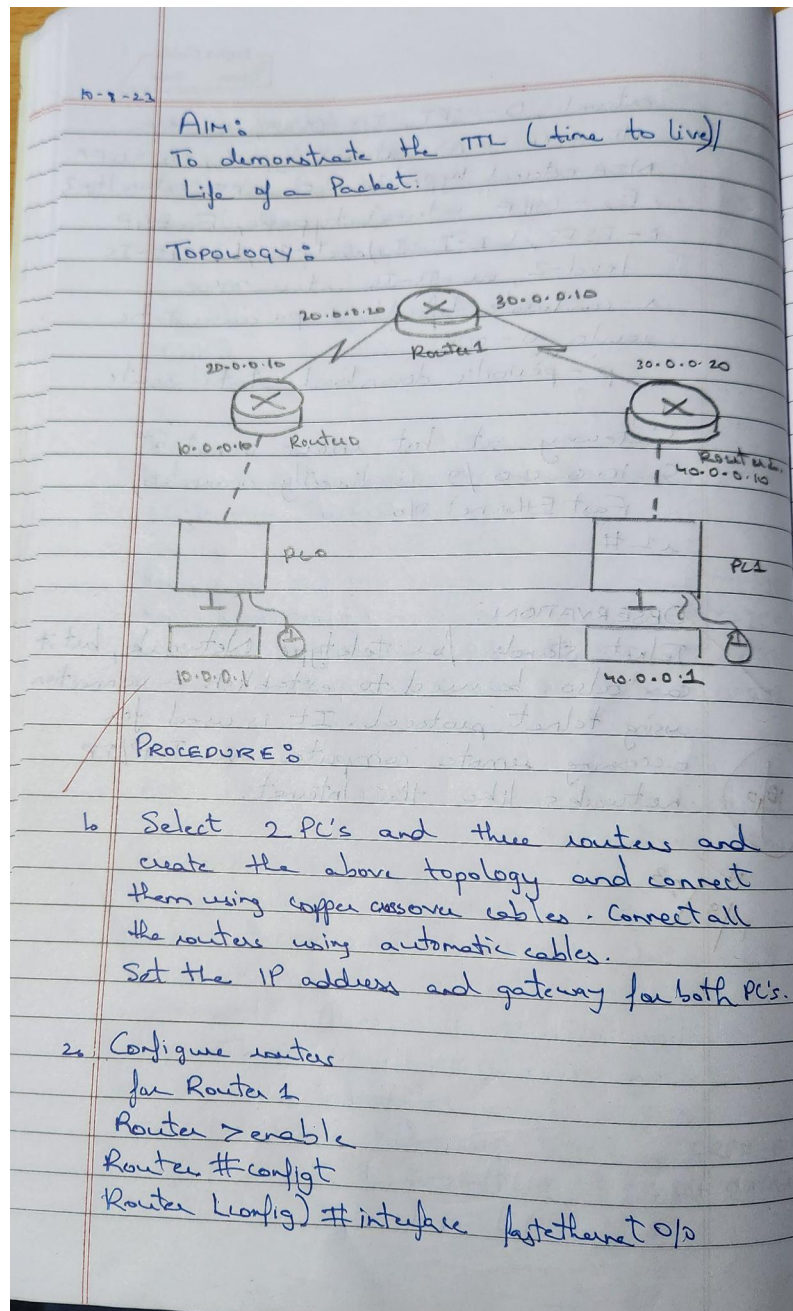


# EXPERIMENT 7

## AIM:

Demonstrate the TTL/ Life of a Packet.

## OBSERVATION:



```
Router (config-if) # ip address 10.0.0.10 255.0.0.0
Router (config-if) # no shut
Router (config-if) # exit
Router (config) # interface serial 2/0
Router (config-if) # ip address 20.0.0.10 255.0.0.0
Router (config-if) # no shut
Router (config-if) # exit
Router 2 :
```

```
Router > enable
Router # config t
Router (config) # interface serial 2/0
Router (config) # ip address 20.0.0.20 255.0.0.0
Router (config-if) # no shut
Router (config-if) # exit
Router (config) # interface 35.0.0.10 255.0.0.0 serial 3/0
Router (config-if) # ip address 30.0.0.10 255.0.0.0
Router (config-if) # no shut
Router (config-if) # exit
```

```
Router 3:
Router > enable
Router # config t
Router (config) # interface serial 2/0
Router (config-if) # ip address 30.0.0.20 255.0.0.0
Router (config-if) # no shut
Router (config-if) # exit
Router (config) # interface fastethernet 0/0
Router (config-if) # ip address 40.0.0.10 255.0.0.0
Router (config-if) # no shut
Router (config-if) # exit
Router (config) # exit
```



Router 1:

Router # config t.

Router (config) # ip route 30.0.0.0 255.0.0.0 20.0.0.20

Router (config) # ip route 40.0.0.0 255.0.0.0 20.0.0.20

Router (config) # exit

Similarly for Router 2:

Router # config t

Router (config) # ip route 10.0.0.0 255.0.0.0 20.0.0.10

Router (config) # ip route 40.0.0.0 255.0.0.0 30.0.0.20

Router (config) # exit

Router 3:

Router # config t

Router (config) # ip route 10.0.0.0 255.0.0.0 30.0.0.10

Router (config) # ip route 20.0.0.0 255.0.0.0 30.0.0.10

3. Select simulation mode, select simple PDU send a simple PDU from one PC to another.
4. Use capture button to capture every transfer.
5. Click on the PDU during every transfer to see the inbound and outbound PDU details. Observe that there is a difference of 1 in the TTL when it crosses every router.
- 6.



### OBSERVATION:

Time to live is the amount of time on hops that a packet is set to exist inside a network before being discarded by a router.

### RESULT:

Select the PDU during every transfer to see ~~inbound~~ and inbound and outbound PDU details.

PDU information at Device: PC0

Outbound PDU details

TTL: 255

PDU information at Device: Router0

Inbound PDU details

TTL: 255

Outbound PDU details

TTL: 254

PDU information at Device: Router1

Inbound PDU details

TTL: 254

Outbound PDU details

TTL: 253

PDU information at Device: Router2

Inbound PDU details

TTL: 253

Outbound PDU details

TTL: 252

PDU information at Device: PC1

Inbound PDU details

TTL: 252

N  
17/8/23

10/10

# Result:

## PC0:

The screenshot shows the Cisco Packet Tracer interface with a network topology. PC0 is connected to Router3. The packet capture window displays the following details:

**PDU Information at Device: PC0**

**OSI Model Outbound PDU Details**

**Ethernet II**

0	4	8	14	18
PREAMBLE: 101010...1011		DEST MAC: 0060.4761.9C5D		SRC MAC: 000A.F337.1D04
TYPE: 0x800		DATA (VARIABLE LENGTH)		FCFS: 0x0

**IP**

0	4	8	16	31
ID: 0x10		DSCP: 0x0		TTL: 28
TTL: 255		PRO: 0x1		CHKSUM: 0x0
SRC IP: 10.0.0.1		DST IP: 40.0.0.1		
OPT: 0x0		0x0		
DATA (VARIABLE LENGTH)				

**ICMP**

0	8	16	31
TYPE: 0x8		CODE: 0x0	CHECKSUM: 0x0
ID: 0x11		SEQ NUMBER: 16	

**Simulation Panel**

Vis.	Time(sec)	Last Device	At Device	Type	Info
0.000	--	PC0	Router3	ICMP	

**Event List**

Time(sec)	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
0.000	PC0	Router3	ICMP		0.000	N	0	(edit)	(delete)

## Router 0:

The screenshot shows the Cisco Packet Tracer interface with the same network topology. The packet capture window displays the following details:

**PDU Information at Device: Router3**

**OSI Model Inbound PDU Details Outbound PDU Details**

**Ethernet II**

0	4	8	14	18
PREAMBLE: 101010...1011		DEST MAC: 0060.4761.9C5D		SRC MAC: 000A.F337.1D04
TYPE: 0x800		DATA (VARIABLE LENGTH)		FCFS: 0x0

**IP**

0	4	8	16	31
ID: 0x10		DSCP: 0x0		TTL: 28
TTL: 255		PRO: 0x1		CHKSUM: 0x0
SRC IP: 10.0.0.1		DST IP: 40.0.0.1		
OPT: 0x0		0x0		
DATA (VARIABLE LENGTH)				

**ICMP**

0	8	16	31
TYPE: 0x8		CODE: 0x0	CHECKSUM: 0x0
ID: 0x11		SEQ NUMBER: 16	

**Simulation Panel**

Vis.	Time(sec)	Last Device	At Device	Type	Info
0.000	--	PC0	Router3	ICMP	
0.001	PC0	Router3	Router1	ICMP	
0.002	Router3	Router1	Router2	ICMP	
0.003	Router1	Router2	PC1	ICMP	
0.004	Router2	PC1	Router2	ICMP	
0.005	PC1	Router2	Router1	ICMP	
0.006	Router2	Router1	Router3	ICMP	

**Event List**

Time(sec)	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
0.000	PC0	Router3	ICMP		0.000	N	0	(edit)	(delete)



Cisco Packet Tracer Student

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

IP

0	4	8	16	20	31	Bits
ID: 0x11 0x0 0x0						
TTL: 253 PRO: 0x1 CHSUM						
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: 0x8 CODE: 0x0 CHECKSUM				
ID: 0x12 SEQ NUMBER: 17				

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
0.000	-	PC0	Router2	ICMP	
0.001	0.001	Router2	Router1	ICMP	
0.002	0.002	Router1	Router2	ICMP	
0.003	0.003	Router2	PC1	ICMP	
0.005	0.005	PC1	Router2	ICMP	
0.006	0.006	Router2	Router1	ICMP	

Reset Simulation ☒ Constant Delay Captured for: 0.006 s

Play Controls Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTLS, EIGRP, EIGRPv6, FTP, H.323, HTTP, HTTPv6, HTTPS, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, LDAP, NETFLOW, NTP, OSPF, OSPFv6, PAgg, POP3, RADIUS, RDP, RDPv6, RTR, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TFTP, Telnet, Telnetv6, UDP, VTY

Edit Filters Show All/None

Time: 00:16:45.342 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Connections

Scenario 0 New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
<input checked="" type="checkbox"/>	In Progress	PC0	PC1	ICMP		0.000	N	0	(edit)	(delete)

Automatically Choose Connection Type

## Router 2:

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File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

PDU Information at Device: PC1

OSI Model Inbound PDU Details Outbound PDU Details

PDU Formats

Ethernet II

0	4	8	14	15	Bytes
PREAMBLE: 101010...1011					
DEST MAC: 0010.117A.166B		SRC MAC: 0004.9A05.4955			
TYPE: 0x000 DATA (VARIABLE LENGTH) FCS: 0x0					

IP

0	4	8	16	20	31	Bits
ID: 0x12 0x0 0x0						
TTL: 252 PRO: 0x1 CHSUM						
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: 0x8 CODE: 0x0 CHECKSUM				
ID: 0x13 SEQ NUMBER: 18				

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
0.000	-	PC0	Router2	ICMP	
0.001	0.001	Router2	Router1	ICMP	
0.002	0.002	Router1	Router2	ICMP	
0.003	0.003	Router2	PC1	ICMP	
0.005	0.005	PC1	Router2	ICMP	

Reset Simulation ☒ Constant Delay Capturing...

Play Controls Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTLS, EIGRP, EIGRPv6, FTP, H.323, HTTP, HTTPv6, HTTPS, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, LDAP, NETFLOW, NTP, OSPF, OSPFv6, PAgg, POP3, RADIUS, RDP, RDPv6, RTR, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TFTP, Telnet, Telnetv6, UDP, VTY

Edit Filters Show All/None

Time: 00:16:55.332 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Connections

Scenario 0 New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
<input checked="" type="checkbox"/>	In Progress	PC0	PC1	ICMP		0.000	N	0	(edit)	(delete)

Automatically Choose Connection Type

Cisco Packet Tracer Student

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

PDU Information at Device: PC1

OSI Model Inbound PDU Details Outbound PDU Details

PDU Formats

Ethernet II

PREAMBLE:		DEST MAC:		SRC MAC:	
101010...1011		0004.9A06.4985		0010.117A.166B	

TYPE: 0x000 DATA (VARIABLE LENGTH) FCS: 0x0

IP

DSCP:		TTL:	
0x0		28	

TTL: 128 PRO: 0x1 CHKSUM

SRC IP: 40.0.0.1

DST IP: 10.0.0.1

OPT: 0x0

DATA (VARIABLE LENGTH)

ICMP

TYPE:		CODE:		CHECKSUM:	
0x0		0x0		0x0	

ID: 0x13 SEQ NUMBER: 18

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
0.000	...	PC0	Router3	ICMP	
0.001	...	Router3	Router1	ICMP	
0.002	...	Router1	Router2	ICMP	
0.003	...	Router2	PC1	ICMP	
0.004	...	PC1	Router2	ICMP	
0.005	...	Router2	Router1	ICMP	
0.006	...	Router1	Router2	ICMP	
0.007	...	Router1	Router2	ICMP	

Reset Simulation ☒ Constant Delay Captured by: 0.007s

Play Controls Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DNS, DTP, EIGRP, ESP, FTP, H.323, HTTP, HTTPS, Icmp, ICMP, IGMP, IPsec, L2TP, LACP, NTP, POP3, RDP, RSH, SFTP, SMTP, SNMP, SSH, STP, Syslog, TACACS, TFTP, Telnet, UDP, VTY

Edit Filters Show All/None

Time: 00:16:55.335 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Connections

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)

Simulation

PC1:

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File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

PDU Information at Device: Router2

OSI Model Inbound PDU Details Outbound PDU Details

PDU Formats

Ethernet II

PREAMBLE:		DEST MAC:		SRC MAC:	
101010...1011		0004.9A06.4985		0010.117A.166B	

TYPE: 0x000 DATA (VARIABLE LENGTH) FCS: 0x0

IP

DSCP:		TTL:	
0x0		28	

TTL: 128 PRO: 0x1 CHKSUM

SRC IP: 40.0.0.1

DST IP: 10.0.0.1

OPT: 0x0

DATA (VARIABLE LENGTH)

ICMP

TYPE:		CODE:		CHECKSUM:	
0x0		0x0		0x0	

ID: 0x14 SEQ NUMBER: 19

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
0.000	...	PC0	Router3	ICMP	
0.001	...	Router3	Router1	ICMP	
0.002	...	Router1	Router2	ICMP	
0.003	...	Router2	PC1	ICMP	
0.004	...	PC1	Router2	ICMP	
0.005	...	Router2	Router1	ICMP	
0.006	...	Router1	Router2	ICMP	

Reset Simulation ☒ Constant Delay Captured by: 0.006s

Play Controls Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DNS, DTP, EIGRP, ESP, FTP, H.323, HTTP, HTTPS, Icmp, ICMP, IGMP, IPsec, L2TP, LACP, NTP, POP3, RDP, RSH, SFTP, SMTP, SNMP, SSH, STP, Syslog, TACACS, TFTP, Telnet, UDP, VTY

Edit Filters Show All/None

Time: 00:17:04.917 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Connections

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)

Simulation



Cisco Packet Tracer Student

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

PDU Information at Device: Router2

OSI Model Inbound PDU Details Outbound PDU Details

PDU Formats

HOLC

0	8	16	32	32+xx	48+xx	64+
FLG:	ADR:	CONTROL:	DATA: (VARIABLE LENGTH)	FC:	FLG:	
0111	0x0F	0x0		0x0	0111	
1110					1110	

IP

0	4	8	16	19	31	Bits
4	IHL	DSCTP:	0x0	TL:	28	
	ID:	0x0	0x0		0x0	
TL:	127	PRO:	0x1	CHECKSUM		
		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:	0x0	CODE:	0x0	CHECKSUM
ID:	0x14	SEQ NUMBER:	19	

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	Alt Device	Type	Info
	0.001	PC0	Router3	ICMP	
	0.002	Router3	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	Router2	ICMP	
	0.008	Router2	Router1	ICMP	
	0.009	Router1	Router2	ICMP	

Reset Simulation ☒ Constant Delay Captured to 0.009 s

Play Controls

Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter: ARP, BGP, CDP, DHCP, DNS, DNS, DNS, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NTP, NTPv6, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RDP, RDPv6, RDP, SCD, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TFTP, TFTPv6, Telnet, UDP, VTY

Edit Filters Show All/None

Time: 00:17:04.920 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Connections

Automatically Choose Connection Type

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	In Progress	PC0	PC1	ICMP		0.000	N	0	(edit)	(delete)

Simulation