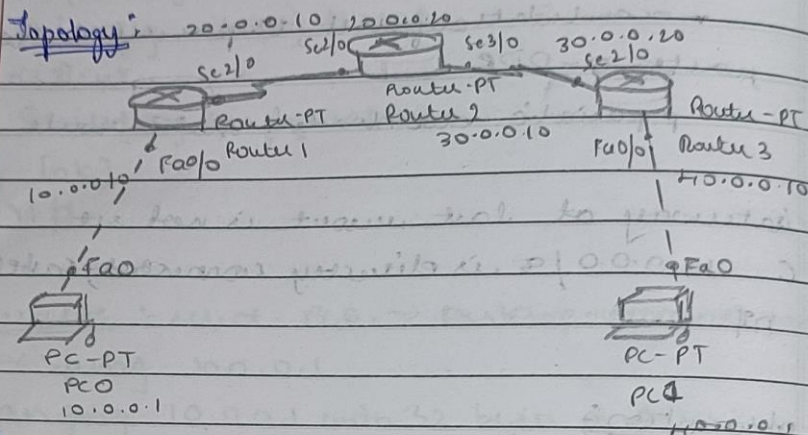


10/8/23

Experiment 12

Aim: To demonstrate the TTL (time to live) / life of a packet.



Procedure:

- * select two PC's and three routers drop them in the workspace connect PC0 to a router and PC1 to another router using copper crossover connection connect ^{all three} routers using automatic cable
- * set IP addresses and gateway for both PCs
- * configure routers.
for Router 1
Router>enable
Router#config t
Router(config)#interface fastethernet 0/0
Router(config)#ip address 10.0.0.10 255.0.0.0
Router(config)#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) #exit

Router(config) #exit

Router 2:

Router>enable

Router#config t

Router(config) #interface serial 2/0

Router(config-if) #ip address 20.0.0.20 255.0.0.0

Router(config-if) #no shut

Router(config-if) #exit

Router(config) #interface 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(config) #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:

Router1#config t

Router1(config)# ip route 10.0.0.0 255.0.0.0 20.0.0.0

Router1(config)# ip route 20.0.0.0 255.0.0.0 30.0.0.0

Router1(config)#exit

Router3:

Router1#config t

Router1(config)# ip route 10.0.0.0 255.0.0.0 30.0.0.0

Router1(config)# ip route 20.0.0.0 255.0.0.0 30.0.0.0

Router1(config)#

- * select simulation mode, select simple PDU 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.
- because there is a difference of in the when it comes every router.

Observation:

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

Result:-

click and click on the PDU during every transfer to see inbound and outbound PDU details.

PDU information at Device: Router2

Inbound PDU details

PPV Format:

HDLC

0	8	16	32	32+K	K+K	56+K
FLAG	ADR	CONTROL	DATA (VARIABLE LENGTH)	FCS	FLAG	
0111	0x8f	0x0		0x0	0111	
1110					1110	

IP

0	4	8	16	19	31	Bits
4	IHL	DSCT: 0x0		TL: 28		
	ID: 0xa		0x0	0x0		
	TTL: 254	PRO: 0x1		CHECKSUM		
		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: 0xa			SEQUENCE: 6	

Outbound PDU details

0	8	16	32	32+K	K+K	56+K
FLAG	ADR	CONTROL	DATA (VARIABLE LENGTH)	FCS	FLAG	
0111	0x8f	0x0		0x0	0111	
1110					1110	

IP

0	4	8	16	19	31	Bits
4	IHL	DSCT: 0x0		TL: 28		
	ID: 0xa		0x0	0x0		
	TTL: 253	PRO: 0x1		CHECKSUM		
		SRC IP: 10.0.0.1				
		DST IP: 40.0.0.1				
		OPT: 0x0		0x0		
		DATA (VARIABLE LENGTH)				

ICMP	8	16	31
TYPE: 0x8	CODE: 0x0	CHECKSUM	
IP: 0x4		SEQ NUMBER: 6	

PDU information at service PC1

Inbound PDU Details
PDU Format

Ethernet II

0	8	14	17
PREAMBLE: 101010...1011	DEST MAC: 0010.111B.PPBE	SRC MAC: 0000.FF93.1A78	
TYPE: 0x00	DATA (VARIABLE LENGTH)	FCF: 0x0	

8P	4	8	16	19	31
8	4	8	16	19	31
ETH	DS CP: 0x0	TX: 28			
IP: 0x4	0x0	0x0			

17H: 25B	PR: 0x01	LH KSUM
	SRC IP: 10.0.0.1	
	DST IP: 40.0.0.1	

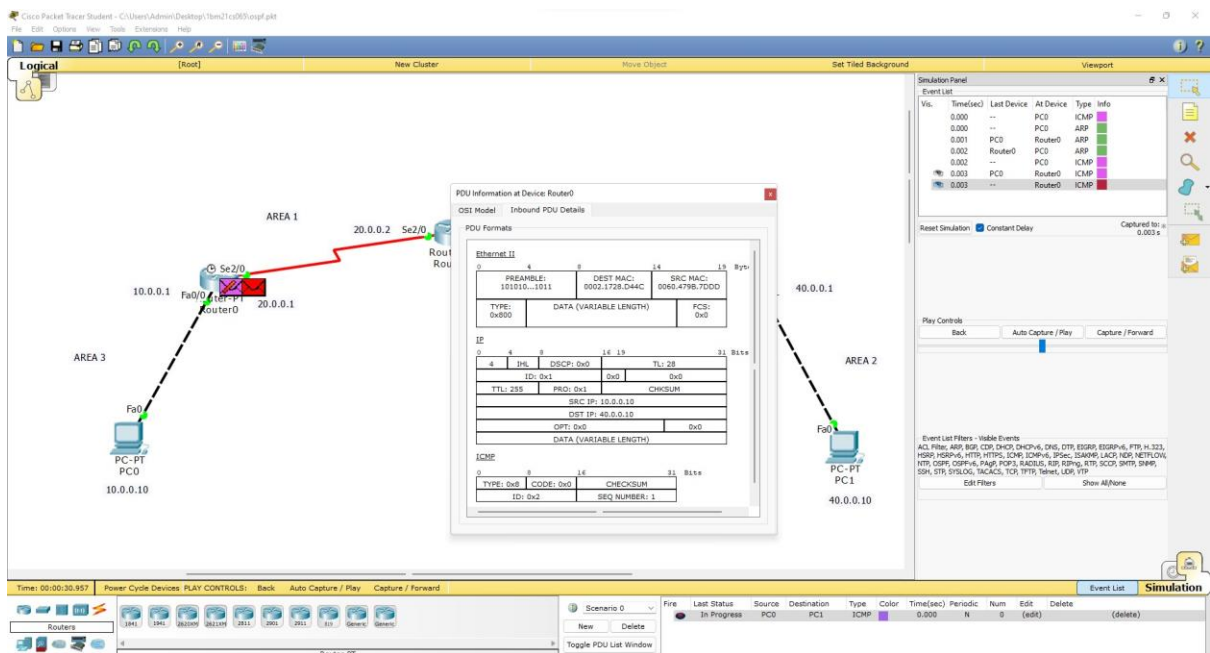
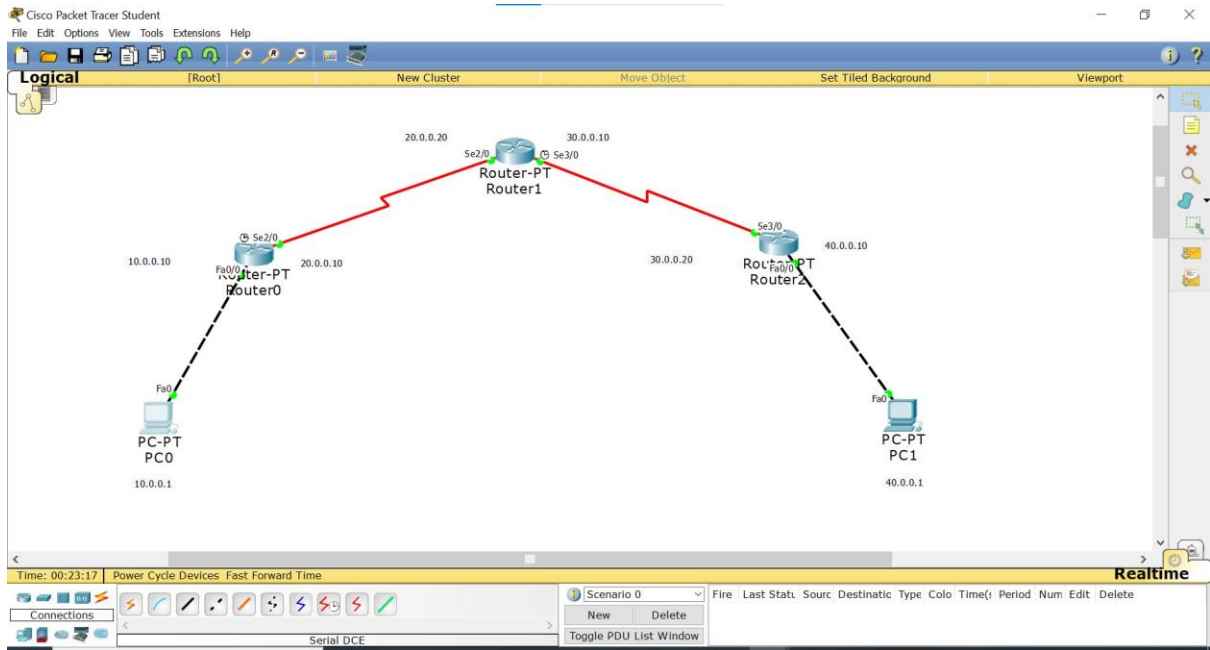
OPT: 0x0	0x0
----------	-----

DATA (VARIABLE LENGTH)

ICMP	8	16	31
TYPE: 0x8	CODE: 0x0	CHECKSUM	
IP: 0x4		SEQ NUMBER: 6	

10/10

12/8/23



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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

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

Reset Simulation Constant Delay Captured to: 0.004 s

Play Controls Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, OTS, EIGRP, EIGRPv6, FTP, H.323, HTTP, IGMPv4, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NTP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, PAgPv6, RADIUS, RDP, RDPv6, RTR, SCCP, SMI, SNMP, SSH, STP, SYSLOG, TACACS, TFTP, TFTP, Telnet, UDP, VTP

Edit Filters Show All/None

Time: 00:00:57.256 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Scenario 0 Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

In Progress PC0 PC1 ICMP 0.000 N 0 (edit) (delete)

New Delete

PDU Information at Device: PC1

OSI Model Inbound PDU Details Outbound PDU Details

PDU Formats

Ethernet II

0	4	8	16	20	24	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176	180	184	188	192	196	200	204	208	212	216	220	224	228	232	236	240	244	248	252	256	260	264	268	272	276	280	284	288	292	296	300	304	308	312	316	320	324	328	332	336	340	344	348	352	356	360	364	368	372	376	380	384	388	392	396	400	404	408	412	416	420	424	428	432	436	440	444	448	452	456	460	464	468	472	476	480	484	488	492	496	500	504	508	512	516	520	524	528	532	536	540	544	548	552	556	560	564	568	572	576	580	584	588	592	596	600	604	608	612	616	620	624	628	632	636	640	644	648	652	656	660	664	668	672	676	680	684	688	692	696	700	704	708	712	716	720	724	728	732	736	740	744	748	752	756	760	764	768	772	776	780	784	788	792	796	800	804	808	812	816	820	824	828	832	836	840	844	848	852	856	860	864	868	872	876	880	884	888	892	896	900	904	908	912	916	920	924	928	932	936	940	944	948	952	956	960	964	968	972	976	980	984	988	992	996	1000
PREAMBLE: 101010...1011																DEST MAC: 0060.4789.AB50																SRC MAC: 0009.7C28.C636																																																																																																																																																																																																																								
TYPE: 0x00																DATA (VARIABLE LENGTH)																FCS: 0x0																																																																																																																																																																																																																								

IP

0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176	180	184	188	192	196	200	204	208	212	216	220	224	228	232	236	240	244	248	252	256	260	264	268	272	276	280	284	288	292	296	300	304	308	312	316	320	324	328	332	336	340	344	348	352	356	360	364	368	372	376	380	384	388	392	396	400	404	408	412	416	420	424	428	432	436	440	444	448	452	456	460	464	468	472	476	480	484	488	492	496	500	504	508	512	516	520	524	528	532	536	540	544	548	552	556	560	564	568	572	576	580	584	588	592	596	600	604	608	612	616	620	624	628	632	636	640	644	648	652	656	660	664	668	672	676	680	684	688	692	696	700	704	708	712	716	720	724	728	732	736	740	744	748	752	756	760	764	768	772	776	780	784	788	792	796	800	804	808	812	816	820	824	828	832	836	840	844	848	852	856	860	864	868	872	876	880	884	888	892	896	900	904	908	912	916	920	924	928	932	936	940	944	948	952	956	960	964	968	972	976	980	984	988	992	996	1000
ID: 0x3																DSCP: 0x0																TL: 28																																																																																																																																																																																																																										
TTL: 255																PRO: 0x1																CHKSUM																																																																																																																																																																																																																										
SRC IP: 10.0.0.10																DST IP: 40.0.0.10																																																																																																																																																																																																																																										
OPT: 0x0																DATA (VARIABLE LENGTH)																																																																																																																																																																																																																																										

ICMP

0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176	180	184	188	192	196	200	204	208	212	216	220	224	228	232	236	240	244	248	252	256	260	264	268	272	276	280	284	288	292	296	300	304	308	312	316	320	324	328	332	336	340	344	348	352	356	360	364	368	372	376	380	384	388	392	396	400	404	408	412	416	420	424	428	432	436	440	444	448	452	456	460	464	468	472	476	480	484	488	492	496	500	504	508	512	516	520	524	528	532	536	540	544	548	552	556	560	564	568	572	576	580	584	588	592	596	600	604	608	612	616	620	624	628	632	636	640	644	648	652	656	660	664	668	672	676	680	684	688	692	696	700	704	708	712	716	720	724	728	732	736	740	744	748	752	756	760	764	768	772	776	780	784	788	792	796	800	804	808	812	816	820	824	828	832	836	840	844	848	852	856	860	864	868	872	876	880	884	888	892	896	900	904	908	912	916	920	924	928	932	936	940	944	948	952	956	960	964	968	972	976	980	984	988	992	996	1000
TYPE: 0x8																CODE: 0x0																CHECKSUM																																																																																																																																																																																																																										
ID: 0x4																SEQ NUMBER: 3																																																																																																																																																																																																																																										

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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

Vis.	Time(sec)	Last Device	At Device	Type	Info
0.000	--	PC0	Router0	ICMP	
0.001	PC0	Router0	Router1	ICMP	
0.002	Router0	Router1	Router2	ICMP	

Reset Simulation Constant Delay Captured to: 0.002 s

Play Controls Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, OTS, EIGRP, EIGRPv6, FTP, H.323, HTTP, IGMPv4, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NTP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, PAgPv6, RADIUS, RDP, RDPv6, RTR, SCCP, SMI, SNMP, SSH, STP, SYSLOG, TACACS, TFTP, TFTP, Telnet, UDP, VTP

Edit Filters Show All/None

Time: 00:00:57.256 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Scenario 0 Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

In Progress PC0 PC1 ICMP 0.000 N 0 (edit) (delete)

New Delete

PDU Information at Device: Router1

OSI Model Inbound PDU Details Outbound PDU Details

PDU Formats

ESP

0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176	180	184	188	192	196	200	204	208	212	216	220	224	228	232	236	240	244	248	252	256	260	264	268	272	276	280	284	288	292	296	300	304	308	312	316	320	324	328	332	336	340	344	348	352	356	360	364	368	372	376	380	384	388	392	396	400	404	408	412	416	420	424	428	432	436	440	444	448	452	456	460	464	468	472	476	480	484	488	492	496	500	504	508	512	516	520	524	528	532	536	540	544	548	552	556	560	564	568	572	576	580	584	588	592	596	600	604	608	612	616	620	624	628	632	636	640	644	648	652	656	660	664	668	672	676	680	684	688	692	696	700	704	708	712	716	720	724	728	732	736	740	744	748	752	756	760	764	768	772	776	780	784	788	792	796	800	804	808	812	816	820	824	828	832	836	840	844	848	852	856	860	864	868	872	876	880	884	888	892	896	900	904	908	912	916	920	924	928	932	936	940	944	948	952	956	960	964	968	972	976	980	984	988	992	996	1000
FLG: 0111																ADR: 0x0																CTR: 0x0																PROTOCOL: 0x21																LCP: (VARIABLE LENGTH)																FCS: 0x0																FLG: 0111																																																																																																																																																										
ID: 0x3																DSCP: 0x0																TL: 28																																																																																																																																																																																																																										
TTL: 255																PRO: 0x1																CHKSUM																																																																																																																																																																																																																										
SRC IP: 10.0.0.10																DST IP: 40.0.0.10																																																																																																																																																																																																																																										
OPT: 0x0																DATA (VARIABLE LENGTH)																																																																																																																																																																																																																																										

ICMP

0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176	180	184	188	192	196	200	204	208	212	216	220	224	228	232	236	240	244	248	252	256	260	264	268	272	276	280	284	288	292	296	300	304	308	312	316	320	324	328	332	336	340	344	348	352	356	360	364	368	372	376	380	384	388	392	396	400	404	408	412	416	420	424	428	432	436	440	444	448	452	456	460	464	468	472	476	480	484	488	492	496	500	504	508	512	516	520	524	528	532	536	540	544	548	552	556	560	564	568	572	576	580	584	588	592	596	600	604	608	612	616	620	624	628	632	636	640	644	648	652	656	660	664	668	672	676	680	684	688	692	696	700	704	708	712	716	720	724	728	732	736	740	744	748	752	756	760	764	768	772	776	780	784	788	792	796	800	804	808	812	816	820	824	828	832	836	840	844	848	852	856	860	864	868	872	876	880	884	888	892	896	900	904	908	912	916	920	924	928	932	936	940	944	948	952	956	960	964	968	972	976	980	984	988	992	996	1000
TYPE: 0x8																CODE: 0x0																CHECKSUM																																																																																																																																																																																																																										
ID: 0x4																SEQ NUMBER: 3																																																																																																																																																																																																																																										

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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

Vis.	Time(sec)	Last Device	At Device	Type	Info
0.000	--	PC0	Router0	ICMP	
0.001	PC0	Router0	Router1	ICMP	
0.002	Router0	Router1			