System Diagram : PING

Echo Request

Application Layer
Transport Layer
Network Layer
Link layer
Physical Layer

Appliaction-1   Ping   Appliaction-3

Raw Socket Creation

TCP   UDP

ICMP → IP   IGMP

MAC Address   IP Header+ICMP Header + Data

.......01000010101001010........

Echo Request ICMP packet

00 01 02 03 04 05 06 07	08 09 10 11 12 13 14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Type = 8	Code = 0	Header Checksum
Identifier		Sequence Number
Payload		

IP Datagram

	Bits 0–7	Bits 8–15	Bits 16–23	Bits 24–31
IP Header (20 bytes)	Version/IHL	Type of service	Length	
	Identification		flags and offset	
	Time To Live (TTL)	Protocol	Checksum	
	Source IP address			
	Destination IP address			
ICMP Header (8 bytes)	Type of message	Code	Checksum	
	Header Data			
ICMP Payload (optional)	Payload Data			

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ping 209.85.135.105

INPUT

OUTPUT

Replyfrom 209.85.135.105: bytes=32 time=18 ms TTL=250
Reply from 209.85.135.105: bytes=32time=21 msTTL=250
Reply from 209.85.135.105: bytes=32time=20 msTTL=250
Reply from 209.85.135.105: bytes=32time=33 msTTL=250

Echo Request

Echo Reply

Client

Server

Echo replay

Application Layer
Transport Layer
Network Layer
Link layer
Physical Layer

Appliaction-1   Ping   Appliaction-3

IP Header+ICMP Header+Data

TCP   UDP

ICMP   IP

MAC Address   IP Header+ICMP Header + Data

.......01000010101001010.......

Echo Replay ICMP packet

00 01 02 03 04 05 06 07	08 09 10 11 12 13 14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Type = 0	Code = 0	Header Checksum
Identifier		Sequence Number
Payload		

IP Datagram

	Bits 0–7	Bits 8–15	Bits 16–23	Bits 24–31
IP Header (20 bytes)	Version/IHL	Type of service	Length	
	Identification		flags and offset	
	Time To Live (TTL)	Protocol	Checksum	
	Source IP address			
	Destination IP address			
ICMP Header (8 bytes)	Type of message	Code	Checksum	
	Header Data			
ICMP Payload (optional)	Payload Data			