Ping

What is Ping:

Ping is a simple network tool with which we can get to know whether a particular host is active(i.e, whether it is accepting requests) or not. It also shows the information like latency or delay, how many packets are lost, response time for each packet. Ping measures the Round Trip Time(RTT) for echo packets (sent through flooding).
Ping comes by default with most of the operating systems. In windows, we can access ping from the command prompt.

To see all the options, we can just type ping.

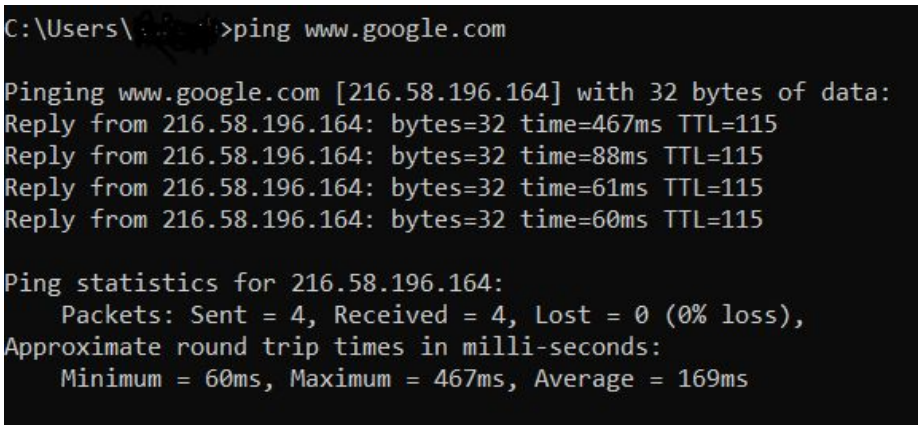
```
C:\Users\[redacted]>ping

Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS]
            [-r count] [-s count] [[-j host-list] | [-k host-list]]
            [-w timeout] [-R] [-S srcaddr] [-c compartment] [-p]
            [-4] [-6] target_name

Options:
    -t             Ping the specified host until stopped.
                   To see statistics and continue - type Control-Break;
                   To stop - type Control-C.
    -a             Resolve addresses to hostnames.
    -n count       Number of echo requests to send.
    -l size        Send buffer size.
    -f             Set Don't Fragment flag in packet (IPv4-only).
    -i TTL         Time To Live.
    -v TOS         Type Of Service (IPv4-only. This setting has been deprecated
                   and has no effect on the type of service field in the IP
                   Header).
    -r count       Record route for count hops (IPv4-only).
    -s count       Timestamp for count hops (IPv4-only).
    -j host-list   Loose source route along host-list (IPv4-only).
    -k host-list   Strict source route along host-list (IPv4-only).
    -w timeout     Timeout in milliseconds to wait for each reply.
    -R             Use routing header to test reverse route also (IPv6-only).
                   Per RFC 5095 the use of this routing header has been
                   deprecated. Some systems may drop echo requests if
                   this header is used.
    -S srcaddr     Source address to use.
    -c compartment Routing compartment identifier.
    -p             Ping a Hyper-V Network Virtualization provider address.
    -4             Force using IPv4.
    -6             Force using IPv6.
```

Working:

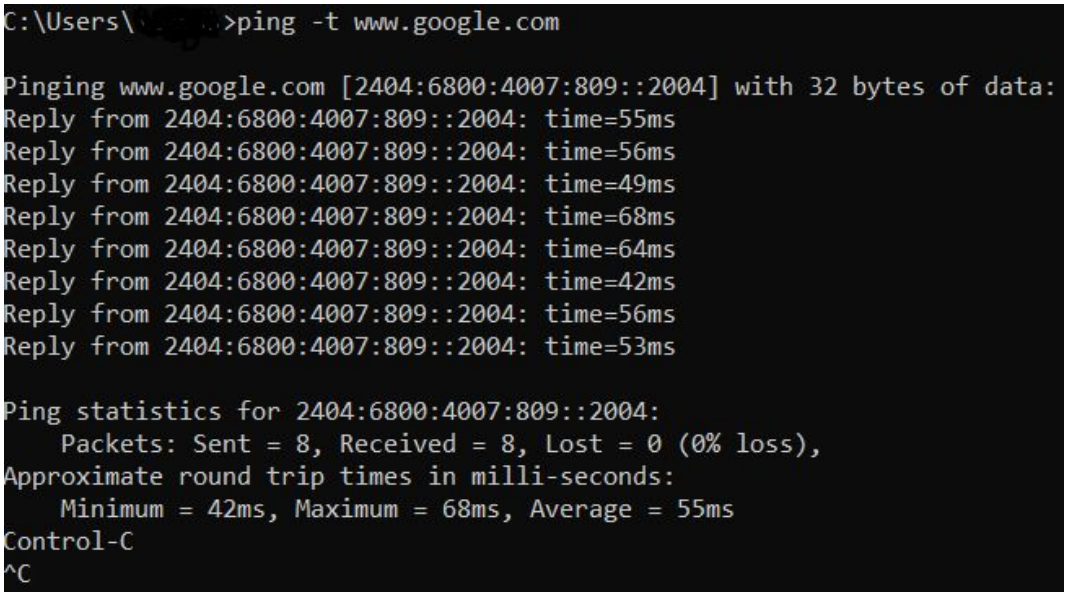
To send a request for a particular domain we can type ping <Domain name>.

By executing the above command we can see that the ping has sent 4 requests to the given domain name(in this case the domain name is www.google .com). We can see the statistics that, a total of 4 packets are sent, four packets are received (echo reply) and 0 packets are lost. We can also see the statistics of the roundtrip times (time between the packet is sent and the acknowledgment received), the maximum time taken is 467ms, and the minimum is 60ms and the average time taken is 169ms.

Note: All the times mentioned are for this particular case.



The options in the ping and their working can be seen in the first image. Let us explore some of the options. By using the flag -t, ping keeps on sending the requests until we hit the control + c.



We can specify the number of echo packets to send by using the option -n.

If we use an invalid domain name it shows an error.

If the ping doesn't get the echo reply from the server within the time it shows "Request timed out"

Ping is a very useful tool in network troubleshooting. This can be used to narrow down the causes of the problem.