Using The ping Utility

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The **ping utility** is the most basic TCP/IP utility, and it's included with most TCP/IP stacks for most platforms. In most cases, `ping` is a command-line utility, although there are many GUI implementations available. You use the ping utility for two primary purposes:

- To find out if a host is responding
- To find out if you can reach a host

Here's the syntax (you can use either command):

```
ping hostname
ping IP address
```

If you ping any station that has an IP address, the ICMP that's part of that particular host's TCP/IP stack will respond to the request. The ICMP test and response looks something like this:

```
C:\Users\clarusway>ping 3.225.75.90

Pinging 3.225.75.90 with 32 bytes of data:
Reply from 3.225.75.90: bytes=32 time=137ms TTL=233
Reply from 3.225.75.90: bytes=32 time=136ms TTL=233
Reply from 3.225.75.90: bytes=32 time=134ms TTL=233
Reply from 3.225.75.90: bytes=32 time=134ms TTL=233

Ping statistics for 3.225.75.90:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 134ms, Maximum = 137ms, Average = 135ms
```

Because we've received a reply from the destination station we know that we can reach the host and that it's responding to basic IP requests. Don't forget that you can use name resolution and ping to a name, such as `ping www.clarusway.com`. Most versions of `ping` work the same way, but there are some switches you can use to specify certain information, like the number of packets to send, how big a packet to send, and so on. And if you're running the Windows command-line version of `ping`, just use the `/?` or `-?` switch to display a list of the available options like this:

```
C:\Users\clarusway>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.
```

As you can see, there are many options you can use with the `ping` command from a Windows DOS prompt.

The `-a` switch is handy if you have name resolution (such as a DNS server), you can see the name of the destination host even if you only know its IP address. The `-n` switch sets the number of echo requests to send, where four is the default, and the `-w` switch allows you to adjust the time-out in milliseconds. The default ping time-out is 1 second (1,000 ms).

The `-6` is also nice if you want to ping an IPv6 host. And then there's `-t`, which keeps the ping running.

From a MAC, you can use the `ping6` command. Here are the options:

```
$ ping6
usage: ping6 [-DdfHmnNoqrRtvwW] [-a addrtype] [-b bufsiz] [-B boundif]
[-c count][-g gateway] [-h hoplimit] [-I interface] [-i wait] [-l preload][-p
pattern] [-S sourceaddr] [-s packetsize] [-z tclass]
[hops ...] host
```