# PING UTILITY

```
Enter the destination IP address or hostname:
instagram.com
Enter number of ping requests (default: 4):
5
Enter TTL (default: 64):
64
Enter the packet size (default: 64):
32
Enter timeout in seconds (default: 1):
1
Pinging 157.240.16.174 with 32 bytes of data:
Reply from 157.240.16.174: bytes=32 ttl=51 time=102.08ms
Reply from 157.240.16.174: bytes=32 ttl=51 time=56.62ms
Reply from 157.240.16.174: bytes=32 ttl=51 time=56.82ms
Reply from 157.240.16.174: bytes=32 ttl=51 time=138.70ms
Reply from 157.240.16.174: bytes=32 ttl=51 time=398.79ms

Ping statistics for 157.240.16.174:
    Packets: Sent = 5, Received = 5, Lost = 0 (0.00% loss),

Approximate round trip times in milli-seconds:
    Minimum = 56.62ms, Maximum = 398.79ms, Average = 150.60ms

PS C:\Users\Ankit Singh\Desktop\SEMESTER 5\NETWORKS LAB>
```

How each parameter—TTL, packet size, and timeout—affects the behaviour of the ping utility:

## 1. TTL (Time-To-Live)

**What TTL Does:**

- **Purpose**: TTL is a field in the IP header that determines the maximum number of hops (routers) a packet can traverse before being discarded. Each router that forwards the packet decreases the TTL value by 1.

- **Default Value**: Common default TTL values are 64, 128, or 255, depending on the operating system and network configuration.

**Effects of Changing TTL:**

- **Increasing TTL**: Setting a higher TTL (e.g., 128) allows the packet to travel through more routers before being discarded. This is useful if you're testing connectivity over long network paths or across multiple networks.

- **Decreasing TTL**: Setting a lower TTL (e.g., 1) limits the number of hops the packet can make. This can help in detecting routing loops or in diagnosing issues where packets are

getting stuck in the network. However, if the TTL is too low, the packet may not reach its destination if the path requires more hops.

## 2. Packet Size

**What Packet Size Does:**

- **Purpose**: Packet size refers to the amount of data (payload) sent in each ICMP packet. The size of the packet can impact network performance and diagnostics.

- **Default Size**: Typical packet sizes are 64 bytes, but this can be adjusted based on needs.

**Effects of Changing Packet Size:**

- **Increasing Packet Size**: Larger packet sizes (e.g., 1500 bytes) can help in testing how well the network handles larger amounts of data. Larger packets can reveal issues like fragmentation problems or limitations in network equipment.

- **Decreasing Packet Size**: Smaller packet sizes (e.g., 32 bytes) can help in testing basic connectivity and understanding the network's ability to handle small packets. This can be useful for ensuring that small packets are not getting dropped or delayed disproportionately compared to larger ones.

## 3. Timeout

**What Timeout Does:**

- **Purpose**: Timeout specifies the maximum amount of time (in seconds) to wait for a response to a ping request before considering it lost.

- **Default Value**: Common timeout values are 1 second or 2 seconds.

**Effects of Changing Timeout:**

- **Increasing Timeout**: Setting a longer timeout (e.g., 5 seconds) allows more time for a response to be received, which can be useful if you're pinging destinations over slow or high-latency networks. It may reduce the number of timeouts reported.

- **Decreasing Timeout**: Setting a shorter timeout (e.g., 0.5 seconds) can be useful for quickly identifying network issues where responses are delayed. However, this might result in higher rates of false positives (where valid responses are missed due to the short timeout).

## Summary:

- **TTL**: Controls the number of networks hops a packet can make. Higher TTL values allow for longer network paths, while lower TTL values are useful for diagnosing routing issues.

- **Packet Size**: Affects the amount of data sent in each packet. Larger packet sizes test how well the network handles big data, while smaller sizes help test basic connectivity.

- **Timeout**: Determines how long to wait for a response before considering a packet lost. Longer timeouts are useful for slow or high-latency networks, while shorter timeouts can help detect quick issues.

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