Lab – Testing Network Connectivity with Ping and Traceroute

Background / Scenario

Ping and traceroute are two tools that are indispensable when testing TCP/IP network connectivity.

Ping is a network administration utility used to test the reachability of a device on an IP network. This utility also measures the round-trip time for messages sent from the originating host to a destination computer. Ping operates by sending Internet Control Message Protocol (ICMP) echo request packets to the target host and then waiting for an ICMP response. It can record the round trip time and any packet loss.

The traceroute utility is a network diagnostic tool for displaying the route and measuring the transit delays of packets travelling an IP network. The tracert utility is available on Windows, and a similar utility, traceroute, is available on Unix-like OS and Cisco IOS.

In this lab, the **ping** and **traceroute** commands are examined and command options are explored to modify the command behavior. Use Ping Command for Basic Network Testing

Step 1: Use ping command on a PC.

The default **ping** command sends four requests at 32 bytes each. It waits 4,000 milliseconds (4 seconds) for each response to be returned before displaying the “Request timed out” message. The **ping** command can be fine tuned for troubleshooting a network.

a. At the command prompt, type **ping** and press Enter.

```
C:\Users\User1> 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] [-4] [-6] target_name
```

The **ping** command is extremely useful when troubleshooting network connectivity. However, ping cannot indicate the location of problem when a ping is not successful. The **tracert** (or **traceroute**) command can display network latency and path information.

Part 2: Use Tracert and Traceroute Commands for Basic Network Testing

The commands for tracing routes can be found on PCs and network devices. For a Windows-based PC, the **tracert** command uses ICMP messages to trace the path to the final destination. The **traceroute** command utilizes the User Datagram Protocol (UDP) datagrams for tracing routes to the final destination for Cisco devices and other Unix-like PCs.

Step 1: Use the tracert command from your PC to www.cisco.com .

a. At the command prompt, type **tracert www.cisco.com**

Step 2: Explore additional options for the tracert command.

a. At the command prompt, type **tracert** and press Enter.

```
C:\Users\User1> tracert
```