# What is traceroute, and why is it used?

Traceroute is the first choice of IT administrators when it comes to troubleshooting connectivity problems or network latency. In other words, traceroute is a network diagnostics tool. This tool is simple to use through the command prompt. However, it requires you to learn the basics so you can understand the output. You may have come across this as tracert in Windows and traceroute in Linux and Mac.

## What is traceroute?

Traceroute is a command which you can access from the command prompt to run network diagnostics tools. These tools will help you take a closer look at the connectivity issues by tracing the complete path that a data packet takes from the source to the target destination. The tool will report all routers' IP addresses that it has come in contact with during its tracing.

Another point to note here is that whenever data is transmitted between two certain points, it takes several 'hops' through the devices. This concept is much similar to that of switches and routers. Traceroute also keeps a record of the time taken for each hop during its journey.

Hence, traceroute provides the following information of each hop, wherever possible during its en-route:

* Round trip time
* Device name
* IP address

The accuracy of each hop is ensured by querying the results multiple times. It is ideal for measuring the response of a particular hop three times for accuracy. Furthermore, traceroute uses Internet Control Message Protocol (ICMP) and variable time to live (TTL) values in the IP address header to function.

## Why is it used?

Traceroute is useful for network diagnostics, such as response delays and routing loops. It is also used to discover any failure points from a particular location to a set destination. Technicians prefer traceroute over ping because the latter only identifies what problem exists, whereas; the former also provides a complete report of where the problem exists.

The traceroute usage can be further elaborated with the following example: You are browsing on a website, and your site is taking too long to respond. In this case, you can use traceroute to figure out the problem.

## Conclusion

Choosing the right network diagnostics tool is significant as it can simplify your complex networking problems. In times when networking has become limelight, it is crucial to ensure its working. Thus, traceroute is a vital option for network diagnostics.