What’s "normal" for latency and packet loss?

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Question

What's a 'normal' latency (or good range) that I can expect to see?

Solution

The out-of-the box legend (the green / yellow / red at the upper right corner) in PingPlotter and MultiPing frames a basic reference to what a good or bad latency might be, although it's not specific for connection type or distance to target.

Latency

There are two **normal factors that significantly influence the latency of a consumer device (like a cable modem, dsl modem or dial-up modem).**

1. The latency of the connecting device. For a cable modem, this can normally be between 5 and 40 ms. For a DSL modem this is normally 10 to 70ms. For a dial-up modem, this is normally anywhere from 100 to 220ms. For a cellular link, this can be from 200 to 600 ms. For a T1, this is normally 0 to 10 ms.
2. The distance the data is traveling. Data travels at (very roughly) 120,000 miles (or 192,000 kilometers) per second, or 120 miles (192 km) per ms (millisecond) over a network connection. With traceroute, we have to send the data there and back again, so roughly 1 ms of latency is added for every 60 miles (96km, although with the level of accuracy we're using here, we should say '100km') of distance between you and the target.

Connecting to a web site across 1500 miles (2400 km) of distance is going to add at least 25 ms to the latency. Normally, it's more like 75 after the data zig-zags around a bit and goes through numerous routers.

This means that a DSL modem on the west coast of the United States, tracing to a server on the east coast of the United States should expect somewhere around 120 ms (depending on the route and a number of other factors, but this is a rough ballpark) - 25 ms for the DSL modem and 100 ms for the distance. Tracing across an ocean, or through a satellite link, or some other link where the distance is further will certainly impact the expected latency more.

Packet Loss

Packet loss is almost always bad when it occurs at the final destination. Packet loss happens when a packet doesn't make it there and back again. Anything over 2% packet loss over a period of time is a strong indicator of problems. Most internet protocols can correct for some packet loss, so you really shouldn't expect to see a lot of impact from packet loss until that loss starts to approach 5% and higher. Anything less than this is showing a possible problem, but one that is probably not impacting your experience significantly at present (unless you're an online gamer or something similar that requires 'twitch' reflexes).

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Using PingPlotter to measure latency and packet loss If you've determined that your latency is out of the normal realm, and if you're seeing problems with some aspect of your connection (unexpected slowdowns, disconnects, or that you are often forced to 'retry'), then looking at the PingPlotter data should help you understand the source of the problem. You're looking for big changes in latency and/or packet loss between two hops. Start at the end and go backwards till you find a hop that's not showing the problems that your final destination is showing. Once you've identified that, then you know where the problem is occurring. Ideally, you'd be able to contact that provider and find out how to solve the problem. Often, the result is that you would contact your ISP and they would help you solve the problem.

For more details on finding latency and packet loss problems, visit our Getting Started Guide, or see our article on how to pinpoint the problem.

Need interpretation help? PingPlotter Sidekick is equipped to help you make sense of your data. You can also find us on Reddit. Or feel free to create a share page and send it to us at support@pingman.com.

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