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What a Wi-Fi Throughput Test Measures, and What It Doesn't

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Download the Field Plate (PDF)

A throughput test measures one thing: the path between the client you start from and the server you measure to. Move the server and you have measured a different network.

That is why the speed test a client forwards you as proof the Wi-Fi is broken usually says nothing at all about the Wi-Fi.

Follow the path. A Wi-Fi client [1] goes over the air to the Access Point [3], into the switch [4], out through the router [5] to the ISP [6] and across the internet [7]. A wired client [2] skips the air entirely and starts at the switch. Now put a test server somewhere along that path and watch what the number means:

Server at A, directly behind the AP: you are testing the Wi-Fi link, and only the Wi-Fi link.

Server at B, past the switch fabric and router: Wi-Fi plus the local network, no WAN.

Server at C, chosen by the ISP: that is the ordinary internet speed test.

Server at D, internet-hosted: the whole path, end to end, WAN included.

Run the same test from a wired client to the same D server and compare the two. That one pair tells you whether the limit is the Wi-Fi, the local network, or the WAN. It is the fastest honest answer you can give.

There is also an X on this plate. That is the WLAN Pros Toolbox reading RF and Wi-Fi health directly, with no throughput number at all. Sometimes the right measurement is not a speed.

We made this PDF/Graphic because arguments about Wi-Fi performance keep ending with a screenshot nobody can interpret, and the Wi-Fi takes the blame by default. Before you trust

a number, ask when it was run, from what client, to what server, over TCP or UDP, and whether it was a single run or an average. A local server, iPerf or LibreSpeed or a WLAN Pi, can be shaped to mimic a real application load. An internet speed test cannot.

Download it, print it, and put it in front of the next person who hands you a speed test as evidence.

What is the worst conclusion you have watched somebody draw from a single speed test?

By Keith Parsons, CWNE #3, Wireless LAN Professionals. Free to read and share. Facts