NEWSLETTER

Where You Test Your Throughput Changes the Number

By **Keith Parsons, CWNE #3** · 2026-06-17 · originally on LinkedIn

Where You Test Your Throughput Changes the Number

One internet speed test cannot tell you whether your Wi-Fi, your local network, or your WAN is the limiter. It tells you one number, from one device, to one server, and people read that one number as the verdict on the whole network. It isn't. A throughput test only measures the path between the client you start from and the server you measure to. Move the server, and you measure a different chunk of the path. The number changes. Nothing about your network changed at all.

I have run eight different tests on the same Wi-Fi, in the same spot, in the same minute, and gotten eight different results. Which one is correct? That is the wrong question. They are all correct. They are just measuring different things.

The path is the test

Look at the figure. A frame leaves a client, crosses the Wi-Fi link to the Access Point, drops onto the wired switch, goes through the router, out to the ISP, and across the WAN to some server on the internet. That whole chain is the path. A speed test measures one slice of it, and the slice is defined entirely by where the server sits.

- Put the test server **right behind the Access Point (A)**, and you measure the Wi-Fi link and nothing else. No WAN, no ISP, no internet weather. Just the radio link and the local switch.
- Let the ISP pick a **"near" server (C)**, and you measure your local network plus the hop out to the ISP. This is the one most consumer speed tests quietly choose for you, because it produces the biggest, friendliest number.

- Hit a **hosted server out on the internet (D)**, and now you are measuring the entire path, WAN and all. This is the only test that reflects what your user actually feels when they load a real site.

Same client. Same Wi-Fi. Three servers, three answers. None of them is lying. They are answers to three different questions, and most people never notice they asked a different question each time.

The number you chase is just a color with a decimal point

Everyone wants the throughput number, whether it makes sense or not. They run the test, they get a big green result, and they relax. Green does not mean good. Green is just a number, mapped to a color, collected on one device, to one server you didn't choose. It tells you almost nothing about whether your stuff actually works.

I stayed in a hotel once with genuinely excellent Wi-Fi. Rock-solid MCS rates, clean RF, the radio link was doing everything right. The download? About 1 megabit. They had fantastic Wi-Fi. They had bad backhaul. If I had run a single speed test to an internet server and stopped there, I would have blamed the Wi-Fi and been completely wrong. The Wi-Fi was the one part of that network that was working.

That is the whole trap. The internet speed test sits at the far end of the path (D), so every weak link between you and that server gets blamed on the last thing the user touched, which is the Wi-Fi.

RF, local network, or WAN: which one is the limiter?

The useful question is never "what's my number." It is: is it the Wi-Fi, the local network, or the WAN that is holding me back? You answer it by testing at the right points and comparing, not by running one test and guessing.

Here is the method the figure lays out.

1. **Test the Wi-Fi link by itself.** Put a server behind the AP (A) and run wired-versus-wireless to the same endpoint. The wired number is your ceiling. If wireless comes close to wired, your Wi-Fi link is fine and the problem is downstream.
2. **Walk the server outward.** A to C to D. The first place the number falls off a cliff is the first place you have a problem. If A is great and C is terrible, your local-to-ISP hop or

your WAN is the limiter, not your radio link.

3. **Check the radio link a different way entirely.** This is the X in the figure, and it is a different kind of measurement. The WLAN Pros Toolbox tests the Wi-Fi link itself: RF health, channel utilization, MCS and data rates, retry rates. It reports the health of the radio link without ever producing a throughput number at all. Every transmission self-reports the RF conditions it sees. If your MCS rates are high and your retries are low, your Wi-Fi is healthy, and anything else the user complains about cannot be the Wi-Fi.

That last point is the one most people skip. A throughput test gives you a number and makes you infer the cause. The RF health check gives you the cause directly. When the radio link reports healthy and the internet test still reads slow, you have just located your problem on the wired side, and you did it without arguing about which speed-test server was "right."

What, where, when, and how, not just how fast

Before you trust any throughput number, ask four things:

- **What** is being tested? Wi-Fi only, local network, WAN, or the full path?
- **Where** is the server? Behind the AP, near the ISP, or out on the internet?
- **Wired or wireless?** Run both to the same endpoint, or your number means nothing.
- **One sample, or many?** One run on one device is an anecdote, not a measurement.

Answer those, and the same speed test that used to start arguments starts ending them instead.

A single internet speed test cannot tell you whether your Wi-Fi, your local network, or your WAN is the limiter. It was never built to. It measures one slice of the path to one server it usually picked for you. Test at the right points, compare wired to wireless to the same endpoint, and check the radio link directly. Then the number finally means something, because you know exactly which part of the path it is measuring.

When someone hands you a green speed-test result and tells you the Wi-Fi is the problem, what is the first thing you check before you believe them?

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