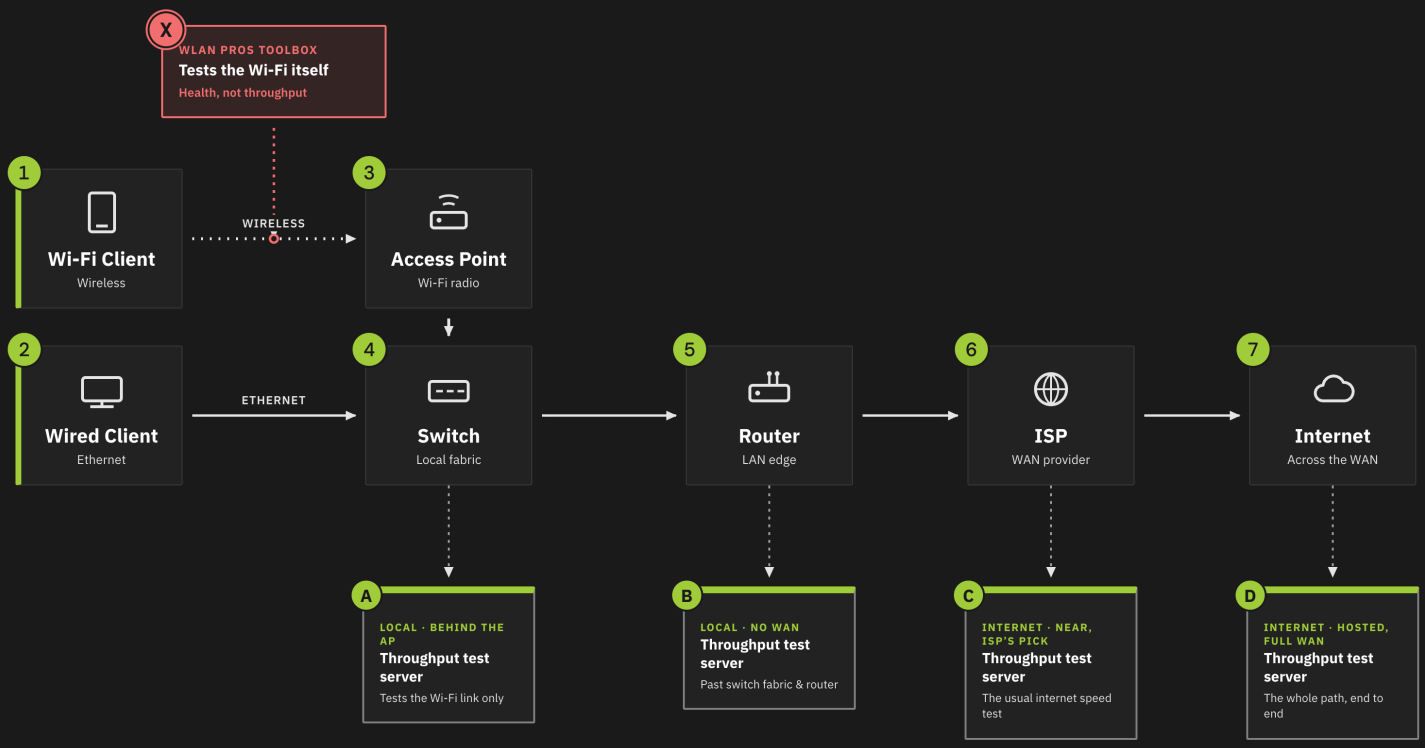
THROUGHPUT TESTING

Where you test changes the number

A throughput test only measures the path **between the client you start from and the server you measure to.** The boxes **1–7** are the path; **A–D** are where a test server can sit along it; **X** is the Toolbox app testing the Wi-Fi itself. **What, where, when, and how** you test all change the result.



THE RESULTS MATRIX: WHAT EACH TEST ACTUALLY MEASURES

● From **1** : Wi-Fi client ○ From **2** : Wired client ○ To **X** : Toolbox Wi-Fi test ○ To **A–D** : test server

FROM	TO	WHAT IS BEING TESTED	RESULT
1	X	RF info, CH utilization, MCS rates, retry rates, data rates	**Health of the RF & Wi-Fi network, without throughput**
1	A	Wi-Fi to a test server **directly behind the access point**	Testing the Wi-Fi link only: reports Wi-Fi throughput
1	B	Wi-Fi through AP, switch fabric, and router, no WAN	Testing Wi-Fi plus local network, without WAN
1	C	Wi-Fi through local network to the server the ISP chooses	Testing local network plus WAN to the ISP's server
1	D	Wi-Fi & local network across the WAN to an internet-hosted server	Testing Wi-Fi plus local network plus WAN across the internet
2	A	Ethernet to a locally attached test server	Testing the local Ethernet only
2	B	Ethernet through the local switch and router, no WAN	Testing Ethernet plus local network, without WAN
2	C	Ethernet through local network to the ISP's chosen server	Testing local network plus WAN to the ISP's server
2	D	Wired local network across the WAN to an internet-hosted server	Testing local network plus WAN across the internet
1 2	D	Compare **wired vs. wireless** to the same endpoint server	Is it Wi-Fi, the local network, or the WAN that's the limit?

Before you trust a number, ask:

- ? **When, where, and what client** is being tested? Why?
- ? **What** is being tested: TCP, UDP, other? Why?
- ? **Where** is the test server located? Why?
- ? **How often** are tests completed? Why?
- ? **One test, or multiple and averaged?** What variability did you see?

LOCAL TEST SERVERS

Can be **iPerf, LibreSpeed, a WLAN Pi,** and more, and can be configured to mimic certain application loads. An internet speed test cannot.

Throughput testing: where you test changes the number. Boxes **1–7** are the path: a Wi-Fi client **[1]** over the air to the access point **[3]**, a wired client **[2]** into the switch **[4]**, then router **[5]** → ISP **[6]** → internet **[7]**. A server at **A** reports the Wi-Fi link; a server at **D** folds in the whole local network and the WAN. **X** is the Toolbox measuring RF and Wi-Fi health directly, with no throughput number at all. Same client, very different result.

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