Using Internet Speed Tests to Test Your Performance

The idea of using an Internet speed test to test your Internet speeds may seem like an easy and logical choice to help troubleshoot performance issues you may be having. But, as you will realize, it is not that easy and often does little to help discover where the true performance issues are derived from.

With many people at home, schooling from home, and working from home, a good Internet connection has become more of a priority than ever. But with more people using your connection the demand on your network is higher and performance can become an issue.

When things are "slowing down" we may assume it is an ISP issue or think we need to increase our bandwidth to solve the issue. Though in some cases your ISP may be having an issue, or you may need more bandwidth, often it is your home network causing the issues. These issues can include routers that are outdated, too many users, wireless interference, distance issues, and don't forget your devices and user habits.

So, when things seem slow, just performing a speed test offers little help to solving the issue. But this is not where the problems with speed tests end. All speed tests are not built the same, and you will notice a variance between speed test sites and even multiple tests done from the same site. This variance can derive from the site's own servers being overloaded to your home network being in use.

The "ceiling speed" is a reference to the total speed you could get from your modem connection under ideal conditions. This would mean you are directly connected via an ethernet cable to the modem, your device is at peak performance, and the server you are testing from is not congested.

The "real-world speed" refers to the speed you can obtain through your home network under normal use and circumstances. Now we must add in your router, the distance to your router, gaming and streaming habits, and/or if people are using meeting-based software, such as Zoom. Your "real-world" speed will be much lower than your ceiling speed, perhaps 10% or less.

To see how this all plays out I have done a speed test under various circumstances. They are all done via the same laptop, browser, modem, and router. The modem is configured for 100 Mbps down, and 5 Mbps up. I have included a few screen-captures at the end of this paper.

Here are the results:

	Google	Speedtest.net	Oberlin
Wired	69.3 / .07	73.52 / 8.44	111.8 / 4.96
Wireless within 3 Feet	46.9 / 10.1	68.6 / 8.65	90.4 / 5.01
Wireless within 3 Feet while Streaming	54 / 10.9	65.22 / 8.59	90.21 / 5.13
Wireless, 60 Feet (2 Rooms) Away	7.63 / 5.33	19.25 / 8.81	16.77 / 6.13

Key = download / upload

The results show that each speed test site reveals different results – some more than a 40% difference. From wired to wireless a 30% loss of bandwidth can occur and when we increase our distance, we can lose up to 85%. We could continue by adding more devices and drop the speed test results by even more. And finally, even when the same site is used, we can have different results. Three tests performed back-to-back can have over a 25% difference in their results.

To sum things up, all speed test sites are not equal. We can also tell that a wired connection is much faster than wireless, but distance plays the biggest role.

So, what does all this mean?

1. When you test via your wireless network you are getting results based on your router and the distance from your router.
2. When testing via a speed test site you are testing via the world wide web and the servers used by the test site.
3. To properly test your modem speeds, you will need to bypass your router and plug directly into your modem.
4. The device (i.e., a laptop or desktop computer) connected to the modem must be plugged into an electrical outlet and all programs shutdown. There should be no extra browser windows opened or programs running in the background.
5. Using 208.66.208.31 as your speed test will show the results of the Cable Co-op network. Using any other speed test site leaves you at the mercy of the world outside of Oberlin and outside of Cable Co-op's control.

Here is a small write-up on Internet speed:

 https://www.oberlin.net/internet-speeds-simplified/

Here are some articles about Internet speeds:

https://www.cnet.com/how-to/your-router-isnt-as-fast-as-you-think-it-is-heres-why/

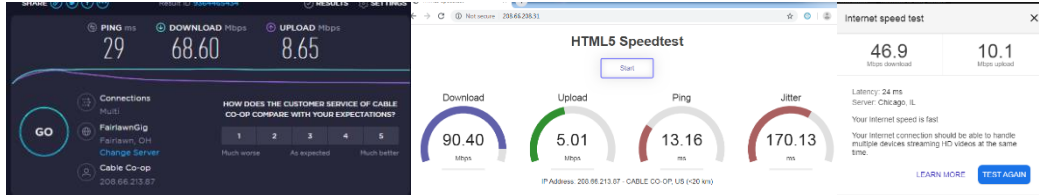https://www.makeuseof.com/tag/4-things-that-might-be-slowing-down-your-home-network/

https://www.speedtest.net/about/knowledge/faq

https://www.allconnect.com/blog/understand-speed-test-results

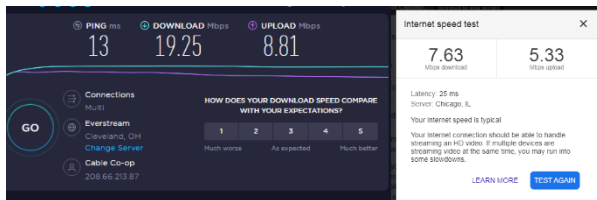https://www.pilotfiber.com/blog/guide-to-speed-tests-how-to-run-read-and-use-them
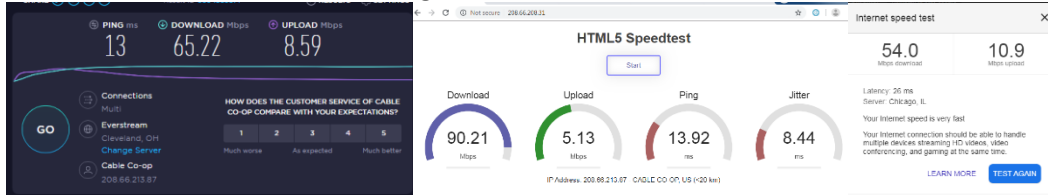
Results via wired:

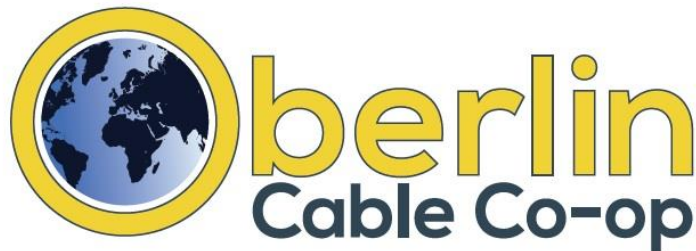
Results via wireless at 3 feet:

Results via wireless at 60 feet:

Results via wireless while streaming one movie:

Results via Google Speed Test, 3 in a row:

Internet, Streaming, HD TV
Member Owned / Community Focused