

## Assignment 2-2: Bandwidth Check

Name: \_\_\_\_\_

### Objective

The purpose of this lab is to introduce you to tools for checking bandwidth of your Internet connection.

### Background

This lab uses your web Browser, so it can be done on a PC or Mac. It would work on a Smartphone or tablet using their browser, but there are also free Apps that will do similar tests. While it can be run on a wired or WiFi connection, the lab assumes that you are using a laptop or tablet with a wireless connection. You can if you want do this lab with others if you like.

**Note:** Internet connections are bidirectional (two-way) but almost never equal in bandwidth. The download (Internet to you) speed will usually be significantly faster than the upload (you to Internet) speed. The rationalization is that you download far more than you upload, which is true for most users. The other reason is simply to discourage you setting up a commercial server without paying commercial rates.

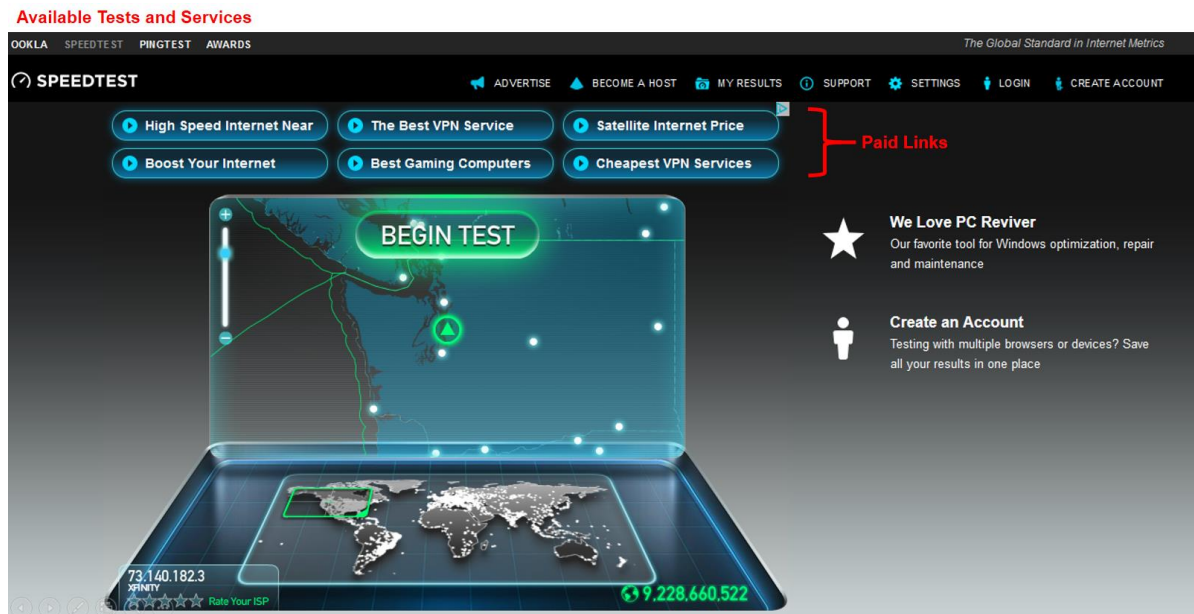
This lab uses your web Browser and a hosted tool, so it can be done on either a PC or a Mac. It assumes that you are using a laptop or tablet with a wireless connection. You can if you want do this lab with others, particularly if you don't have WiFi.

### Bandwidth Speed Test

Go to this Web site: <http://www.speedtest.net/>

You might want to bookmark this site. It is very handy when you are working and the network seems slow you can get a good indicator of the sites connectivity. Number of users on the LAN and on the ISP can dramatically impact your results.

The screen will look similar to this.

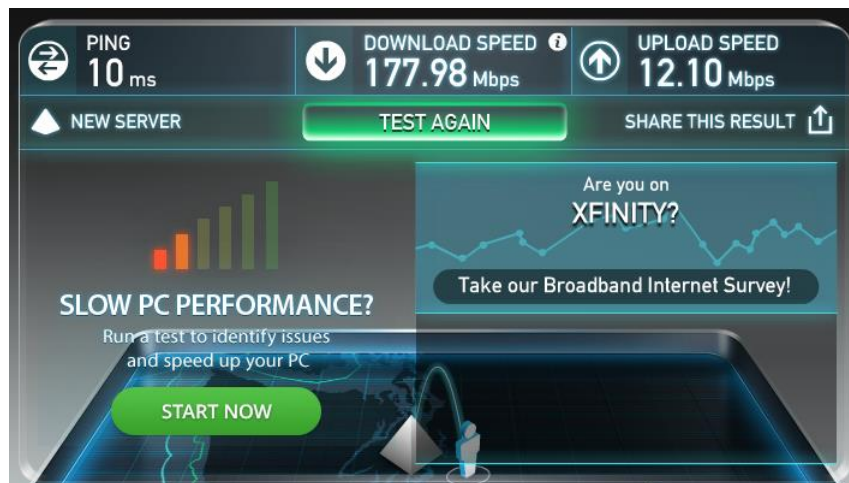


When you click on the **Begin Test** button, four things happen.

1. The tool will pick a server to ping in your area – actually in your ISP's area\*.
2. It will run a PING test to the site to verify connectivity and to give you an idea of the roundtrip time for a packet to go to the site and return.
3. It will run a timed download speed test.
4. It will run a timed upload speed test.

\* Your ISP's "headend" can be quite far away in the case of satellite providers – the map will give you a pretty good idea where it is. Note the results will be fastest because the distance will be close. They do not really reflect your throughput if you deal with sites farther away.

The important output is just the top row. The second row is useful to run another test and everything else is more links to advertising.



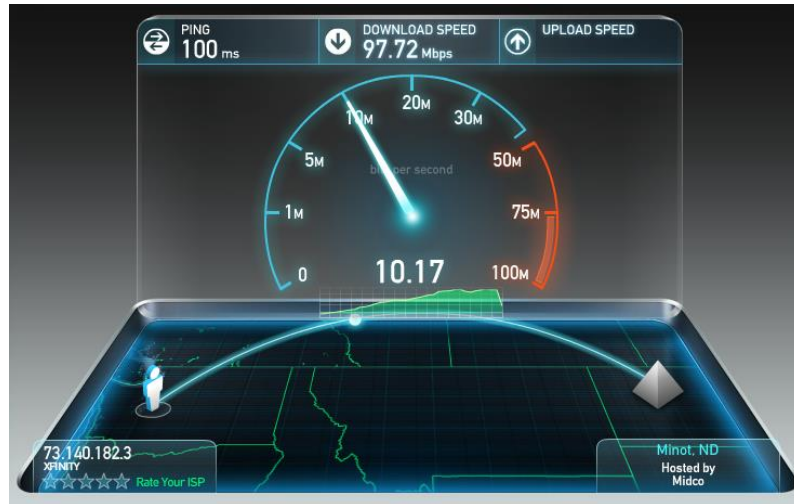
If you click **Test Again** it will run the same test to the same test site. If you run the test a couple times you will often see performance variation often within a short timeframe.

If you click on **New Server** you can click on any of the dots you see on the map and it will run a test to that site. The slide bar on the upper left corner will let you adjust the map – minus (down) expands the map. Don't click on **Begin Test** because that will revert back to the original site.

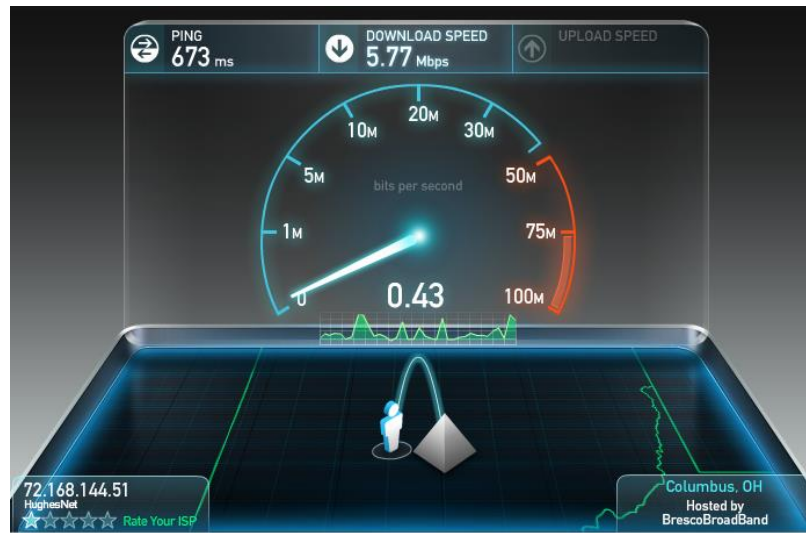


The next image shows a test from my house to Minot, ND that I captured during the upload test. Note the PING took much longer (10x) and the download speed is about half

of the initial test. Also, note the green graph below the dial, it shows that the bandwidth was not consistent over the duration of the test. It started slow and then picked up speed.



The next example shows a recent test I did in Yakima, WA on a Hughes.Net dish system. First, note the long PING time and the small download speed. Upload ranged from 0.29-0.57 mbps. While very slow, they are not uncommon in rural areas without cable or digital phone service (Yakima has both, but this place is outside both company's area of interest even though it is within a mile of the city as the crow flies).



Second, look at the map. It looks like the test occurred in OHIO – that is where the “headend” for Hughes’ satellite system is located. The PING actually went from Yakima to Ohio, but the person-graphic only represents from the headend to the destination. Finally, look at the performance graph, the peaks are the 5.77 mbps, much of the time it was far less than that.

## You Try it

My suggestion would be to experiment with Speedtest to distance sites from someplace where you are comfortable and can think about or discuss your results in comfort, out of the weather, and maybe with food and a beverage.

Then I'd like you to make three tests at each of at least three sites and record your results – if possible, school and home would be too good tests. For this part, letting the tool select the destination is fine. It will give you a comparison for the locations.

Consider running Wireshark captures of some of your tests. I'd suggest closing as many other applications as possible to reduce the size and complexity of your captures.

Screen captures are always a nice record of your results.

Record your Speedtest results in the table below.

Location	Test 1	Test 2	Test 3	Test 4

After recording your results, try 2-3 more times from a single location using the **Test Again** button with a short period of time and record each results. Are the results the same? Why do you think? Maybe reflect on that after running tests in a couple more locations. Maybe try 3-4 rapid retries and then spaced out a couple minutes apart. What is this telling us? If there is a group of you run tests at the same time and compare the results.

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