

Which is faster - a router's wired or wireless Internet connection?

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*Stump the PC Club is a free tech-advice column written by members of the **North Orange County Computer Club**, which has been in existence since 1976. Visit the club's site at noccc.org. And don't forget to stop by the Gadgetress' home for the PC Club, at ocregister.com/link/pclub, to find out how to ask a question and read past answers.*

QUESTION: I have two Mac computers and a laser printer hardwired to a D-link Extreme N Gigabit Router. Would my Internet browsing and e-mail be faster, slower or the same if I used the wireless features instead of connecting it via Ethernet cables?

PC CLUB: First of all, a wired or Ethernet cable connection to a router is the fastest and most secure connection. So - how much performance do you give up with wireless? The answer is "it depends."

First of all, your Internet speed can only be as fast as what you get from your Internet Service Provider. In Orange County, Verizon's FiOS service offers some of the fastest download speeds of 50 megabits per second.

But everything between the Internet modem to the components of a computer could slow that speed down.

D-Link Xtreme N Router

Let's start with wireless. There are several standards for wireless routers including ones that comply with the 802.11g standard and those that comply with the [recently approved](#) 802.11n standard. But the marketed speeds — wireless g routers transfer at rates up to



54 mbps, while wireless n routers are anywhere between 100 to 300 mbps — have nothing to do with how fast your Internet is or how fast your computer can pull up web sites.

And there are wired connections, which include Gigabit routers. The term Gigabit refers to how fast files can be transferred between two devices wired to the same router. For example, if you have two PCs hard-wired to the router, you can take advantage of the gigabit speed, which has a theoretical maximum bandwidth of 1,000 mbps. This feature, too, has no bearing on your actual Internet connection speed.

Speed is limited by the slowest link in the data transfer route. For example, your particular wireless router may have a higher bandwidth than your Internet connection. This means that upgrading to a new and faster wireless n router may not improve your wireless performance.

Speed could also be limited by the speed of your hard drive, which in my case is 400 mbps. Wireless speed could be hampered by poor signal strength, especially if you have a lot of walls between the router and computer.

If you are just surfing the Internet you will generally notice only a small difference between a wireless and a wired connection depending on your Internet service provider.

If your ISP provides blazing speed, then your wireless router may be the bottleneck. If you are downloading large files, then your wired connection will be faster than wireless. How much faster depends on the speed of your router, the traffic on the network, the speed of the server from which you are downloading, the size of the files, etc. In my experience, using an 802.11g router, the speed of the wired connection is twice that of wireless. When using an 802.11n router, the speed of the wired connection was only 50 percent faster than the wireless.

Here are more results from my tests:

1. Wired connection average download from the Internet is 25mbps
2. Wireless 802.11g router average download is 8 mbps
3. Wireless 802.11n router average download is 25 mbps
4. Wired download large file speed is 16 mbps
5. Wireless 802.11g router download large file is 9.6 mbps
6. Wireless 802.11n router download large file is 16 mbps
7. Wired PC-to-PC file transfer speed is 96 mbps
8. Wired PC-to-PC file transfer with gigabit router is 190 mbps
9. Wireless g PC-to-PC file transfer is 19 mbps
10. Wireless n PC-to-PC file transfer is 38 mbps

Note: Results 1 through 4 were obtained using sites such as www.speakeasy.net, www.speedguide.net and www.pcpitstop.com to measure the Internet download speed. Wireless clients (PC connected wirelessly to the router) must

have a wireless n Network adaptor to take advantage of the higher speed. All of my tests were conducted with a Linksys WRT54G or Belkin Wireless N+ Model 8235 router.



A big factor is the bandwidth provided by your ISP. Cox cable, for example, offers three plans with speeds of 1.5 mbps, 12.5 mbps and 25 mbps. You can compare your wireless and wired download speeds by going to any one of sites mentioned above. Be sure to run the tests more than once and at different times of day and average the results. Remember, the only true test is transferring files and measuring the elapsed time. This is more meaningful than going to a test site.

In my case, I have the 12.5 mbps plan with Cox Cable. Theoretically, with a Wireless-G router, rated at 54 mbps, the download speed would be limited by my ISP. Not so. My download speed on the average is 25 mbps (higher than my contract states) wired and 8mbps wireless. With a wireless-n router, rated at a theoretical maximum 300mbps, the wireless download speed tripled to 25mbps.

Conclusion - be aware of all of the hype when purchasing a router. You may never achieve the vendors rated performance. ~ *Ed Schwartz, NOCCC member. View his blog at www.edwardns.com/blog*