

Routers, Routers, and the like

Here's a few handy tips about how your Wi-Fi router works and some guidelines to help optimize what you've got. It's a router by the way....not a rooter.

What's the difference between Wi-Fi and Broadband?

Wi-Fi is a function of your router, broadband is the bandwidth coming into the premises provided by your ISP and determines the speed of your internet connection. Your internet speeds when connected to Wi-Fi will be limited by the amount of broadband you purchase.

What about Wi-Fi range?

This is the radius an access point's Wi-Fi signal can reach. Typically, a Wi-Fi network is most viable within about 150 feet from the access point. This distance, however, changes based on the power of the devices involved, the environment, and, most importantly, the Wi-Fi standard. A good Wireless-N, or 802.11ac Wi-Fi router can offer a range of up to 300 feet or even farther.

How do I tell what Wi-Fi speeds my router is capable of?

Below is a breakdown of real-life average speeds (dependent on your internet connection) you can expect from wireless routers within a reasonable distance, with low interference and a small number of simultaneous clients (i.e. people and devices using your Wi-Fi at the same time):

802.11b - 2-3 Mbps downstream

802.11g - ~20 Mbps downstream

802.11n - 40-50 Mbps typical, varying greatly depending on configuration

802.11ac - 70-100+ Mbps typical, higher speeds possible over short distances

The above estimations are based on our real-life experience. Often your router's packaging will list higher speeds, but this is because manufacturers are combining the upstream and downstream bands available to their device. Because it is only possible to use one band at a time, the actual performance speeds you'll see will be much closer to what we've listed above.

To identify what type of router you have, the model number will typically include this information. For example, 1600AC denotes an 802.11ac router, and 741n denotes an 802.11n router. You can usually find the model number on the bottom of the router, as shown in the image below.



There may also be a confusing number next to the letter in the model number like *Wireless N 300 mbps*. This does not mean you will get 300 mbps internet, it means that if you combine all of the bands of the router and the downstream and upstream, it reaches 300 mbps.

Your Wi-Fi is only as fast as your slowest link:

Rule of thumb: *The speed of a single network connection is determined by the slowest speed of any device involved.*

For example, in order to have a wired Gigabit Ethernet connection between two computers, both computers, the router they are connected to, and the cables used to link them together all need to support Gigabit Ethernet or faster. If you plug a Gigabit Ethernet device and a regular 100 Mbps Ethernet device into a router, the connection between the two will be capped at the speed of regular Ethernet, which is 100Mbps.

As mentioned above, regardless of how fast your router and internet speeds are, if the wireless receiver on your computer is too old or slow, you will not see full speeds. Example: If you have an AC router producing 100mbps Wi-Fi around your house, but your 5 year old laptop only has an 802.11n card, your router will auto negotiate the speed down to an 802.11n band and lower your Wi-Fi speeds to 50mbps. This is due to your laptop having older technology than your router, to fix it – you would need to use a newer laptop or purchase an AC wireless card for your laptop to get the full speeds.

How does connecting multiple devices affect my Wi-Fi?

Certain devices can utilize bands other devices can't. Any smart phone these days will connect to an AC or Dual Band N router. Most routers support between 50-250 devices, but internet is like a limited pressure water supply, think of each device as a hose. As more hoses turn on the pressure drops and less water comes out of each one. A 1.5Mbps connection shouldn't have more than 1 or 2 devices connected to it.

What about Interference?

The construction of your home can greatly affect wireless communication speed and range. Some common types of materials, such as wood and glass, don't have much of an effect. However, denser materials such as concrete, brick and metal can make it difficult to connect, slow network speeds, or even completely block wireless signals from reaching certain parts of your home.

What should I do if my Wi-Fi signal strength seems weak?

First, try moving your wireless device to a new location. It doesn't have to be to a different room or floor. Even just a few feet can make a significant difference in signal strength. Some wireless devices, like Wi-Fi routers and cordless phones, can have adjustable antennas. Pointing the antenna in a different direction to aim the signal can help as well. Another option is to add a Wi-Fi extender to your network. Extenders re-broadcast your router's signal from another room or location. They can give devices that were out of range or receiving a poor signal a stronger Internet connection. Powerline adapters are another option, especially useful for larger homes with thick or dense walls and floors. Powerline adapters use your home's electrical wiring for Ethernet so you can easily extend your network right through the walls without installing expensive new wiring. Connecting a powerline adapter to a Wi-Fi extender can bring a strong wireless connection to even the most remote rooms in your home.

I have more questions – who can I call?

You can always contact our dedicated support team to answer general or specific questions regarding your internet services, devices, or Wi-Fi at **(541) 386-8300 ex 300**. We respond to email too: support@gorge.net.