What's Up with Dual Band Modems

More Dribble from the Pen of Wolf

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5GHz verses 2.4GHz

Most modern modems/routers, as part of your Internet service or cable TV system, have dual band functionality. Each of these designs consist of several channels to keep neighboring devices from interfering with each other. The 2.4GHz systems are an older technology and became ubiquitous with almost everything that was "wireless" but this led to frustrating signal interference.

Current WiFi guidelines recommend switching away from 2.4GHz to boost speed and reliability and avoid congested bandwidth. Devices like microwaves, baby monitors, and cordless phones often use 2.4GHz causing a threat to good WiFi usage. What I find amusing is current devices have both bands built in, but the 2.4GHz is not turned on by default. The router could be made cheaper by not putting this little radio transmitter in there at all.

2.4GHz gives you more range but a less bandwidth or data speed, whereas, 5GHz offers a more bandwidth but can’t travel as far around your home. This implies anything that’s going to use a lot of bandwidth needs to be as close to the router as possible. This is because radio waves attenuate more easily at higher frequencies, and that’s the same with WiFi signals because in fact, they are just radio waves. Devices using the 5GHz band will also have more difficulty penetrating walls and other objects when connected for WiFi. So how do you decide which band to use? Remember: data is king. Modern devices have to have it or die. So basically, the 2.4GHz band is passé.

Another factor to consider is your basic provider data-speed they offer you according to your plan. ATT is typically 20 to 50 MBS (Mega bits per second). Spectrum is advertising 200MBS. Each character coming onto your browser window takes 8 bits to display and another 24 bits that sets the color, so you can see, with the mass of data that flows into onto your screen with each refresh takes a lot of data bandwidth or BPS(bits per second).

The concept of bandwidth has been blurred by marketing. Bandwidth is more applicable to distinguishing a segment of a frequency spectrum like the frequency band to broadcast an FM radio station, but with digital electronics the speed which useful data needed to transmit information has kidnapped the term bandwidth to measure this data-rate idea. So frequency bandwidth and digital data-rate have come to using the same term. They are related by the fact higher

frequency transmissions can contain higher data-rates because each one of those data bits needs a cycle of broadcast frequency to be counted. The higher the frequency, the more bits that can be transmitted.

Now that you know what's going on with routers and bits, how does this all affect our little Zoom gatherings? If you are working from a laptop at the other end of your house, the bandwidth getting to your computer is on the hairy edge of breaking up. If someone in the house is looking at a video on their phone or a TV, that bandwidth is being divided going to support all those devices. At some point, your Zoom app may not get enough information to recognize your data traffic and decide to buffer or drop out. You can experience skipping in and out as the app struggles to read what's coming in.

Armed with the above knowledge, you can move closer to your MODEM/ router or if you can, the best solution is plug your computer into the router via an Ethernet cable and bypass this radio frequency/bandwidth issue altogether because the direct connection does not use WiFi broadcast, it's wired directly into the bandwidth of your provider. The other alternative is to install a WiFi adaptor that physically moves the router broadcast closer to you. You still have to run a wire to the adaptor and hang it somewhere, but that is a common solution people are getting used to that live in big houses.