

## Things to consider when you buy a Modem/Router

Many of us rent our modems from Comcast. For about a full year's rental you can buy the equipment. The downside of buying is that if standards change, you are responsible for replacing the equipment. If an electrical surge damages your equipment, you are responsible for replacing the equipment.... You are responsible for the setup, and functioning of your equipment. Right now standards are changing.

Normally when I buy equipment, I do a lot of research. When I decided to put in my own modem/router this year, I wasn't thorough and I made a really bad choice. I went to Bestbuy, and saw what kind of cable modems they had on the shelf. I then read the reviews, and selected one that had good speed, good price and good reviews. MISTAKE! I should have done more research.

First off I bought a modem/router combo unit. Our condo is tiny and anything with a reduced footprint seemed like the way to go. What I didn't know was when you have a modem/router combination in most cases you can't update the firmware when it becomes available. You have to wait for your ISP (Internet Service Provider) to push the update. They finally updated my router's firmware last week. The patch has been out for 6 months!

When a router becomes infected, your whole network is vulnerable. An infected router won't be detected by your anti-virus or anti-malware programs. Keeping your firmware up to date, and changing the default admin password on your router are some of the precautions that I take to keep my router safe. You might have read about the router exploits in the news over the summer. Apparently over 50 routers have a vulnerability that allow them to be hacked by opening an malicious email attachment or visiting an unsafe website. A lot of the exploits depend on the user's not changing the router's default password. Whether I rent or own, I change the admin password on my router as a security precaution as my first order of business. After all who wants one of their major passwords to be "password", "admin" or "1234", which is the case with most routers when they come out of the box. You can see how this would be rather easy to guess. It also bothered me that my router was running the exploit-vulnerable firmware. I'm finally up to date.

The other thing I failed to consider 5GHz, verses 2.4GHz spectrum band and whether the router supported the newer 802.11ac standard. Most new equipment manufactured after 2013 is able to run on either spectrum. Anything older usually can only see the 2.4GHz spectrum. My new Motorola Surboard SB6580 is "dual switched", which lets me choose one or the other. For a few dollars more I could have had outter that offers "dual concurrent" offering 2.4 and 5GHz simultaneously. This would have let me use 5GHz for my newer equipment while using 2.4GHz on my Windows 7 PCs and my iPhone 4. At this point when buying any Wi-Fi equipment, you should be looking for "dual band" in its specifications. This is especially important for video streaming devices.

I had read that 5GHz was faster and didn't travel as far. After doing some experiments, I found that 5GHz would be ideal for use at Vista Royale. I may have mentioned that the 2.4Ghz Wi-Fi environment over at my condo is miserably slow, with lots of drops, where we lose connectivity for 3 to 5 minutes at a time.

Typically a router comes out of the box set to 2.4GHz Auto, 1, 6 or 11. This is because only channel 1, 6 and 11 in the 2.4GHz spectrum don't interfere with each other. Wi-Fi is wider than one 2.4 GHz channel. In addition, there are lots of household gadgets that can cause interference on the 2.4GHz spectrum. This band is not just for Wi-fi. A few 2.4GHz offenders are microwaves, wirless security cameras, baby monitors, cordless phones. But for now lets just look at the other 2.4GHz Wi-Fi signals.



Here is a picture of what the 2.4 Ghz band Wi-Fi looks like in my condo. But this is just a glimpse. In this picture you see we have a lot of people on channels 1, 6 and 11, but we also have someone on channel 2, channel 3 and channel 7. Actually if I took enough snapshots, we would see channels 1,2,3,4,5,6,7 are all in use. Routers listen for gaps in the “conversation” on their own channel before they “talk”. They don't consider other channels. So those running on channels 2, 3 and 7, create noise on channels 1 and 6 and vice versa. This causes a lot of retransmissions on channels 1, 2, 3, 6 and 7 to compensate for the noise. When I chose my channel, I ran a lot of speed tests, and determined that even though it is more crowded, channel 11 is consistently the fastest channel here.

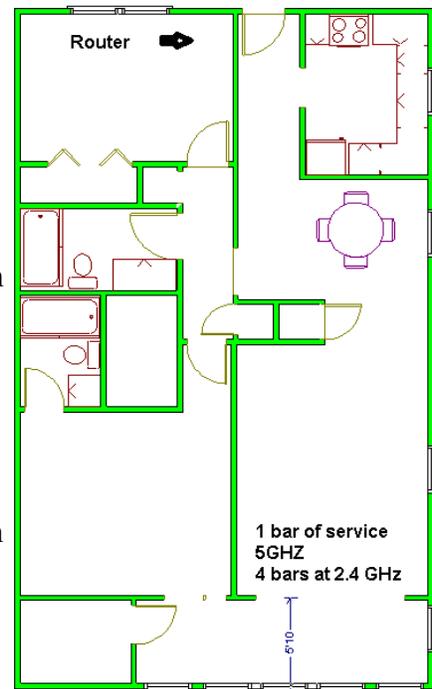
You can't police the airwaves. There is nothing illegal about running on an off channel, but it sure does slow down Wi-Fi by creating a lot of interference on the standard channels. This is where 5GHz come in. Nothing is running on it. It is empty in my area. Sure you think its only a matter of time until it fills up too. But NO, it is not going to become an issue because 5GHz is a very short range signal.

In my unit, with my router in the second bedroom, power set at 100% , I loose a bar of 5GHz service by the time I get to the door of that bedroom, and by the time I get to the far end of the living room, I'm going to be down to 1 bar of service.

The 5GHz signal can't be seen from downstairs, doesn't travel down the open walkway beyond one condo. It is also free from interference from all the 2.4GHz appliances and 2.4GHz routers in the area.

In contrast, you can see my 2.4GHz signal all the way down the walkway and in the neighboring buildings, as well as downstairs.

My 2 days of experiments with 5GHz showed my Wi-Fi internet speeds to be faster than my current 2.4GHz system, even when I'm only getting one bar of service. Since it doesn't travel far, the 5GHz spectrum is less likely to interfere with my neighbors, or have my neighbors interfere with me. My neighbors that have the 2.4 GHz wireless security camera trained on the parking lot, are not going to interfere either.



I really want to run a 5GHz network. At present several older pieces of equipment are not 5GHz compliant. Had I bought a true dual band router that runs both bands simultaneously, I could still run my old equipment at 2.4GHz while running our tablets and phones at 5GHz. It would have saved me money. Now I'm looking at USB dual band Wi-Fi adapters for my Windows PCs, and a repeater, because my new router isn't strong enough to reliably cover the living room. Still looks like a new "concurrent" dual band router with external antennas is going to be the cheaper option.

So in conclusion, look for a separate modem, not a combo modem/router. For a router, look for something that has dual band and can run both bands simultaneously. You may need a router with external antennas to get 5GHz throughout your condo, otherwise a wireless repeater might be needed. Whether you rent or own, don't leave the router's default password to be "password"!

I hope this helps you make a better buying decision than I did, if you decide to buy a cable modem, and or a new router in the future.

Food for thought

Vicky

Recommended reading:

Router Security:

<http://www.tripwire.com/state-of-security/vulnerability-management/wireless-router-vulnerabilities-leave-enterprise-networks-vulnerable/>

<http://www.techworld.com/tutorial/security/home-router-security-2015-9-settings-that-will-keep-bad-guys-out-3609122/>

<http://www.tomsguide.com/us/home-router-security.news-19245.html>

<http://routersecurity.org/checklist.php>

<http://blog.emsisoft.com/2015/05/27/exploit-kit-attacks-dns-settings-of-over-50-different-router-models/>

Pros and Cons of 5Ghz

<http://www.wi-fiplanet.com/tutorials/5-pros-and-cons-to-5-ghz-wi-fi-routers.html>

<http://www.speedguide.net/faq/is-5ghz-wireless-better-than-24ghz-340>

<http://www.macworld.com/article/1140685/networking-hardware/wifi-spectrumbands.html>