

## ***Crossing the Digital Divide Volume 16***

“Plumbing”

by Joseph Feigon  
for the Observer

Out of the fog and into the sun, spring has sprung and the growing season in full swing. The sun feels good, the ground still semi-soft, and dinner time seems to be rolling around later and later in the day. Time to unwind, check email, do a tad bit of research, maybe the news recap, but the computer only works in the living room, and it's too nice on the deck, and you'd really like wifi access out there, but...

Internet Access options, in Mendocino County, are typically “gateway” based. If you're a WillitsOnline customer, you likely have a modem or modem/router connected to your phone line. If you use one of the satellite solutions (Hughes/Exede), you have, at minimum, the satellite modem and possibly a router (wired, maybe with wifi). Most of the wireless routers I come across are low-powered, consumer-quality devices, often sitting behind a TV or on the floor in the corner.

Wifi and physical data cabling are two forms of digital plumbing. Each has benefits, each has negatives. Whenever possible, the FASTEST, most SECURE connection to your GATEWAY is an Ethernet cable, which is physical media, and engineered to pass data quickly and error free between computing device and the router/gateway. Cabling to an office, desk, garage or workshop should not exceed 300 feet for a single “run”; beyond that, data loss may result.

Wifi is slick, no wires needed, but this flexibility has its own set of limitations. Wireless signals are prone to degradation through walls as well as distance from their source. Wireless signals are also subject to interference from other radios, including older microwave ovens. Not all wireless devices/routers are the same. For example, your smartphone can be a wireless hotspot, suitably strong (with US Cellular/AT&T/Verizon/T-Mobile/Sprint) enough to support a few users on their laptops, but not far from the iPhone or Droid, as the signal produced will decrease in strength 5-10 feet or so away from the cellphone. Let's assume you have a Netgear, Linksys, Asus or similar, consumer grade, under \$100 wireless router. How do we improve coverage without buying more gear?

Wireless signals, if we could see them, look somewhat like a donut. The further away the signal travels, the donut is deconstructed, leaving ever increasing gaps between the radio waves until they completely fade. As a wifi signal weakens (distance/obstructions/etc.), connections get dropped, web pages won't refresh, Pandora dies. This side of spending more money to improve hardware/range/coverage, here's what you can do now:

- 1) Move the wifi router off the floor, and as centered in the room as possible. Don't lose half your signal to the floor or wall behind the modem, visualize that donut, give it room to grow;
- 2) Update the firmware on the router – this is the software that runs the router, the updates often correct shortcomings in programming, maximizing the hardware;
- 3) Confirm/modify your wireless settings. 20MHz on the broadcast beam, not 20/40. 802.11g/n, not 802.11a/b if you have no need to support old devices (older than 5 years).

Items #2 & #3 are accessible via administrator login on the wireless device.

Don't forget, if you have neighbors, or live where someone could sit in front of your house and access your wireless network, make your wifi network is secured with a WPA or WPA2 network passphrase (not password), such as: "this is our wifi" with spaces between the words. Do not use WEP, it's archaic and easily hacked. Enjoy the weather!