



NINE TIPS FOR IMPROVING YOUR OFFICE WIFI

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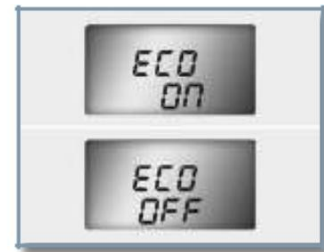
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Using Wi-Fi in an office is essential to the use of the Medscribber electronic medical record. There is no other way to get computer mobility other than through a good office Wi-Fi network. Getting that network is more than just opening the router box and plugging it in. A poorly performing Wi-Fi network is costly, slowing down important workflow. There are certain things that can limit the received Wi-Fi signal, which makes the mobile office computers run slower than they should. This problem can easily be improved by looking at nine items.

Turn off the router's "green" settings

Some routers have a "Power savings" mode which is on by default. Bandwidth range and speed is negatively affected by this mode. Settings like "Transmission Power" or "ECO mode" or "Green" or "Power saving" need to be turned OFF. Also, some routers have an "Automatic" transmission setting which turns on the eco settings, disable it usually by going to "100%" all the time. Electricity saved is a couple of dollars per year at most.



Make clear signal sight lines

The distance between the router and the computer using the wifi affects signal strength which then affects speed. Forty feet is a lot for the cheaper routers. Besides distance, the other wifi destroyers are the objects that are between the router and computer, walls and floors. Many medical offices are built with metal wall studs and metal soundproofing wall straps. Floors and walls will also have electrical wiring that gives off interference. Water pipes are an almost total block to wi-fi signals. Even gloss paint on walls may reflected wifi signals



and create signal drops or "dead" spots. Minimize these effects with router placement or add extra access points. Keep in mind too many additional access points may create their own signal loss problems.

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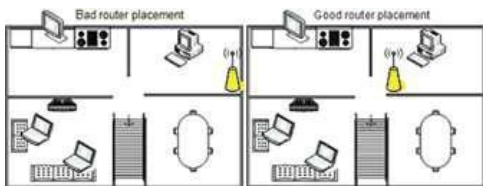
Change the router's antenna

A weak signal is often caused by router antenna design. Replace the built-in antenna of the router with one that is 5db or greater. Make sure to match the 2.4 or 5 GHz band of the router. Not all routers, especially the low end ones from the local computer store or ISP, are able to use an upgraded antenna. Manufacturers often have upgraded antenna's available on their websites.

For most medical offices an omnidirectional antenna that scatters the signal with a centrally located router is best.



Find the best spot for the router



Use a wi-fi mapping tool to find the best place for the router or to determine where and what is causing signal loss. A free tool for this is [Heatmapper](#) for Windows. It will track and map wi-fi coverage of an office location. There is a professional version as well as testers such as

Aircheck that are dedicated devices, local network companies should use these in setting up of any office wi-fi.

Maybe it's the computer that's the problem!

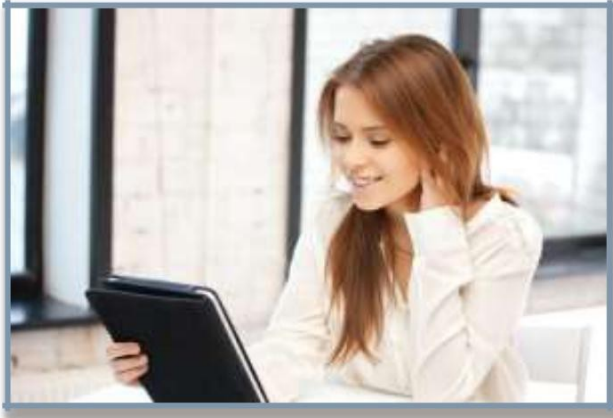
A computer's motherboard can also cause wi-fi interference. Internal computer "noise" is picked up by the built-in Wi-Fi transmitter. Unfortunately, the higher that noise is, the more likely it is for the wireless adapter to lower bandwidth automatically to avoid frequency interferences. Most CPU's will create this noise at various rates causing the Wi-Fi adapter to constantly adapt and make not only a variation in signal strength but also dropped connections. This is especially true on tablets and laptops where the Wi-Fi adapter is often built close to the memory and CPU.

If there is constant switching to "limited" connectivity especially with heavy media intensive web serving or media streaming or PDF downloading, it may be the computer or tablet design. Not good!

An external wi-fi adapter may help by putting distance from the CPU but then there is something sticking out of an USB port.

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Router problems to be fixed



Almost everyone forgets about the router's software. Make sure the router's firmware is up-to-date — especially with a newly purchased one. This is especially true for local computer shop wireless routers. The consumer models are focused on cheap and often ship with buggy software. Go to the manufacturer's website often as they usually only fix software in a one problem at a time pace.

Home and small office routers are not built to handle the wireless traffic of a medical office. If there is sudden loss of reliable wi-fi a good guess is the router has turned flaky. It is not unusual for busy offices to have to replace cheap routers two or three time a year.

There is a catch, good commercial routers start at about \$500, but they are usually more difficult to set up as they are more secure. But high level wi-fi security is not really a concern the way most electronic medical record systems operate in an office.

Choose the right channel

Most routers will automatically detect the least crowded channel and make that its default, or else they will simply set the default on their own, normally at channel 3. This is a problem because Wi-Fi is a shared medium, which means that only one person (or device) can use it at any given time--everyone else has to wait. So no matter how strongly your device detects a Wi-Fi signal, the more routers and devices in the same proximity that are using the channel or channels, the slower it will be for everyone. There is a saturation point.



See some tips in our related paper ["Fast and Reliable Internet Network Connections"](#)

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Use the router's 5GHz network



The 2.4GHz frequency is used by many other devices besides computer wifi. Speed is not just affected with neighbors using the same channel, but also by baby monitors, cordless phones, microwave ovens and more. Most 802.11n routers offer "dualband", which means they're sending two network signals: One at 2.4GHz, and one at 5GHz, which is far less crowded.

Unfortunately, many device makers try to save a few cents on a cheaper wifi, knowing most new customers base the purchase on cost and not the wifi standard. Buy a Tablet PC or laptop that can handle the 5GHz network.

Chose reliability over speed

Sometimes finding and selecting a "lonely" channel is not possible. Crowded channels results in dropped connections which adds extra overhead to re-connect. In such cases, set in the router configuration signal intervals to 20MHz. This will give a stronger and more reliable signal with less dropouts and may actually be faster in a crowded space.

