Wi-Fi dead spots? — Try a Wi-Fi extender, or maybe a mesh network

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If your home is very large or if there are many walls between your router and the location at which you want Wi-Fi access, you may have Wi-Fi dead spots. Your Wi-Fi signal, as all electromagnetic emanations, is diminished by distance and by certain intervening objects, such as walls. (Your specific Wi-Fi capability is dependent on many things, but a typical Wi-Fi router, using the 2.4GHz band and 802.11n, can work 100 to150 feet with no intervening objects.). Not to get very technical: for distance, the signal drops off proportional to the inverse of the square of the distance; and for intervening objects, the loss getting thru the object is dependent on the type of material and its density; metal may stop the signal dead in its tracks. So, if there is a line-of-sight back to the router, dead spots are probably far from your router. If there is no line-of-sight back to the router, you might have dead spots wherever the signal encounters a lot of loss going thru walls and objects. (I have seen a reference to Wi-Fi as being a “3 wall solution”, meaning that the signal may get through no more than three walls, so if you have a spot more than three walls away from the router you will probably have a dead spot.)

So, if you have a dead spot, or dead spots, you may want to think about a Wi-Fi extender (a simple solution), or even a new “mesh network” (a more involved, more expensive solution). A Wi-Fi extender is a device that may look like a router, but is a receiver and transmitter. It receives the Wi-Fi signal and immediately retransmits the signal. The retransmission may then be received by a device that is in a dead spot of the original signal, (but not in a dead spot of the extended signal). The Wi-Fi extender simply extends the area that the Wi-Fi signal may be received. When you set up an extender, you do have to make sure that the Wi-Fi extender is not placed in a router dead spot. If the Wi-Fi extender can receive the router signal, it will retransmit it and devices that can receive the extender’s signal will be included in the Wi-Fi network as if they got the signal directly from the router. Wi-Fi Extenders can be purchased for anywhere from about $50 to $200, depending on features and capabilities. You may even find one below $50 if you wait for a sale; I found one for $25 and it seems to do the job quite well. If you are interested in reviewing some possible choices, just Google “Wi-Fi extender reviews” and you will find a good number of reviews based on price, features, and specifications. So that is the easy (and less expensive) solution, and probably the one you will want to try first.

The other solution, the Wi-Fi Mesh Network solution, is more involved and usually much more expensive. A mesh network may be $200 to $400, or more. Basically, a Mesh Network is a communications network made up of many nodes (access points), organized in a highly-interconnected grouping where all nodes cooperate in the collection and distribution of data in the network. Each node is a router and an access point for your devices. The size of the area to be covered will determine

how many nodes you would need to install. (One recommendation I saw was to install a node every 50 to 75 feet, but that depends entirely on the shape of the installation area.). From Wikipedia, “Mesh” refers to a rich interconnection among devices and nodes. Wi-Fi mesh networks consist of routers and devices that use the network. The devices are typically the laptops, tablets, and smartphones you have in your home. The mesh routers (access points) send messages to the devices, and other routers. The routers are placed in an arrangement so that each one can send and receive from at least one other router. The more routers that can send and receive messages from many other routers, the more robust the network will be. (Though I have seen some indications that there may be some practical limits as to how many nodes can be used in a home mesh network.). A mesh network is usually highly reliable due to its multiple redundant paths to a device. If one node is inoperable, the other nodes can still communicate with each other directly or through one or more of the other nodes. This type of network can be very dynamic, much like the internet itself. (The internet topology and design allow for messages to be re-directed around nodes that may be inoperable so that a message always arrives at its intended destination. Though, this may be hard to believe if you have ever had an unexpected and unexplained temporary problem with an internet session.).

From reviews I’ve seen, a mesh network may be a great solution for a large home or a home with multiple levels. If a mesh network seems to be a solution for you, do a little research before you jump in. Google the term “Wi-Fi mesh network” and look at some of the reviews. You will find many of the router manufacturers you are familiar with, like Linksys and Netgear, but you will also find some new names such as Eero, Luma and Amped Wireless, as well as Google. So, if you think you have dead spots in your Wi-Fi setup at home, you may want to give one of these two possible solutions a try.