Reader Shares His DIY WiFi Booster How-to

Practical Sailor has reviewed several solutions for boosting your WiFi connectivity on board, including the 5MileWiFi (January 2009), the Bitstorm, Wave WiFi, and The Wirie (April 2010). Reader Ed Mini of Mystic, Conn., recently wrote us about his DIY approach to ending his frustrations with lackluster Internet connections while aboard Margalo, his Columbia 8.7 (bought new in 1977). His setup includes some of the same components as systems we've tested, but his package is more affordable than off-the-shelf systems and easy to set up. His letter follows:

"As my wife and I are both freelance IT developers, we require reliable onboard Internet connections. Our setup is almost identical to that of The Wirie (*www.thewirie.com*) but costs $87.50 instead of $250 and has a one-year warranty on the only component likely to fail: the Alfa interface card.

"The installation takes about an hour and requires no electrical know-how. Instead of using a watertight box as The Wirie does, we used PVC fittings from Home Depot; these look great, are inexpensive, and are completely waterproof.

"A brief non-technical note: When we 'connect' to the Web, we are receiving a signal from a server and then engaging in a dialog. The server has to have enough power to reach us, and our machine has to have enough power to reach the server. At anchor, we may be able to receive the server signal, but the WiFi card in a typical laptop (around 2-megawatts) doesn't have the power to hold up its end of the conversation. A reasonable compromise is 500 or 1000 megawatts.

INSTALLATION DETAILS

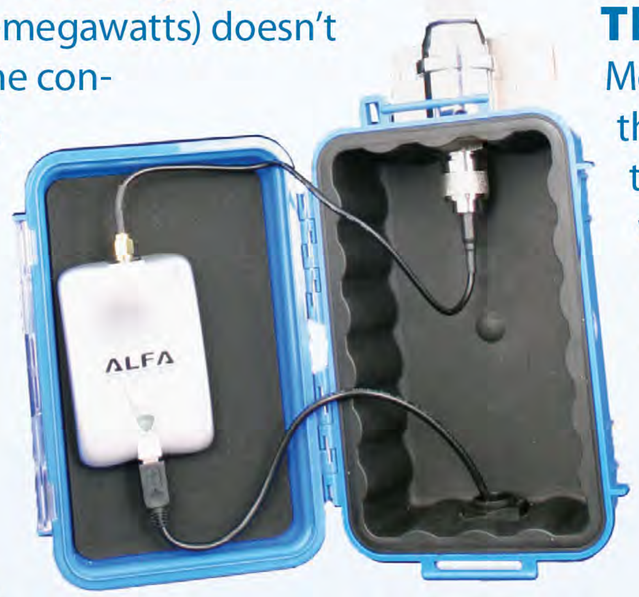
Amplified WiFi Card: The card is an Alfa AWUS036H (*www.alfa.com.tw*, $27.50); it is rated at 500 megawatts, but the manufacturer has recently re-rated it to 1000 megawatts.

Antenna: The antenna is a 24-inch, 6-decibel vertical ($16.50). (The card and the antenna are the same components used in The Wirie.)

Software: Users do not use the WiFi software already installed on the computer. Instead, use the driver and interface for the chipset in the new Alfa card. This card's chipset is a Realtek 8187L; the proper PC or Mac driver and the interface utility can be found on the Realtek website (*www.realtek.com.tw*), if it's not included with the card.

Housing: The PVC container assembly comprises a 3-inch diameter pipe that's 6 inches long, a domed cap, and a screw-in base. (About $10 total for the parts.)

Accessories: We used a 6-inch pigtail to connect the card to the antenna and a 2-foot USB male mini-B to male mini-A USB cable to start the run to the computer, and an active USB cable for the rest of the run.



Ed Mini's DIY external WiFi booster uses several of the same components as The Wirie (above), which PS reviewed in the April issue.

HOW TO SETUP

1. Install the driver and utility to the computer. If it's a PC, select "Show icon in taskbar" for the utility. (I don't know anything about Macs but I am sure there is something similar.) If you right-click on the icon, it will say "No 8187" (you're not connected to the card yet), and if you left-double-click it, the utility screen will flash briefly and then disappear.

2. Drill a hole in the domed cap to take the base of the antenna. The PVC thickness is such that the base of the antenna is too short to screw on the retaining ring, but I used a washer and just screwed the pigtail on to hold it all together.

3. Cut a groove on the base to let the connecting USB cable out, and install the card. I sanded a 2-inch piece of scrap into a curve to fit inside the pipe, epoxied the card to the flat side, and epoxied the subassembly into the pipe.

4. Cut a hole in the base to hold a mounting clamp if you intend to mount the antenna on deck. (I modified a standard antenna rail clamp.)

5. Drill a couple of quarter-inch holes in the cap to facilitate disassembly and fill them with earplugs to keep water out.

6. Put everything together. The antenna will stick out the top, the USB cable will come out of the bottom, and the antenna mounting clamp will be on the bottom-center—and all will be waterproof.

TEST IT

Most directions for this kind of rig tell you to mount the card by your computer and connect to the antenna with "low-loss" coax. DON'T! Low-loss coax will lose about .5 decibels/foot, which means you negate your 6-decibel gain from the antenna in just 12 feet of connection. USB cable has NO loss, so we use it to connect the antenna/card assembly to the computer.

Although there is no loss in the USB cable, due to the design of the USB protocol if the run is more than 15 feet, the receiving USB connection will see the delay as a disconnect. So if your run is more than, say 12 feet (just to be safe), you need an active USB cable that contains a little booster at the sending end. (The bulge containing the booster wants to be the end NOT plugged in to the computer.) This takes care of the problem, and these active cables can also be chained together, if for example, you want to put the antenna module up in the rigging. These cables are a little more expensive than a normal USB cable but will avoid a hard-to-diagnose problem. All power comes from your computer.

Disable the existing WiFi connection. Plug in the USB cable from the antenna module and reboot. You will NOT be using the internal WiFi software; you will be using the utility that comes with the card. Click on its icon; the Realtek management screen will appear. Open a browser/your e-mail client, and you're in business!