

Getting wired — homestyle

No longer just for firms, networks have a future in homes with multiple PCs / **Simon Garfinkel**

IVE BEEN LIVING IN something of a construction zone for the past two months. You see, my wife and I bought a

condo back in March, and we've been renovating it ever since. We started by having the lead paint removed. We have also ripped out a wall, installed a new kitchen, and wired more than 100 electrical outlets and fixtures. There has been a constant flow of workers but it has all been worth the time and money: We're creating a new home that we'll both really love.

One of the things that differentiates our house from others on the block is the computer network we've installed. Although you might think that networks are the domain of businesses, home networks are the wave of the future for any family that's got more than one computer and an Internet connection.

The main reason we wanted a network was to make it easier for us to use our laptops. With a network jack in every room of the house, we can simply take a laptop into the kitchen, sit down, plug in, and check our e-mail.

We can access files that are stored on my desktop machine, use its fax modem remotely, or print to its printer. We can even

reach out across the Internet and download files that are stored on our other computer that's on Martha's Vineyard.

The first step to setting up a home network is to plan it out. These days most computer networks are wired with twisted pair telephone wires in the walls, connected to RJ-45 jacks.

An RJ-45 looks like an oversized variation of the standard RJ-11 telephone jack: instead of 4 wires, it carries 8. We decided we wanted two network jacks (one for each laptop) and four telephone

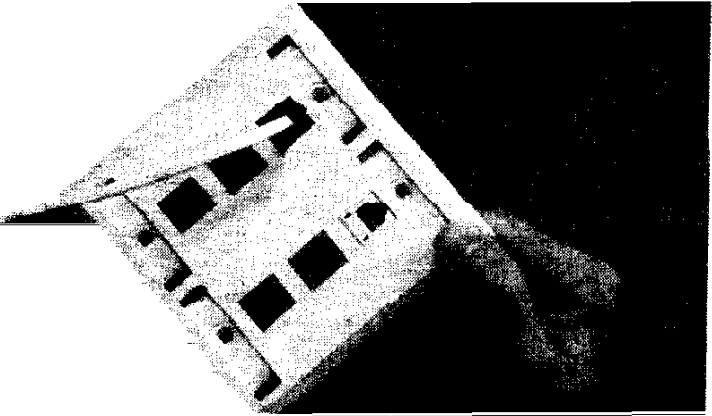
lines in every room. The jacks all connect to a wiring center that's located in a third-floor closet.

We used standard category 5 cable for both the computer network and the telephone system. Each category 5 cable contains eight strands of wire twisted together into four pairs.

Computer networks use two of these four pairs for sending data; the other two are left fallow. For telephone, we use all eight wires and run four phone lines simultaneously.

Rather than pull the wires myself — a dirty and difficult job — I paid my burglar alarm company to pull the wires for me.

The alarm company also pulled a coaxial cable to each room that can be used for cable TV or a whole-house television antenna.



The total cost for six rooms was around a thousand dollars, including the cable.

For the network and telephone connections in each room I used the Hubbell Premise Wiring system (<http://www.hubbell-premise.com>). The system is based on little jacks that snap into Hubbell's electrical plates. The jacks are sold in many different colors, so I got white for the first two telephone lines, gray for telephone lines three and four, green for the first computer network, blue for the second, and gray for the cable TV.

To attach the cable to the jacks I first stripped off the plastic sheath with a Thomas & Betts Wire Stripper. This is a \$5 tool that looks like a bent piece of plastic with a razor blade in the middle. Just slip it over the cable and spin. Then I pressed the individual cable wires into the jack using a Weidmuller Paladin 110 Punch-Down Impact Tool. The punch down system automatically strips a little bit of the insulation off the wire, makes a solid electrical connection between the wire and the jack, then snips off the extra wire that is not needed. Each punch down takes me about five seconds.

For the wiring closet I bought a small 19-inch rack also manufactured by Hubbell, and a long strip with 24 RJ-45 jacks on one side and 192 punch-downs on the other. I used 16 of the plugs for the computer network, and 8 of the plugs for my phone system. (If you try this yourself, take the blue and green pairs to your first RJ-11 jack, so they match up with the correct pins on the RJ-45 connectors.)

I've got two wiring hubs inside the closet, one for the telephone system and one for the computer. The telephone hub is a five-position telephone extension strip sold

down block I use small patch cords about a foot long with an RJ-11 on either side. I made these up myself using RJ-11 plugs and a crimping tool.

The network hub is a 16-port rack-mounted fast Ethernet hub that I bought for \$316 from a mail order company. There are more expensive hubs on the market, such as \$900 units that will automatically switch between regular Ethernet and fast. But these days, fast Ethernet equipment is so inexpensive that it's frequently cheaper to upgrade an entire network to fast Ethernet, which runs at 100 megabits per second, than to get a switching hub. To connect the hub to the punch-down block I bought 16 category 5 patch cords, each 2 feet long.

A friend of mine wanted to know why I was installing fast Ethernet equipment. Did I really need to transfer 100 megabits per second? Of course I don't. And in fact, in my testing standard PCs can only deliver between 10 and 20 megabits per second over this allegedly 100 mbps network. But still, that's a lot faster than the 1.5 mbps I was able to get over the older Ethernet network that I had in my old house.

There are some situations for which installing a home network doesn't make sense. If you are not ripping out walls, you might be able to save money by purchasing wireless network adapters. I chose not to go this route for two reasons. First, the wireless adapters cost between \$500 and \$900 each. The second reason that did without wireless is that it only runs at 10 mbps, 10 times slower than my fast Ethernet network.

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GLOBE STAFF PHOTO/DAVID L. RYAN
A network hub allows for both telephone and Internet connections for laptop computers.