



The

# Broadcasters' Desktop Resource

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... edited by Barry Mishkind – the Eclectic Engineer

## IT Tech Tips

### Alternatives to Wired Ethernet Networks



**By Dana Puopolo**

*[December 2016] There are few businesses today that do not have computer networks of some sort, to either connect computers or allow periodic access for laptops or visitors. Getting these networks to operate properly can be affected by many things, including the age and construction of your building. Dana Puopolo discusses some tricks to get past various roadblocks.*

Here is a News Flash: Many of you have or maintain computer networks.

However, as many have found while installing a network or expanding one, it is not always possible to run Cat 5 or 6 cable everywhere. Wireless can help, but since it is a shared resource, it bogs down with a bunch of users – or even one user that is streaming video.

Fortunately, there are alternative networking technologies available and we will discuss some of them in this article.

#### **CAT 3 ALREADY IN PLACE**

The first one we shall discuss is simple phone wire.

Many houses are wired with category 3 cable for their POTS service. This can be pressed into service for networking. You can even continue to use some of the pairs for your POTS.

Though normally rated for only 10 mbps, short runs of Cat 3 can actually run at 100 mbps (as I was recently reminded when I had to make up a bunch of 15-foot RJ45 jumpers and only had Cat 3 cable available). I have even successfully used short runs of quad phone cable for 100 base T networking before.

Another possibility is to use your phone wiring with a Home PNA adapter. Unfortunately, the Home PNA adapters that run over phone wire have largely been replaced by coaxial cable units (the latest PNA standard, 3.1 only specifies coax cable), though the older units are probably still available on ebay.

If the wire is already there, why not try using it? You might find this works out fine for you.

#### **ETHERNET OVER AC WIRING**

The next thing to consider is using your AC wiring for networking.

Most (but not all) manufacturers comply with the “Home Plug AV” standard, which allows for speeds of up to 200 mbps and up to 16 interconnected devices. Hooking these up is as simple as plugging them into an AC socket.

Unfortunately, there are some caveats. First off, home plug devices will generally only play together nicely *if they are on the same leg* of your wiring. This means that while you might get a perfect connection between outlet A and B, plugging into outlet C might result in no connectivity at all. Some people fix this by installing .01 @ 400 Volt Orange Drop capacitors between the legs and/or phases in their location.

Connectivity can also be affected by interference caused by the motors used in blenders, vacuum cleaners, etc. Another problem is interference to radio. Though these devices do not interfere with AM radio, they could cause shortwave interference, a concern for people who use shortwave such as Amateur Radio Operators.

The final concern is cost: these units can be expensive though, again, sometimes they can be found on sale or ebay. I successfully used these units before in one home, but when I moved found them completely ineffective in the new one. All that said, they are certainly worth trying.

## COAX CONNECTION

Lately networking over coaxial cable is becoming very popular.

The most popular standard is known as MoCa, which stands for Multimedia Over Coax Alliance. Verizon uses MoCa to distribute their FiOS within many homes that already have coax installed (and if you can find FiOS Actiontec router/bridges on ebay they work fine as stand-alone MoCA adapters). These units are readily available on ebay and other places.

If you have FiOS with coax, then adding an additional Ethernet connection is as simple as add-

ing a MoCA adapter to your system. However, be aware that there are two implementations of MoCA and they are *not* compatible: MoCA 1.1, the most common type that you will see when buying MoCA Ethernet adapters, offers rates of up to 175 mbps.

MoCA 2.0, introduced in 2010, runs with throughputs as high as 800 mbps.

MoCA runs in the frequency spectrum above 1 GHz, which makes it compatible with over-the-air antennas and most cable systems (you can run MoCA simultaneously over the same coax cable as these services).

On the other hand, MoCA is not compatible with satellite systems and also requires 1.5 GHz or higher frequency splitters.

## DECA

DirecTV has their own Ethernet-over-coax protocol called DECA.

If you have DirecTV with a DVR (as I do), you probably already have a DECA adapter installed in your home. They are small units that connect to your router to enable On Demand recording.



You can find DECA adapters on ebay at inexpensive prices; I found one for \$15 brand new, shipped. I wanted a wired Ethernet connection in my bedroom, so I bought a 2 GHz splitter for \$5 and a DECA bridge for \$15.00.

I split the satellite coax in my bedroom with the splitter and ran one output to the satellite receiver and the other to the DECA bridge. It was literally that simple, and I was rewarded with a 100 base T connection in the bedroom.

You can also buy several of the DECA adapters, connect them together with unused coax and splitters and have your own Ethernet-over-coax network.

Among the pluses, DECA adapters typically run about half the cost of MoCA ones.

By the way, although I have not personally tried it, the newest implementation of Home PNA mentioned above (v 3.1) also runs over coax cable and offers speeds of up to 175 mbps.

I hope that these alternative ways of installing Ethernet help you out at both your station and your home.

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