

ADSL & Home Networking

ADSL

An Internet connection can be brought into your home or business in several ways, by radio WiMax and Satellite but most often by piggybacking on a telephone line. This is not always a sympathetic relationship. The ADSL high frequencies can introduce noise to the phone and the phone can degrade the ADSL. To avoid these problems a micro-filter is installed by the user, at each phone. Unfortunately this is a technically flawed procedure and can result in degrading the ADSL connection significantly. Here, I am within 500m of the local exchange and thus a sloppy install has little effect. If on the other hand I was at the end of a long rural overhead line, I would want to get the very best out of that line.

The ordinary telephone line was never intended to deliver the high frequencies required by ADSL. To get the best out of a telephone line, the two components (Phone and ADSL) are separated by a filter at the point the line enters the building. Ideally, this is located in a small box (Coffret de communication) containing a test socket, lightning arrester (Parafoudre) and central master filter (Filtre Maitre). In this way the cohabitants, Phone, Alarm systems, and ADSL can all function at their best.

The Home and SOHO network.

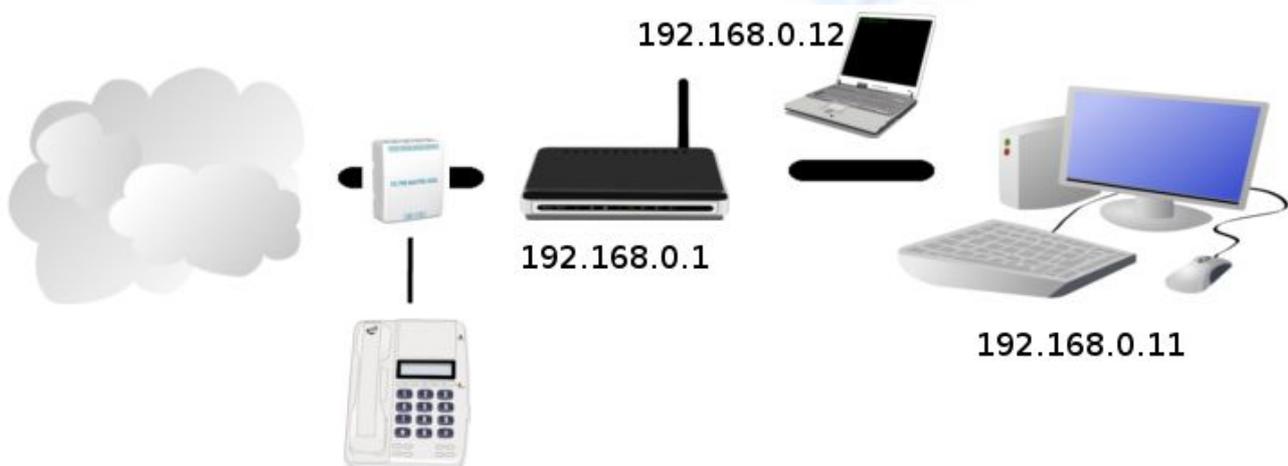
The domestic Modem/Router/WiFi access point/ VOIP end point provided by your ISP is often all that is required. Cable Cat5 or 6 is more reliable for connecting demanding devices, Smart TV/Media center, Network storage (NAS) or small office server. WiFi may well suffice for more general use.

Networking is now ubiquitous, cars, Hi-Fi even domestic appliances contain and are connected to networks. There are many types of networks, the domestic or SOHO are built around common hardware (Ethernet) and software protocols (TCP/IP). Each device on the network has a unique ID, a MAC address (Media Access Control) and more than likely a (unique to that network) IP address.

The IP address is often written thus **192.168.0.1**. This address is split into two parts the **network address** and the host or **device address**. 192.168.0.1 is an address specially reserved for internal use. Yet another parameter is the subnet mask, this delineates the split of the IP address into its two parts. Often this mask is written 255.255.255.0

The above mask tells the network that the blue part is all network address and the red part leaves 254 free device addresses 1 to 154.

Each device will want to know how to get to other networks. To find the gateway out, the device



must know the DEFAULT GATEWAY, which in this case is the ISP's ADSL Modem/Router address 192.168.0.1

DHCP Dynamic Host Configuration Protocol is the method most often used to set up the addresses required by the devices on your network, they can also be configured manually. Typically leaving it up to the DHCP server embedded in the Router will suffice. Shown here the router has been configured to give a range of addresses starting at .10 to hand out to connecting devices.

Modem/Router/Switch/WiFi access point. The device seen in the diagram with the IP address of 192.168.0.1. often provided by your ISP, can be purchased for 20-30 Euros but others providing all manner of network facilities can cost ten times that. Seen here connecting both the PC and Laptop on the same network, enabling sharing of files, printers and other resources across the network.

DNS Your router will forward DNS requests onto your ISP's server. It converts the domain name e.g. OpenDNS.com to the IP address 67.215.92.211 There can be speed and security benefits to using OpenDNS rather than your ISP's DNS server.

When setting up your network try to eschew the kindly provided CD, or at least be aware that the configuration software on it might alter browser settings such as home page and install unwanted utilities.

A couple of useful tools; Ping and Traceroute.

Ping will tell you if an address is reachable and Traceroute will list the route to a device or remote site.

When the network is running smoothly, take a look at the System Information provided by your router. Make a file of these details, particularly the ADSL line parameters, keep this for, literally a rainy day. Should the line become faulty having a stick to poke the Telco is helpful.

Further reading see

1 *Linux Network Administrators Guide* a link is to be found on the [Toolbooks](#) page

2 [Home Networking](#) About.com