WiFi on a netBook – Introduction

(Originally written for publication on FoxPop in October 2003, added to and updated on an ongoing basis since!)

One of the nice things about the Psion netBooks (NB: doesn't always apply to Series 7's - see *) is that they're capable of using PCMCIA form-factor cards such as modems, Ethernet cards, GSM/GPRS cards, and even WiFi (aka. Wireless Ethernet, 802.11b, etc.) cards. Whilst the price of compatible GPRS cards remains high, WiFi prices have fallen to very low levels in the last 12-18 months.

Being a Scot <grin>, it was this low pricing that attracted me to the idea of trying to get my netBook wirelessly connected using WiFi. The following pages relate how I went about this and record my own experiences and thoughts on the matter. It's worth noting at this point that there are many ways to skin a cat and so the way I've done it doesn't necessarily mean that a) another way won't work (possibly better too), and b) that I know anything other than what I relate. Whilst I do know a reasonable amount about Psions, I knew practically nothing about WiFi when I started looking into this and had no equipment other than my home PC and my netBook. Hence please consider this a beginner's diary rather than a guide!

Since this was effectively an experiment for me, keeping the price down was important (did I mention that already?!?). I'm please to be able to report that I now have a WiFi connection at home for less than £75 (approx. US$120) all-in. :¬)

In order to break things down into manageable chunks, I've decided to recount my experiences and thought-processes in a series of articles:-

- ° **Part 1 - Choosing equipment**

- ° **Part 2 - Configuring your equipment**

- ° **Part 3 - Using WiFi on the netBook**

- ° **Part 4 - Upgrading to broadband**

(* - NB: Series 7's aren't capable of doing everything that a netBook can. Their motherboards can't handle as much current and the installed OS version didn't ship with Ethernet/WiFi drivers and/or software. Whilst I believe that there were beta drivers available at one point, my only experience is using a netBook and so that's what I describe here.)

WiFi on a netBook - Part 1: Choosing equipment

Once you've decided that you're going to explore the possibilities of WiFi with your netBook, the most important thing you can do is research the topic! There's a lot of information on the web giving people's experiences of what works and what doesn't. Sites and links I'd recommend for reading are:-

- http://www.isbg00598.pwp.blueyonder.co.uk/faqNetworks.htm

Ian Sylvester's 'EPOC FAQ (ish)' web site is both understated and gives itself a self-effacing title. In truth, it's probably the most comprehensively useful repository of EPOC info. on the web. This particular section covers Ethernet connectivity in gener al and various other associated topics including a list of netBook-compatible wireless LAN cards.

- http://www.millican.info/wifi.htm

Well-known freeware author, Kevin Millican, describes his netBook WiFi experiences here.

- http://staff.washington.edu/dushaw/psion/netbook.html

Brian Dushaw's 'Notes on a Psion Notebook' is a fascinating collection of his experiences of some of the more interesting things you can do with a netBook and covers some WiFi in this list too.

- http://www.jag.me.uk/misc/netbook/

An interesting account of new netBook experiences and the setup used for his WiFi connection.

- http://www.pdastreet.com/forums/forumdisplay.php?s=&forumid=117

PDAStreet has become the default forum for all things EPOC these days (although of course it has Palm and PocketPC sections too). This particular forum is dedicated to WiFi and Ethernet on the netBook/S7 and contains lots of useful info., tips, etc.

Last but very certainly not least (ahem…!) I'd recommend reading Elizabeth's own write-up of her (albeit non-Psion) experiences about setting up her own WiFi network here http://www.foxpop.co.uk/wifi/wifi_cover.htm and here http://www.foxpop.co.uk/wifi/wifi_06.htm   Whilst she's using a laptop instead of a netBook, there's a lot of common ground in terms of choosing equipment to use (more than she realises but is about to find out! ;¬)). Read on…

A PCMCIA WiFi card for the netBook:

As reading some of the above linked articles will explain, there are a number of things to consider when choosing a WiFi card that you can slot into your Psion:-

PCMCIA / CardBus?

Nowadays, PC Cards come in two varieties; PCMCIA and CardBus. Simply put, PCMCIA is the original type and uses a 16-bit bus. CardBus is newer and uses a 32-bit bus. Be aware that physically both types look identical to each other. Your Psion will *only* support PCMCIA however so don't buy a CardBus card!

Chipset used

By this I mean the make/name of the set of chips used inside the WiFi card. The netBook is capable of supporting 5 basic chip sets: Lucent Hermes, Intersil Prism II/Atmel, Cisco, CombineIT, and Dacom (Olitech/SMC). To complicate matters, some

of these have re-branded e.g. the Lucent Hermes chipset as Orinoco, Agere, Proxim, and Avaya.

Some of these are preferable over others however for the following reasons:

Power consumption

The power consumption of the card is important for two reasons. Firstly because the netBook can only support up to a certain maximum current (the Series 7 even less than the netBook). Secondly simply because you want to maximise your battery time if you're planning using your Psion truly wirelessly!

Size

A PCMCIA card is a PCMCIA card right? Wrong. All the cards have to protrude from the machine they're inserted into so that the card's built-in antenna isn't covered up by the machine. Fair enough. However, quite a few of the earlier cards have 'bulging' protuberances (!) in other words, the bit that sticks out isn't flat like the rest of the card. Why is this a big deal? Well, on a netBook/S7 that 'bulge' effectively prevents access to the stylus's silo. Not a big deal in itself but worth remembering... Heck, it's just plain ugly too! ;¬)

Program compatibility

Some of the software in the netBook's OS will only work with certain chipsets too. Specifically I'm thinking of the NetStatRF program that reports information such as signal strength, signal-noise levels, connection information, etc. I believe that it will only work with cards based on the Lucent Hermes chipset.

So, given all the above, I went hunting. And the solution I came up with is a card from a company called Buffalo (actually a trading name for a division of Mitsubishi). They're fairly well know and have been around a while. More importantly, the card I found fulfilled all my criteria: PCMCIA bus, Lucent Hermes chipset, v. low power consumption, 'flat' form factor, and last but not least cheap as chips!

http://www.buffalotech.com/wireless/products/airstation/pcmciacard.php

In fact, don't tell Elizabeth this (she won't find out will she?) but the equipment I ended up buying (both for the netBook and my PC) is effectively cloned versions of the Lucent/Proxim/Orinoco equipment that she bought but at a rather lower price I suspect! ;¬)

The cheapest source I was able to find was Dabs.com and the above card came to a grand total of £34.60 inc. VAT

Okay, so the WiFi card will let you use your netBook to surf using WiFi in a hot-spot at an airport, certain coffee emporiums, etc. (I'll explain the various configurations in the next article). But if you want to use it at home too then you'll need something to plug into your home PC, right…?

A USB WiFi 'card' for your PC:

Right, one of the first things to mention is that you don't necessarily need one of the fabled 'Access Points' in order to use WiFi at home. To explain: an Access Point is a box which can plug into your internet connection directly (usually ADSL) and provide WiFi access without any other equipment being switched on. This is great if you've got more than one machine at home that you all want to connect over WiFi (PC, netBook, other PDA, etc.). Currently however, I suffer from an affliction commonly being described as the 'rural divide'. Despite being located some 35 or so miles from the centre of London as the crow flies, I am determined by British Telecom to be un-ADSL-able because my house is located more than the 4 or 5 miles distance to the exchange that they require. Of course, the technology already exists to get around this minor problem but explaining something like that to BT is completely pointless… Anyway, the upshot is that I'm still using a dial-up connection at home. Whilst it's possible to get dial-up Access Points/routers, the last time I checked they were over £200 each not exactly in line with my cheap'n'cheerful plans!

The good news however is that the netBook OS also supports peer-to-peer WiFi (aka. 'ad-hoc' WiFi). Essentially this means that you can connect directly to any other computer with WiFi without the need for an Access Point. Of course, you're not strictly making a 'network' here (since it's just a point to point connection) and the 'host' PC obviously needs to be switched on the whole time that you want to access its internet connection but at least Windows XP *will* let you share the connection!

So hence all you need to set up a WiFi link at home is another WiFi 'card'. Now, if your main PC at home is a laptop then a 2nd PCMCIA card like the one I just described might be ideal. My home machine however is a desktop and doesn't have any PCMCIA slots. However, you can buy USB 'cards' almost as cheaply (I say 'card' because that's what they call them. Made me think of something like a slot-in PCI card and you need to be a little careful that that's not what you buy! In fact, it's a stand-alone add-on.). I plumped for a Buffalo unit (to ensure WEP compatibility more about that is later articles).

http://www.buffalotech.com/wireless/products/antenna/usbclient.php

Note the similarity between Elizabeth's equipment and this unit which I also sourced from Dabs.com for all of £37.60 (heh, heh…).

And that's it. These two pieces of equipment (plus my netBook running built 158 and my PC running Windows XP) were all I needed to invest in order to get a WiFi link running at home. Considering that I'd just got a dial-up connection at home, I do think it's rather cool to fire the PC up in the spare bedroom and then retire to bed and do all my email, FTP-ing, surfing, etc. from the comfort of the matrimonial boudoir on my netBook… Well, sometimes you have to take your thrills where you can find them!! ;¬)

Addendum:

It's worth noting that the CardBus and/or 802.11g (54Mb/s) variants of the PC-Cards are rapidly gaining over their 802.11b (11Mb/s) siblings. If you're in the market for a PC-Card for your netBook, I wouldn't leave it too long since the netBook only support PCMCIA.

<u>WiFi on a netBook - Part 2: Configuring your equipment</u>

This is basically a case of: 1) Configuring your netBook, and 2) Configuring your PC:-

Configuring your netBook:

There's no rocket science here in terms of the hardware – just plug your PCMCIA WiFi card into your netBook's PCMCIA socket! Configuring the system/software is fairly straightforward as well. However, as with the previous entry in this series of articles, I'd strongly recommend looking at a few websites that go into a lot more detail than I do here. For example, please do take a look at Ian Silvester's 'EPOC FAQish' website and specifically the section on Ethernet/WiFi networks:
http://www.isbg00598.pwp.blueyonder.co.uk/faqNetworks.htm - it's got to be the definitive online guide on the subject. Right, let's get started:-
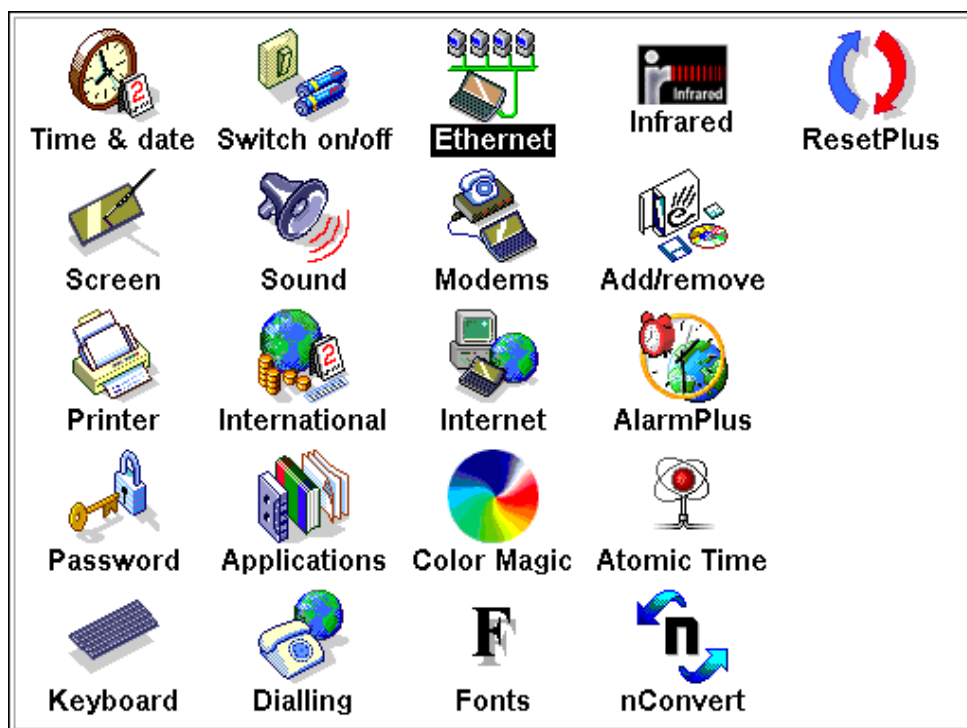
First, select the Ethernet icon on your control panel and then in the Ethernet setting dialog box select 'New' (Ctrl+N). Now select 'Standard settings' and this'll bring you up a 'New Ethernet interface settings' box. Select 'Existing Ethernet settings' and '802_11-Lucent:' – if you've taken my advice previously and got one of those type of cards! :¬) – and you'll get the 'Edit Ethernet settings' dialog shown below:

The 'Name' you give the setup can be whatever you want. Keep the configuration method as DHCP (unless you want to get IP-specific and start filling in DNS addresses, etc.). The Hostname can be left blank – although you might want to call it 'netBook' or something else so as to identify it at the PC side of things. The 'Device' is 'Lucent WaveLAN / Orinoco Card'.

Now select the 'Options' button (Ctrl+O):
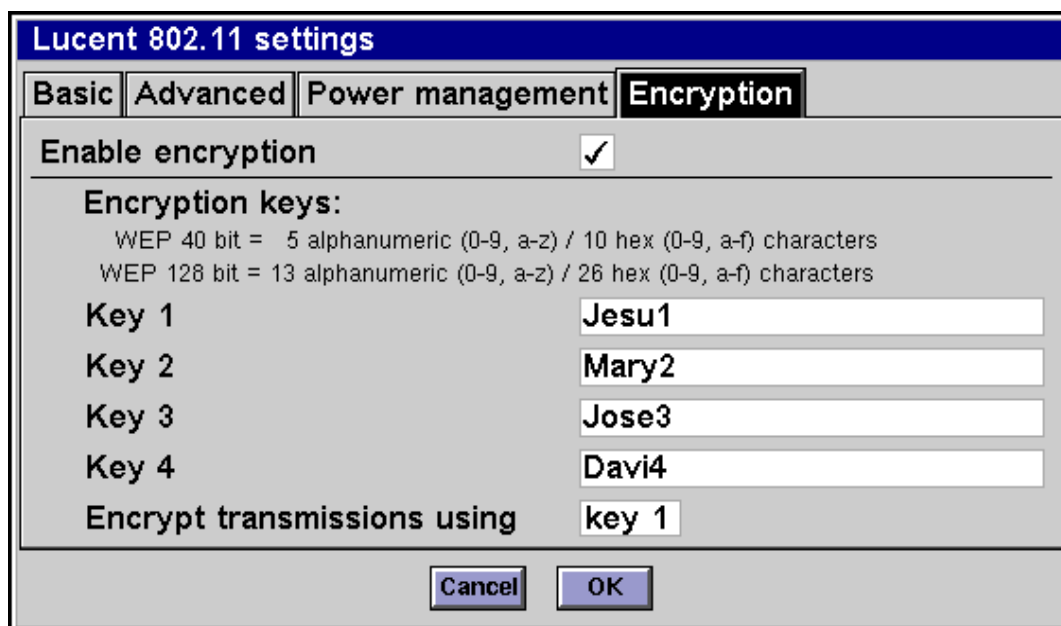

The WaveLAN network name is basically just the SSID – basically the name of your home network. It's not really compulsory though as the netBook will normally connect to

whatever network it finds if it can. Peer to peer mode however is important as it's what tells the netBook that it's looking for another PC client connection (as opposed to a proper access point).

The 'Advanced' and 'Power management' settings probably don't need to be touched at this stage. Ultimately you might want to use the 'Encryption' settings if you want to make your wireless network at least moderately secure. There's been a lot of debate recently about whether WEP (the standard currently used for WiFi encryption) is worth using or not (since it's been shown to be relatively easily crackable). My view is that it always is worth using. Without it, any passer by can "listen in" to what you're transmitting if they have a WiFi capability. Using it will probably put off all but the most determined. I think of it as the equivalent of choosing to lock your car doors. That won't stop a determi ned person who wants to break in – but it'll probably deter them quite a bit unless they're a pro'. When you're initially setting things up however, it's probably best to leave this switched off until you get everything up and working – quite simply, it's one less variable to worry about.

Lucent 802.11 settings

| Basic | Advanced | Power management | **Encryption** |

Enable encryption   ✓

Encryption keys:
    WEP 40 bit =   5 alphanumeric (0-9, a-z) / 10 hex (0-9, a-f) characters
    WEP 128 bit = 13 alphanumeric (0-9, a-z) / 26 hex (0-9, a-f) characters

Key 1   Jesu1
Key 2   Mary2
Key 3   Jose3
Key 4   Davi4
Encrypt transmissions using   key 1

[Cancel] [OK]

Configuring your PC (or laptop):

My home PC runs Windows XP and so that's all I'm reporting on here. It's quite possible that Windows 2000 (and maybe even earlier versions of Windows) can be persuaded to wirelessly connect – but that's not something I've explored…

On plugging-in your WiFi card/unit to your PC, it should automagically have realised that it's for a Wireless Network connection. Go to your Control Panel in Windows and double click on 'Network Connections'. This should bring up a display showing all the possible connectivity options you have on your machine – including the one for your WiFi card/unit.
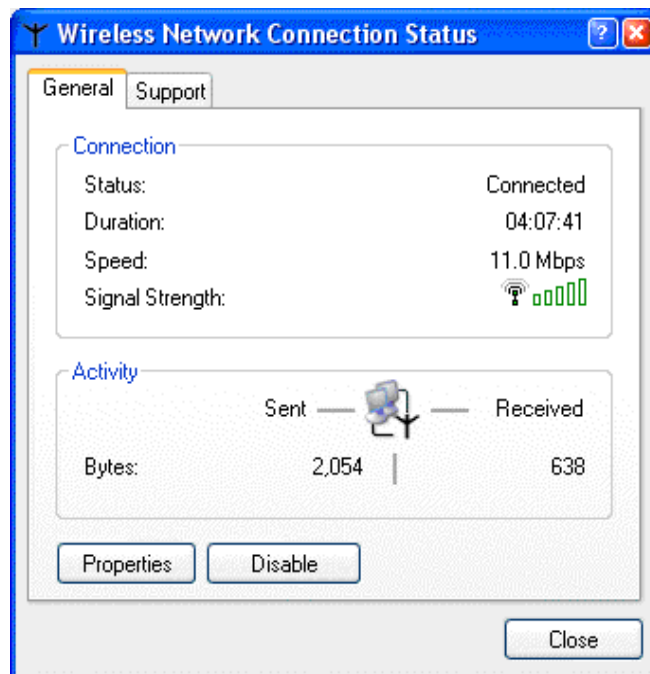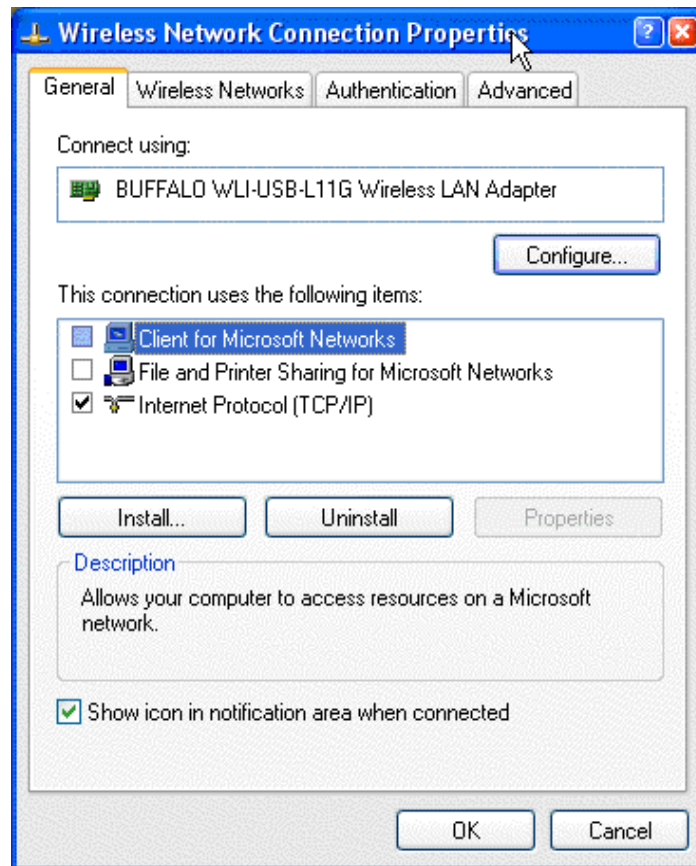
You need to configure your connection so that it'll work with your netBook. Double click on the Wireless Network Connection icon:-


This is what it shows when it's actually connected to your netBook – obviously you don't see exactly this when you're setting it up initially. Now click on the 'Properities' button:-

It's reasonably self-explanatory. Obviously you need to select the WiFi adaptor you're using if it's not already selected. If you're not planning on using any other Windows machines on your WiFi 'network' (apart from the host PC obviously) – and possibly even if you are – I'd strongly recommend un-ticking the 'Client for Microsoft Networks' and 'File and Printer Sharing for Microsoft Networks' boxes. These are designed to sharing files and resources between two or more Windows PC's and are a possible security issue if someone does wander past your 'chez moi' abode determined to see what he/she can scavenge from any wirelessly receptive PC's not practicing safe comms… ;¬) (I'll explain how you can share files between your netBook/PC in the next article). You do need the TCP/IP box ticked as this is what will allow your netBook to access the internet.

Next, click on the Wireless Networks tab:-
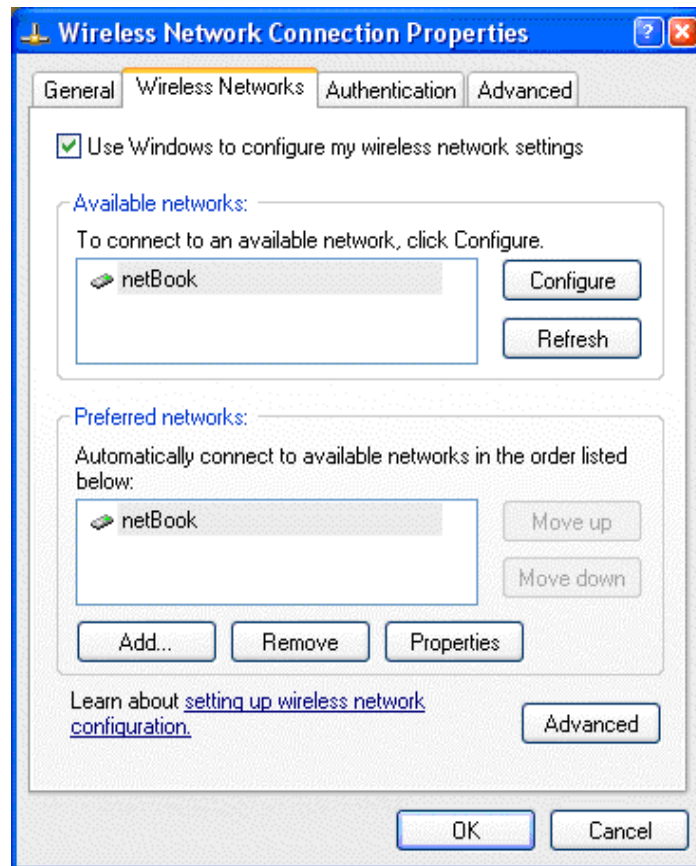
Here you need to add your netBook's details - use the 'Add'/'Properties' buttons:-
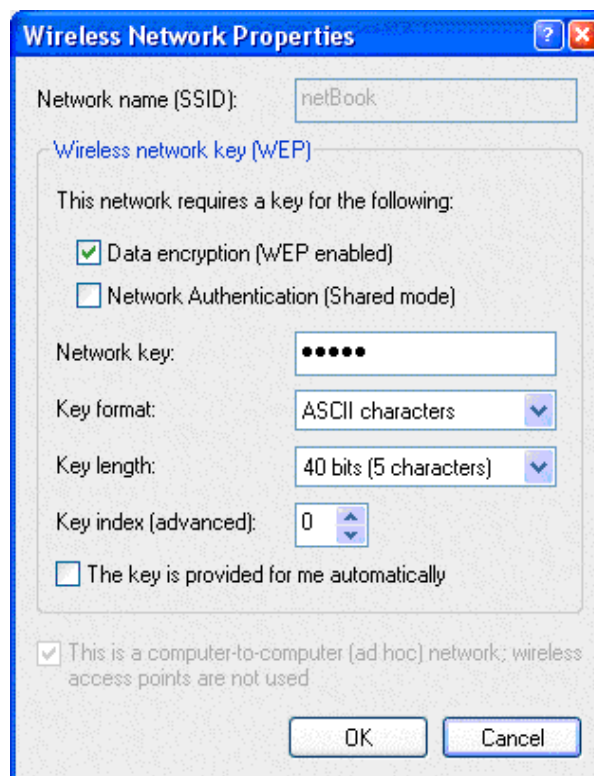
This is where you enter the various WEP encryption passwords – if you're opting to use them initially (see my earlier comments). Click 'OK' and then click on the 'Advanced' button in the Wireless Network Connection Properties / Wireless Networks box…

…which lets you specify (in this case) that it's a computer-to-computer (aka. ad hoc, aka. peer to peer…!) network.

Finally click on the 'Advanced' tab in the 'Wireless Network Connection Properties' box again. (You almost certainly don't need to do anything with the 'Authentication' tab) :-
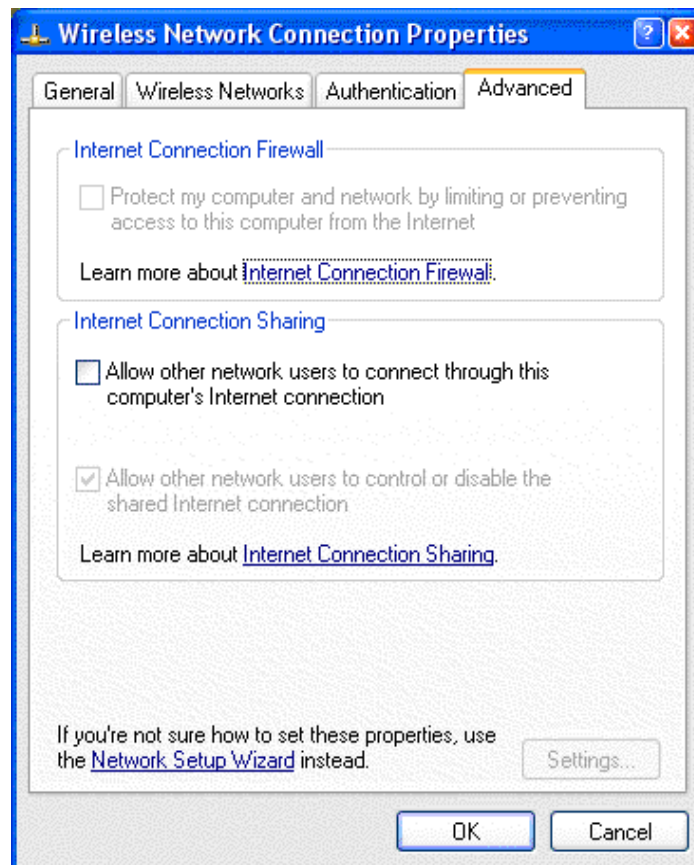
Initially, I'd suggest having both these tick-boxes un-ticked. Once you've got things up and running however – and if you've not already got your own firewall program running on your PC – it's probably a good idea to experiment with using Windows XP's own firewall to help block general access to your PC from the WiFi connection. However, a word of advice if you are using your own firewall program – make sure that it's turned off while you're setting up your WiFi link initially. This single thing kept m e from getting the link running initially on my setup for almost a week until it finally dawned on me that the firewall blocked every unspecified connection attempt…

And finally…

You will also want to let your netBook share your PC's standard internet c onnection (otherwise this is probably all a little pointless) so go back to your 'Network Connections' icon in the Control Panel. Now select the properties of whichever connection it is that you use as your internet connection. In my case, that a Freeser ve Anytime dial-up connection. Click on the 'Advanced' tab:-
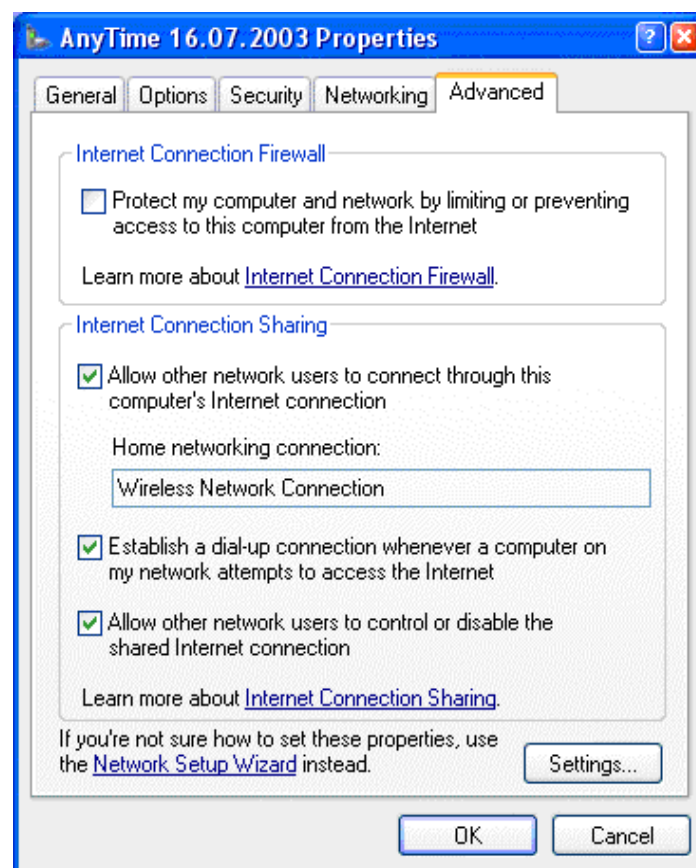
Make sure that the 'Internet Connection Sharing' boxes are ticked. Windows XP has a nice feature (not sure if it exists in previous versions) that instigates an automatic dial-up connection when you request an internet connection from another machine. Effectively this means that all you have to do to use your PC in peer to peer connection mode and still connect to the internet via your netBook is switch it on – neat! Again, I don't have the firewall activated above since I use a 3rd party firewall – but as general rule of thumb it's recommended (except perhaps when you're setting up your WiFi stuff to begin with as I mentioned).

And there you have it. You can now use your home PC or laptop to run a (very cheap) WiFi connection to your netBook – even over a dial-up internet connection! Next month I'll explore some of the other things you can do over WiFi on your netBook and some of the useful software for doing it with…

WiFi on a netBook - Part 3: Using WiFi on the netBook

Having described how to get WiFi up and running on your machine, I'd like to go on to describe a) some of the cool things you can do with it, and b) some of the programs and utilities that'll help you get there.

Stuff you can do:

Email:
Sounds completely obvious, right? Well, yes, it is... And it's probably the first thing you'll do with your WiFi connection. But there's something extremely liberating about using your totally wireless netBook (ahh, that long battery life...!) to download your email for the 1st time. Once you've managed to wipe the silly grin off your face, you'll want to swank in front of your friends, downloading as you go (although I take no responsibility for their actions if you actually choose to do this!).

As well as being able to do this in private (!), you can of course now avail yourself of the various public hot-spots that are springing up all over the place. Most of these are commercial (i.e. you have a pay to get access) but if you're lucky, you'll ocassioan lly find one that's either free or is commercial but running a free 'trial period'. Normally you'll have to use your browser to go through a few pages (and maybe to pay) before the access is opened such that you can use your email (or surf, etc.). By way of example, below is a screenshot of Copenhagen's airport WiFi access site viewed in Opera earlier this year:-

An increasingly useful utility for EPOC email users these days (not WiFi specific - but very useful nonetheless) is called SMTPAuth by Marcus von Cube (http://www.mvcsys.de/doc/smtpauth.html). Increasingly, some ISPs are requiring special SMTP authorisation in order to download your email. Most Windows email clients handle this in their stride but you need this program in order to do it on your Psion...

Surfing:

The next most obvious thing after email is of course browsing the web. Opera v5.14 (as supplied in the netBook's ROM - well RAM actually but anyway...) is generally a reasonable browser for most sites. There are ocassions however when you might prefer to use Psion's own home-grown browser - 'Web'. This should be on the CD that came with your netBook but if for any reason it's not (say you bought your machine 2nd-hand, etc.) then Mike McConnell very kindly keeps a copy on his website for people to download: http://www.mikemcc.org.uk/

In recent weeks, people have been reporting increasing incidents of Opera locking up when surfing. This has nothing to do with WiFi per se but it turns out that it's caused by automatic port scanners trying to probe your browser and causing it to crash. Fortunately, Hans Lub has written a program called Sink (http://utopia.knoware.nl/~hlub/uck/rlwrap/) which blocks the appropriate port addresses and lets everything work. I believe that Marcus von Cube has also added this functionality to his SMTPAuth program but I can't confirm it.

FTP:

If you'd like to use your netBook to be able to transfer files over WiFi (and much, much faster than using PsiWin!) then you can use FTP (stands for File Transfer Protoc ol). You need to set up an FTP server on your PC. Fortunately, there are quite a few freeware versions around (Google for 'FTP server freeware' or something similar). Personally, I use CesarFTP (http://www.aclogic.com/) but I'm sure that many others will work too.

Next you need to use an FTP client on your netBook to access the FTP server over your WiFi link. Again, the latest build of the netBook ROM comes with nFTP by Neuon (http://www.neuon.com/) built in. Alternatively you might like to try RMRFTP (http://www.rmrsoft.com/epoc/index.htm).
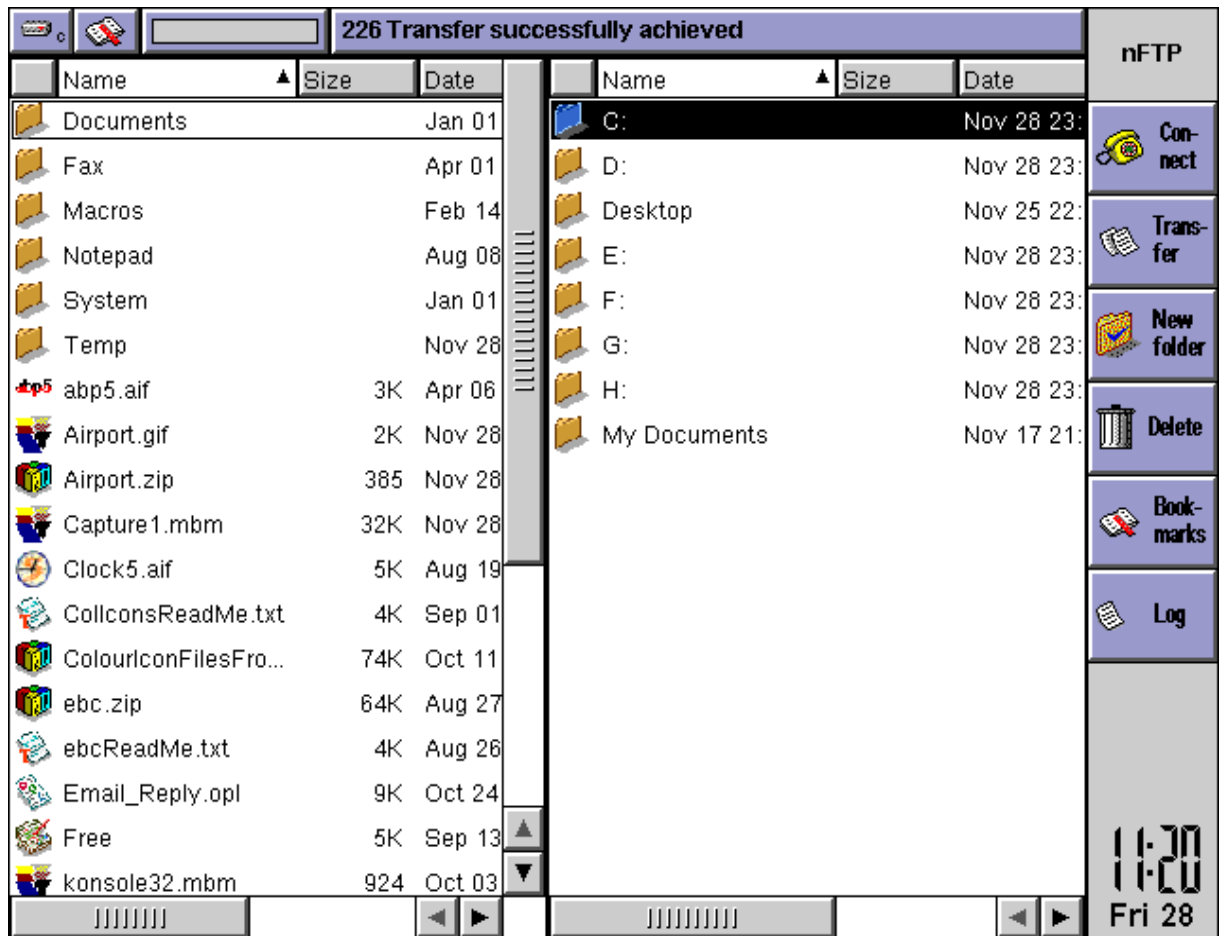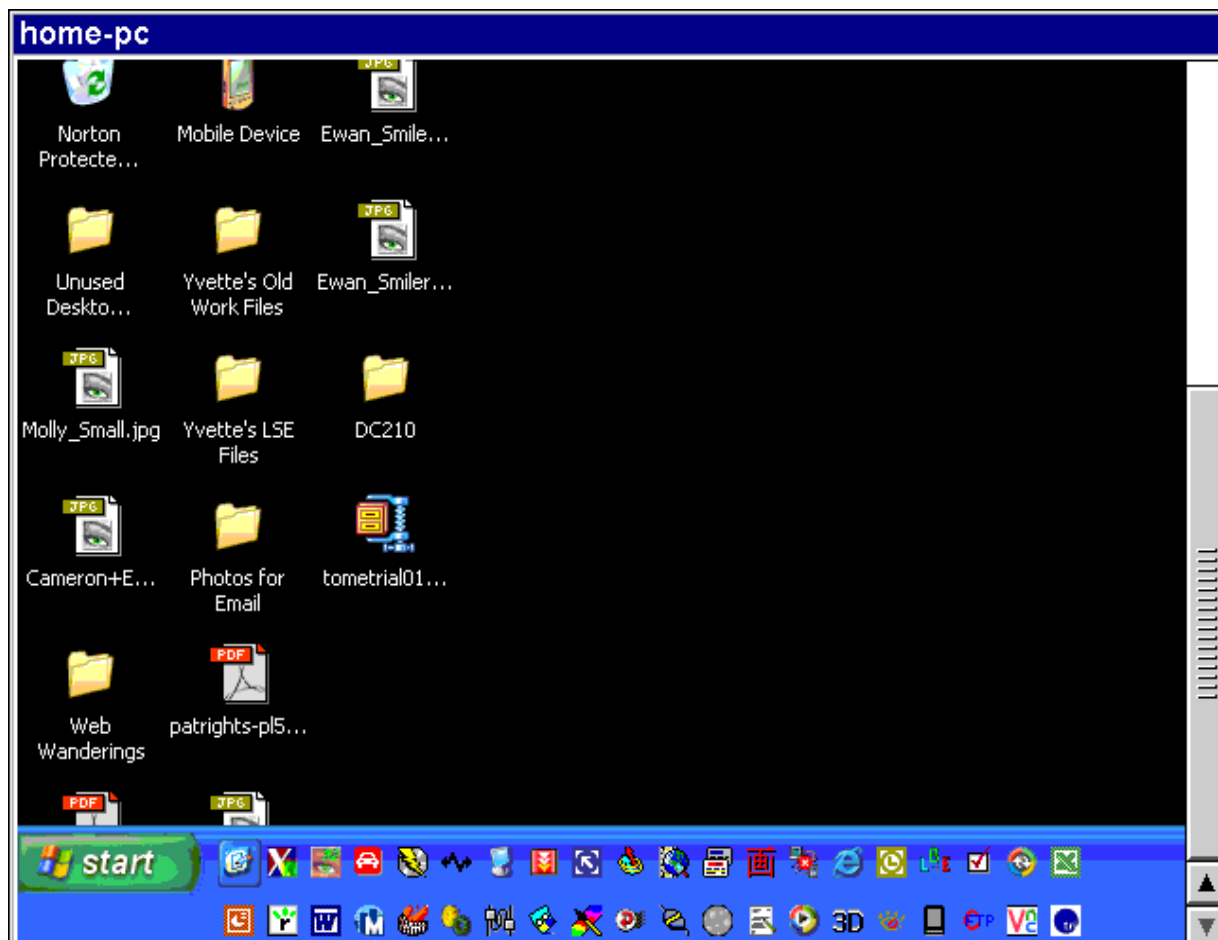

Using nFTP to look at various directories on my desktop

If however you'd like to use your PC to browse the files on your Psion (i.e. the other way around) then you need a standard FTP client on your PC (again, the re are many freeware version around) and an FTP server for your Psion. Fortunately, Victor Kviat has written just such a program called (sensibly enough) FTP-Server - and it's freeware:
http://itnat.kbsunet.ru/~vkv/index.htm

VNC:

Another thing that's ocassionally nice to do is to be able to 'remote control' your Windows desktop from your netBook (yes, you read that right!). Perhaps you'd like to be able to switch your PC off from your Psion, look up some data that you can't otherwise access, etc. Whatever. It's possible using a program called VNC (http://www.realvnc.com/). You'll also need a VNC client for your Psion. I'm aware of two (free) versions that work on the netBook - both written in Java - available at http://www.imhotek.com/version1/ and http://www.geocities.com/giulopresti/handhelds/vnc-epoc.html

Viewing and controlling Windows from my netBook - how cool is that!

Other Useful Utilities:

A couple of other useful utilities also deserve a mention:-

- NetStatRF is also built into your netBook's ROM. It only works with Lucent chipset-based WiFi cards but it's extremely useful - giving you connection info., signal strength, etc.

NetStatRF connected to a WiFi hotspot

- NetUtils is another free program by Victor Kviat (http://itnat.kbsunet.ru/~vkv/index.htm). It helps make connections (and disconnect afterwards) and has a host of useful network-type utilities built into it.

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│ⓘ │ 🔴│ IP: 192.168.0.119           │  Running script  │ │ NetUtils │
├──┴───┴─────────────────────────────┴──────────────────┤ └──────────┘
│Dial-up: NIF status ?                                   │ ┌──────────┐
│Dial-up: Running script                                 │ │ 💻 Dialer│
│IP address set to: 192.168.0.119                        │ └──────────┘
│Ifconfig:                                               │ ┌──────────┐
│Interface: ethernet (up)                                │ │ ⚒ Utility│
│  ethernet [Broadcast,Multicast,NoARP,Dialup] MTU=1500 10000 Kbps│ └──────────┘
│  Address: 192.168.0.119  NetMask: 255.255.255.0  Gateway: 192.168.0.1│ ┌──────────┐
│  Broadcast: 192.168.0.255  DNS1: 192.168.0.1  DNS2: 0.0.0.0│ │ ❌ Close │
│Interface: loop0 (up)                                   │ └──────────┘
│  loop0 [Loopback, NoARP] MTU=16384 0 Kbps              │
│  Address: 127.0.0.1  NetMask: 255.0.0.0  Gateway: 127.0.0.1│
│  Broadcast: 127.255.255.255  DNS1: 0.0.0.0  DNS2: 0.0.0.0│
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NetUtils showing a WiFi connection working

WiFi on a netBook - Part 4: Upgrading to broadband

Living as I do in a rural part of the Berkshire countryside - albeit only about 35 miles from the centre of London as the crow flies - I was, until recently, deemed 'un-ADSLable' by BT. Hence I was using an unlimited dial-up account to get a 56K connection to the internet. Not ideal - but not much I could do about it either. However, I bought myself an Apple Airport access point (AP) off eBay a short while after writing the previous artcles/pages.

The reason for buying this was because - unlike most plain AP's that just have an ethernet input connection - it also had a built-in 56K dial-up modem. The stated purpose of this modem according to the literature was to "act as a backup connection should the ethernet broadband fail". Except in my case it was my only connection! And it worked perfectly well with my various PCs as well as my netBook to give a WiFi connection over dial-up. The advantage of this over using a peer-to-peer setup as I described previously

was that the main PC didn't have to be left switched on if I wanted to use my netBook (or another laptop, etc.) online.

In fact I wrote an EPOC shell program to run a small Java routine that would allow control of the dialing/disconnection of the Airport from my netBook itself. It wasn't great but it worked (see APDialer on the Software page if it's of any interest). This setup wasn't totally ideal for a couple of reasons (bandwidth connection aside):

• The Apple Airport would only let you set one dial-up number at a time. So no big deal, right? You can only connect to one number at a time anyway! True, except that in an effort to improve their customers' experiences of getting connected over dial-up, many of the main ISP's (I was using FreeServe [now Wanadoo - soon to be Orange!] at the time) were giving out multiple dial-up numbers - usually via an intelligent piece of Windows software that automatically dialled the next number in the list if the 1st was engaged, etc. Fine - but no help if you have to manually enter all the configuration details into the Apple prior to using it and it's only got space for one number. Usually this wasn't a problem but at peak times the dial-up number was sometimes engaged and I then had to choose whether to try again later or to go through the palaver of changing the dial-up number in the Airport...

• The range of the Apple AP wasn't great. It would generally stretch to a couple of rooms but that was about it. I bought an external antenna and connected it in through the case in an attempt to improve the range but I suspect that this had limited effect.

Of course, on the plus side, the Apple unit looked about as sexy as I imagine an AP can look! Almost made you wanna go out and buy that Apple Mac that you like the look of... A bit like the Bang & Olufsen effect of totally lusting after a gadget in a window - without necessarily knowing what on earth it does. All very well and good until your wallet manages to get a main-line connection to your brain!

Broadband arrives:

Happily BT announced early in 2004 that suddenly ADSL was able to reach further than before and that they'd be switching on this 'extra range' in September. Sure enough in September I found that suddenly our house could be reached (just!) with a 512Kb connection!

Now, we didn't actually use BT as our phone service provider; having opted instead for an 'all you can eat' landline deal from OneTel some months previously. It took OneTel a few weeks before they started offering this extended range as well but as soon as they did we signed up for a combined 'unlimited calls + broadband' package for a lot less than the equivalent from BT. In fact, there was a double-whammy saving for us since previously we'd paid for a 2nd phone line to use as a dedicated internet line and now we could switch that line off completely.

Give OneTel their due, the process of turning our line from a plain-Jane phone line into a super-whizzy ADSL+phone in one went entirely smoothly. We'd heard a few horror stories from friends and neighbours about BT trying to do it for them but in fact we didn't have any contact with BT during this process at all. OneTel's website tracked the process of our request on a daily basis, the 'free' equipment (i.e. a cheap USB ADSL modem, 2 microfilters, and software package) turned up in a few days and the line itself was live within abiout 10 days (less than the 15 specified on OneTel's website.

Extra equipment:

Now, a USB ADSL modem is just fine for a domestic broadband connection if you've just got one PC and it happens to be located near to your phone line. However, if you've got multiple PC's and laptops (and a netBook!) located all over the place and/or would like the flexibility of easily moving these around, then a WiFi connection is definitely a useful thing. And fortunately you can now buy AP's with built-in ADSL modems - they're typically called ADSL gateways (or combined ADSL routers/access points).

So even before the ADSL got connected, I went looking for one of these little gizmos. I wish I had carried out more research in that early stage because I chose poorly. I ordered a Linksys WAG54G - based almost entirely on Linksys's reputation and experience I'd personally had of some their other products previously.

With hindsight I wish I had some some basic research first. A quick look online at many of the forums that talk about such things reveals that these models - especially the 1st generation versions - were notoriously unreliable. My unit was typical of the 1st generation breed it seems. When it was working, it was fine. However, I had a number of problems with the WiFi signal itself dropping for no apparent reason and even more problems with the unit dropping the ADSL connection on a regular basis. I upgraded the firmaware for the device on a regular basis (alarm bells should have rung when I realised just how many firmware upgrades Linksys were releasing for it!) but at best I wouldn't say that things ever improved beyong 'flaky' at best! At one stage, it got to the point that I was having to reset the unit 2 or 3 times a day. Sometime this would fix the problem. Other times the unit would forget all its setting and these would have to be re-entered or re-loaded before attempting connection again. Indeed I would have returned the unit to the original supplier as being 'unfit for purpose' had not that original supplier been bought out by another company.

In the event, I ended up selling the WAG54G a few months after getting connected and - after carefully researching the options this time - bought a Netgear DG834G. Thus far I'm happy to report it has been rock-solid only requiring a couple of simple resets over the couple of months that I've now had it.

I have to admit, using WiFi on a netBook over a broadband connection is an extremely liberating experience! Being an 'always on' technology, there's no waiting for a dial-up connection to be established. All you have to wait for is the quick handshaking between your 802.11b WiFi card in your netBook and your access point or gateway - a matter of literally a second or two. Then everything begins to flow! My Buffalo WiFi card stays permanently in my netBook's PCMCIA slot these days so it's extremely quick to check

email - just flip it open, Email app. Ctrl+C to choose the account, connect, Ctrl+D to close the account, and close the machine!

It's interesting to see what applications on a netBook can actually make best use of the speed. Email is reasonably fast (although, if you have to use something like SmtpAuth when sending then this slows things down somewhat). Opera does get faster - but the speed at which it can render pages and graphics is basically its limiting factor, not the speed of the data. Probably the best application for seeing the speed increase is nFTP (although this kind've assumes that you've got some sort of web space that requires you to use it). I find that I can get a consistent throughput (i.e. on large files) of about 15Kb/s when uploading to my website. Given that of course a 512K ADSL connection normally only gives you 256K upstream (the 512K figure is a measure of the download speed), this seems reasonably good. I'm not certainly but I think it's my ADSL speed that's limiting the netBook here as I've uploaded files over faster connections in hotels whilst travelling on business and I think I've seen faster speeds - I'll try and pay more attention to that next time!

Security shmecurity:

I think I may have mentioned earlier somewhere that I live in 'the sticks'. Wireless security is - if I'm honest - not of massive concern to me. Without wishing to be ageist; I seriously doubt if the neighbours on either side of me would know how to turn a PC on - let alone know what WiFi is. That's no critisism - it's just the type of people they are. And so - unless the cows in the field behind us are secretly hooking up to the internet using a 'cantenna' pointed at my house - I doubt whether anyone is listening in.

And if someone is trying to slurp off my connection, I'm really not too worried - I'm on an uncapped connection after all. Although they'd pretty much have to be sitting on my drive in order to be doing it! And not a great deal of what I send via email or browse could really be considered sensitive. Yes, I use internet banking and order stuff online - but all those financial type transactions are all encryped using SSL so they're pretty secure anyway.

In reality I do take some security precautions. All my connections are MAC filtered - in other words, only WiFi cards with an authorised MAC addresses built into them are authorised to connect to my Gateway. The Gateway itself has all its standard security features turned on - true firewall, SPI, DoS protection, etc. And all the standard passwords are changed and rotated of course...

Extending the range...:

One slight issue I found was that - whilst the wireless performance of Netgear DG834G was fine (and in fact its WiFi range was similar to the other 802.11b units I'd used before) - it didn't quite stretch to all points within our house. Our house might loosely be described as an 'extended bungalow'. I.e. some rooms upstairs but predominantly on the ground floor - and hence with a tendency to sprawl! As a result, the signal strength at the bottom half of our lounge was marginal and effectively non-existent in the main bedroom (although this mainly due to the hot water tank being in a direct line between the bedroom and the DG834G - it's complicated!).

In theory of course you can now get 802.11n MIMO units that effectively extend the range of your WiFi. However, this wasn't a viable solution for me since a) I didn't want to have to replace a bunch of 802.11b adapters/cards/etc. that I'd already invested in, and b) it was a non-starter for my PCMCIA-only slot netBook!

The other solution was to bring my Apple Airport unit out of semi-retirement in order to act

as a 2nd access point elsewhere in the house. Fine in theory but how to get the signal from the Netgear DG834G to the Airport? Certainly, trying to route 10-15m of ethernet cable around our house was going to go down like a lead balloon...

The solution turned out to be (IMHO) quite elegant. I purchased a 'homeplug networking' starter kit - specifically a Devolo MicroLink dLAN HomePlug Ethernet Starter Kit (!). This is a fancy name for ethernet over power and basically amounts to two reasonably bulky power plugs with some LEDs on them and an ethernet port on each.

In normal use you'd connect one of these to your ADSL modem (the DG834G in my case) using an ethernet cable and plug the unit into the mains. The other unit gets similarly plugged into the mains next to your PC and connected to it using an ethernet cable again. They're pretty self-configuring and so within a few minutes of testing this I had a good ethernet connection to my ADSL box through the mains (a slightly weird experience!).

Since what comes out of the 'receiving' Devolo plug once it's set up as above is effectively just a standard ethernet signal connected to the internet, it's perfectly feasible to plug this signal into another Access Point (AP) so that it effectively acts as a 'repeater' to extend the range of your WiFi coverage (although see the 'Additional Notes' section below). And this is exactly what I did - using the Apple Airport as the AP.

And I'm very pleased to report that this setup has worked perfectly since I installed it 3 or 4 weeks ago (at time of writing) - it's not given problems once. The Devolo kit reports a connection speed of about 8 or 9Mb/s - which I consider to be quite extraordinary considering that my Netgear DG834G gateway sits right next to the main house fusebox and it (and hence the 'transmitting' Devolo plug) are plugged into a spur directly off this - presumably pretty dirty (from a mains noise point of view) - supply and it then sends around the looping mains wiring over a distance of I guess 20-30m. Certainly that speed is nowhere near being a limiting factor for me since a) 802.11b has a (theoretical) maximum speed of 11Mb/s, and b) my ADSL connection is only 512Kb/s right now anyway!

Additional Notes:

1) When I initially set up the 'receiving' end of the Devolo link, I plugged the unit into the multi-plug adaptor that my home desktop PC, monitor, printer, and about 10 other peripherals and gadgets were also plugged into. It didn't like that much and had problems getting a reliable link to the other Devolo unit. However, when I then plugged it in to it's own separate socket (away from any peripherals, etc.) it worked perfectly. My assumption is that I have a particularly 'dirty gadget' somewhere (no wisecracks please!) and that it was generating so much interference on the line nearby. A point worth noting.

2) When setting up two AP's to work together such that their coverage may overlap in places, you need to ensure that their 802.11 channels don't interfere with each other. To do this, you keep the channel numbers at least 3 apart. In my case, my DG834G was already on channel 3 - so I set my Airport to channel 6.

To be continued...