



The Unofficial FAQ

Frequently Asked Questions (and their answers)

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TABLE OF CONTENTS

1	INTRODUCTION.....	4
1.1	STATEMENT OF PURPOSE	4
1.2	ABOUT THE AUTHOR.....	4
1.3	REGULAR CONTRIBUTORS	4
1.4	ABOUT THE FAQ	5
2	CONFIGURATION.....	6
2.1	SETTING UP THE FIRST TIME	6
2.2	ROUTERS (WIRED AND WIRELESS).....	6
2.3	POWER OVER ETHERNET.....	7
2.4	SECURITY TIPS.....	7
2.5	LINUX	8
2.6	INSTALLING/CONFIGURING A SECONDARY WIRELESS NETWORK.....	9
3	CONNECTION TROUBLESHOOTING	11
3.1	ARE ALL CABLES FIRMLY PLUGGED IN?	11
3.2	HAVE YOU RESET YOUR MODEM?	11
3.3	HAVE YOU RESET YOUR ROUTER?	11
3.4	IS YOUR MODEM TRYING TO DOWNLOAD A FIRMWARE UPGRADE?.....	11
3.5	FORCE YOUR NETWORK CARD TO 10MBIT/SEC.....	11
3.6	CHECK FOR UPDATED DRIVERS FOR YOUR NETWORK CARD	12
3.7	CHECK FOR UPDATED FIRMWARE FOR YOUR ROUTER	12
3.8	INSTALL THE LATEST SERVICE PACK FOR WINDOWS	12
3.9	ADJUST THE ANGLE OF THE MODEM'S MAIN ANTENNA	12
3.10	ADJUST THE ORIENTATION OF THE MODEM TO "SIDE ON"	12
3.11	TRY REMOVING THE MODEM'S MAIN "EAR"	13
3.12	TRY WRAPPING THE MODEM IN FOIL.....	13
3.13	ADJUST YOUR COMPUTER'S MTU OR RWIN SETTINGS	13
3.14	CHECK YOUR POWER SUPPLY	16
3.15	CHECK NETWORK CARD POWER MANAGEMENT	17
4	PERFORMANCE.....	18
4.1	DOWNLOAD SPEED TESTS.....	18
4.2	UNDERSTANDING THE DIFFERENCE BETWEEN Kbps AND KBPS	18
4.3	ANTENNAE (COMMERCIAL AND HOME MADE).....	19
4.4	CISCO / NAVINI MONITORING SOFTWARE.....	23
4.5	PING TIMES.....	24
4.6	MAXIMUM TRANSMISSION UNIT (MTU) SIZE	24
4.7	VENTURI – OPTIMISATION SOFTWARE	24
5	ACCOUNTS AND BILLING	26

5.1	YOUR RIGHTS AND OBLIGATIONS	26
5.2	MONITORING YOUR USAGE.....	26
5.3	BILLING CYCLE.....	26
6	NETWORK ARCHITECTURE.....	28
6.1	TOWER LOCATIONS.....	28
6.2	WHAT IS A BTS?.....	30
6.3	OVERVIEW OF WIMAX	30
7	SERVICES	31
7.1	EMAIL	31
7.2	NEWSGROUPS	32
7.3	WEBSITE	32
7.4	NETWORK STATUS	33
7.5	BULLETIN BOARD	33
7.6	DOMAIN NAME SERVER (DNS) SETTINGS	33
8	MISCELLANEOUS INFORMATION.....	34
8.1	MODEM, RABBIT OR WEBBIT?	34
8.2	WHIRLPOOL (WWW.WHIRLPOOL.NET.AU).....	34
8.3	ONLINE GAMING (UNWIRED'S PING TIMES).....	34
8.4	MY WEB BROWSER REPORTS THAT I HAVE A VIRUS!.....	34
8.5	SOMEONE IS TRYING TO HACK MY COMPUTER.....	35
8.6	RADIATION.....	36
8.7	SIGNAL STRENGTH AND QUALITY	38
8.8	MISCELLANEOUS ERROR MESSAGES.....	39
8.9	BATTERIES – TAKING YOUR WEBBIT ON THE ROAD	39
8.10	STEAM CLIENT AND PORT FORWARDING	40

1 Introduction

1.1 Statement of Purpose

The Unwired Unofficial Frequently Asked Questions (FAQ) documentation is a collation of useful technical tips, general information and perhaps even some "old wives tales" which have been collected gradually since Unwired Australia launched publicly during 2004.

The purpose of the documentation is to provide an independent reference point for Unwired's customers, enabling them to have access to information that they otherwise might not be able to obtain due to constraints imposed by Unwired's public company status.

Disclaimer

Readers should note that the information in the Unwired Unofficial FAQ documentation is neither provided nor endorsed by Unwired Australia.

1.2 About the Author

Stephen Frost

An IT professional with more than 20 years experience (including around 10 years working with ISPs), Stephen is currently running his own IT consulting business and also works during the day for Greyhound Racing Victoria. He is the founder of Croydon Chess Club (www.croydonchess.com) and is currently on a personal mission to get his Australian Chess Federation (ACF) rating up to 1600 points. Through his company Frostbyte Consulting (www.frostbyte.com.au), Stephen is contracted by Unwired to provide moderation and oversight services on the Unwired Bulletin Board.

1.3 Regular Contributors

Matthew Hilder

One of our moderators in his spare time, Matthew currently works in a Blue Mountains hotel but previously held a range of different posts (including IT for several years) in different Sydney hotels. He is a Microsoft Certified Systems Administrator (MCSA) on Windows 2000, but is also long-term Mac user.

Barry Gerdes

Barry is a retired communications engineer, formerly with the Department of Defence, and is also a ham radio operator (VK2ZAH). He has gained much experience with computers over the past 25 years, but is really more interested these days in model engineering, astronomy and playing golf. Readers are encouraged to visit Barry's astronomy observatory website (<http://www.geocities.com/barrykgerdes/>).

Mick Nicholls

Mick is a retired telecommunications worker with Telstra (previously known as the PMG or Telecom) who had reached the position of Strategic Fleet Manager for the greater Sydney area on his retirement. He has been involved with all forms of motor sport since the early 1950's (incidentally, he was introduced to motor sport by a girl at his school, who he later married and is still married to 50 years later!). Mick is an International Grade steward, a Tribune and the Minute Secretary for the Confederation of Australian Motor Sport (CAMS) NSW State Executive, State Council and Judiciary Advisory Panel. In December 2006 he was awarded the CAMS Service Star for his services to motor sport over many years.

Trash

A regular poster on the Whirlpool (www.whirlpool.net.au) bulletin board, Trash is an engineer with expertise in antenna-building and wireless transmission.

1.4 About the FAQ

Alternate Versions

There is a web-based version of the FAQ published at the Unwired bulletin board (located at: forums.unwired.com.au).

The PDF version of the FAQ can be downloaded from Stephen Frost's website (located at: www.frostbyte.com.au).

Revision History

v1.00	01/07/2005	Initial version
v1.01	13/12/2006	Roll-up of many minor edits and additions
v1.02	18/01/2007	Minor edits and additions
v1.03	09/02/2008	Minor edits and additions
v1.04	07/08/2008	Updated info about Cisco/Navini diagnostics application
v1.05	20/12/2008	Added information about Steam game client port forwarding
v1.06	19/03/2009	Added email account activation information
v1.07	05/04/2009	Added information about the "virus detected" captive portal

2 Configuration

2.1 Setting Up The First Time

Why is my modem flashing red?

This means that your modem is unable to connect to the Unwired network. Reasons for this may include:

- *The modem is unable to detect a signal*

You may be outside Unwired's coverage area, or alternatively, you may be in a "black spot" within the published coverage areas. Try moving the modem around to different locations. You don't need to have it connected to a computer to do this, so just get a long extension cord and walk it around.

Spend 30 – 60 seconds in each location. Check up high near the ceiling. Try near windows. Try rotating the modem slightly, so that the different internal antennae have a chance to look for the signal.

- *The modem may not be "activated"*

In the early days of Unwired, some modems supplied through channels such as Harvey Norman had not been properly pre-configured. The Unwired network didn't recognise the modem when it attempted to connect, causing the "flashing red" symptoms and no connection. If you suspect that this may be your problem, place a call to technical support.

2.2 Routers (Wired and Wireless)

Its quite feasible to connect your Unwired modem to a router so that other devices at your location. For those with a moderate level of computer skill this can be fairly readily achieved, but it certainly is not recommended for beginners. In that scenario I can strongly recommend getting one of the three F's to help you out (friends, family and fools!). Unwired "do not support" router setups, so in that respect you are on your own with the design and implementation of a solution.

One of the drawbacks with using an additional router is that the Cisco/Navini diagnostics program will not work. This is the program that allows you to get detailed information out of the modem (e.g. measurements of signal strength and quality). These diagnostics are an essential part of troubleshooting if you're in a situation where your connection is not performing well.

There are a few minor 'gotchas' that crop up from time to time. One of these is difficulty setting up a Netgear 614 model wireless router. One of our bulletin board members writes:

I have been reading about the problems associated with the setting up of a Netgear 614 wireless router so I got myself one that I might learn something about it.

After printing out the instructions and following them to the letter (and second) I spent three days trying to get it to work without any joy. I could not even get the welcome page to come up. I knew I had the computer configured correctly and could always connect to the internet directly so I gathered that there must be something basically wrong with what I was doing. It is years since I set up a network but I have done so before so I have a pretty good idea of the basics.

In any case I decided to look closely at the router specs and noted that the default address was 192.168.1.1 and not 192.168.0.1 like the manual says. Hey that rang a bell. I checked the IP address of the ADSL modem. Yes it was also 192.168.1.1. Ah hah!

*At this stage I could not get into the router except through the browser (and this was timing out) so I looked up **www.netgear.com** on the internet and found the instructions for getting into the router other than directly via the browser ("Completely Avoiding the SmartWizard").*

*I ran this method and got straight onto the **www.routerlogin.com/basicsetting.htm** and was able to edit the IP address back to the original default.*

This done I turned everything off and started the setup routine from scratch again. This time everything went like clockwork and five minutes later I was accessing the internet via the wireless router from all my remote locations.

2.3 Power over Ethernet

A number of users have experimented with mounting their webbit externally, close to (or on!) and external antenna. In those situations it may be preferable to run Power Over Ethernet (PoE) rather than running 240V power outside your home or office. There is some useful information on how to put together a PoE setup on the Whirlpool website (www.whirlpool.net.au).

2.4 Security Tips

General Security

It really depends on what operating system you're running. Windows XP Service Pack 2 upgrades/improves general security for users by beefing up its in-built firewall capabilities. I thoroughly recommend that all Windows XP users upgrade to the latest service pack ASAP. You should also check with Microsoft's Windows Update service on a regular basis.

One thing we've been asked a couple of times is "How can I stop my flatmate from accessing the 'Net using my connection?" There are a couple of suggestions:

1. Disconnect the modem and hide it away somewhere.
2. Make sure all user accounts on the PC have passwords set ... so that only you know the passwords. Here's a link:

http://www.wown.com/j_helmig/wxphusrm.htm

Network Security

Most home-user routers (e.g. ADSL, wireless) utilise a thing called NAT (Network Address Translation) so that your computer uses non-routable IP addresses (starting with either 10.something or 192.168.something or 172.16-32.something). This means that other internet users cannot "see" you and connect direct to your machine, but you can "see" them and connect to them.

Most home-based routers will have a web-based interface. The router should (!) be able to tell you what machines it knows about on the local network. Check to ensure that the router does NOT allow "remote administration" ... i.e. you can administer it from the local network, but it shouldn't allow configuration from to be done from the Internet ... otherwise someone might try and hack it.

Wireless Security

Some people can get a little worried about someone hacking into their "wireless connection". It is important to understand that the kind of wireless connection that Unwired gives you is fundamentally different from the sort of "wireless LAN" networking (i.e. 802.11b or 802.11g protocols) that is built into most of today's notebook computers.

If you are using a wireless local LAN segment ... that is, *if the connection between your computer(s) and the Unwired modem is facilitated by a wireless router*, there are definite security configurations that you should implement (e.g. WEP).

For the majority of Unwired customers though, if you're using the Unwired modem in its usual basic configuration ... that is, it is physically connected to a single PC either via a network cable or via a USB cable ... then wireless security is NOT an issue.

Anti-Virus Protection

I strongly recommend that everyone should have a good anti-virus program and ensure that it downloads updates regularly. At home I use Norton Anti-Virus. At work we use Trend Micro Anti-Virus. Just make sure that it is (1) reputable; and (2) regularly updated. Don't just rely on the software to update itself either. Make a point of occasionally forcing it to do an update manually, just in case a virus has slipped in to your system and has disabled the auto-update feature of your program.

2.5 Linux

One Unwired user wrote the following for us:

I use unwired on a Debian distribution daily. I have an ethernet modem. I've had no problems with my connection at the Linux end. I plug my ethernet cable in and type:

```
dhclient eth0
```

and in a few moments, I'm connected.

For any users out there who'd like to play around with Linux, then download a Linux live CD, such as Knoppix, or Kanotix. You can boot from the CD into Linux without installing it on your hard drive. If you boot from one of these live CD's, they more

often than not will recognise your ethernet card and automatically attempt to get an ip address via dhcp. That way, you don't even need to type `dhclient eth0`.

`dhclient` may not be installed on redhat. A quick google came up with this:

Configuring a DHCP Client

The first step for configuring a DHCP client is to make sure the kernel recognizes the network interface card. Most cards are recognized during the installation process, and the system is configured to use the correct kernel module for the card. If you install a card after installation, Kudzu should recognize it and prompt you to configure the corresponding kernel module for it. Be sure to check the Red Hat Linux Hardware Compatibility List available at <http://hardware.redhat.com/hcl/>. If the network card is not configured by the installation program or Kudzu and you know which kernel module to load for it, refer to Chapter 24 for details on loading kernel modules.

To configure a DHCP client manually, you need to modify the `/etc/sysconfig/network` file to enable networking and the configuration file for each network device in the `/etc/sysconfig/network-scripts` directory. In this directory, each device should have a configuration file named `ifcfg-eth0` where `eth0` is the network device name.

The `/etc/sysconfig/network` file should contain the following line:

```
NETWORKING=yes
```

You might have more information in this file, but the `NETWORKING` variable must be set to `yes` if you want networking to start at boot time.

The `/etc/sysconfig/network-scripts/ifcfg-eth0` file should contain the following lines:

```
DEVICE=eth0
```

```
BOOTPROTO=dhcp
```

```
ONBOOT=yes
```

You need a configuration file for each device that you want to configure to use DHCP.

2.6 Installing/Configuring a Secondary Wireless Network

When operated in a permanent home environment, usually because ADSL or cable is not available, the Unwired system is a great way to get a broadband connection. Its main problem in some of the poorer locations is getting a good reliable signal from the Unwired towers. Sometimes this is quite difficult from the prime location of operation in your home.

A common way to improve operation is to put the Unwired modem in an area of the house that has a reliable signal (e.g. in the roof, or near a window) and run an Ethernet cable to the computer.

This can often be rather inconvenient, because of difficulty in finding a satisfactory route to run the Ethernet cable. The way to get around the cable connection is to run a secondary wireless network from the Unwired modem to service any or all of the computers in the house. The one drawback to this of course is that the same network

can service any computer within about 300 ft of the wireless router, although encryption can virtually remove the problem of freeloaders.

Setting up a network is quite simple, even for the inexperienced, if the instructions that come with the router are followed to the letter. There are quite a number of wireless routers on the market now that all work well once installed. Basically you need:

- your Unwired modem
- a wireless router (kit)
- a short Ethernet cable to connect the WAN socket on the router to the LAN socket on the Unwired modem
- an Ethernet cable to connect your set up computer LAN to one of the LAN sockets on the router (not the WAN that is reserved for the modem)
- a computer to use that can be wired to the router (as in 4.) to set up the router using the installation CD that comes with the router. This computer may be removed after initial set up but can also be used as the server in your own home LAN if you wish. It will also be necessary for changing any configuration, encryption or passwords
- a wireless network card for each computer or laptop that is to be on your wireless LAN, plus the card's installation CD

The procedure for setting up is well described in the set up instructions that come with your chosen brand of router and network cards. The procedure is generally as follows:

1. Set up the Unwired modem first, connected to the computer and connected to the Internet. If this does not work you cannot progress further till it is sorted
2. Install the router initiating software on your computer then insert the router as above between the computer and the modem
3. Run the software and get the computer connected to the Internet via the LAN wired connection. Once done, this computer is no longer needed as a wired connection, unless you intend to use it as a server or you wish to use encryption later
4. Install your wireless network card software on your LAN computer. Turn off the computer and install the network card. Turn on the computer and it should find the card. Install the provided software. Once completed, the configuration screen should appear and search for wireless networks
5. Select your wireless network, and if that computer was previously connected to the Unwired modem you should be able to connect to the Internet
6. If you have not used that computer on the internet before, use the same standard procedure for setting up the internet on a LAN. This will be spelled out in the instructions

Some points to note:

The Cisco/Navini diagnostics does not work through a router. The computer must be connected directly to the modem for this to work. If you only have one computer it will need to be used in sequence to perform the router set up before being used as a wireless connected LAN.

3 Connection Troubleshooting

3.1 Are all cables firmly plugged in?

Many people have had problems with either a power supply cable that fits poorly causing occasional reboots of their modem, or a network cable that fits poorly causing short dropouts of connectivity. Try relocating the cables in a slightly different physical position just in case something is causing them to move (e.g. your feet, your hands, etc).

3.2 Have you reset your modem?

Try turning the modem off for 60 seconds, then turn it on again.

3.3 Have you reset your router?

Some customers have occasionally found that their router “locks up” creating a loss of connectivity. Before calling technical support, power off your router for several seconds, then power it on again.

3.4 Is your modem trying to download a firmware upgrade?

Unwired occasionally release modem firmware upgrades. Your modem will automatically detect these upgrades, download them, install them, and then reboot itself. It is a good idea to occasionally (say, once a month) leave the modem turned on overnight, so it has a good opportunity to update itself. You don't need to leave your computer turned on at the same time, as the modem is quite capable of downloading and installing the firmware updates without the help of the computer.

At this stage it is not possible for customers to initiate a modem firmware upgrade themselves. Do NOT call Unwired Support about this issue either, as they also cannot specifically target an upgrade at a single modem. So your best bet is to periodically follow the suggestion in the preceding paragraph and occasionally leave your modem on overnight.

3.5 Force your network card to 10Mbit/sec

A large number of users have benefited from this tip! First, some background information. Windows XP uses 'media sense' to determine if the network interface card (NIC) link is active, however there are a number of NIC's which do not function correctly if you have them set to auto-negotiate. Occasionally the NIC drops the link.

By default, Windows XP puts a setting of “Auto-Negotiate” on your network card. This enables the computer to try different settings (e.g. 10Mbit/sec, 100Mbit/sec or 1000Mbit/sec) when talking to a switch or router, so that the maximum possible performance is achieved.

If you were just connecting to a switch on your local network, you probably wouldn't even notice, but when you're connected to the Unwired modem a re-negotiation has

the unfortunate side-effect of causing a temporary loss of connectivity. Thus we get the dreaded “dropout” problem that has been reported so often. Here’s one way that some have fixed it. Navigate to:

Start → Settings → Control Panel → Network Connections

then right-click on your *Local Area Connection*, choose *Properties*, and click the *Configure* button for the network card. Many will now be able to access the *Advanced* tab and see something like:

Link Speed and Duplex

Set this to **10Mbit/sec Half Duplex** so that your network card exactly matches the setting of the Unwired modem (the modems are 10Mbit/sec, not 100Mbit/sec!). Test for several days and see if the dropout problems are either completely gone or at least substantially reduced.

For an even smaller number of users, setting to **10Mbit/sec Full Duplex** has proved beneficial. Frankly, I am not sure why ... but it may be worth your while trying it!

3.6 Check for updated drivers for your network card

A number of users have reported connectivity problems that disappeared following an upgrade to the latest firmware for their network card.

3.7 Check for updated firmware for your router

A number of users have reported connectivity problems that disappeared following an upgrade to the latest firmware for their router. Watch out for suppliers (e.g. D-Link) which often release patches overseas for their devices but not locally until months later ... it may be worthwhile talking to their technical support team.

3.8 Install the latest service pack for Windows

A number of users have reported connectivity problems that disappeared following an upgrade to the latest Windows XP Service Pack 2.

3.9 Adjust the angle of the modem’s main antenna

Try setting the modem’s main “ear” to either 45 degrees or 90 degrees from vertical rather than having it straight up and down.

3.10 Adjust the orientation of the modem to “side on”

If the modem is oriented so it is exactly side on to the base station, then some users have found that they get a better result for both signal strength and signal quality. The orientation must be very precise, within 10 degrees or maybe even 5 for this to have an effect.

To check this, get hold of the Cisco/Navini diagnostics program (refer section 4.4 below). You will also need the location of your nearest base stations from the list provided in section 6.

Orient the modem so it is close to side on to the closest base station, then start moving it in very small increments, each time having a look at the signal strength display until the display steadies.

The reason this works is that the base station works by beaming the signal backwards and forwards on an arc with the modem somewhere on that arc. When the modem is correctly oriented, the base station may find it easier to pinpoint it and beam the signal directly to it all the time.

3.11 Try removing the modem's main "ear"

Webbits contain three antennae ... the main one which is easily visible from the outside, and two (2) internal antennae in the side panels. Try removing the main antenna and then rotating the modem so it is side on to your nearest tower.

To remove the external antenna, look closely at where it attaches to the modem. There are two small 'markers' which you line up by rotating the ear. Then pull, gently but firmly, and the ear should come off. Here's a picture of a de-eared webbit:

<http://community.webshots.com/photo/183973395/188576428SvyLSw#>

In the picture above the user has connected an external antenna in place of the one supplied with the modem, but that's a separate discussion!

3.12 Try wrapping the modem in foil

If you suspect that your webbit is frequently switching from tower to tower (can cause dropouts) and you want it to stop, try wrapping your webbit in aluminium foil.

Important: Put some holes in the foil where the vents are top and bottom to allow air to flow through and keep the webbit cool.

Don't cover the main ear antenna.

Then take the webbit and point it in the direction of the tower. Chances are the other towers are being connected via the side (internal) antennas, so detuning and shielding them with foil should stop the webbit switching to them.

3.13 Adjust your computer's MTU or RWIN settings

This stuff is a bit tricky. When data is transmitted between devices on the Internet (or on any network) it is typically broken down into "packets" of data. Each packet has a header, a body of data, and some kind of checksum so that the receiving end can confirm that the information received has not been damaged or altered in some way during transit.

On a wired network packets can be quite large without causing a problem. The default setting for Windows computers is to have a maximum transmission unit (MTU) of around 1500 bytes.

On a wireless network there is greater possibility of data loss on any individual packet of data. Data loss causes the receiving computer to signal to the sender to retransmit the packet. The more data loss you get, the lower your link performance.

Maximum Transmission Unit (MTU)

Consider trying an optimisation tool such as DrTCP to “fiddle” the MTU settings down. Whilst you will certainly get some reduced performance as a result of the changes, what you lose on the roundabouts you might make up for on the swings.

Here’s an explanation of why performance might be affected. I will compare maximum possible throughput at MTU of 1500 bytes vs MTU of 576 bytes.

	<u>MTU = 1500</u>	<u>MTU = 576</u>
TCP Header	40 bytes	40 bytes
Payload	1460 bytes	536 bytes
Payload Percentage	1460/1500 = 97%	536/576 = 93%
Header Overhead	3%	7%

As you can see from the above, reducing the MTU increases the amount of “header overhead” from 3% of each packet to around 7% of each packet.

Why would you then change it down? You’d be hoping that the number of re-transmissions of packets would drop because the packets, being smaller, are less likely to be corrupted ... and thereby hoping that overall performance might slightly improve.

This tip really requires a bit of systematic testing in order for you to be sure whether you are helping or harming your connection!

Receive Window (RWIN)

Now here are some really useful ideas courtesy of user “Al” from the Unwired bulletin board. He writes as follows:

I've spent a lot of time visiting/running tests at www.pcpitstop.com (which I highly recommend if you want to get the most out of your machine). After trawling many sites for advice, the common factor that seemed to emerge was the biggest single adjustment to boost internet downloads was adjusting the size of the 'Receive Window'.

The tests at pcpitstop had indicated that the size of my 'receive window' was woefully small. I spent some time playing with the registry, trying various patches from different sites. One good tweaking tool I found is called 'DrTCP' and is downloadable from:

www.dslreports.com/drtcp

There's some helpful explanatory information (very technical) at:

www.montanasky.net/Help/DSL_Info.html

and more specifically at:

www.dslreports.com/tweaks/RWIN

For those who are less technically minded or don't know how to back up the registry before applying these changes, I would suggest downloading 'TZ connection booster 2.6.0.0' which can be found at:

www.majorgeeks.com

I used the 'DSL' option in type of network (which I think applies to Unwired). You don't need to know about the registry to use it as it gives you an option on next start-up to restore your previous settings if not happy with the changes. I would suggest trying changes over a couple of days at different times of the day, in case your timing is unlucky (network congestion, etc.).

On a poor day my file are around 17KB/sec (around twice what I was getting), and an hour ago, I averaged 28KB/sec on a 5MB file (approx 3 minutes to download) ... i.e. around 224Kbits/sec of theoretical max 256Kbits/sec, so no complaints there.

So, my settings in DrTCP (I have Windows '98SE):

```
TCP Receive Window: 255552
Windows Scaling:     yes
Time stamping:      No
SelectiveAcks:      Yes
MTUdiscovery:       Yes
BlackHole:          No
MaxDuplicateAcks
TTL:                64
Dial up Adapter
MTU:                1500
```

Applying Registry Changes Without Rebooting

One quick method for updating the registry: press CTRL+ALT+DEL (simultaneously) to open the Task Manager application.

Locate the Explorer task, click "End Task" and when it asks "What do you want the computer to do?" click "Cancel" then "End Task" (on subsequent Window).

Your registry changes should then be applied (much quicker than re-starting Windows) and should be reflected when next starting DrTCP.

MTU Setting Impacts Some Websites

Some users have trouble accessing particular websites, or have trouble sending emails to particular SMTP servers. Some of these kinds of problems can also be caused by MTU settings ... reducing from 1500 to 1460 fixes a large percentage of website access issues. A good example of a server which needs a lower value is the Sydney Morning Herald (www.smh.com.au).

Here is an example of using ping to test for the optimal Maximum Transmission Unit (MTU) size for connecting to a particular site:

```
Microsoft Windows XP [Version 5.1.2600]
```

(C) Copyright 1985–2001 Microsoft Corp.

```
C:\>ping -f -l 1500 www.cisco.com
Pinging www.cisco.com [198.133.219.25] with 1500 bytes of data:
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Ping statistics for 198.133.219.25:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>ping -f -l 1480 www.cisco.com
Pinging www.cisco.com [198.133.219.25] with 1480 bytes of data:
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Ping statistics for 198.133.219.25:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>ping -f -l 1460 www.cisco.com
Pinging www.cisco.com [198.133.219.25] with 1460 bytes of data:
Reply from 198.133.219.25: bytes=1460 time=319ms TTL=113
Reply from 198.133.219.25: bytes=1460 time=320ms TTL=113
Reply from 198.133.219.25: bytes=1460 time=320ms TTL=113
Reply from 198.133.219.25: bytes=1460 time=318ms TTL=113
Ping statistics for 198.133.219.25:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 318ms, Maximum = 320ms, Average = 319ms
```

3.14 Check your power supply

One or two users have noted problems caused by their power supply overheating/failing. One commented:

The power supply to my webbit has distorted on one side with a slight brownish tinge on the sticker indicating some sort of issue has happened to it. The webbit is also exhibiting strange behaviour including not connecting and displaying strange light combinations on the front panel. The top indicator light on the webbit flashes red then green then red again continuously. I previously had a good connection which connected to the same BTS and had the same IP address for months.

The user contacted Unwired and arranged for a replacement power supply to be sent. Once installed, their connection problems were immediately fixed.

This was confirmed again in May 2006 when another user with connectivity problems replaced their “old” power supply (rated to 2.5A) with a new unit (rated to 3A) and they noticed an immediate performance improvement. He tested the old power supply and noted that it was “failing under load”.

3.15 Check network card power management

The default setting in Windows sets the network socket to switch itself off to save power after a period of time. To turn this off, go to Control Panel and select the Network Connections applet. The computer's network socket is usually named Local Area Connection. Right click on this and choose Properties. Click the Configure button, then go to the Power Management tab. Ensure the "*Allow the computer to turn off this device to save power*" box is unchecked.

4 Performance

4.1 Download Speed Tests

Here's some speed testing sites that some users have found helpful:

http://www.dungogtgc.org/speedtest_2.shtml

http://www.giganews.com/test_connect.html

<http://www.users.bigpond.com/speedtest>

4.2 Understanding the Difference Between Kbps and kbps

The first thing to understand is that computers work in binary code, or "base 2". So computer data is made up of myriads of on/off switches, represented as ones and zeroes. These ones and zeroes are called BITS. Computers put these bits together in groups of eight to form a BYTE. In most cases it takes 8 bits (or 1 byte) to represent a single character such as a number or a letter of the alphabet.

It would get very tiresome if we all had to work in bits, because the numbers are so large. So computer manufacturers and users use a sort of shorthand, where we group bytes together in batches of 1,024 to form a KILOBYTE, or in batches of 1,048,576 to form a MEGABYTE. Why 1,024 you ask? Why not 1,000? Well it all comes down to the fact that computers calculate in binary code, so:

Decimal	Binary
0	00000000 00000000
1	00000000 00000001
2	00000000 00000010
4	00000000 00000100
8	00000000 00001000
16	00000000 00010000
32	00000000 00100000
64	00000000 01000000
128	00000000 10000000
256	00000001 00000000
512	00000010 00000000
1024	00000100 00000000

This means that 1,024 is a fairly close representation of 1,000 decimal that happens to fit nicely into binary code. That makes it relatively convenient for humans to work with, so 1,024 and 1,000 are often used interchangeably when calculating file sizes, or disk space, or whatever.

Lets start by looking at a basic throughput scenario. On a 256K plan you should expect to get throughput of:

$$256 * 1024 = 262,144 \text{ bits/second} = 32,768 \text{ bytes/second (8 bits to each byte)}$$

If you allow about 5% for TCP/IP header overheads (this is for the internal workings of the network protocol that governs the moving of data from place to place) that should work out at a maximum of 31,130 bytes/second. You then divide by 1024 again to get kilobytes:

$$32,768 \text{ less } 5\% \text{ overhead} = 31,130 / 1024 = 30.4 \text{ Kb/sec}$$

One megabyte (1,024 kilobytes, or 1,048,576 bytes) should therefore take around 34 seconds to download in optimal conditions:

$$1,024 \text{ kilobytes} / 30.4 \text{ kilobytes-per-second} = 33.7 \text{ seconds}$$

Many Unwired customers do achieve close to optimal performance. Others, presumably because they are in somewhat marginal locations from a signal perspective, seem to get around 60%-70% of optimal.

4.3 Antennae (commercial and home made)

User Comments

"My antenna connects via a 30cm pigtail to the Unwired webbit. The antenna is attached by removing the upright webbit ear. The webbit is then connected normally to the PC or router. The webbit has to be this close to the antenna because the signal loss at 3.5ghz is high and if the pigtail is too long it negates the addition of the antenna. The antenna at my house is on the roof on an mini TV mast. I then have my webbit sitting in the roof space connected to a wireless router."

This is the simplest solution:

$$\text{Antenna} \leftarrow \rightarrow 30\text{cm Pigtail} \leftarrow \rightarrow \text{Webbit} \leftarrow \rightarrow \text{Ethernet} \leftarrow \rightarrow \text{PC}$$

This is a solution with a wired router:

$$\text{Antenna} \leftarrow \rightarrow 30\text{cm Pigtail} \leftarrow \rightarrow \text{Webbit} \leftarrow \rightarrow \text{Ethernet} \leftarrow \rightarrow \text{Router} \leftarrow \rightarrow \text{Ethernet} \leftarrow \rightarrow \text{PC}$$

This is a solution with a wireless router:

$$\text{Antenna} \leftarrow \rightarrow 30\text{cm Pigtail} \leftarrow \rightarrow \text{Webbit} \leftarrow \rightarrow \text{Ethernet} \leftarrow \rightarrow \text{Router} \leftarrow \rightarrow \text{Wireless} \leftarrow \rightarrow \text{PC}$$

The Ethernet cables can be anywhere from 0.5m to 90m.

User Examples

<http://www.geocities.com/mostlybooks900/>

<http://community.webshots.com/album/183973395WcCdiw>

Where Can I Get An External Antenna?

There are a number of possible suppliers to consider. In alphabetical order:

austwireless.com

http://www.austwireless.com/index.php?cPath=23_219

Hills Antenna

12 Wiggs Road
Riverwood NSW 2750

t: (02) 9717 5290

f: (02) 9717 5226

e: NSW@hillsantenna.com.au

RF Shop

<http://www.rfshop.com.au>

Have a look at the 3.5GHz antenna section

The RF Wave

www.therfwave.com

Make sure you read this link (great information!):

<http://www.therfwave.com/html/unwired.html>

TCOM (may be able to install the antenna for you)

<http://www.tcom.com.au>

How Can I Make My Own Antenna?

There are a couple of possible techniques to consider:

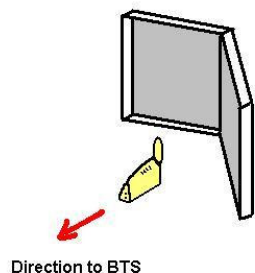
OPTION #1 – The “wrap the modem in foil” trick

This involves completely wrapping the modem in kitchen foil EXCEPT for the main antenna (the ear). Then poke a few holes in the foil at the top where the air vents are on the modem so that excess heat can get out. This technique effectively prevents signal getting to the internal side antennae, forcing the modem to use the main antenna and making it more directional. Rotate the modem very, very slowly until you get the maximum possible signal quality.

OPTION #2 – The “pizza box” trick

Wrap an old (preferably not grotty!) pizza box in foil. Then stand it next to the modem, with the main antenna of the modem pointing inwards towards the fold of the box. Incoming signals will “bounce” off the pizza box and be concentrated towards the antenna, hopefully improving the signal. Rotate the modem and pizza box very,

very slowly until you get the maximum possible signal quality. It should look something like this (courtesy of "trash"):



OPTION #3 – The “beer box” trick

Basically the same as the pizza box trick, except with beer! Rip one end out of the beer carton, line with foil, put the modem inside with its main antenna pointing towards the inside of the box. Rotate the modem and beer carton very, very slowly until you get the maximum possible signal quality.

OPTION #4 – The “coke can” trick

What you'll need:

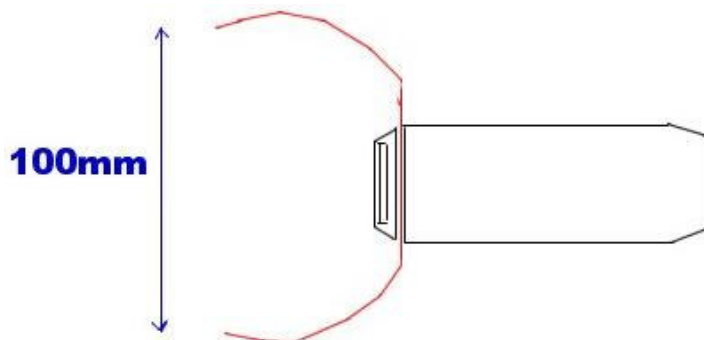
- Sharp scissors / tin snips / dremel with cut-off wheel
- Gloves (don't cut your hands!!!)
- Soft drink can ... use one without any dents or distortions to the aluminium

Step 1: cut top and bottom off a can, don't worry if it's a bit rough to start off.

Step 2: you will now have a cylinder. Slice from top to bottom. Now you have a cylinder with a slice up one side.

Step 3: gently expand the cylinder, from the slice out. Be careful not to "over expand" it as you may lose the natural return "spring" of the aluminium.

Step 4: expand the natural curve of the cylinder to a larger diameter. The can starts at a diameter of roughly 65mm. We want a diameter of 100mm. This is done by using your hands (**but wear gloves for safety**). Rubbing the sheet over a table edge will assist in creating a smooth surface.



Step 5: cut a small rectangle on the bottom edge of the can, where it will slide behind the ear of the webbit, so as to let it slide down further down, providing coverage of the bottom section of the ear

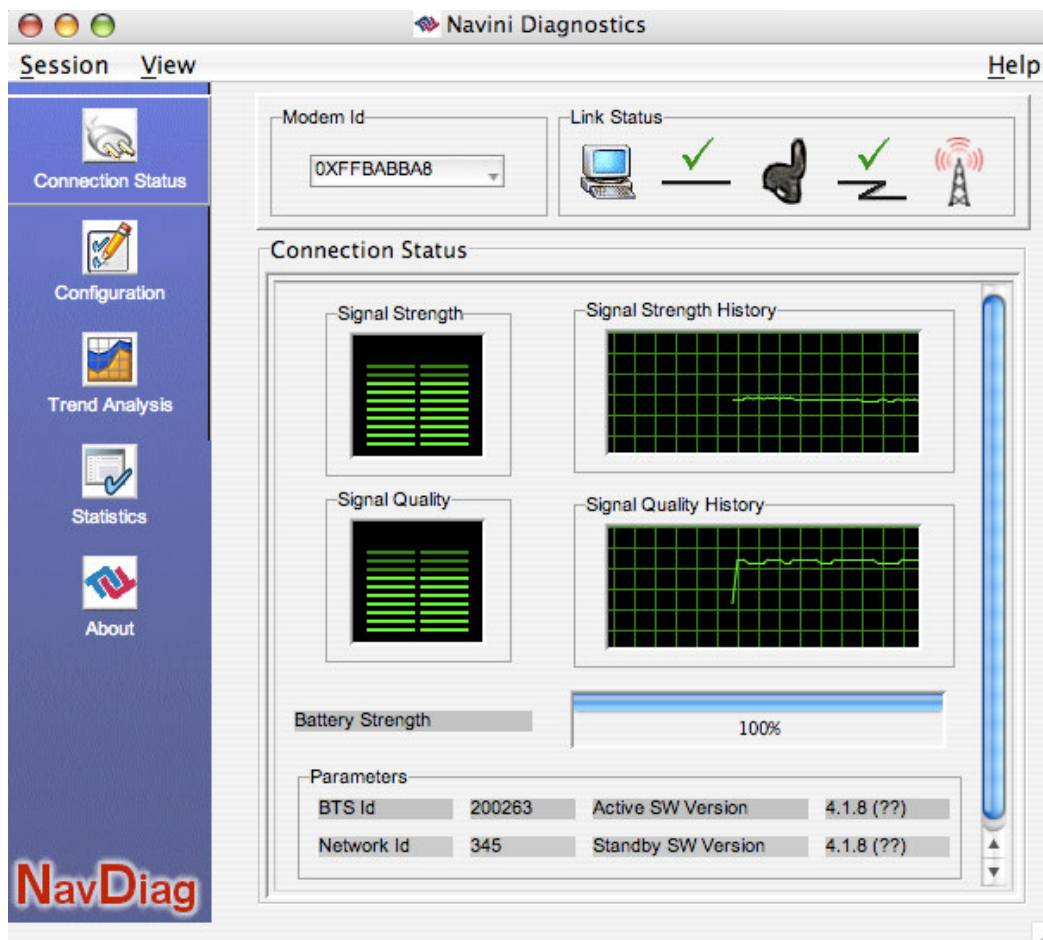
Step 6: behind your ear on the webbit, you will notice the seam where it attaches to the modem. Slide the can gently down into this seam.

Step 7: now all there is left to do is make some fine adjustments to your dish's angle. This should be easy ... just widen and close the opening edges to see what the correct angle is. You should be already very close with the 100mm diameter.



4.4 Cisco / Navini Monitoring Software

A mandatory tool for checking the effectiveness of your connection and thereby maximising your download speeds is the Cisco/Navini diagnostics tool.



There are versions available for Windows, Mac and Linux which can be downloaded as follows:

1. **Recommended** – download from Frostbyte Consulting (www.frostbyte.com.au)
2. Alternative source – download from Navini (www.navini.com)
3. If neither of the above are working, it may be possible to download from Cisco, but be warned – several people have tried this and found that the software would not run correctly with the Unwired modems ... but if you want to give it a go, here's how:

First, register yourself an account with Cisco Software:
<https://tools.cisco.com/RPF/register/register.do>

Once your registration is completed and confirmed (they will email you instructions). Then:

- go to www.cisco.com

- go to Support, Download Software
- select the Wireless Software category
- look under Broadband Wireless Access
- click on "Cisco BWX 100 Series Modems"
- click on "Cisco BWX 110 Desktop Modem"
- click on "Broadband Wireless Access (BWX) Client Applications Software"
- select the latest release

4.5 Ping Times

Traffic prioritisation is an issue that will affect ping times because of lower priorities for ICMP traffic. The Windows command line ping tests are a little inferior (see below). I can recommend looking into the following tool instead:

- **FPING** <http://www.kwakkelflap.com/downloads.html>

IMPORTANT NOTE: Test using pings spaced about 150ms-200ms apart in order to get a more accurate approximation of network latency. Windows command line ping works on a 1000ms spacing which is too slow. For example:

```
fping www.unwired.com.au -t 150 -n 20
```

4.6 Maximum Transmission Unit (MTU) Size

See: **3.13 Adjust your computer's MTU settings**

4.7 Venturi – Optimisation Software

In early 2007 Unwired launched an enhancement to their service ... network traffic optimisation software provided by a company called Venturi. Users that have the Venturi upgrade installed will notice a new icon in their system tray (a little "tornado" that swirls around when its active).

How does it work? It takes data running over your Unwired connection and does two things to it:

- (1) it converts the data from the standard internet TCP/IP protocol to a proprietary Venturi protocol; and
- (2) it compresses the data

When the compressed/translated data reaches the Unwired network, it is fed back into a Venturi "server" device that uncompresses the data and translates it back again into TCP/IP.

This process usually results in a modest performance improvement, however a few users have had problems to a greater or lesser extent. Those people have typically taken one of the following approaches:

- (1) manually control the operation of the Venturi optimiser (i.e. manually enabling or disabling it as they wish; or
- (2) permanently disabling it; or even
- (3) uninstalling it from their PC

For the majority of users however, the Venturi Optimiser is a welcome addition to the arsenal of tools to improve performance of the Unwired system(s). For more information about how the Venturi software works, you can download the Help Guide:

http://www.venturiwireless.com/tech_support/Help/Venturi_Help_Guide.zip

5 Accounts and Billing

5.1 Your Rights and Obligations

It is important to understand both your rights and your obligations in respect of usage of the Unwired network. Please take note of the following two pages:

Terms and Conditions of Use

<http://www.unwired.com.au/terms/terms.php>

Acceptable Use Policy

<http://www.unwired.com.au/terms/aup.php>

5.2 Monitoring Your Usage

Whilst Unwired do provide a record of your data usage on their website (you can login there with your account details and view this record), there is sometimes a requirement to have an independent or perhaps more detailed record of usage (e.g. perhaps you suspect that someone else is using your computer whilst you are not at home).

Many Unwired customers have found that DU Meter is a very helpful application in these sorts of situations:

<http://www.dumeter.com>

5.3 Billing Cycle

There are two key dates in Unwired's billing cycle:

- the INVOICE date (usually the anniversary of the date you joined Unwired);
and
- the BILLING date (3 days later)

If an invoice date falls on a weekend, it is held over until the Monday following (please don't ask me what happens with public holidays on a Monday (I'm not sure what happens in that scenario yet!).

Once the invoice is generated, the billing date is always 3 days later. e.g.

- invoice date falls on a Saturday
- invoice is generated on the following Monday
- billing is run on the Wednesday

The only other complicating factor is that "direct debit" arrangements are slower to process than "credit card" because of the additional work required by the customer's bank, sometimes by anywhere from 2 – 5 days, so keep that in mind.

If this additional delay in processing causes you problems, consider getting a “debit card” attached to your bank account, as from Unwired’s perspective it works like a credit card and it doesn’t have the processing delays of a direct debit arrangement.

6 Network Architecture

6.1 Tower Locations

The Australian Communications Authority maintained an online database for all of Unwired's tower locations. The licences used to be issued under either the AKAL or BKAL name, but recently a reorganisation/representation of the data at the ACA website has made it more difficult to locate the information:

<http://web.acma.gov.au/pls/radcom/>

A roughly accurate list of tower (BTS) locations was once compiled by Unwired customers. It is now out of date but may be helpful:

ID	POST CODE	SUBURB	LOCATION	SITE ID	HEIGHT	LONGITUDE	LATITUDE
20036X	2011	KINGS CROSS	The Elan Building, Kings	204278	154	151.2216667	33.87722
20057X	2016	REDFERN	Tower 1 TNT Building, Lawson Square	3453	50	151.1983333	33.89361
20007X	2022	BONDI JUNCTION	Bondi Junction Plaza, 500 Oxford Street	3718	101.1	151.2488889	33.89361
Not Built	2031	RANDWICK	Vodafone Site, Prince of Wales Hospital	3805	46	151.2380556	33.91944
20087X	2035	PAGEWOOD	Eastgardens Shopping Centre, 152 Bunnerong Road	101247	26.6	151.225	33.94667
20075X	2041	BALMAIN	Bijou Building, 2A Rowntree Street	101245	22	151.1769444	33.85778
20055X	2049	PETERSHAM	Optus 606 Parramatta Road	201910	32.6	151.1522222	33.89056
20085X	2060	NORTH SYDNEY	Northpoint, 100 Miller Street	4022	137.3	151.2058333	33.83944
20048X	2063	NORTHBRIDGE	Optus Site Northbridge Plaza, 83-113 Sailors Bay Road	54792	15.4	151.2005556	33.81167
20001X	2064	ARTARMON	Ch7/10 Tower, Hampden Road	4046	33	151.1802778	33.80694
20090X	2074	TURRAMURRA	Bobbin Head Road	130009	34.1	151.1469444	33.70528
20062X	2075	ST IVES	Vodafone Site Water Board Rosedale Road	4169	37.3	151.1572222	33.7375
20077X	2077	HORNSBY	20 George Street	200511	9.8	151.0980556	33.705
20065X	2084	TERREY HILLS	Bush Fire Brigade Tower Emergency Services Centre	4245	45	151.2169444	33.69417
20031X	2086	FRENCHS FORREST	High School, Frenchs Forest Road	4264	23.4	151.2294444	33.75139
20003X	2093	BALGOWLAH	Balgowlah Boys High School, Maretimo Street	4297	20.8	151.2533333	33.79833
20030X	2094	FAIRLIGHT	Tarquin Apartments, 10 Hilltop Cresnet	51764	33	151.2725	33.79778
20017X	2097	COLLARROY PLATEAU	Cellular Tower, Plateau Park	55315	24.5	151.2911111	33.73111
20022X	2099	DEE WHY	224 Headland Road	201992	11	151.2808333	33.76139
Not Built	2107	BILGOLA PLATEAU	Water Board Plateau Road	53537	27	151.3130556	33.645
20060X	2112	RYDE	Water Tower Reservoir Lane	4433	22.1	151.1013889	33.80444
20074X	2113	NORTH RYDE	Vodafone site 3 Thomas Holt Drive	55302	40	151.1275	33.78889

20013X	2118	CARLINGFORD	Carlingford Court Shopping Centre, Pennant Hills Road	4476	44.2	151.0516667	33.77722
20123X	2120	PENNANT HILLS	423 Pennant Hills Road	4489	54.2	151.0680556	33.74139
20069X	2120	WESTLEIGH	Optus/Vodafone Site, Quarter Sessions Road	100979	18.5	151.0725	33.71722
20086X	2121	EPPING	Press Building, 16-18 Bridge Street	130925	19.7	151.0802778	33.77583
20021X	2132	CROYDON	West Street next to canal	203695	27.5	151.1252778	33.87639
20025X	2136	ENFIELD	Beaumaris Residential Flats, 294 Liverpool Road	4560	27.6	151.0919444	33.88861
20076X	2141	LIDCOMBE	77 Parramatta Road (Cnr Silverwater & Parramatta Rd)	51040	27.5	151.0419444	33.84667
20089X	2145	GRAYSTANES	Merrylands Road	5015	33.2	150.95	33.83083
20032X	2145	PENDLE HILL	Cnr Amax & Girraween Roads	4743	20.1	150.9405556	33.80944
20061X	2147	SEVEN HILLS	Water Reservoir off Old Windsor Road	130970	17	150.9563889	33.76278
20006X	2148	BLACKTOWN	Optus Site Blacktown Council Building, 62 Flushcombe	4816	25.2	150.9075	33.77361
20052X	2150	PARRAMATTA	Wentworth Gardens, 15 Campbell Street	4728	47.7	150.9980556	33.82028
20047X	2151	NORTH ROCKS	Muirfield Golf Course Barclay Road	130906	33.2	151.0130556	33.76778
20072X	2153	KELLYVILLE	Kellyville Park Memorial Avenue	501857	21.6	150.9580556	33.71944
20049X	2154	CASTLE HILL	Australian Catholic University, Old Northern Road	51041	39.5	151.0172222	33.72278
20081X	2161	GUILDFORD	Kennards Self Storage, 565 Woodville Road	203742	33.6	150.9927778	33.86417
20034X	2164	HORSLEY PARK	Lot 33 Border Road	201854	55	150.8538889	33.86306
20078X	2164	WETHERILL PARK	Water Board Reservoir, Horsley Drive and McIlwraith	51061	47.5	150.8883333	33.85278
20011X	2166	CANLEY VALE	Fairfield Council Depot, Cardwell Road	198305	26.4	150.9388889	33.88444
20038X	2170	LIVERPOOL	Optus Site, Dept of Housing Building, 23-31 Moore Street	201020	49.6	150.9244444	33.92417
20046X	2170	MOOREBANK	Chatham Village, 17 Greenhills Avenue	501860	29	150.9291667	33.94056
20015X	2170	PRESTONS	NTA Compound Corner Wonga Road Kurrajong Road	200535	37.4	150.8858333	33.94583
20008X	2177	BONNYRIGG	Monopole 740 744 Cabramatta Road	130538	13.7	150.8897222	33.89556
20079X	2190	CHULLORA	Potts Hill Switching Station, Rookwood Road	130268	47.5	151.0408333	33.89
20059X	2196	ROSELANDS	Corner Canarys & Nicolls Street	203300	43	151.0741667	33.93361
20018X	2200	CONDELL PARK	Water Tower, 1a Simmat Avenue	5278	23.5	151.0102778	33.92028
20012X	2203	DULWICH HILL	831 New Canterbury Road	5218	27.6	151.1291667	33.90611
20050X	2213	PANANIA	67 Anderson Avenue	5331	19	150.9975	33.95639
20037X	2217	KOGARAH	Optus Site, St George Hospital, Belgrave Street	202401	63	151.1330556	33.96889
20035X	2220	HURSTVILLE	43 Bridge Street	5379	45	151.0933333	33.96611
20045X	2228	MIRANDA	Car Park Westfield Shopping Centre	5426	31.7	151.1030556	34.03361
20019X	2230	CRONULLA	21 Bourke Street	202499	45	151.1508333	34.04972

20064X	2232	SUTHERLAND	Endeavour House, 3-5 Stapleton Avenue	5489	23	151.0597222	34.03222
20026X	2233	ENGADINE	Optus Site Water Reservoir, Old Princes Highway	5515	24.7	151.01	34.06778
20043X	2234	MENAI	Optus Tower, Corner Menai Road & Old Illawarra Road	130084	49	151.0083333	34.01667
20067X	2430	LANSDOWNE	977 Hume Highway	204644	32.9	150.9702778	33.89111
20029X	2560	CAMPBELLTOWN	St Gregorys College, Mount Badgelly	198392	28.6	150.7680556	34.04417
20010X	2560	CAMPBELLTOWN	Optus Site 171-179 Queen Street	201770	26	150.8125	34.06833
20040X	2564	MACQUARIE FIELDS	Sewage Treatment Centre, Victoria Road	131005	32.1	150.9030556	33.9875
20091X	2565	INGLEBURN	Water Board Reserve, Collins Promenade	51748	32	150.8741667	34.01028
20044X	2566	MINTO	Metalcorp, 56 Somerset Street	202549	32.5	150.8422222	34.02333
20009X	2747	KINGSWOOD	Optus Site Corner of Phillip Street & Copeland Street	9980	33	150.7158333	33.75611
20054X	2750	JAMISONTOWN	Optus/Vodafone, 21 to 23 Abel Street	201263	24.3	150.6836111	33.76667
20082X	2756	WINDSOR	Vodafone/Optus Site, 100 Mileham Street	51765	32.1	150.8097222	33.62139
20028X	2759	ERSKINE PARK	Optus/Vodafone/Hutchison Site, Lot 3 Lenore Lane	130595	32	150.7936111	33.81306
20063X	2760	ST MARYS	Voda Site Police Station, Great Western Highway	201230	20.1	150.7744444	33.77139
20051X	2763	QUAKERS HILL	MWS & Db Reservoir, Wilson Road	130102	20	150.915	33.73639
20073X	2765	RIVERSTONE	Optus Site, Lot 113 Cudgegong Road	4925	25.2	150.9041667	33.68528
20023X	2766	EASTERN CREEK	Minchinbury Reservoir, Wallgrove Road	51755	24.2	150.8391667	33.80333
20024X	2770	EMERTON	Optus Emerton Hotel, Popondetta Road	201428	24.2	150.8086111	33.74583

6.2 What Is a BTS?

BTS stands for Base Transceiver Station and refers to the towers which transmit and receive data from the modems and then relay that data to/from the core Unwired network.

Each BTS has a unique ID assigned to it by Unwired. The first five digits are the tower location, and then there is a suffix number between 1 and 3 or sometimes between 1 and 6 (meaning that each tower has either 3 or 6 BTS units commissioned).

6.3 Overview of WiMAX

For some overview information on how WiMAX works and its expected benefits, try the following website:

<http://www.conniq.com>

7 Services

7.1 Email

What Is My Email Address?

Your Unwired email address is in the following format:

yourusername@unwired.com.au

Server Names and Ports

Unwired's mail servers are configured as follows:

POP3 (mail retrieval): **pop3.unwired.com.au** (port: 110)

SMTP (mail sending): **esmtplib.unwired.com.au** (port: 25)

SMTP Authentication

Unwired have now enabled authentication on their SMTP servers, so you will also need to tell your email program your account details. Your username for authenticating or logging on to the SMTP server is in the following format:

yourusername.unwired

Email Account "activation" Before Using POP3/SMTP

When you register your Unwired account and choose the option to have an Unwired mailbox and email address with your account, you must go to the Unwired website and login at least once to the Umail (web-based) email system before you try to set up and retrieve email using another mail client (e.g. Outlook).

This is because registration of your account only creates the possibility of an Unwired mailbox. Actually logging in to Umail is what triggers the process of physically creating the mailbox in the mail system. If you attempt to send/receive emails using another mail client before this you will see all sorts of odd errors. So always login to Umail at least one time and ensure that you can send/receive email from there before you attempt to send/receive with another mail application.

Umail / BlueTie

If you use Unwired's web-based mail service Umail, you will discover that it is outsourced to a company in the USA called BlueTie. There is a server status page for BlueTie here:

<http://support.bluetie.com/?q=node/819>

Safari Browser on Apple Mac

The web-based Umail system is believed to be incompatible with the Mac's Safari browser. You may need to download Mozilla and use that instead.

Relaying

Relaying occurs when someone connects to an SMTP server and sends an email:

1. Where the sending address is not on the SMTP server's local network or domain; AND
2. Where the recipient address is also not on the SMTP server's local network or domain

Virtually nobody allows relaying nowadays because of the scourge of SPAMmers who will send mail through open relays in order to try to cover their tracks.

7.2 Newsgroups

Does Unwired run a news server?

Unfortunately Unwired do not offer a USENET service. The only option at the present time is to purchase such a service from a third-party provider, or try to utilise one of the ever-shrinking number of free USENET servers.

7.3 Website

Can I build my own personal web page?

Unwired do not offer any free web hosting services for customers, so you would need to source a web site from another source. But fortunately one of Unwired's customers has stepped into the breach. He writes:

We (being slacker Services) are offering unwired users a free web hosting account until such time as unwired make a decision on there web hosting. The Package offered is a professional hosting solution so you get all the perks of paid hosting. The Package contains:

- **100Mb Web Space**
- **Up to 2 Gig of Transfers per month**
- **Cpanel** – Web hosting control panel, including web stats to keep track of people visiting your site)
- **Fantastico** – Auto script installer e.g. Forums, web site templates, etc

We also run daily/weekly/monthly backups of all accounts on our servers.

To take advantage of this offer, please send an email (from your unwired email account) with a username (up to 8 letters) and a password (up to 8 letters/numbers) to:

Slacker_au@unwired.com.au

You will receive a welcome email once the account is set up, advising the contact details for any questions or support issues you may have. When your account is set up it will look like the following:

<http://username.isphomehosting.com>

and can also be accessed via:

<http://www.username.isphomehosting.com>

7.4 Network Status

You can find out the current status of the Unwired network here:

<http://www.unwired.com.au/support/status.php>

7.5 Bulletin Board

What is the purpose of the Bulletin Board?

The bulletin board has been provided as an adjunct to the normal mechanisms of technical support and customer feedback so that customers can more readily exchange information and ideas. This enables Unwired's management to more readily obtain first-hand feedback on issues affecting customers, ideas for products, etc. Customers are also notoriously inventive, so this board is also a mechanism for gathering information about work-around solutions for unusual technical problems.

Why don't Unwired staff post on the Bulletin Board?

The bulletin board has been specifically designed to be a peer support environment, so it would not be appropriate for staff to post.

Who runs the Bulletin Board?

The board is maintained by a number of parties. **Technical ownership** is maintained by members of Unwired's IT team. The **board administrator** is Stephen Frost, an independent contractor who acts as a kind of customer ombudsman or customer advocate. **Moderator duties** are performed by Stephen Frost, Matthew Hilder, Barry Gerdes and Mick Nicholls.

7.6 Domain Name Server (DNS) settings

Unwired's DNS servers are normally supplied to your modem/PC via DHCP when you connect, but just in case you need to set them manually they are:

220.101.191.16

220.101.191.17

8 Miscellaneous Information

8.1 Modem, Rabbit or WEBBIT?

You will find that your Unwired modem is described in a number of ways and this varies depending upon which Bulletin Boards you frequent. To summarise:

Modem

Short for “MOdulate / DEModulate”, it describes the process of converting a digital signal (i.e. ones and zeroes) into an analog signal like a radio or TV broadcast.

Rabbit

The Unwired modem is sometimes called a Rabbit, presumably because the large antenna looks like a rabbit’s ear.

WEBBIT

Short for “Wireless Enhanced BroadBand InterneT” it also conveniently sounds a little bit like “rabbit”. This is the officially approved name for the modem.

8.2 Whirlpool (www.whirlpool.net.au)

Whirlpool is a site dedicated to providing news and discussion about broadband internet services. There is a section dedicated to Wireless ISPs and a sub-section of that forum for Unwired specifically. In there you will find a number of technical tips and opinions posted by other Unwired customers (and non-customers).

8.3 Online Gaming (Unwired’s ping times)

It has become clear that for many (not all) online gamers, Unwired’s wireless broadband can present problems. The typical complaint is “ping times are too high”. This appears mostly due to a network architecture issue relating to the way that data is transmitted back to the core network from some (most?) of the towers.

In recent times (July/August 2005) Unwired made some changes to the way traffic is routed which should result in better real-world application performance whilst simultaneously causing a reduction in ping performance. Since ping traffic is ICMP the conclusion reached is that some kind of traffic prioritisation has been implemented. It is hoped therefore that game performance may improve somewhat, not withstanding that ping times might now be a little worse than prior to the changes.

8.4 My web browser reports that I have a virus!

An Unwired user writes:

When I opened my web browser this morning, a webpage with an Unwired logo came up, advising me that I had a virus and to click a link for a system

check. I did this and then I got a message saying "restarting modem". Is this a legitimate Unwired service or some sort of virus itself?

This is a rarely seen "early warning" part of the Unwired system. They have a portal set up which intercepts traffic when a customer's connections exhibit virus-like behaviour (e.g. large amounts of uplink traffic across known suspect ports).

If you do not take action to remove the virus from your system, eventually another page will come up and you will be disconnected.

The recommended course of action is to contact the Unwired technical support call centre. They can provide you with details of the specific ports, traffic levels, and the times they occurred, thus making it easier for you to identify the type of virus involved and putting you well on the way to finding the right cure.

It is also strongly recommended that you update your anti-virus, anti-spam and anti-spyware software regularly!

8.5 Someone Is Trying To Hack My Computer

Should I Report Hacking Attempts?

Your response really depends on how "community minded" you are. If you have good firewall software which is telling you about the attempts to breach your security, then at least you're safe. But what should you do about it?

First of all, there are three likely reasons for the scans/attacks:

1. Someone is infected by a virus and has no knowledge that their PC is consequently trying to infect everyone else; or
2. You're seeing a "script kiddie" who has downloaded some kind of tool from the 'Net and is giving it a run to see whether they can subvert a PC
3. It's a real hacker

Items #1 and #2 are more likely than #3, so that's the first thing to keep in mind.

If you want to contact Unwired you'll need to provide them with the date and time of the "attack" and the IP address of the attacker. They can then check their logs and determine which user launched the attack and contact them. The address to email your information to is:

abuse@unwired.com.au

What Is CPE.UNWIRED.NET.AU ?

You may notice attempts to access your machine from **cpe.unwired.net.au** ... this is the domain that relates to "all Unwired users" so you definitely do not want to open that up as a trusted part of the network. So if your firewall asks you if you want to give it access, the safest response is "NO"!

8.6 Radiation

How much radiation does my webbit produce?

Thanks to Trash from the Whirlpool bulletin board who contributed this info

There's really nothing to worry about. Remember that your webbit isn't held against your head like your mobile phone. Here are some comparisons between your webbit and other common electrical devices.

The standard that I work to is 2.00mW/cm² maximum exposure to RF workers and 0.20mW/cm² maximum to everybody else. The Australian standards are slightly higher. Results from Radiation tests I have done:

Webbit Frequency = 3550MHz (approx)

Average Radiated Power = 0.10mW/cm² (when transmitting)

I have captured peaks as high as 0.6mW/cm² but only for **very short bursts**, usually at the start of file transfers. This is measured *right next to the modem*. When measured 50cm away there is <0.001mW/cm² (in other words, *no signal that I can measure*).

My GSM mobile phone:

Phone Frequency = 900MHz (approx)

0.04mW/cm² Mobile phone front side (in good signal area)

0.12mW/cm² Rear side where the antenna is (in good signal area)

0.10mW/cm² Mobile phone front side (in low signal area)

0.25mW/cm² Rear side (in low signal area)

Microwave ovens:

Frequency = 2450MHz (approx)

0.10mW/cm² around the door seams

0.20mW/cm² was the worse case I found on one oven (around the seam)

0.40mW/cm² worst case (peak - not constant) on the same microwave in one spot near the door handle.

Other stuff:

0.00mW/cm² for computer monitors and CRT TV's

0.30mW/cm² for a security door RF access tag system reader

0.00mW/cm² for a toilet (it is also zero when it is flushed!)

Standing on the street below a mobile phone tower, radiation level measured is 0.00mW/cm² (the meter can pick up a signal as low as 0.001mW/cm²). **Mobile phone towers really are completely harmless**, unless one falls on you!

I think the toilet emits more things than the towers!

What are the different types of radiation?

Nuclear Radiation is different from Radio and Microwave Radiation.

Nuclear Radiation is what is termed "Ionising Radiation". The effects of ionising radiation are accumulative. That means that exposure limits are totalled up over your whole life time. If you get exposed to more than what is considered the safe limit, your lifespan is going to be negatively affected. Ionising radiation can and does cause cancer. Types of ionising radiation are:

- **Alpha Particles** – these are emitted by smoke detectors. The radiation itself is very dangerous, but it only travels distances of less than 5cm in air. So your smoke detector is quite safe, just don't eat it!
- **Beta Particles** – these are not commonly found around the home. They are usually absorbed by a few metres of air
- **Gamma Rays** – your smoke detector also emits very low-energy gamma rays, but they are not enough to be dangerous. Uranium (green) glass found around the home and Thorium gas lantern mantles also emit gamma rays (and alpha particles)
- **Cosmic Rays** – these are emitted by the sun and other stars. The sun also emits all the other types of radiation. The Earth's atmosphere absorbs most of this energy
- **X-rays** – come in many different types. The dose given to you by an x-ray machine is very small, but it's effects are accumulative, which is why radiographers go to great lengths to make sure they get as little exposure as possible
- **Ultra Violet Light (UV)** – your exposure to it is accumulative over your whole life. The more time you spend in direct sunlight, the greater your chance of skin cancer. Glass absorbs UV light

All types of radiation below visible violet light are what is termed "Non-Ionising Radiation". The effects of non-ionising radiation are not accumulative, but this does not mean they are not dangerous. A burn received from non-ionising radiation might be considered accumulative. Long term exposure to low fields is considered harmless. Types of ionising radiation are:

- **Light** – sun exposure is approximately 0.0001mW/cm² on the surface of the earth at the equator
- **Heat** - yes, non-ionising radiation does cook! (sometimes called Infra Red light)

- **Microwaves** – more than just the type that cooks your food, microwaves are just a type of radio wave
- **Radio** – the lowest energy waves of all electromagnetic radiation

The higher the frequency of the radiation, the more energy a photon/quanta of radiation is said to have.

8.7 Signal Strength and Quality

What is all this dB and dBm stuff?

The abbreviation 'dB' stands for decibel which is the unit of measure used for sound and/or signal strength. The decibel scale is a logarithmic scale, so:

0dB	= x1
3dB	= x2
6dB	= x4
7dB	= x5
10dB	= x10
20dB	= x100
30dB	= x1000

and therefore:

-10dB	= x0.1 (or divide by 10)
-20dB	= x0.01 (or divide by 100)

The formula is $Z(\text{dB}) = 10 \log (x / y)$ [where x/y is the ratio]. In the case of 'dBm' the "m" stands for milliwatts (e.g. 1/1000th of a watt of power), so:

0dBm	= 1 milliwatt
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So when your modem reports something like this:

-107dBm	= 50 billionths of a milliwatt (50×10^{-12} watts, or 50 femtowatts)
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then this is probably the actual signal level. It's **very low** and probably very close to the noise floor of the webbit. As a comparison, a mobile phone will typically drop out at about -100dBm.

The carrier-to-noise ratio (signal quality) is probably your best indication of the effectiveness of your connection. (C+N/N) is how much signal the webbit can see from the BTS versus the noise generated from its own electronics. 13dBm is ok (more is always better for this value).

Another good indication of how well your webbit is doing is the transmit power. On most webbits it's anything from +10dBm to +30dBm (lower is better). Some have seen values as low as -10dBm (100uW) when using the webbit in partnership with a high gain antenna.

If your connection speed is jumpy, check and see what the transmit power is and see if it is changing levels a lot.

What Is Multipath Interference?

A good example of multipath is a "mirage". If you look down a long road you can see the object, but also see another optical path that looks like water on the road. The light is following more than one path to reach you (e.g. one direct path which is line-of-sight, the other path is reflected off the road).

Another good example is listening to a weak FM radio station in your car ... as you pull up to a set of traffic lights you may notice the signal fades in and out about 1.5 metres.

Also, "ghosting" on a TV is multipath interference. Flutter on a TV when a plane flies over is also multipath.

Now if the two (or more) signals happen arrive 180 degrees out of phase, you'll get a null ... they cancel themselves out and your modem won't see anything!

So multipath interference can sometimes explain why people who might be able to get solid orange/red signal strength are nevertheless unable to get stable connections. Many of these people seem to be in inner city areas where they get hit with lots of reflections from buildings.

Unwired's solution is 'non line of sight' because as long as any one reflection of the signal makes it to your antenna, the system will try to ignore all the weaker echoes and hopefully function correctly.

WiMax (coming soon we all hope!) is relatively immune to multipath problems.

8.8 Miscellaneous Error Messages

Load Roll Back – may be related to scenarios where a user is 'preferred' to a specified tower (BTS) and/or related to the modem's attempt to download/install a firmware upgrade. Likely resolution is to remove the tower preference from your user account (this requires Unwired's assistance). Another possibility is that the current firmware image has been corrupted. If in doubt, contact Unwired technical support.

8.9 Batteries – Taking Your Webbit On The Road

Unwired do make a battery available which you can purchase for under \$100. It gives around an hour or so of use which isn't particularly long. But the upside is that the battery sits snugly inside the modem casing, so its neat and tidy.

For those that are interested in more "grunt" it is possible to build your own battery solution from readily available parts at your local Dick Smith or Tandy store.

WARNING: Using a home-built battery may damage your modem or void your manufacturer warranty!

Thought I'd better throw that in first. If you hook up the wrong voltage and fry your modem, don't come here complaining because we'll say "I told you so". In other words, if you know what you're doing, fine, if you don't, buy an Unwired modem and be happy with 1 hour or so of usage on the road.

Now here's a link to a site showing how one user put together a battery pack. The person in question has actually taken their Unwired modem airborne in a helicopter and has demonstrated that it works fine "on the fly":

<http://www.coppock.biz/unwired/index.htm>

8.10 Steam Client and Port Forwarding

Several users have noticed that their Steam client (used for gaming) performs poorly on the Unwired network. It is believed that this is caused by the packet prioritisation Unwired does in order to shape peer-to-peer (P2P) traffic and reduce its priority when compared to protocols such as HTTP, SMTP, POP3 and so on.

A possible workaround is to use port forwarding. If you have a router, with your Unwired modem connected to the router rather than directly to your PC, then the following guide may be helpful:

<http://portforward.com/cports.htm>

(see the Steam Client line, where it recommends forwarding ports 27020–27050 for both TCP and UDP packets).