

By courtesy of:



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## Internet Assistance Program

A joint initiative between the Australian Government and Telstra

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[www.iapselfhelp.com](http://www.iapselfhelp.com)

**Telephone: 1800 427 457**

Welcome to the Internet Assistance Program Self Help Kit, a jointly funded initiative between the Australian Government and Telstra.

A recent Australian Government Inquiry found that a small, but significant number of customers, particularly in rural and remote areas, are either unable to access the Internet or experience slow Internet speeds. This initiative is in response to this Telecommunications Service Inquiry into the telecommunications needs of rural and regional Australia.

This \$50m Internet Assistance Program will address these issues by providing access to a range of help services to solve Internet problems and allow customers to achieve a minimum equivalent throughput of at least 19.2 kilobits per second, no matter where they live or carry out their business.

This program will involve significant cooperation between the Australian Government, Telstra, other service providers, users, and third parties. An independent advisory panel has been established by the Government to make sure that the program maximises benefits to consumers, and operates in an impartial and competitively neutral manner.

# Modem Self Help

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## **Tips for reliable and fast Internet access**

- **Unplug all other equipment on the same line**

Equipment that you use on the same line as your modem can affect your modem's efficiency and stability. This equipment includes telephones, answering machines, fax machines, alarm systems, calling number display units, extension ringers, etc.

- **Turn off Call Waiting**

Call Waiting beeps will interfere with modem data transmissions and in most circumstances your modem will disconnect.

- **Check your dial tone**

If you can't hear a dial tone from your modem's speaker, unplug the modem and plug a working telephone into the same telephone socket. If you can hear a dial tone when you lift your telephone handset there is a problem with your modem.

- **Other dial tones**

The network sometimes supplies alternate dial tones for different facilities. If your modem does not recognise these and displays a NO DIAL TONE message, then you need to set your modem to ignore the dial tone and dial out regardless.

- **Remove sources of interference**

Mobile phones, CB radios and other sources of Radio Frequency Interference can cause your connection to dropout. Turn them off or keep them away from the computer, modem and phone line.

- **Check for line noise**

Noisy telephone lines will affect your connection. Try using a telephone on the line and listen for any unusual sounds during a phone call. If you have an electric fence, try turning it off to see if the noise improves.

- **Unplug your telephone extension cord**

Noisy/faulty cabling can cause dropout problems. Try plugging the modem directly into the telephone socket, to see if the situation improves.

- **Reduce your connect speed**

Many modems tend to be speed aggressive. Reducing the connect speed using AT commands can reduce error rates and increase download efficiency. This is not to be confused with the port speed, which we will explain later.

- **Install the latest modem drivers**

To ensure the modem is sent the correct initialisation/Command string, you should install the correct and latest driver software for the particular make and model of your modem.

- **Turn on modem error correction**

High data speeds require an error correcting modem. Ensure your modem has this feature enabled/turned on.

- **Turn off disconnect if idle option**

Internet software can be set to disconnect after a set period of inactivity. Try turning off this option.

- **Set the port speed correctly**

With modern high-speed modems that use data compression, it's best to try setting your port speed to the maximum that your modem can handle. The typical port speed is 115200 bits per second.

- **Check your guaranteed connect time**

Check with your Internet Service Provider (ISP) what your guaranteed connect time is. For example, your ISP may disconnect users after two hours if all the access lines are busy, in order to allow other users to connect.

These topics plus more useful tips and information are covered in detail on the following pages.

## More detailed information

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### General

There are four main factors affecting your modem's Internet performance –

- Modem type and setup.
- The maximum data speed achievable by your phone line.
- Your ISP.
- The Internet site you are downloading from.

Here is a checklist of potential problems and possible solutions:

#### ❑ **Disconnections caused by other devices sharing the same telephone line**

Modems should be the only equipment plugged into a phone line when transmitting data – if other equipment is plugged in, poor speed or disconnections may occur. If you are unable to unplug or remove other equipment, contact your Telephone Company (Telco) or Licensed Cabler to arrange other options.

#### ❑ **Check for dial tone**

Plug a telephone into the modem socket and lift the handset.

If no dial tone is heard at this socket, but the dial tone is OK at the other sockets in the house, contact a Licensed Cabler to repair.

If the socket has a dial tone, but your computer gives no dial tone error messages, force your modem to blind dial by adding 'x3' to the beginning of your initialisation string. See the **AT Commands** section for more instructions.

#### ❑ **Check for Line Noise**

Plug a telephone into the modem socket and lift the handset. When you hear a dial tone, press the digit '1' and listen for five seconds. If static is heard, repeat the process at other sockets in the house.

-If the problem only occurs at one socket, please contact your Licensed Cabler for repair.

-If the problem occurs at all sockets, contact your Telco for repair of the line.

**Note:** If you have an electric fence, try to perform the following to prevent interference with your telephone service –

1. If possible, don't run your electric fence parallel with the phone cable.
2. Cut vegetation away from the live fence wires.
3. Make sure the live wire is well insulated on the fence posts.
4. Check the quality of the earth connection.

All of the above problems can contribute significantly to poor modem performance.

❑ **Turn Call Waiting off**

ALWAYS switch Call Waiting off before connecting.

To turn Call Waiting off permanently, lift your telephone handset and dial #43#.

To turn off Call Waiting temporarily (Telstra lines only), insert \*44 directly in front of your ISP's phone number in your computer's Internet Settings.

**Note:** \*44 should be used only if Call Waiting is turned on. If you try to use this feature and your Call Waiting is not turned on, you won't be able to connect to your ISP.

❑ **Don't use Radio Frequency Devices in close proximity to your modem**

To avoid interference, you should switch off devices such as CB Radios and mobile phones when you are online. If you need to leave your mobile on, try moving it to another room.

❑ **Check with your Internet Service Provider**

Check your **uninterrupted connection guarantee**, as your service provider may disconnect you after a period of time, if your service is provided on a longest in, first out basis. Customers using an unlimited use option may find the ISP's equipment stops them from reconnecting after a lengthy Internet session, for a short 'no reconnect' period eg, 5 to 15 minutes.

If you try to reconnect during this time the ISP's equipment will answer the call, check your User ID and Password and then automatically disconnect the call.

**Remember:** a call connection has been made and therefore a call charge is incurred.

You may redial and attempt to reconnect as often as you wish but the service provider may continue to disconnect you until the time that you are unable to reconnect has lapsed. Please contact your ISP to confirm this.

## **Call Charging**

❑ **Charges for unsuccessful attempts to log onto the Internet or other modems**

If a call from your modem is answered by your ISP's equipment you will be charged by your Telco for that call regardless of whether you were able to connect to the Internet.

Contact your ISP for more information.

❑ **Automatic Redial**

Disabling Automatic Redialling will stop your computer from making multiple calls to your ISP whilst attempting to connect to the Internet.

❑ **Why am I not connecting at 56k?**

All telephone lines have different maximum speed potentials. To find a suitable speed for your connection visit our website **[www.iapselfhelp.com](http://www.iapselfhelp.com)**

In addition, your ISP MUST have digital lines that allow 56K connections. Please contact your ISP if you are unsure if their lines are digital.

#### ❑ **Programmable Modem Speeds**

There are two programmable modem speeds within your computer. One is the speed at which your computer talks to your modem and the other is the speed at which your modem connects to the telephone line. These are referred to as Data Terminal Equipment (DTE) and Data Communications Equipment (DCE) speeds respectively.

#### ❑ **DTE Speed**

A setting in the Windows Control Panel controls DTE speed, which is commonly known as **port speed**. Your port speed should always be set at a higher speed than the modem's rated line speed. Most modems work best at their highest port speed of 115200bps. You can check your modem's highest port speed in the Windows Control Panel.

#### ❑ **Adjust your port speed**

##### **Windows 95/98/ME users**

The Windows **Control Panel** can be accessed by pressing the **Start** button on the **Desktop**, then going to **Settings** and selecting **Control Panel**. Once in **Control Panel**, double click the **Modems** icon and you should see your modem listed in the window. Next, click the **Diagnostics** tab at the top, then highlight the **Com port** used by your computer (usually Com 2 for external modems and Com 3 or 4 for internal modems) and click on **more info**.

Your modem will then be interrogated and a screen similar to the one above should be displayed. This screen will show your modem's port speed.

The **Modem Properties** can be accessed by pressing the **Start** button on the **Desktop**, then going to **Settings** and selecting **Control Panel**. When in **Control Panel**, double click on the Modems icon. From there you can set the maximum speed (port speed) that your computer uses to communicate with your modem.

The **Universal Asynchronous Receiver Transmitter (UART)** in your PC must be capable of high-speed communication with your modem. It achieves this in part by buffering the data. The **UART FIFO (First In First Out)** buffers must be enabled / turned on.

From the **general** page, select the **connection** tab at the top, and then select the **port settings** button near the bottom.

You can also set the speaker volume from this page.

**Note:** This is **NOT** where modem line speeds are changed, refer to **Setting Line Speed** for more information.

### **Windows 2000 (Professional) users**

The **Windows Control Panel** can be accessed by pressing the **Start** button on the **Desktop**, then going to **Settings** and selecting **Control Panel**.

When in **Control Panel**, double click on the **Phone and Modem Option**.

Click on the **Modems** tab to view installed modems. Highlight the modem of interest and then click on the **Properties** button to change the settings. The **General** tab is displayed first.

Within the **General** tab you can adjust the **port speed** using the drop down menu.

Remember, this is the speed between the modem and the PC.

**Note:** This is **not** where modem line speeds are changed, refer to **Setting Line Speed** for more information.

### **Windows XP**

The **Windows Control Panel** can be accessed by pressing the **Start** button on the desktop, then going to **Settings** and selecting **Control Panel**.

When in **Control Panel**, double click on the **Phone and Modems** icon, a **Phone and Modem options** window will appear. Click the **Modems** tab to view installed modems.

Highlight the modem of interest and then click on the **Properties** button. The **General** tab is displayed first. Click on the **Modem** tab.

Within the **Modem** tab you can adjust the **port speed** using the drop down menu.

Remember, this is the speed between the modem and the PC.

**Note:** This is **not** where modem line speeds are changed, refer to **Setting Line Speed** for more information.

#### **□ AT Commands for adjusting line speed**

Modem line speed is adjusted by using **AT** commands in the **Advanced Connection Settings of Windows**. Customised modem initialisation strings enable effective handshaking, which in turn achieves stable connections and efficient data transmission. Given the enormous variety of modems available, it is impossible to provide general advice on suitable modem settings for all types and brands of modems. An initialisation string may be provided after you have conducted an Internet speed test through [www.iapselphelp.com](http://www.iapselphelp.com) and it is found that an initialisation string will benefit your service.

### **How to install recommended AT Commands**

To insert extra initialisation strings into **Windows 95/98**:

- Click on **Start, Settings, Control Panel**, and single click.
- Double click the **Modems** icon.
- Highlight the modem you use by clicking on it. When the modem is highlighted, press the **Properties** button.
- A new window will appear, click on the **Connection** tab, then click on the **Advanced** button.
- A new window will appear that will have an **Extra settings** box to allow you to put in additional initialisation settings to better control your modem.
- Type in the extra settings and then click **OK**.
- Click **OK** and then **Close**.
- **If the Close button is not clicked, windows will not remember the settings you have just entered.**
- Close the **Control Panel**.

To insert extra initialisation strings into **Windows ME and Windows 2000**:

- Click on **Start, Settings, Control Panel**, and then single click.

WindowsME users may have to click on the link on the left side of the window that says **display all Control Panel icons**, then double click the **Phone and Modems** icon.

- Click on the **Modems** tab, highlight the modem in current use by a mouse click and then click **Properties**.
- In the new window, click on the **Advanced** tab, and type in the extra initialisation string to control the modem.
- Click **OK**, then click **OK**.
- Close the **Control Panel**.

To insert extra initialisation strings into **Windows XP**

*Please note: Windows XP users must be logged in with administrative rights.*

- Click on **Start, Control panel** and single click.
- Double click **Phone and Modems Options** icon.
- Highlight your current modem and click the **Properties** button
- Click on the **Modem** tab.
- Click the **Advanced** tab, the **Extra initialization commands** box is now displayed. Enter your initialisation string needed in this box.
- Click **OK**, then click **OK** again.
- Close the **Control Panel**.

#### **Modem Error Correction**

The **Error Connection** box should always be checked. If it is not checked your modem is much more likely to disconnect unexpectedly.

#### **Modem Drivers**



Updating your modem's driver can have dramatic effects on improving your modem's performance on some telephone lines. Contact your modem manufacturer or retailer for the latest drivers and installation instructions.

□ **Software Configuration problems**

If your **Dial-up Network** settings are incorrectly configured or the settings have become corrupted, they may interfere with normal data transmission or the ability of the modem to establish a connection.

□ **Browser cache settings**

The browser cache stores web pages in your PC for reuse during your Internet session. If you are connected, but it takes a long time to display a page in your browser, the cache may be too large. To change these settings, open your browser, then click **Tools, Internet options**, and ensure the **General** tab is selected. In the section labelled **temporary Internet files**, click on **Settings** and manually change the **amount of disk space to use** to 9Mb, when this is done, click on the **delete files** button to clear the cache. When this clearing operation is complete, your settings will need to be saved. To save, click **OK** and then click **OK** again.

Cont/....

## Customer Responsibility

### Equipment Compliance

Any equipment to be connected to a telecommunications network, including telephones, answering machines, fax machines and **modems** must meet the Australian standards for that equipment and must be labelled to show this.

Before you connect any telecommunications equipment, you should look for a compliance label bearing the A-Tick mark (or in the case of some older equipment, an AUSTEL permit, or a Telecom Authorisation Number). Only telecommunications products that carries an Australian compliance label can legally be connected to a telecommunications network in Australia. The A-Tick mark can be on the compliance label or appear elsewhere on the equipment or the documentation or packaging which comes with that equipment. The A-Tick mark looks like: (Fig 1.)

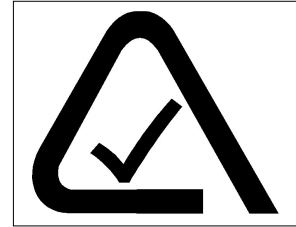


Fig 1.

Equipment labelled with an AUSTEL permit (eg. A91/33/335, A96/1342) or a Telecom Authorisation Number (eg. C89/33/1) can be connected to a telecommunications network in Australia, as long as it has not been modified or altered since purchase.

Connecting non-compliant equipment to a telecommunications network in Australia is an offence and can result in fines under the *Telecommunications Act 1997*, or civil action for damages by the carrier if the equipment causes damage to their network.

**While a compliance label indicates compliance with basic safety and interoperability standards, you should ensure that equipment meets your particular requirements and those of the service you are connecting to.**

### Telco Responsibility

Householders and businesses are responsible for work carried out past the 'network boundary'. The network boundary is generally the first socket in your house or the distribution frame at a business premises.

If you have concerns about where your network boundary is, you should ask your telephone company. Any telecommunications cabling on the customer side of the network boundary is classified as 'customer cabling'. Householders and businesses have to pay a licensed cabler to install or alter customer cabling

Note: Only a person holding an ACA registration or license can do any cabling work on customer cabling. Penalties are applicable for any unlicensed work on customer cabling.

The authors of this Self Help Pack do not accept any liability or responsibility for any changes made to customer hardware or software. If you are unsure of any procedures please contact your PC / modem supplier, or refer to your modem and operating system manuals.

## Extracting AT responses from the modem

### Windows 95, 98, 98SE

Collecting AT responses from the modem.

- Click on **Start, Settings** and click **Control Panel**.
- In Windows 95,98 and 98 Second Edition, the **Control Panel** will open and you should see all the icons.
- Double click on the **Modems** icon, a **Modem Properties** window will appear, click the **Diagnostics** tab.
- Click the **COM port** that is listed next to the modem you use, then click the **more info** button.
- The PC will now communicate with the modem. When the communication has finished, the modem's responses will be listed in a separate window. It is these responses that you will need to write down for future reference (the ati3, ati4, ati5, ati6, ati7 responses).
- Write them down now.
- Click **OK** when these responses are written down.

### WindowsME

Collecting AT responses from the modem.

- Click on **Start** button, **Settings** and click **Control Panel**.
- In WindowsME, the **Control Panel** will open. By default, WindowsME displays the six most commonly used icons. To display the **Modems** icon, click the **Link view all Control Panel options** that is located on the lefthand side of the **Control Panel** window.
- Double click on the **Modems** icon, a **Modem Properties** window will appear, click the **Diagnostics** tab.
- Click the **COM port** that is listed next to the modem you use, then click the **more info** button.
- The PC will now communicate with the modem. When the communication has finished, the modem's responses will be listed in a separate window. It is these responses that you will need to write down for future reference (the ati3, ati4, ati5, ati6, ati7 responses).
- Write them down now.
- Click **OK** when these responses are written down.

## Windows 2000

Collecting AT responses from the modem.

- Click on **Start** button, **Settings** and click **Control Panel**.
- Double click on the **Phone and Modems** icon, a **Phone and Modem options** window will appear, click the **Modems** tab.
- Click the modem that you are currently using, then click the **Properties** button.
- Click the **Diagnostics** tab and then click the **Query modem** button.
- The PC will now communicate with the modem. When the communication has finished, the modem's responses will be in a window located above the **Query modem** button. It is these responses that you will need to write down for future reference (the ati3, ati4, ati5, ati6, ati7 responses).
- Write them down now.

## Windows XP

Collecting AT responses from the modem.

- Click on **Start**, and click **Control Panel**.  
*In Windows XP, Control Panel now has two display modes, the default is the new **Category View**. You can switch to the familiar classic view by clicking on **Switch to Classic View**. It does not matter which mode Control Panel is in, the following steps apply.*

In the default **Category View** mode, double click on **Printers and Other Hardware**.

- Click the **Modems** tab.
- highlight your current modem and click the **Properties** button.
- click the **Diagnostics** tab then click the **Query modem** button.
- The PC will now communicate with the modem. When the communication has finished, the modem's responses will be in a window located above the **Query modem** button. It is these responses that you will need to write down for future reference (the ati3, ati4, ati5, ati6, ati7 responses).
- Write them down now.

In **Classic View** mode, double click **Phone and Modems Options** icon.

- Click the **Modems** tab
- highlight your current modem and click the **Properties** button
- click the **Diagnostics** tab then click the **Query modem** button.
- The PC will now communicate with the modem. When the communication has finished, the modem's responses will be in a window located above the **Query modem** button. It is these responses that you will need to write down for future reference (the ati3, ati4, ati5, ati6, ati7 responses).
- Write them down now.

## Glossary Of Terms

<b>ACA</b>	Australian Communications Authority
<b>Bits per second (bps)</b>	A measure of the speed that modems transmit data per second. Derived from Binary Digit, a bit is a single unit of data. When transmitted through the telephone lines groups of bits are called packets.
<b>Byte</b>	A group of 8 bits, a byte is the normal unit of storage on a PC.
<b>CPU</b>	Central Processing Unit.
<b>Handshaking</b>	The initial 'conversation' between equipment, in this case between modems. During handshaking a common language and a set of rules and method of interworking are established.
<b>Initialisation String</b>	A series of commands passed to a modem which define a number of settings on how the modem is to operate.
<b>ISP</b>	Internet Service Provider.
<b>MDF</b>	Main Distribution Frame
<b>Modem</b>	Modems were developed as a means of converting digital computer data into an audio signal that can be sent along a telephone line. What the modem does is encode the 0's and 1's that make up all computer information into a MODulated audio signal. The modem at the other end of the line DEModulates the signal back into its original binary form (1 or 0).
<b>Packet</b>	When data is transmitted through the telephone lines the bits are arranged into groups called packets. Like normal mail each packet includes an address.
<b>PC</b>	Personal Computer.
<b>UART</b>	Universal Asynchronous Receiver Transmitter.
<b>Telco</b>	TELEphone COmpany.