

# SIXTEEN BITS

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# Editorial Information

## **SIXTEEN BITS** (ISSN 0817-0991)

is published monthly by the

**PC Users Group (ACT) Inc**

**PO Box 42**

**Belconnen ACT 2616**

**Australia**

We welcome submissions of articles from members of the Group. If you are interested in writing please contact the Managing Editor and ask for a copy of our '*SIXTEEN BITS - Guidelines for Authors*' (also available on the *Sixteen Bits* Web site at <http://www.pcug.org.au/pcug/16bits/16guide.htm>).

Correspondence and material for review or publication should be forwarded, preferably as a plain text file with separate PCX/BMP graphic files, by the deadline specified, to the Editor as follows:

- By email to [pcug.editor@pcug.org.au](mailto:pcug.editor@pcug.org.au)
- By fax to (02) 6253 4922
- By mail to the Centre's address above.

Anonymous contributions will not be published, though name and address can be withheld from publication on request. Disks are not returned unless requested by the author.

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Articles from *SIXTEEN BITS* are also published on the Internet as *Sixteen Bits Online* at <http://www.pcug.org.au/pcug/16bits/> and extracts are read on Radio 1RPH (1125AM) Thursdays 10.45am & 9.45pm.

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## **Deadlines For May 1998 Issue**

Articles and Member Ads

Friday 24 March 1998

Commercial Ads

Friday 1 April 1998

## **Advertising in SIXTEEN BITS**

*SIXTEEN BITS* is a unique and powerful medium for reaching the thoughtful decision makers in the ACT area. Our circulation exceeds 3500 copies each month, with multiple readership exceeding 4800. Many copies are retained by members for future reference. The advertising deadline is normally the first Friday of the month of publication.

Advertising options include

- **Cover ads**
- **Display ads**
- **Special inserts**
- **One-off mailing lists**

Regular advertisers receive discount vouchers to pay for any future advertising with *SIXTEEN BITS* (subject to account being in order). Every 12th consecutive ad placed is free. Please contact the Advertising Manager, Ken Livingston, on (02) 6285 3747 for further information.

## **Sixteen Bits**

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and support of



**Adobe**



**Corel  
Corporation**

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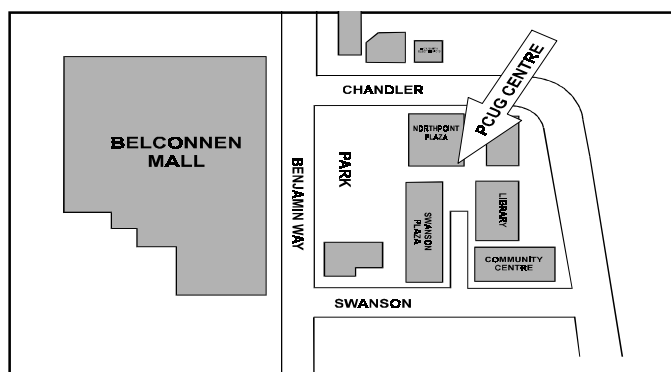
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The phone numbers listed above are home numbers unless otherwise specified. **Please restrict calls to between 7.30pm and 9.00pm.**

## New Members' Information Night

7.30pm *first* Monday of the month PC Users Group Centre, Northpoint Plaza Belconnen.



# How To Make Contact

✉ **Postal address**  
PO Box 42  
Belconnen ACT 2616  
(For **ALL** correspondence)

☺ **PC Users Group Centre**  
Northpoint Plaza, Belconnen  
**Open Mon, Wed and Fri 10am-2pm**  
**Saturdays and Sundays 9am-5pm**  
(closed long weekends)

The PCUG Centre is the venue for PCUG training, some Special Interest Group meetings and other activities. There is no charge for using the Centre for *PCUG activities*. Contact Petra Dwyer at the PCUG Centre on (02) 6253 4911 for bookings.

☎ **PCUG Main Phone number**  
(02) 6253 4911  
(Answering machine when Centre unattended)

📠 **Fax number**  
(02) 6253 4922

✉ **Email**  
[pcug@pcug.org.au](mailto:pcug@pcug.org.au) (or use addresses at left)

🌐 **The INTERNET Project**  
(02) 6206 6200 [help@pcug.org.au](mailto:help@pcug.org.au)

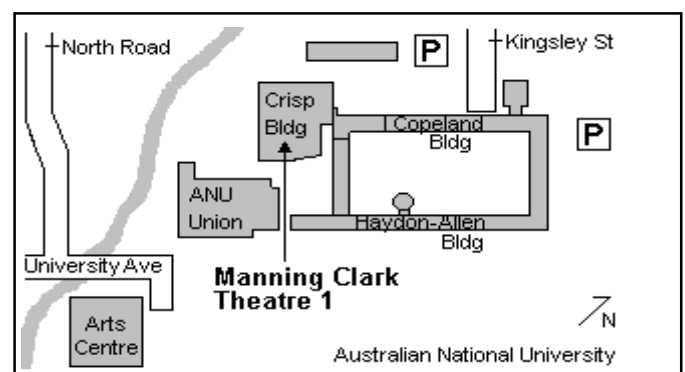
🌐 **World Wide Web page**  
<http://www.pcug.org.au/pcug/>

💻 **Bulletin Board Service (BBS)**  
(02) 6253 4933 (5 lines 33.6k bps)  
Fidonet address 3:620/243

☎ **BBS Sysop voice number**  
(02) 6253 4966 (6.00pm - 9.00pm)

## Main Meeting

Main meetings are held 7.00pm for 7.30pm, *usually* on the last Monday of every month at Manning Clark Theatre 1, Crisp Building Australian National University.





# Editor's Desk Top

Anne Greiner, Managing Editor

Last month I mentioned the editorial team, and the part it plays in producing Sixteen Bits. They are of course not the only ones involved in this production. Russell Kerrison is the graphic artist who has produced the extremely high standard of cover that we have enjoyed for the last three something years. The combination of innovative thought and technical expertise blend into something that any commercial production would envy, and the group is lucky indeed to have him as one of our 'volunteers'. And then there are the contributors – without them of course, anything we do is for naught. Even though a number of us contribute, there is no way we could produce the variety, quality and quantity of written material that we are routinely sent for consideration, and that goes to print every month. So now sharpen those metaphorical pencils, and do your bit for your

group. Everyone contributes in different ways, and your talents may take a literary bent. Don't be daunted if you are not a software or hardware guru, your story of how first logged onto the Internet, or how you beat an application or a piece of equipment into submission (or it beat you) may either amuse other members, or even help them to gain an upper hand in the perpetual battle between wet and dry neural networks.

I spent a large part of Monday at ACT Alive in the PCUG stand in a hot dusty little tent, answering lots questions about what the group does, and realized that the vast bulk of what we do for the public and for each other is done by volunteers. A classic example of this is the Seniors' Internet Project, run on weekday mornings in our public libraries. There are however a number of people who are dissatisfied with the Group and the magazine and the training and a number of other things.

The really interesting thing is that these people rarely seem to be seen at the coalface of any of the Groups activities. Lets all of us encourage those detractors to contribute positively to what is really a unique collection of disparate people with a common interest, rather than detract from the common weal. In other words, instead of saying, as one of our members has said, in writing, and as part of a whole page of adverse comment, *I am not satisfied with the quality of the magazine!*, he were to inform the editor what sort of article he wished to see, or even write an article or a letter himself, this could be considered constructive criticism, which is welcomed, rather than destructive criticism which takes the heart out of any group, however hardworking. In the (paraphrased) words of JFK, As well as thinking what your Group can do for you, think what you can do for your Group...



# President's Letter

Ken Livingston, President

There will always be attrition in our membership due to members moving away, etc., and we continually need new members to prevent our membership from declining. The best form of advertising is by word of mouth. So tell your friends, neighbours and co-workers about the PCUG. And there are other good ways to promote the group, as well. For example, many local merchants are happy to offer our brochures to their customers. But someone must supply the brochures to the merchants. So if anyone is interested in helping to distribute brochures around town, please let me know.

Two members have now expressed interest in handling the hire of the training room and this is good news. The room sets idle much of the time and we need to utilise it.

Thanks to Adina Evans, Dan Darling and Anthony Glenn of Maestro for their presentation on 56K modems at the February monthly meeting. Microsoft will be on hand at the March meeting to demonstrate Windows 98 and Outlook 98, both of which will be released later this year. Come along -

On Committee news, Allan Mikkelson has resigned as Treasurer. Owen Cook, former Assistant Treasurer, was appointed as our new Treasurer and the Committee co-opted Allan to stay on the Committee as an ordinary member. George Beaton is headed overseas and can no longer serve on the Committee. Thanks to Allan for his work as Treasurer and George for his contributions. We now have two casual vacancies on the Committee and about seven months remaining in the current term. Any expressions of interest for these positions are welcome.

The Committee has authorised a task force to look into our current financial standing with respect to the division of cash assets between the PCUG and AUUG of funds in the joint TIP bank account, following last year's AGM resolution. The plan is to assess our current position, reach a fair settlement of accounts with the AUUG, make any adjustments that are necessary to the joint agreement to bring it into line with current and/or most desirable practice, and finally to implement adequate

accounting procedures that will eliminate the need for similar reconstructions in the future. The message is that these inquiries are going well, and a resolution should be reached soon.

There have been a number of rumours making the rounds that bear little, if any, resemblance to reality. One of these rumours is that the Group is in financial difficulties. This could not be further from the truth. In actual fact the Groups bank balances show a very healthy total, and upgrades to equipment for both PCUG and TIP are being considered to improve member services.

I attended yet another meeting of the Online Services Advisory Group. On 18 March, the group will have hosted an information forum for local ISPs to discuss legal issues involving content regulation and liability. I also attended the first meeting of the Regional Telecommunications Infrastructure Fund ACT Advisory Committee on behalf of the PCUG. If you are interested in further information on what's happening with either OLSAG or RTIF, please feel free to contact me.



# Letters



Dear Ed,

It was with great surprise that I received the March issue of Sixteen Bits. On the front cover was something I had dared only hope to see: Linux. It was a proud day for our user community when a magazine that had been so Windows-biased finally paid some real attention to an alternative Operating System that aimed to make people more productive, rather than to make it's owners richer.

However, there were a few factual errors in the article that I feel need to be addressed and corrected lest confusion arise.

1. "GNU stands for GNU's Not Unix, GNU is the group which create and maintain Linux." This could not, in fact, be further from the truth. Linux itself is only the kernel, which is maintained not by GNU, but by Linus himself with help from teams of dedicated volunteers.

What GNU do is provide excellent open-source software for anyone, not just for Linux. The availability of GNU software has helped turn Linux into the success it is, but the projects are in no way related. The GNU software was designed with their own Operating System "The HURD" in mind.

2. "Linux is a POSIX compliant" This is a slight generalisation. Linux is only compliant with certain standards in the POSIX suite. The important ones, mind you.

These are minor points, but ones I felt needed clarification.

Jonathon W. Ross

Dear Editor

Buying books from USA Maybe someone has some experience to share...

Recently I decided to buy a MS Press book. The shelf price here is \$80 less a few cents. The Uni Co-op price is \$70.

Amazon (www.amazon.com) has it listed at US\$40 less a discount, so the actual price is US\$32. At 66c to the \$ (this varies, but as an example) this is then AU\$48. Chuck in (say) \$8 for handling by seemail, and it comes to \$56. So this would be attractive, especially if you buy books regularly.

Timing is not critical, I'm happy to wait a month or so.

Dunno whether any other fees apply - (customs?) but if anyone has gone this route and had good/bad experiences, I'd be glad to hear.

Paul Blair

Dear Madam Editor

Having moved to Canberra from Melbourne 12 months ago, the first thing I looked for was the PC Users Group. I had been a member in Melbourne for several years and found them very helpful.

However after being part of the ACT Group for the past year I have to congratulate all who take a part in the running of this group.

The quality of the magazine amazes me, and I notice that you have regular contributors. For a magazine this size to be produced each month with not only original articles from members but taking into account the hours involved putting it all together I can only dips my lid to those involved.

However one can't just thank those people, look around you folks, who packs, labels and posts the magazines, mans the centre a weekends, organises the monthly meetings, keeps the centre's computers up and running, organises trainers to do course, puts their name on the list for phone help runs training sessions, organises stands at computer shows and local events, gives up the time to man those stands etc etc. The list is endless.

Volunteers do, that's who.

Chatting with a seasoned volunteer at the Centre one weekend I asked how many volunteers do you have? 'Around 80 regular ones out of around 3000 members' I was told I was stunned, how on earth could a group this size run such an effective organisation on such a small resource?

I returned home and promptly forgot about it. Then I received my March 16 Bits, delivered right on time into my mailbox and once again I thought 'how do they do it?'

This time I don't intend to forget about it, I will be at the next stuffing, and I will put my hand up next time they need someone to give a hand at a show. I don't feel confident enough to be a direct help person but I will try and be helpful enough so that next time someone asks 'how many volunteers are there?' Some can reply 'about 81 regular ones'. Care to help me make that number up to 300 - surely 10% of the membership is not too much to ask?

Mary Howard

## IMPORTANT NOTICE FOR TIP USERS

The Internet Project proxy server has recently been upgraded and installed on a new system. The existing proxy server on "supreme" will be shut down on Friday 3rd April during the normal TIP system maintenance period.

**PLEASE** ensure that you are using the correct proxy settings.

Manual proxies must be set to:

(Domain name)	(Port)
proxy.tip.net.au	8080

Netscape and Internet Explorer users who have configured their browsers to use Automatic proxy configuration do not need to make any changes. TIP users who wish to use Automatic configuration should use this URL: <http://www.tip.net.au/proxy.pac>

If you are using ANY of the following domain names or IP address for your proxy settings, you will be unable to access WWW sites other than TIP/PCUG/AUUG pages after April 3rd:

www.pcug.org.au	supreme.pcug.org.au	pcug.org.au
www.tip.net.au	supreme.tip.net.au	tip.net.au
www.auug.org.au	supreme.auug.org.au	auug.org.au
www.canb.auug.org.au	supreme.canb.auug.org.au	canb.auug.org.au
203.10.76.34		

Questions regarding these changes and browser configuration problems should either be posted to the TIP newsgroups tip.general or tip.help, or by email to the TIP Help Team, 'help@tip.net.au'.

# The Internet -

## - a tale of protocols and packets

by Glenn Pure

A computer is just a beige box full of complex circuit boards, wires, switches and other paraphernalia. Right?

Nope. These days it's more likely to be a beige box full of complex circuit boards, wires, switches and other paraphernalia - connected to a whole pile of other beige boxes like it! As Sun Microsystems of the US exclaims 'the network is the computer'.

Many of us have used networked computers for years at our workplaces. It would be hard to imagine functioning usefully any other way (except the days when the network is down!).

Nowadays, many of us are extending computer networks to our homes. Some of us connect to an employer's network so we can work after hours or take up home-based work. Lots of us are getting connected simply for play and pleasure - and to nothing less than the network of networks, the Internet. (You'll find out that 'network of networks' is actually a very apt title.)

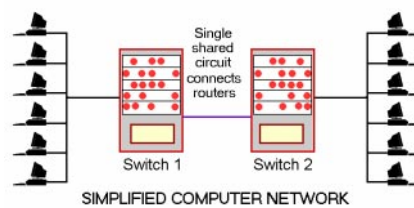
Oh yes, the Internet again. I dare not think how many words have been written about the 'Net but this article is DIFFERENT. I'm not going to thrill you with clever things you can do on the Internet. Instead, I'm going to dabble in the standards, protocols and architecture that make it work. My aim is to avoid excessive techno-babble and explain it in a way that even the 'technically-challenged' can understand...

### Computer networks

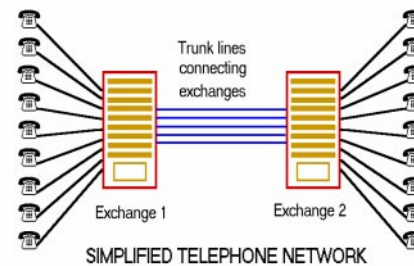
Let's dive straight in. You may have seen the acronym TCP/IP. This is the stuff of the Internet. TCP stands for Transmission Control Protocol and IP stands for Internet Protocol. These are the two standards that work together to drive data over the 'Net. But

before looking at these in any detail, we need to learn some basics of computer networks.

Figure 1 shows a simplified computer network. For comparison, a simple telephone network is shown in figure 2. Let's look at the phones first. The black lines connecting each phone to the exchange each represents a pair of wires. Every phone connected to the exchange is connected via its own separate, private pair of wires. This means that at the telephone exchange end, there are huge, thick bundles of wires going in: one pair for each subscriber. When a call is made from a phone



on Exchange 1 to a phone on Exchange 2, the switches in the two exchanges connect the two



relevant phone lines together via one of the trunk lines between the two exchanges. The significant thing to note is that once the connection is made, it remains unbroken for the length of the call. Both subscriber phones

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*A computer is just a beige box full of complex circuit boards, wires, switches and other paraphernalia. Right?*

---

will be 'busy' and no other calls are possible because their lines are occupied with the current call. There is a permanent and private physical connection established between the two phones for the duration of the call.

The computer network is very different (figure 1). Any computer connected to a particular switch is connected via a single cable which it shares with all other computers

connected to that switch (computers use special 'switches' which I'll explain a bit later). There is no private line for each computer. When a 'call' is connected between a computer on Switch 1 and a computer on Switch 2, the data first travels down the common cable to Switch 1 which shunts it onto the cable connecting the two switches. Switch 2 then switches the data onto the shared cable that goes out to the computers on the right side of the figure.

The call between the two computers might remain active for minutes, hours or days but is only allowed to occupy the cable for brief moments every now and then, when data is ready to be exchanged. All the other computers sharing the cable can have active calls over the same period and can exchange data - but they have to wait until the cable isn't tied up with another caller's data. A single computer can also have multiple 'calls' in progress at one time. It simply jumps from one to another as needed. In the case of the computer network, there are multiple virtual connections established over a single permanent physical circuit or connection (the single shared cable).

An analogy for the computer network, using the telephone example, would be a conference call among a group of people. Each person is connected to all the other parties, and can address anyone, at any time and in any order - provided no-one else is currently talking, of course. This analogy illustrates another important point which applies to the computer network: the conference callers can't conduct a private conversation with any one of the other callers because everyone else can hear. Any computer sharing the same network cable as other computers can obviously hear all the other conversations going on. This is one of the

features of computer networks that hackers can take advantage of to intercept and interfere with other 'calls' (although there are solutions to this problem).

Be aware that the computer and telephone descriptions are simplifications. Also, technology is constantly on the move such that computer networks are increasingly being designed like the connections between telephones and exchanges: with each having a private cable. This enables network engineers to do nifty things like isolate computers onto different virtual networks (virtual LANs). Likewise, telephone trunk routes will, more times than not, be 'digital' and

*continued on page 8 ...*

# Membership Notes



by Mike Burke  
Membership Secretary

Welcome to new members reading *Sixteen Bits* for the first time, welcome to the PC Users Group. Continuing members should also check this column regularly because I am sure that there will be some little surprises from time to time, even for the most jaded of old hands.

If your PCUG membership expires at the end of April 1998  
**RENEW NOW**  
to avoid losing access to  
The Internet Project.

## Your Membership Card

Your membership card will be mailed to you as soon as possible after your application for membership, or renewal, has been processed. This will normally occur within one week of your receipt of your first issue of *Sixteen Bits*. Please be patient, however. There is only one print run of mailing and membership labels every month, and this normally occurs over the weekend immediately before the *Sixteen Bits* stuffing day (normally the third Monday in the month). Normally, membership cards and disks will be dispatched on the third Monday. If you lose your card, please leave a message with the Executive Secretary on 6253 4911, or contact me directly via TIP at [pcug.membership@pcug.org.au](mailto:pcug.membership@pcug.org.au).

## Information Disk

New members should also receive a disk containing information about the Group and its services. Please read the information on the disk carefully as you will find the answers to most of your questions there.

## New Members'

## Information Night

New members are especially urged to attend a New Members' Information Night which is normally held at 7.30pm on the first Monday of the month (except January) at the PC Users Group Centre (see map page 3). These meetings are a chance for new and 'older' members (who are always welcome to attend) to meet with representatives of the Committee, to put names to faces, and to ask any questions that you may have about the Group and its activities. Tea and coffee are available, and the atmosphere is informal and friendly.

## Main Meetings

Our main meetings, targeted at our general membership, are normally held monthly, on the last Monday of the month. The date, venue and topic of the meeting always appear on the front cover of *Sixteen Bits* which is timed to arrive in your mail-box in the middle of the week before the next main meeting. Main meetings are also advertised in the computing section of the Canberra Times on the day of the meeting. Anyone is welcome to attend these meetings—you do not need to be a member. For main meetings, we arrange guest speakers on a variety of topics throughout the year. As an added incentive, there are usually a couple of door prizes to be won. You've got to be in it to win it. There is no main meeting in December.

## Special Events

We also have some special events such as the 'Bring and Buy Night' at the Albert Hall in November, and an annual Quiz Night in April. You should read *Sixteen Bits* thoroughly as special events are publicised mainly through the magazine.

## Annual General Meeting

The Annual General Meeting is held in September each year. Even if you are unable to attend Main Meetings regularly, members

should make every effort to attend this Meeting at which office bearers for the ensuing 12 months are elected.

## The 'Rules' and Other Good Stuff

For those who haven't yet learnt through bitter personal experience, please remember that TIP access is dependent on your continuing PCUG membership, and that it takes time to process your membership renewal - currently up to two weeks. We are looking at ways to reduce this time, but the best solution is for you to remember to renew early. Members, particularly TIP users, whose PCUG membership expires at the end of the month stated in the above box should renew their PCUG membership immediately. Do not delay because your TIP access will automatically be cut off at midnight on the last day of the month unless your renewal has been processed.

Don't forget! **RENEW TODAY**, if not yesterday, if this copy of *Sixteen Bits* arrived with a pink label.

For those of you who would like to try it, John Carroll has produced a natty little Windows program that can be configured to automatically provide you with up to 90 days' prior warning of your PCUG membership expiry. The program is now included on the New Members' Disk, and is currently available from the BBS.

Next New Members' Night

**6 April 1998**

**7.30pm**

**PCUG Centre**

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use very similar technology to that which connects two computers.

You might be wondering how this relates to your humble (or not so humble!) computer which has a connection to the Internet. Well, your computer isn't directly networked (ie shares a common cable) with other computers. But the computers at your Internet service provider are. In the case of the PCUG, these are The Internet Project (TIP) computers. Much of what I cover will describe what happens to your data once its gets into the big wide world at your ISP and beyond.

### Packets and collisons

I haven't quite finished on the problems that arise when computers share a common cable. When does a particular computer know it is allowed to 'have its go' on the cable? There are many ways this can be done and it varies with the type of network. All of them rely on the sender breaking his or her data up into lots of small chunks that won't tie up the cable for very long. These chunks of data are called packets or frames. There is no standardised terminology. For the sake of this article, I will stick mostly with the term packet. Computer and digital networks are often described as packet-switched networks and the concept of packets is fundamental to such networks, including the Internet.

There are a few different ways that computers can avoid turf battles on a shared cable. While you don't really need to understand this, you might find it interesting all the same. One simple method is to give each machine a small, regular slot of time. Each computer keeps track of the time and can easily predict when its turn comes up next. The name for this technique is time division multiplexing. It is not used very often because it suffers from a major weakness. Can you guess what that is? To give you a hint, what would happen if one computer suddenly needed to send a lot of data over the cable while the others remained fairly idle. Would it be efficient to make this busy computer wait around for a time slot while the others weren't making good use of their time slots?

A more efficient method is to allow computers to fire their packets of data willy nilly (at least initially), but if someone else

happens to send their packet at the same time, then they each wait a short but random time before sending again. The chance that they will both choose the same random time is very small and another packet 'collision' can thereby be avoided. This method, in fact, forms the basis of one of the most widely used network technologies: Ethernet. Just to let you know what I am saving you from by way of gobbledegook, here is the official name for this collision detection protocol: Carrier Sense Multiple Access with Collision Detection, or CSMA/CD for short.

### Addresses

From a wiring point of view, the computer network is obviously a lot simpler (and potentially cheaper). But there is a particularly worrisome question that this architecture raises... For any data transmitted on the cable, how do the computers and the switches know where the data is coming from or going to?

The solution is conceptually very simple. An address is simply added to the start of each data packet, just as a paper envelope would have a destination address on the front. The address specifies the computer the packet is being sent to. This is where TCP/IP comes in. The 'IP' part provides the addressing feature. And just like ordinary postal mail, it's useful to have a sender's address in the packet header. IP provides this and a number of valuable features as well.

### IP packets

It's now time to have a more detailed peek at what an IP packet looks like before running through an example of how it works in the real world. Figure 3 is a diagrammatic representation of an IP packet. (The official

the TCP header lurking behind it - but I won't be explaining its role until later. The remainder of the packet contains the actual sender's data - which could be anything — maybe part of an email message, or a piece of a Web page.

The IP header is the first thing to be transmitted because the network 'switches' need to retrieve the destination address before the packet can be forwarded in the correct direction. It makes sense, therefore, to put this information up front. Don't ask me, however, why the destination address was put down the tail end of the header!

As you can see, there are lots of other fields in the IP packet. A brief explanation of each will start giving you some hints about the other capabilities of IP. I have also indicated in brackets the number of bits occupied by each field:

#### version (4 bits):

This is the IP protocol version. The current version is '4'. Believe it or not, version 4 was defined way back in 1981. IP version 6 is on the drawing boards now and will probably start to be deployed in a major way in the next couple of years (there was no version 5).

#### IHL (4 bits):

This is short for Internet Header Length and specifies how long the IP header for the current packet is. The IP packet header can actually be a variable length as we will see soon.

#### service type (8 bits):

Contains space for a precedence code and a service quality code. The precedence code allows a packet to be specified, for example, as a 'network control' packet. The second code is the service quality code and allows the sender to request special needs for example whether the packet should be transmitted with minimum delay (as opposed to 'normal' delay), or the degree to which errors can be tolerated during transmission.

#### length (16 bits):

Contains the total number of bytes (8 bit words) in this particular packet, including all the headers. The minimum suggested size for transmission efficiency back in 1981 was 576 bytes, but I've got no idea wanted the current preferred size might be.

#### ID number (16 bits):

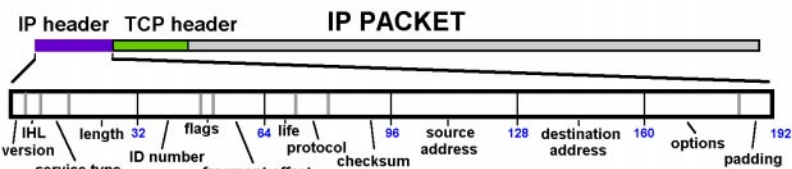


Figure 3 - Structure of an IP packet with an 'exploded' view of the IP header.

documents describing IP packets actually call them datagrams, but I'll stick with the term packet here). An IP packet is simply a long string of bits (ones and zeroes). The bits are transmitted one after the other over the network cable or phone line, starting from the left. Since transmission is from the left, the first data transmitted is the IP header. You will also notice

continued on page 9 ...



# interact

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Contains an arbitrary 'serial' number which helps identify the packet. The ID number is especially useful if the packet has to be broken into smaller fragments during transmission as it aids reassembly at the destination.

**flags** (3 bits):

Contains a code which specifies whether the network is allowed to break the packet into smaller pieces during transmission. Some networks might only be able to handle shorter packets. If this flag is set to ban fragmentation and it reaches a network that can't handle it, the packet may simply be dropped in the bin. (The network can be a cruel place!)

**fragment offset** (13 bits):

This is used only for packets that are fragmented during transmission and specifies where in the original (unfragmented) packet the bytes in this fragment are from.

**life** (8 bits)

This is an interesting one since it starts off containing the number of seconds the packet is allowed to spend in the network before it is dumped. This value is specified by the sender. Every network switch that processes the packet must reduce the value by at least one second, even if the switch takes less than a second to deal with it. In other words, this field changes as the packet moves through the

Internet, and once it reaches zero, it's bye bye packet!

**protocol** (8 bits):

Contains a code number that specifies the next header type in this packet, for example, whether the next header is a TCP header or some other type.

**checksum** (16 bits):

Contains a checksum of the IP header to help detect whether the packet has been damaged during transmission. If it has, then the packet is unceremoniously dumped.

**source address** (32 bits):

This contains the unique address number (IP address) assigned to the sender.

**destination address** (32 bits): The unique IP address of the receiver.

**options** (variable length):

Enables a whole pile of interesting things to be specified or requested like the security level of the packet (the Internet protocol was originally designed for the US defence department). Selecting other options can force the packet to go via a specific route or ask the packet to keep track of where it had to go on the network to get to its destination. Where a route is specified or recorded, the format is simply a list of IP addresses of each network switch that the packet went through.

**padding** (variable):

All IP headers must finish on 32 bit boundaries (in other words, the number of bits in the IP header must be divisible by 32). Padding, consisting of zeroes, must be added to bring the header up to the next 32 bit boundary.

There are a couple of fields above worth a further comment or two. One of these is packet length. The size of packets is a tricky thing to specify. Because the IP and TCP headers might occupy, between them, almost 400 bits, they add a lot of 'overhead' to the packet. Ideally the ratio of data bits to header bits should be maximised to keep this overhead down. However, networks physically can't transport packets with no chance of error. And the larger the packet gets, the more chance that it will score some damage during transmission and must be discarded. So the packet length is something of a compromise between network error rates and packet header overhead.

The IP source and destination address fields are probably the most interesting... and the most important to this article (see box on IP addresses). Every computer or device connected to the Internet has its own 32 bit address. This means there are 4,294,967,296 possible addresses ie just over 4 billion. Like

*continued on page 10 ...*

the 640K limit on RAM in the original IBM computer, no one ever thought this would be exceeded. And, like IBM memory, there are now serious concerns about running out of 32 bit IP addresses. IP version 6 (the next version) will solve this, at least for a 'little while'. IPv6 addresses are 128 bits long. This means there are  $2^{128}$  possible addresses. To put a number of this size in context, the total number of atoms in the Earth is estimated to be  $2^{170}$ .

### IP addresses

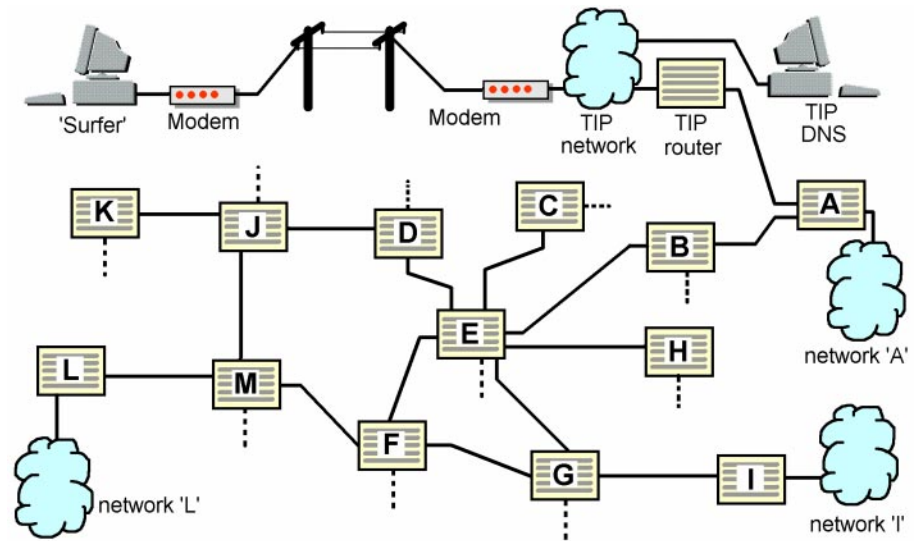
IP addresses are written in an unusual way. They consist of four numbers separated by dots, for example:  
10.157.23.98

The dots are just convenient separators. Each of the numbers represents one of the four bytes that make up the 32 bit address, and each byte has a possible value of 0 to 255.

Every IP address has to be different to ensure that every user or machine on the Internet can be uniquely identified. The only effective way to achieve this is to leave a single body in charge of all IP addresses. There is such a body and it is called the Internet Assigned Numbers Authority (IANA). However, rather than issue all the IP addresses itself, it delegates the job to recognised authorities around the world, and issues each of these with a block of addresses that can be handed out. There are four such bodies in Australia: Melbourne IT, Netlink Holdings, Capital Networks [in Canberra!] and Moniker. (The politics of IP address allocation are very complex and warrant a whole article in themselves.)

These bodies also register names associated with the IP addresses, simply so we don't have to remember a 32 bit number to get to a site or mailbox on the Internet. Instead, we remember the name associated with that address, for example, *www.pcug.org.au* instead of 203.10.76.34. (By the way, this 32 bit number should work if you try it, but I recommend you don't as there is no guarantee that TIP won't be reconfigured by our TIP administrators tomorrow, and the address changed.)

Just as we need telephone directories to find people's telephone numbers, the Internet has to provide directories so that the IP addresses of Internet sites can be



found. These 'directories' are stored in computers on the 'Net and form part of the Domain Name System (DNS for short).

### Addresses and domain names

Now it's time to look at what actually happens when you send or receive data between your computer and the Internet. As an example, let's look at what happens when you fire up your World Wide Web browser to take a peak at a Web site of interest. Figure 4 shows a layout of the hypothetical section of the Internet (the real thing is similar but vastly bigger than this). You will need to look at this diagram to make sense of the explanation below.

At the moment, you only know the name of the site. You have no idea what its IP address is. So the first thing to do is look up the IP address. To get this process underway, an IP packet is created on your computer. The data section of the packet (not the header) will contain the name of the site you want to look at (for example *www.intel.com*). The IP header of this packet will contain, as its destination address, the IP address of your preferred Domain Name System (DNS) server. This server looks up '*www.intel.com*' to find the corresponding 32 bit IP address. It then creates a new IP packet containing this information and sends it back to you by putting your IP address as the destination in the IP header. We'll look at the process by which the packet gets routed to and from you in a minute since it is the same for other packets.

Before finishing on the topic of the DNS, there are a couple of interesting questions to

Figure 4 - A hypothetical section of the Internet showing a 'surfer' connected via modem to TIP (top part of figure). The shaded boxes are network switches called routers. The routers each have a private network connected to them, shown either as a cloud or abbreviated as a dotted line. The routers could be scattered around the world and are connected to one another by public communication lines such as satellite links, undersea cables, optical fibres etc which are rented off phone companies or the like.

answer. How do you know which DNS server to send your request to in the first place? Well, this is the only address where you must tell your computer the numerical IP address. When you first subscribe to TIP or another Internet Service Provider (ISP), you will be told the local DNS server's IP address (or it will be buried somewhere in the start up kit your ISP gives you and automatically loaded for you). In the case of TIP, it actually has its own DNS (the IP address is 203.10.76.34).

What happens if you make an error in the name of the site you send off to the DNS server? Try it some time and have a look at the message on your browser screen. It will say something like 'DNS name lookup failure... The named host probably does not exist.'. Hopefully you'll now have a better idea of what that message means.

Our browser now has the 32 bit address for the Web site. Another packet is created containing this as the destination address in the

IP header. The data section of the packet will contain a message requesting the Web page. (The format for this message is not of interest here; it is part of the HyperText Transfer Protocol, or http for short.) We're interested in how the packet gets to its destination and how the requested information is returned in response.

Back to figure 4 again. Let's assume we are fetching a Web page from the Web server located on network 'I' (the Web server is nothing more than a computer on this network running Web server software).

### Routers and routing

The first thing that happens is the packet is turned into a stream of bits by your computer and transmitted to TIP over the phone lines, via a modem at each end. Once in the TIP network, it will be one of many packets on the shared cable that connects all the machines at TIP, including the TIP router. Router is the term used for a network packet 'switch' and they are just specialised computers (there are a few other switch types, but we won't get into these). The router's job is to look at the destination address in each packet and decide whether it should be sent to the outside world on one of its ports, or just ignored. In the case of the packet we have just sent to TIP requesting a Web page, the TIP router reads the destination address and says to itself 'Aha, this packet is not addressed to any IP address in TIP. It therefore must be sent forth into the wider Internet.'

In figure 4, it happens that the TIP router is only connected to one point on the Internet: router A (all of the boxes with letters in them in figure 4 are routers). Note that there is also a 'private' network (network 'A', shown as a cloud) connected to router A. In fact, the only reason router A probably exists is because the organisation that created network 'A' decided it wanted an Internet connection and so put the router in place to connect itself. The managers of the TIP network and network 'A' would have to agree with each other before renting a line to connect them. Network 'A' could be just about anything including a private network in a company, another organisation like TIP, a university, a public Internet Service Provider (ISP) and so on.

(All the other routers shown in figure 4 will probably have private networks connected to them and network clouds are shown for some. To save space, the networks connected to other routers have simply been abbreviated as dotted lines. The Internet is sometimes referred to as a 'network of networks'. The logic behind this name is that the routers are connected to one another in one huge network while there are smaller private networks connected to each router.)

Coming back to our packet, from here on the same thing happens each time it gets to another router. The destination address is examined by the router to first determine whether or not it is addressed to any machine on that router's private network — if not, it sends it to the next router. The packet will finally get to the router connected to the destination network, which in our case is network 'I'. Once it reached router I, that router would look at the destination address and say to itself 'Wow, this packet is actually addressed to someone on my network. How exciting. I'll forward it on to my local network straight away' (routers have pretty boring lives).

The tricky part with routing comes when there is more than one router to send the packet to (for example, router E). But let's first backtrack and look at what happens to our packet at router A. This router could, in fact, send the packet to router B or back to the TIP router if it wanted. To make the right decision (ie send it to router B), router A not only has to know what IP addresses exist on network 'A' (so it can decide whether or not to forward any packet on to network 'A'), it must also have some idea of the network addresses that are connected to its other ports. On the TIP side, that will be the relatively short list of TIP addresses. On the router B side, all the remaining IP addresses on the Internet are found. The simplest way for router A to deal with this is to record only the addresses that are connected to the TIP port and to private network 'A' in its routing table. Anything that doesn't match these will simply be forwarded to router B (the router's equivalent of buck-passing!). In this situation, router B would be referred to as the default router for router A.

The job of configuring router A is obviously fairly straightforward and can probably be done manually by the administrator of network 'A'.

### Routing made simpler: class A, B and C addresses

There are three classes of IP addresses that are issued to end users: A, B and C.

Remember that IP addresses consist of four bytes, each with a range of values from 0 to 255. When all but the last byte is specified in an address, this is said to be a Class C allocation. For example, 203.10.76.\* is Class C. The person or organisation which is assigned this can use all of the 256 possible values for the final byte to assign to people or machines on their network (don't forget that anyone who wants to use the Internet has to have their own unique IP address).

A Class B allocation only specifies the first two bytes, for example 132.10.\*.\*. There are 65,536 possible values for the remaining two bytes. Such large amounts of address space would be reserved for either very large organisations.

You have probably guessed that Class A allocations only specify the first byte, for example 45.\*.\*.\*. Each Class A allocation can provide almost 17 million addresses. A Class A allocation would be sufficient for a whole country in many cases.

Because addresses have mostly been allocated in blocks as just described, routers can save themselves a lot of work. Rather than storing all the 4 bytes addresses which are accessible on each port (after all, there are 4 billion addresses total), they only need to store the class A, B or C numbers in their routing table. This vastly reduces the storage and processing power required in the router down to a practical level. An analogy in the ordinary postal system is the use of street, suburb and country identifiers to help the postal service to efficiently sort and dispatch mail. For example, a postal worker sorting international mail only needs to look at the country in the address. He then parts of the address.

Router E, on the other hand, can't get away this easily. It has to store a lot more information in its routing table because it has many more active ports with routers connected. (It will probably be a lot busier too, and consequently have a faster processor and bigger memory.) Router E

# FASTER *Two Options To Speed Up Dialup Networking*



## INTERNET ACTION

By Terry Bibo

Computers are getting faster, modems are getting faster, but we still want more speed from our Internet connections where the World Wide Web has become known in some circles as the World Wide Wait.

Internet delays can be caused by a number of factors including net congestion, overloaded servers or MTU speed problems. So what is an MTU?

The acronym stands for Maximum Transmission Unit and is the greatest unit of data that the network can transfer at one time.

Data is transferred along the network in blocks or packets that are individually routed between hosts, with no previously established communication path. Packets are routed to their destination through the most expedient route, and not all packets

travelling between the same two hosts, even those from a single message, will necessarily follow the same route. The destination computer reassembles the packets into their appropriate sequence.

The MTU is usually determined through negotiation between the sending and receiving computers with the lower MTU value usually, but not always, being accepted. Packets carry header and trailer information that enable them to be reassembled, and the combined size is known as a frame. Each medium has a maximum frame size that cannot be exceeded, and frames can be broken up or fragmented as they pass through different interfaces with a smaller MTU than the packet length, resulting in delays with data having to be resent. Frame sizes are listed below:

Default MTU size for different media.

Network	MTU(Bytes)
16 Mbit/Sec Token Ring	17914
4 Mbits/Sec Token Ring	4464
FDDI	4352
Ethernet	1500
IEEE 802.3/802.2	1492
X.25	576

(X.25 is an international standard packet switching network.)

The header information takes 40 bytes, and if these are subtracted from the MTU what is left is the MSS or Maximum Segment Size. The MSS is the largest segment of data that the receiving Winsock can accept, and the header is stripped off before the data is placed in the window buffer. The Winsock is at the heart of the TCP/IP (Transmission Control Protocol/Internet Protocol) on which the Internet is constructed. TCP is the most common transport layer protocol used on the Internet, and allows computers with different architectures to communicate with each other. It is built on top of Internet Protocol (IP). The IP is a packet switching protocol providing packet routing, fragmentation and re-assembly through the data link

layer. Essentially it defines the form in which the data will be exchanged.

The MSS must be taken into account in determining the size of the TCP Receive Window, known as RWIN. This window sets how much data the receiving computer can accept and is a multiple of the MSS. It would seem that anything other than an integer value must result in fragmentation of data packets arriving at RWIN. Recommended multiples are usually four, six or eight. Too small a multiple will result in slow transmission because of having to process more units of data. Too large a multiple can also result in slow transmission if data in the MSS is lost or damaged and larger blocks have to be retransmitted. So we can see where delays might occur in trying to contact a remote web site through multiple interfaces.

Another factor that comes into consideration is Time To Live (TTL). TTL is the number of hops a packet of data is permitted to make before being discarded. Win95 defaults to 32, but with an ever increasing - and increasingly busy - Internet a value of 64 is generally recommended. It is possible that a value of 32 could produce a 'site not found' message when the site does, in fact, exist.

Windows 95 has a default MTU of 1500 bytes set in the registry, which is great for Local Area Networks on cable connections but seemingly bad news for dialup connections proceeding through several routers. The most common setting for MTU throughout the Internet is 576 bytes, and this is recognised as a defacto Internet standard. Obviously then, a packet of 1500 bytes is liable to suffer severe fragmentation and consequent delay. Optimising the MTU and RWIN in the registry and changing TTL should materially increase throughput using the Point to Point Protocol (PPP) of modem connections to the Internet. PPP is the Internet standard for transmitting IP packets over serial point-to-point links. It can configure connections to a remote network dynamically, and test that the link is usable.

Manually editing the registry is fraught with danger, and there are programs that make the task safer and easier here. I will mention three that I am aware of.

\* PPP-Boost is freeware from [www.sysopt.com](http://www.sysopt.com) or [www.c3sys.demon.co.uk](http://www.c3sys.demon.co.uk). It sets Windows Default, Recommended, and Custom values for MTU, RWIN and TTL. It is small, fast and simple. Recommended starting points for optimisation are MaxMTU = 576; TTL = 64; and RWIN = 2144 (MSS{576-40=536} x 4).

\* MTUSpeed is also freeware from Tucows or [www.sysopt.com](http://www.sysopt.com); (author's home page [mike@mjs.u-net.com](mailto:mike@mjs.u-net.com)). Documentation is comprehensive and responsible; it warns about backing up the registry before making changes to it in case of glitches. The program permits much more customisation for those intrepid enough to want to experiment, and introduces more variables like 'Black Holes' and NDI Cache size. There are several recommended sites for background reading and I suggest that you visit these sites for additional information.

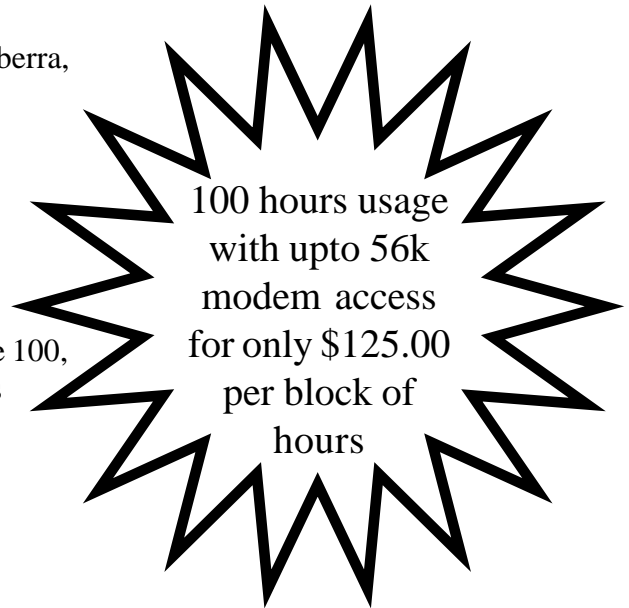
\* The third program is TweakDUN, available through [www.sysopt.com](http://www.sysopt.com). This is a professional shareware program at a very modest price that appears to be the Rolls

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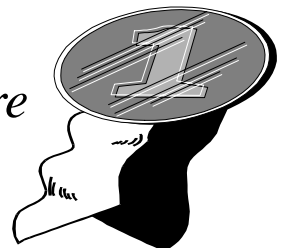
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Royce of these programs. It introduces an even wider range of settings than MTUSpeed.

In using any of these programs there are simple precautions to be observed and recommended procedures to be followed. The first precaution is to backup the registry before altering it. This means copying the User.dat and System.dat files from the Windows folder to a safe medium like a floppy disk. User.dat may only be small but System.dat will almost certainly be too big to fit on a conventional floppy. You may want to compress it or use a removable Zip disk. In restoring these files remember they are protected and will need to have the attributes changed before they can be overwritten. I would also recommend exporting the registry to the root directory using Regedit and selecting Registry | Export. . | All. Give this file a .REG extension, and double clicking on it will restore the registry (so I'm told; I haven't tried it).

To get an objective view of the benefits of your changes you will have to monitor modem speeds before and after making changes. There are third-party programs to do this but Win95 has a perfectly satisfactory facility built into its Programs | Accessories | System Tools folder. It is called System Monitor. For the monitor to display its readings you must set your modem to Record a Log File in its Properties options.

Run this after you are connected to the Net and you will be able to set Bytes sent and Bytes received by the modem. Display options include bar and line graph and numbers. I prefer numbers updated about every three seconds. Once you have set this up you will be able to reload it at any time with these settings retained.

Recommendations here are that you clear your cache before each test to provide a level

playing field. This is done in Internet Explorer through View | Options | Advanced | Settings. Also the computer has to be rebooted after changing the settings for them to take effect.

There is an enormous amount of enthusiasm out there for these programs, and obviously people are achieving figures that convince them of the benefits of changing these values in the registry. Some users report success after changing only the MTU, others only after changing the RWIN as well. Anecdotal evidence was quoting throughput for streaming video increasing from 1.8kbps to 4.5kbps with peaks at 6kbps. My experience was different. In my tests on a three-minute streaming video with a lot of throughput, and a 600k QuickTime movie that had to be downloaded before running. In my early experiments I was able to lift Bytes received from around 2.5-3.0kbps to 3.0-3.7kbps, which was hardly encouraging. I am running a Pentium 100 with a 33.6kbps modem.

At this point my story diverges drastically. In the course of researching this article I found an MSDUN1.2 (Dial-Up Networking) upgrade on the Microsoft site. With a degree of trepidation I installed this and ran my tests again. The results were astounding. Reverting to Win95 defaults for MTU, RWIN and TTL I am regularly seeing throughput of 3.6-5.1kbps with peaks well over 7.0kbps. For one brief instant I recorded 3.1Gbps. Speeds in this range appear when only small amounts of information are transferred, but the overall performance on the Internet has jumped dramatically. It seems that Microsoft have addressed the problem and solved it. To prove the point, I have run my previous tests with the upgrade installed. **Every test degrades performance significantly.** Here is what

Microsoft have to say about the upgrade in their Release Notes:

### Windows95 Dial-Up Networking 1.2 Upgrade

The Windows95 Dial-Up Networking 1.2 upgrade is a significant enhancement to the Dial-Up Networking features that were originally delivered with Windows95. This upgrade provides client support for a single PPTP connection, support for internal ISDN adapters, multilink capabilities, connection-time scripting to automate non-standard logins, and improved performance and stability. All of the improvements included in the OSR2 release of Windows95 and the ISDN1.1 Accelerator Pack have been included in this package.

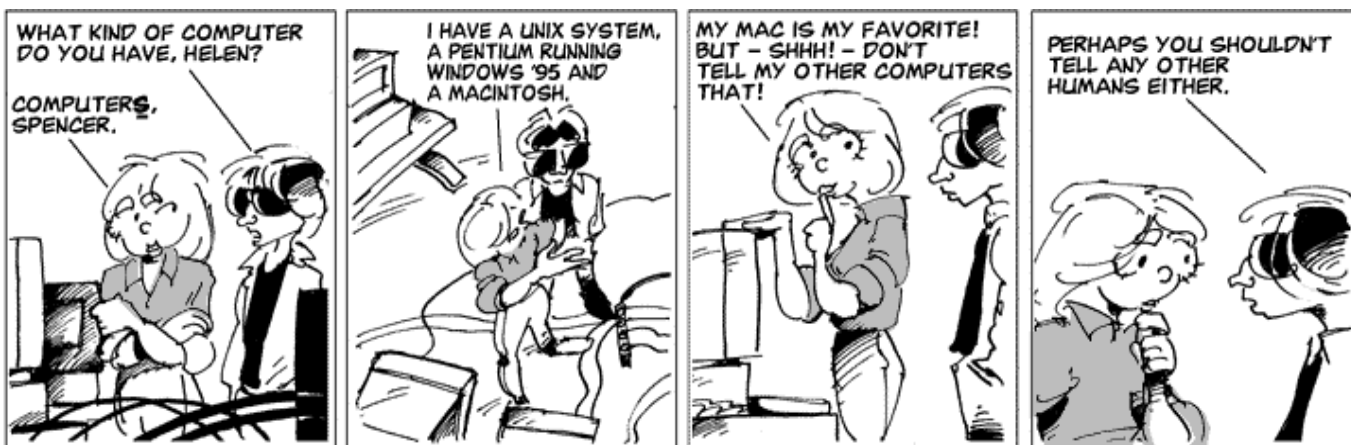
The Windows95 Dial-Up Networking 1.2 upgrade replaces all of the Dial Up Networking components, and installs new versions of the TCP/IP stack and the NDIS layer. A new version of Winsock is included as an optional component in order to correct name resolution limitations in the original Windows95 software.

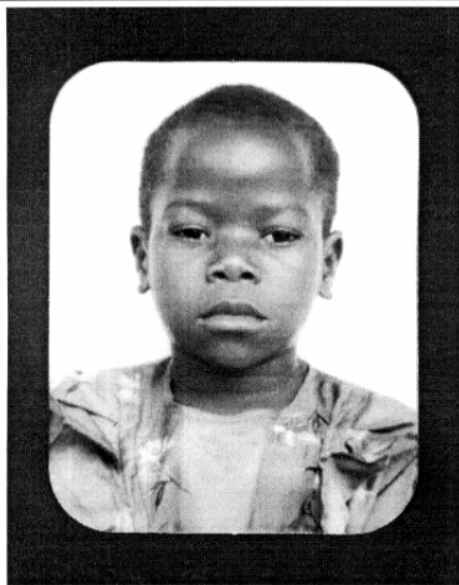
This Dial-Up Networking 1.2 upgrade can be applied to existing Windows95 systems, including the retail release and OEM Service Release 2 (OSR2)."

The MSDUN12 upgrade is easily found on the Microsoft site in the free download area, and installation is done on line. With this upgrade installed you will not need to Record a Log File in your modem properties. The System Monitor is upgrade with several new features and I now find my readings on Dial Up adaptor #2.

You should try one of these speedup options. Enjoy your computing.

Terry Bibo.





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can still have a default router, but that doesn't greatly diminish the task of knowing what IP addresses are connected to its other ports.

**'Daemons' in the network**

The job of manually entering all the routing information that router E needs is a bit excessive although some manual configuration will always be essential. Router E's task is compounded by the fact that the network is constantly changing to a greater or lesser degree. Fortunately, there are automated ways for it to find out about the addresses that are accessible on its various ports. Most routers come with routing daemons. These are software routines that create and exchange packets with other routers solely to swap routing table information.

Daemons also have other uses. Let's look again at our packet being sent from TIP to the Web server on network 'I'. Once this packet gets to router E, it has a few choices about where to go next. It could go directly to router G. But maybe the line between E and G is slow or error prone. Hence, it might be preferable to send the packet via router F.

Now what happens if router F fails? Will router E find out about this? This is where the daemons come in again since they also help detect failures in the network. If a router somewhere goes off line or crashes (for example, router F), it will stop sending its routing information. Other routers listening for this information (like router E) will suspect a problem and will, after a short time -maybe a minute - delete all of F's routing information from their routing tables. It's as if router F didn't even exist. Router E will still have the information from router G which tells it there is a path to network I through G. Hence, router E will forward the packet this way instead.

So the next time you have trouble reaching an address on the Internet, you might rightly blame the 'daemons in the network'!

Jokes aside, the Internet is actually a very robust network. One of the key reasons is that there are usually multiple paths

to the same destination. The Internet protocol was specifically designed to take advantage of this so that even if parts of the Internet were out of action, the packet would probably get through. After all, the Internet protocol was designed for the US defence department which was conscious that an enemy might be able to take out part of a network, but not all of it. In those circumstance, they would still be able to communicate over much of the network.

**TCP**

Time to look again to our original request to fetch a Web page from network 'I'. Our packet has finally reached its destination. The Web server on network 'I' will intercept it and respond with a copy of the requested page. This will probably be large enough that many packets will be needed to send it back to us. The Web server will send these packets off in the correct order, but there is no guarantee they will reach our end in the same order because it is quite possible for each packet to go by a different route and thereby take a different amount of time in the process.

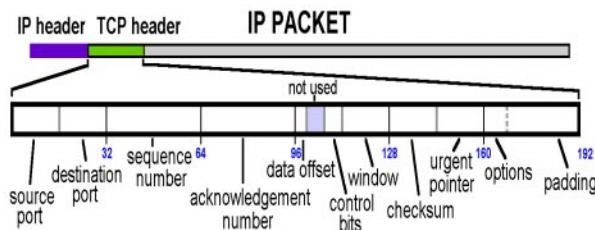


Figure 5 - Location and structure of TCP header in an IP packet

This is where the Transmission Control Protocol (TCP) comes to the rescue...

The Internet protocol is responsible for ensuring that the packet gets from the sender to the destination. IP doesn't care if there is one or one hundred packets that need to be sent. It is worried about each individual packet when it gets it. TCP, on the other hand, is responsible for ensuring that the stream of data which may have been broken up into many IP packets, actually gets to the receiving end without any parts damaged or missing, and in a form that can be reconstructed easily. Figure 5 shows the structure of the TCP

header. Here's a brief rundown on what each of the fields in the header does:

**source port & destination port (16 bits each):**

Don't confuse these with router ports. They have nothing to do with routers. The port fields are numbers. They help the receiver to work out what to do with the data in the packet. Some packets may be addressed to an email application, others might be interacting with a Web page service. A single machine with one IP address may be hosting these applications and a whole heap of others (this is what happens in TIP). To distinguish between them, they are each given a different port number. There is actually a standard list of port numbers published by the Internet Assigned Numbers Authority (IANA) to cover most of the common applications.

**sequence number (32 bits):**

This is probably the most important field. It contains a number which is used to identify where in the original data stream the data in the current packet came from. Say we wanted to send 20,000 bytes of data to a destination. Let's also assume the data is broken up into 20 IP packets for transmission, with each packet containing 1,000 bytes of data. TCP first assigns an arbitrary number to the first of our 20,000 bytes. For simplicity, we'll call this number 'z'. The sequence number of the first packet will be 'z'. The sequence number of the second packet will equal ('z' + 1,000), the third packet will be ('z' + 2,000) and so on. The sequence numbers allow the data to be reassembled in the proper order at the receiving end.

**acknowledgment number (32 bits):**

TCP is quite a bit different from IP in that it involves two-way communication between the sender and the receiver. One role for this is the acknowledgment of packets received. When a packet is successfully received undamaged at the destination, the receiver sends an 'acknowledgment' packet back to the sender. This packet contains a running total, in the acknowledgment number field, of how much data has been successfully received at the destination so far.

**data offset (4 bits):**

The size of the TCP header (expressed as the total number of bits in the header divided by 32)

**control bits (6 bits):**



---

This field contains status or command information, for example whether the sender has finished transmitting data and wishes to close the call, whether there is urgent data in the current packet or whether this packet is an 'acknowledgment' packet (see explanation of acknowledgment number above).

**window (16 bits):**

This field only has meaning in an 'acknowledgment' packet. It is sent from the receiver to the sender and indicates the number of further data bytes which the receiver is willing to accept at this time. Back in 1981 when this protocol was specified, computers and memory were very expensive. If these computers were busy, they might be swamped with more data than they could store and handle. The window was designed as a way of politely requesting that the sender limit how much was sent before it got an acknowledgment.

**checksum (16 bits):**

This contains a checksum calculated for the entire contents of the packet including the TCP header, the IP header and the data. If the packet is damaged during transmission, the checksum calculated by the receiver will not match and the packet will be discarded.

**urgent pointer (16 bits):**

If the 'urgent' status has been flagged in the 'control bits' field (see above), the urgent pointer will identify the location of the urgent data in the packet - otherwise this field is ignored.

**options (8 or 32 bits):**

This field is either one byte or four bytes long, depending on the option. There are only three possible options, and the only one worth mentioning is the 'maximum segment size' option. This is used when a 'conversation' between two IP stations is being negotiated. The receiver uses this field to tell the sender the maximum packet size it will accept.

**padding (24 or 0 bits):**

Length of this field depends the length of the options field. Zeroes are used for padding. The padding is solely done to make sure the TCP header finishes on a 32 bit boundary (that is, the number of bits in the TCP header is divisible by 32).

**A TCP session...**

TCP is quite a bit more complex than IP because it is designed to conduct a two-way

conversation between the sender and the receiver. The role of some of the fields above might become a little clearer once you know how this conversation occurs. There are several ways a conversation can start. In the example below, the sender initiates the conversation. Here's an outline of what occurs, with some steps removed for simplicity (remember, all of these messages are 'wrapped' inside properly addressed IP packets):

1. The sender creates a special TCP message called a synchronise message, or SYN for short. The control bits field in the TCP header is used to specify that the current packet is a SYN. The packet contains no data but it does contain the starting sequence number for the data that is to be transmitted.

2. If the destination machine is in the receiving state, it will acknowledge the SYN message by returning a packet with the sender's starting sequence number in the acknowledgment number field.

3. For various reasons, the sender needs to acknowledge this message. Once this happens the connection between the sender and the receiver is said to be established.

4. Data transmission now occurs. The sender transmits the first chunk of data. The TCP header will contain the starting sequence number for the data.

5. The destination will receive the packet and send an 'acknowledgment' packet back to the sender to indicate success. Steps 4 and 5 are repeated until all of the data is transmitted. It is possible, however, for some of the packets to get lost or damaged. In these cases, the receiver will dump any damaged packets then sit and wait. Meanwhile, back at the sender, a clock is ticking away. Once this clock reaches zero (probably after a few seconds), the sender will retransmit any packets previously transmitted but which have not yet been acknowledged. The TCP/IP stack at the sender's end keeps copies of all unacknowledged packets specifically for this purpose. Once an acknowledgment has been received for a packet, it is deleted from the sender's stack.

6. When all the data has been sent, it's time to close the connection. There are several ways to do this. In this example, the sender will initiate the 'close'. The sender creates a 'finished' packet, or FIN for short and sends this to the receiver.

7. The receiver acknowledges the sender's FIN. The receiver might still be waiting for data packets in which case it will wait until all have been received and acknowledge them. It will then send its own FIN packet to the sender.

8. Finally, the sender will acknowledge the receiver's FIN and the connection will enter the closed state.

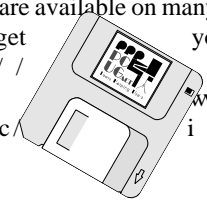
**Putting it all together**

The Internet protocol and the transmission control protocol work hand-in-hand to ensure that data gets from the sender to the receiver reliably and in an uncorrupted form. IP is responsible for creating packets and for addressing them to the correct destination. IP is mostly worried about the network and shifting packets around. TCP, on the other hand, provides crucial quality control. It constantly checks up on IP to see that its packets and getting through. TCP ensures that data is split up properly for transmission (by IP), and is reassembled correctly at the destination end.

I have simplified the story somewhat and left out a few of the more estoric details. There is also lots about computer networking that I haven't covered like the layer structure of the OSI model. But this article was only intended as an introduction, although one with enough detail to satisfy the curious... and it has already turned out far longer than I anticipated.

If you want to read more about TCP/IP and computer networking, there are heaps of resources on the 'Net. Try a search with your favourite search engine. One source of information that is extremely valuable is the RFC documents. 'RFC' is short for 'request for comment'. RFCs are the technical documents that specify all of the Internet protocols and standards. Be warned though, there are thousands of them. Much of this article was drawn from the IP and the TCP RFCs (RFC 791 and RFC 793 respectively). The RFCs are prepared by individuals and working groups of the Internet Engineering Task Force (IETF) and are available on many sites. Try this one to get you started:

`http://www.nexor.com/public/rfc/index/rfc.html`





# Linux

## ... on installation by David Cock

Because of the reaction to my previous article on Linux, I have decided to write another. This piece is intended for those who read it and want to learn more about Linux. In this article I will be covering the installation of Linux, but it may still be of interest to others. I will be describing the installation of Debian, because that is the distribution that I am most familiar with and I believe to be one of the best. I do not want to offend any loyal RedHat or Slackware users out there so I will make the information as general as possible.

First, I had better explain what a 'distribution' is. There is no official distribution of Linux, many different groups and/or companies have produced their own release of the Linux operating system. Each of these releases is known as a distribution, and there are subtle yet important differences between them. Some of the more popular distributions include Debian, Slackware and RedHat. The installation and operation of these different distributions is fairly similar so differences between distributions shouldn't make much of a difference.

If you want to install Linux on your home computer, you will first have to make sure of a couple of things. Firstly, since Linux is a 32 bit operating system, you have to have a 32 bit processor. Any Intel processor from the 386DX upward can run it. nb. The 386SX is a 16 bit processor and hence cannot run Linux though the 386SL (used in many laptops) can. There are also versions of Linux which run on DEC Alphas, SunSparcs, Motorola 68000 processors and many more. A good rule of thumb is, if your computer can run Windows 95 or NT, then it can run Linux. Secondly, you will have to make sure that you have sufficient hard disk space to install Linux 100mb is the minimum for a working installation (though I once installed it in 50, but that's a different story...), that includes some software though the more space you have the better.

The first step in the installation is to obtain the software. You can either download it, use

a truckload of floppy disks, or you can buy a CD-ROM set. The third option is the best for most people. You can get the CDs from Linux System Labs URL: <http://www.lsl.com> or there are many other companies who carry them. Once you have the CDs, you can start the fun part! I will now assume that you have access to the boot and any other necessary disks and/or access to either a CD-ROM or an ftp site.

To install Linux, you will have to create a new partition on your hard drive. Linux requires a swap partition and a partition on which to install. You will have to delete your current partition and create a Linux one. It is possible to operate Linux and another operating system on the same computer, to do this, you need to create another partition. It is possible to non-destructively resize a partition using a program called Fips, but I will not go into its operation here. The partition will be created during the installation process, but you will have to be aware of the need to do so.

If you already have installation disks or a CD-ROM drive in the system that is to have Linux installed, then you can ignore this step. If you do not have disks and cannot boot from the CD-ROM, you will have to create them. You will need several files: `resc1440.bin`, `drv1440.bin` and `rawrite2.exe`. These should be available from <ftp://ftp.debian.org> or one of its mirrors. The executable, `rawrite`, is used to copy raw binary data to a floppy. You will need to copy each file onto a disk, do this with the command: `rawrite2 -f <filename> -d <drive>`. If you are using a UNIX system, use `dd if=<filename> of=<device>`. Now you have the disks ready, you can continue with the installation.

If you created disks in the previous step, insert the one with `resc1440.bin` in the floppy drive and reboot your machine (From now on, this disk is referred to as the Rescue Disk). If you have a BIOS that allows you to boot from a CD-ROM, then simply insert the Linux CD in you CD-ROM drive, set the BIOS to boot from the CD by default and reboot. If you cannot boot from a CD, then boot DOS, go to the directory "boot" on the CD and type "boot". Either of these methods should bring up a text-based menu system that allows you to install Linux. The installation script will now step you through the rest of the process. It will ask you questions about your system and

on which partition you would like to install Linux.

Several important things to note:

a) Linux addresses drives in a different way to DOS, it contains all system devices in a folder called `/dev`. Your first hard drive is `/dev/hda`, your second is `/dev/hdb` and so on. The first partition on your first drive is called `/dev/hda1`, the second `/dev/hda2` and so on. You must tell Linux which drive and partition to install on and which to use as a swap (virtual memory).

b) The installation procedure will ask you if your system is attached to a network, unless your system is permanently connected to a network, an Intranet for example, answer no. Don't worry about the Internet, that can be configured later.

c) The installation procedure will ask you if you would like to install Shadow Passwords. It is strongly recommended that you answer yes here, as it protects your password files from prying eyes.

Next, it will fire up `dselect` which lets you choose which of the software provided on the CD-ROM you would like to install. If you feel that you can figure this part of the process by yourself, then you can complete the installation. For the rest, your Linux system is already fully-functional, though lacks some software. So you can exit the program and come back to it at a later date. To allow you to boot Windows or another operating system in conjunction with Linux you will need to do some simple configuration. Edit `/etc/lilo.conf` and make sure that it looks like this (edit to suit your system):

```
boot=/dev/hda root=/dev/hda2 compact
install=/boot/boot.b map=/boot/map
vga=normal delay=20 default=dos
```

```
image=/vmlinuz label=Linux read-only
other=<device that has DOS on it>
label=dos table=<same as above but without
partition number>
```

Once that is done, you must type `lilo[enter]` to re-write the boot record. You can then reboot with `Ctrl+Alt+Del` or by typing `init 6[enter]`. You can halt the system by typing `init 0[enter]`. To boot Linux, simply hold shift while the system boots and type `Linux[enter]` at the prompt.

Welcome to the wonderful world of Linux! All that remains is to install useful software and to configure your system. I hope to cover these issues in a future article.

# MAINTAINING WINDOWS 95 *keeping it tidy...* by Chess Krawczyk

## Updating to latest version:

We all suspect that there are bugs in WIN 95!!! Microsoft occasionally fixes these and releases upgrades and bug fixes. So the latest OEM version which is given/sold with new systems is better than the original release. You can tell what version you are running by checking the REGISTRY.

Download and run WIN 95B OSR 2.0 , *USBSUPP.EXE* from [www.transmonde.com/supportdrivers.asp](http://www.transmonde.com/supportdrivers.asp)

to OSR 2.1 Build 1214

## FLOPPY DISK TOOLKIT

When WIN 95 crashes you will need to turn to the following 3 floppy disks to recover if you do not want to reinstall WIN 95 then every application.

### 1. Startup Diskette

When you install WIN 95 it recommends that you create a *Startup* diskette. You should update this any time you make changes to hardware, software and also at regular intervals. You can update it by `\Control Panel\Add/remove Programs\Startup diskette`.

If you have to use this diskette because Windows will not boot (again) you may need 2 additional programs which you should manually add to the StartUP diskette

*Sys.com* in case your boot sector on the disk becomes corrupt.

*Xcopy32.exe* in case you want to copy a directory and sub-directories

### 2. ERROR RECOVERY UTILITY

Undocumented feature. On the WIN 95 CD ROM there is a program in `\other\misc\eru\eru.exe`.

This makes a recovery diskette which is better than the STARTUP diskette. Why Microsoft does not shout this out loud, and yell to do this when you are installing is a mystery.

### 3. COMMAND DISKETTE

If you need to use the STARTUP diskette you will inevitably need some other command files which are lost on the hard disk. I keep a backup copy of the `\Windows\Command\*.*` on floppy.

## REGISTRY

The key to your setup of WIN 95 is the Registry. This is fragile and sometimes gets corrupted and unable to recover. Copy `\Windows\System.dat` and `\Windows\User.dat` to another disk, partition or directory frequently just in case!

Download a copy of *Regclean.exe* from <http://tucows.phoenix.net/files2/regcln41.exe>. And use frequently

## BACKUP.EXE

Another undocumented feature. *Backup.exe* once only supported tape drives. Now it is possible to backup to other devices. I have successfully backed up the WIN 95 operating system directories to a spare hard disk partition. Should the complete WIN 95 system crash I could restore an image and save reinstalling all my applications.

## DIAGNOSTICS

More undocumented features. You can use `\Control Panel\System\Device Manager` to check your computer but there are more programs on the WIN 95 CD including *MSD.exe* and *HWDiag.exe* in the `\Misc` directory. This last one is useful for determining which Unknown Device the `\Add new hardware` program finds.

## DOS CD ROM SUPPORT

WIN 95 PnP finds and uses CD ROM drives but when you boot from STARTUP or restart in MS DOS mode you may find no CD ROM drive available, like when trying to install WIN 95 from CD!

Emil Joseph has listed the following procedure for IDE CD ROM drives.

- For proprietary CD ROM interfaces like Sony, Mitsume etc you need *Ctload.Com*
- *Auto exec.bat*: `CTLOAD SLCD.SYS / D:SONY_000 /P:1E8,11`
- *MSCDEX.EXE* `/D:SONY_000`
- *Config.sys* `DEVICE=SLCD.SYS / D:SONY_000 /B:300 /M:P /V/C`
- For SCSI CD ROM drives you need *Aspidos.sys*

- *Autoexec.bat* : `MSCDEX.EXE / D:ASPICD0 /M:12 /L:G`

- *Config.sys*: `DEVICE=ASPI8DOS.SYS /D`

- `DEVICE=ASPICD.SYS /D:ASPICD0`

- All need *Mscdex.exe*

## DISK AYOUT

Partition or use separate disk drives for :

1. Operating system
2. Data, separate into sub directories like DOC, XLS, HTM, TIF, etc
3. Make a directory called *Download* with a sub directory called *Temp* so that you can keep all download files in a standard directory. Copy the downloaded file into the *Temp* directory to *unzip.exe*, *install.exe*, *setup.exe*. Then clean up.
4. Applications, keep the applications out of the C: drive where WIN 95 tries to put them.
5. Backup copies – have a backup directory somewhere to keep copies of *autoexec.bat*, *config.sys*, *system.dat*, *user.dat*

## Nhan Tran's Now Official TIP Web Help Pages

<http://www.tip.net.au/tip/help>

- What's new  
History of changes to TIP help page
- TIP Contact Details  
Phone numbers, domain, proxies, email addresses
- Useful TIP information  
Time allocation, usage statistics
- TIP documents  
Agreement, Charging Scheme, Acceptable Use Policy, Access Application
- InternetFAQ  
Answers to the Frequently Asked Questions about the Internet: what is the Internet, what you can do, netiquette
- TIP help FAQ
- Answers to the Frequently Asked Questions about various problems other people may have had with The Internet Project; your problem may not be a new one
- 'How-to' documents  
How to set up and use various programs needed to make the most of your Internet account.
- Glossary  
Translating acronyms, computer jargon, 'netese and emoticons like ;-) in plain English.

## TIP Technical Information

Domain	pcug.org.au
DNS server	203.10.76.34
Mail server	mailhost.pcug.org.au
News Server	newshost.pcug.org.au
ftp server	ftp.pcug.org.au
WWW server	www.pcug.org.au
Proxies	proxy.tip.net.au port 8080

# cd rom

By Nick Thomson

Welcome to the April 1998 edition of this column. This month I have included reviews of 3 of the 15 or so products that I have reviewed for InfoRom during the last month – to see the other reviews check [www.inforom.com.au](http://www.inforom.com.au). It features reviews of educational, home reference and entertainment CD-ROMs.

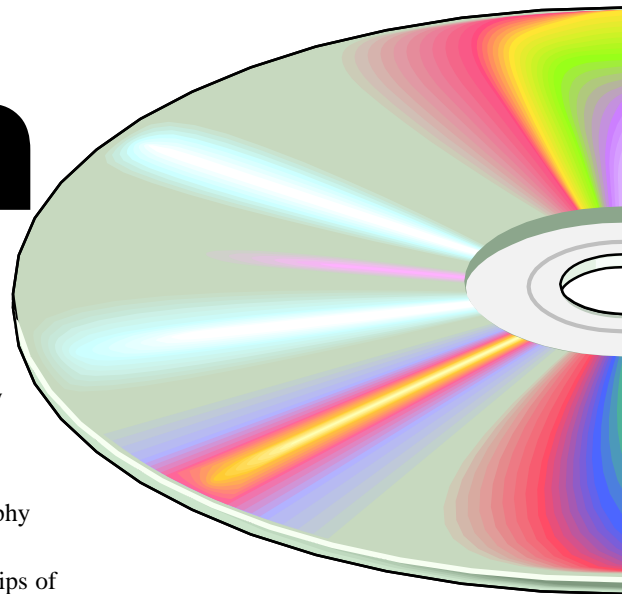
The reviews are of Sting & The Police: Interactive Songbook, The Ultimate James Bond; An Interactive Dossier, and Encyclopedia of Australia 98. Copyright for the reviews rests with InfoRom.

## Sting & The Police: Interactive Songbook

Sting & The Police: Interactive Songbook is a three CD-ROM set that is both a musical history of Sting and the Police and a multimedia introduction to the guitar and keyboard components of 17 of their big hits. It is a must for Sting and Police fans (especially those who want to be able to play in their style), and it is one of a series from Europress that features groups such as Oasis, INXS, Blur and U2 (to be released shortly).

The program has three main components:

- Biography and Discography
- Interactive Songbook
- Quiz.
- The Biography & Discography contains the following:
  - Video Jukebox – six video clips of songs such as Every Breath You Take and Fields of Gold. The visual quality is a bit variable, but they are quite lengthy (2min 30 sec in the case of Fields of Gold)
  - Slide Show – 12 slides of Sting and the Police
  - Sting's Diary – a detailed chronology of important events in his life and musical career from 1984 to 1997
  - Sting's Biography – biographical commentary, mostly about the making and production of the Mercury Falling album

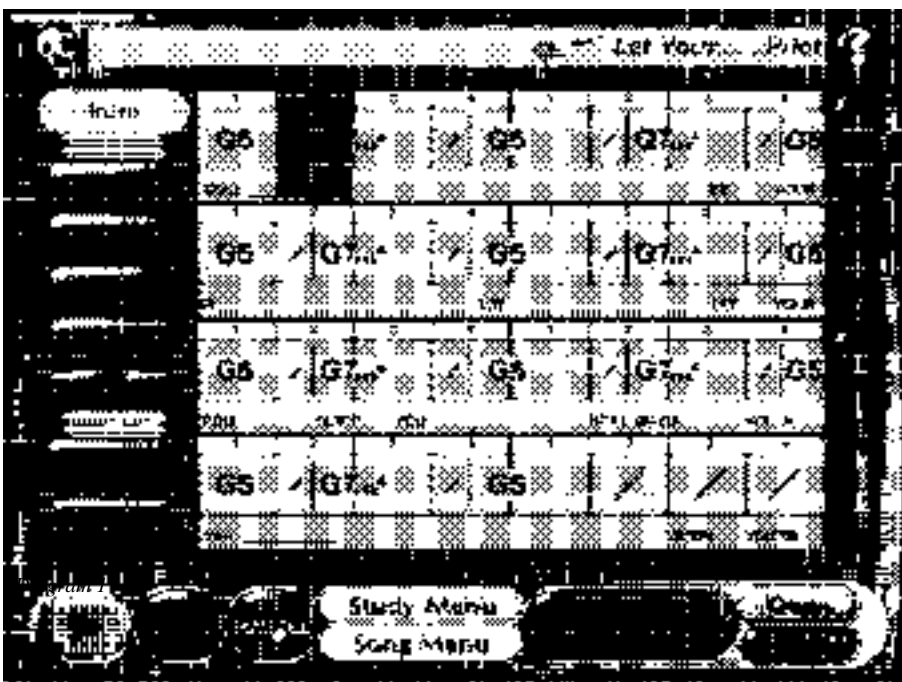


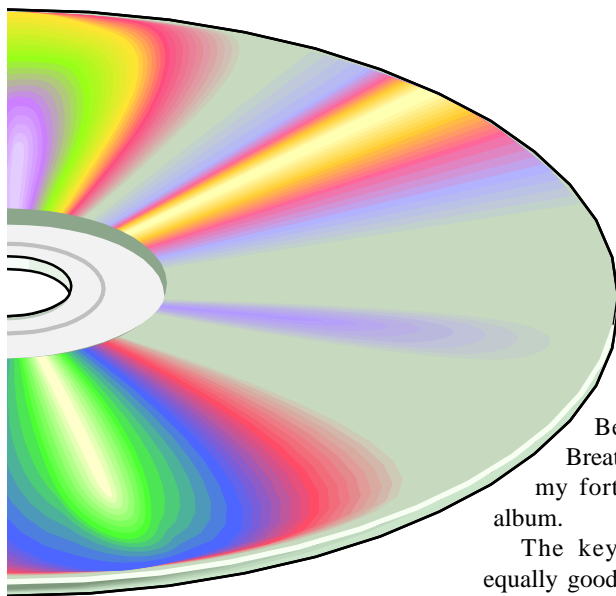
- The Police Biography – chronological history of the band
- Discography – full listing of all singles and albums in vinyl, CD & M.C. format
- Puzzle – re-arrange a scrambled album cover
- Crossword – a series of audiovisual clues that make up a crossword
- Producer Info – lists producers of each track in the songbook.

The Interactive Songbook presents the keyboard, guitar and vocal elements of the following 17 big hits from Police and Sting:

- Message in a Bottle
- Roxanne
- Don't Stand So Close to Me
- Can't Stand Losing You
- Walking on the Moon
- Seven Days
- Fragile
- Every Little Thing She Does Is Magic
- De Do Do De Da Da Da
- Russians
- When We Dance
- Every Breath You Take
- Englishman in New York
- If You Love Somebody Set Them Free
- Fields of Gold
- If I Ever Lose My Faith In You
- Let Your Soul Be Your Pilot.

The vocal component is for those who like to sing karaoke or in the shower, and each track plays along the music with or





without the lead vocal, while the words appear on screen at the appropriate point for you to sing along with.

The guitar section is particularly good, and being a guitarist myself I had a go at playing along with a couple of the songs. The program claims to be easy enough for beginners to use, and this is true up to a point, although some of the chords are quite tricky and require a certain amount of practice first. I am of the 'accompany singers around the campfire' standard (although most of the campers flee into the woods whenever I produce my guitar), and I set out to play along with the incomparable *Let Your Soul Be The Pilot* (my all time favorite Sting track).

The presentation is very good – as the song plays the chord sequence and the beats appear across the screen – one of the best multimedia guitar tutors I have come across. You can separate out verse, chorus, instrumental breaks and the outro (the end bit), and you also have the choice of having the full music playing or just the guitar. Diagram 1 is a sample screen. The bright colours and good screen layout make it very easy to follow, and I was doing fine until nasty chords like A flat and E flat began to appear – then it was time to visit the chord study.

This teaches you how to play every different chord that is used in each song. There is a chord diagram and you can set the computer to play strum or arpeggio (one string at a time). In addition there is a 'graphics' feature that shows you the correct finger positions. There is also a useful guitar tune-up feature – a lot easier to use than my old pitch pipes. I am definitely going to practise my chords until I can play a

few of my favourites such as *Let Your Soul Be The Pilot* and *Every Breath You Take*. Watch for my forthcoming 'unplugged' album.

The keyboard component is equally good, with chord study that teaches you the correct positions for both hands. Backing Tracks allows you to accompany the full song (with full music or just keyboard playing), or select out and practice various components of the song.

The Quiz consists of a series of questions (three levels of difficulty) about Sting and the Police, requiring quite detailed knowledge of the songs, the albums and the events – especially at the medium and high levels of difficulty.

There is no user guide, but there is a quite unique video help feature, which is presented as a kind of dialogue between an interested novice and a narrator. What with the colour diagrams and screen illustrations all features of the program are quite well covered.

**Australian Distributor:** Europress Australia (Tel: 02 9748 4847)

**Format:** Three CDs for Windows 95

**Internet:** [www.europress.co.uk](http://www.europress.co.uk)

#### **The Ultimate James Bond – An Interactive Dossier**

The Ultimate James Bond; An Interactive Dossier is an impressive multimedia resource on 'the lethal yet seductive world of 007' on two CD-ROMs. For those who are/were fans of the movies or the various James Bond characters (I still think Sean Connery was the best), this set is a must buy. It contains the stories of and detailed background information about all the films from *Dr. No* to *Goldeneye*, over 55 minutes of video clips and over 1,800 still photographs – in truth, almost everything about James Bond you need to know. It is rated PG on the basis of 'medium level violence'.

The interface is fun to use, and gives you the impression that you are logging in to a top-secret file within MI5. It is easy to move around or retrace your steps within the program, and the quality of sound and graphics is excellent. Diagram 2 shows the main menu.

From the main menu of the dossier you have the following choices:

- Missions – assignments, histories and reviews
- Women – statistical catalogue
- Allies – patrons and advocates
- Villains – criminal histories
- Q-Branch – non-standard issue equipment
- Vehicles – technical overview
- 007 Declassified – a detailed introduction to the James Bond phenomenon
- HMSS Trivia Challenge – a multiple-choice quiz game.

Missions provides detailed background information and footage of all 17 movies from *Dr. No* (the first) to *Goldeneye*. The highlight is the video summary of each movie – a compilation of some of the action moments, culminating with one of Bond's famous one liners, including the seductively smooth, 'Bond, James Bond.' However, for each movie you can also access a detailed summary of the plot; background information on key people, places and events within the film; information about the movie release and its success (or lack of it); the cast and credits; and a collection of movie stills.

Women – Statistical Catalogue is not quite as sexist as it sounds, although most of the video clips show Bond seducing various members of the fairer sex. For each of the main female characters in the various movies there is a brief description of their role and 'vital qualities'. Who could forget characters such as Pussy Galore and Kissy Suzuki!

Allies provides background information (including video footage) of various goodies such as Felix Leiter, Miss Money Penny and Q; whereas Villains provides all you need to know about assorted baddies e.g. *Dr. No*, *Jaws* (the steel-toothed hit man who finally

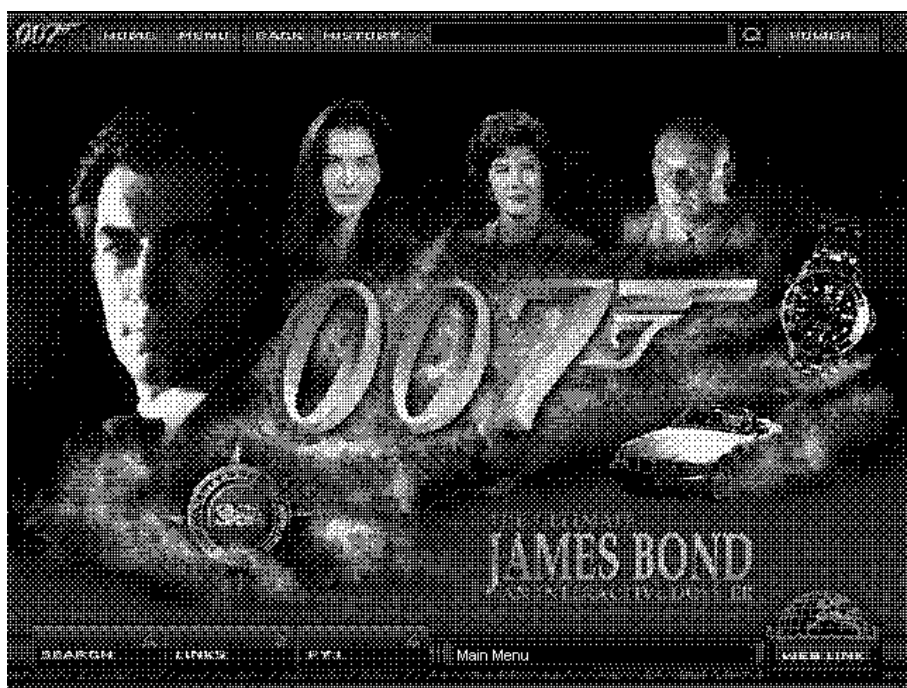


Diagram 2

comes over to Bond's side near the end of Moonraker) and Boris Grishenko.

One of the big attractions of the Bond movies has always been the various gadgets and gizmos – often (in the case of the earlier films) way ahead of their time. Q Branch and Vehicles provides a fascinating examination (complete with photos and some video footage) of the vehicles and weaponry used by both goodies and baddies. Browse items such as the poison-knife shoe ('weaponry that's a step above the rest'), the Aston Martin with an ejector seat for unwanted passengers, and Little Nellie, the autogiro that could be carried in a large case and was armed like a Blackhawk helicopter.

The Trivia Challenge does a DNA test on your identity before allowing you to play, then tests your knowledge of the various movies with a series of multiple choice questions, that include sound clips e.g. Whose (sexy) voice is this? The idea is to build up as high a score as possible before losing your seven lives (you lose one each time you get an answer wrong). Finally, 007 Declassified provides information about Bond and his characteristics; the various actors that portrayed him; his creators such as Ian Fleming; and a chronology of his '45-year reign'.

From within the program it is possible to connect directly to a dedicated website

at [www.mgmua.com/bond/dossier](http://www.mgmua.com/bond/dossier). This provides:

- Information on some of the more recent electronic gadgets
- Wallpaper, sound clips and screen savers
- Lesser known aspects of the dossier such as an 'eject button' that replaces the program screen with a covert wallpaper when an enemy (your boss) approaches.

There is a search facility available within the main menu. You can get online assistance at any time from Q (including a video introduction to their best creation yet – this CD-ROM set), and there is also a 31-page user guide that provides a good introduction to all program features.

**Australian Distributor:** Dataflow  
(Tel: 02 9417 9700)

**Format:** Two CDs for Windows 3.1/95

**Internet:** [www.mgmua.com](http://www.mgmua.com)

#### Encyclopedia of Australia 98

Encyclopedia of Australia 98 is the latest version of the only general reference multimedia encyclopedia to focus specifically on Australia. It has been considerably expanded and now includes 8,500 'pages' of text; over 4,000 pictures, maps and tables; about 75 video clips; and the Heinemann Australian Dictionary. The content has

been updated and is now current to 1997. The information is organised in 12 main subject areas:

- States, Towns, Parks and Maps
- Flora & Fauna
- Climate & Geography
- Facts & Figures
- Australian Inventions
- Performing Arts and Awards
- Politics and Political History
- Sports and Sportspeople
- Famous Australians
- General History
- History Themes
- Year Book and Online Updates.

Most of these are further subdivided (25 categories in the case of Sport). Once a topic has been selected, the screen will generally consist of a picture or video window and a smaller text window. The information is quite well presented, and it is generally at a suitable level for upper primary or secondary school children. The cross referencing is quite extensive, but the articles do not include bibliographies or 'recommended reading'. Diagram 3 is a sample topic screen.

States, Towns, Parks and Maps provides fact files (in the case of states), brief histories and general descriptions of the various localities within Australia. The articles are well illustrated with a variety of good quality, color photos and maps. Similarly, Flora and Fauna provides an interesting summary of some of Australia's unique wildlife (including Australian dinosaurs) and about 500 species of flora. As well as photos there are some video clips.

Climate and Geography includes information about a range of environmental issues such as kangaroo management, the greenhouse effect, and energy saving. Facts and Figures provides a wide range of statistics in 21 categories such as health and education, and includes summary data from the 1996 Census. Interesting to note that Australia's population is now approaching 20 million.

Australian Inventions provides a summary of some of the many interesting devices and processes invented by Australians, while Performing Arts and Awards covers major performing arts awards plus the artists themselves. The

program also provides the words for 13 of Australia's better known poems e.g. The Man From Snowy River and Waltzing Matilda. These are attractively illustrated with colour photos. The next section after Performing Arts is Politics and Political History – this covers state and federal governments and politicians from 1788 to present day.

Sports and Sports People provides background information on a range of major sports from Athletics to Yachting, as well as sections on the Commonwealth games and Olympic games. There is also biographical information on 483 sporting heroes such as Cathy Freeman and Don Bradman – you can obtain an A-Z of these within Search. It is also possible to access a list of Famous Australians via Search. For most of them there is a photo with a few paragraphs of accompanying text.

General History contains 13 chapters on topics such as First Fleet Journals, Settlement Diaries, Aboriginal Arrivals and Post 1945. History Themes is a collection of essays on topics such as Bushrangers, Aboriginal Australia and Advertising.

Year Book and Online Updates provides day-by-day summaries of important events for 1996 and 1997, and it is possible to obtain online updates to the 1998 Year book (on a

progressive basis) from the Webster site on the Internet.

The Search process is quite flexible and allows the user to search via words, topics, videos, graphs, tables, pictures, highlights, notes or within specific categories such as Famous Australians and animal classifications. One can bookmark pages (and thereby make them easier to find in future sessions) or create a library of related articles for use in a research project. Open Application allows the user to open other Windows programs (such as a word processor) from within Encyclopedia of Australia. Articles, selections of text or pictures may be copied to the clipboard or printed.

There is no user's guide, but there is an introductory tutorial that is well presented and easy to follow, as well as online help.

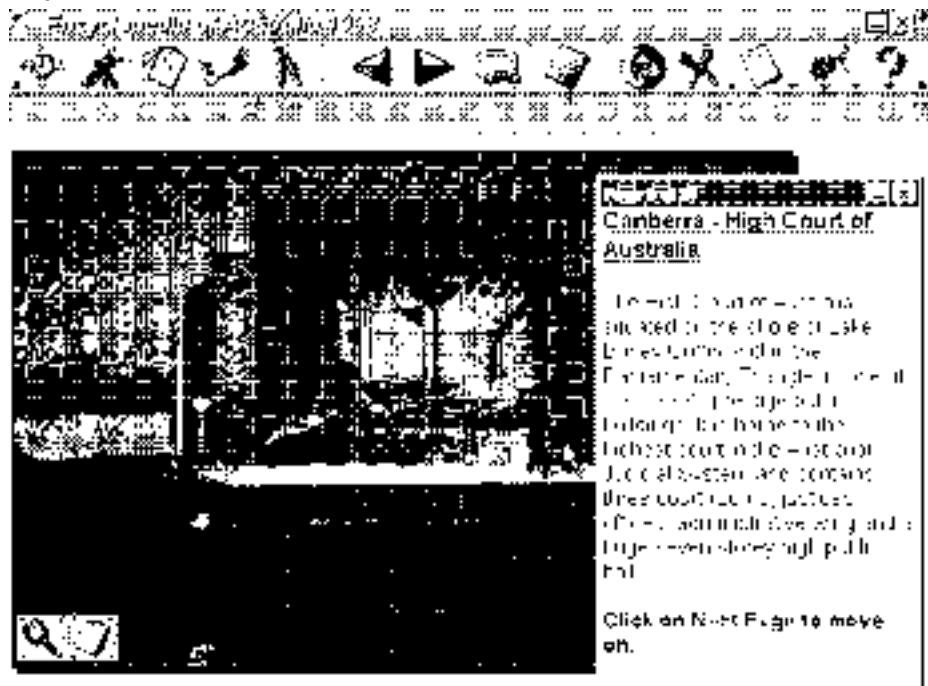
**Australian Distributor:** Webster Publishing (Tel: 02 9975 1466)

**Format:** One CD for Windows 95/NT 4.0

**Internet:** [www.websterpublishing.com](http://www.websterpublishing.com)

Nick Thomson is the manager of InfoRom, a service on the Internet that reviews educational, home reference and edutainment CD-ROM software. It can be found at [www.inforom.com.au](http://www.inforom.com.au).

Diagram 3



## HARDWARE AVAILABLE FOR USE AT THE PCUG CENTRE

(by members only)

*New scanner with both  
graphics and OCR capability  
and 35mm transparency  
adaptor*

*Scanner with graphics  
capabilityS*

*CD burner*

*(remember the copyright  
regulations here, please)*

## POSITION VACANT Main Meetings Coordinator

The PCUG needs a volunteer to organise the main monthly meetings at the Manning Clark Theatre at the ANU.

You would be responsible for organising our main monthly meetings. This involves arranging for guest speakers and hosting the main meetings on a monthly basis. Report to the Policy, Planning and Public Relations sub-committee.

Email expressions of interest to [pcug.editor@pcug.org.au](mailto:pcug.editor@pcug.org.au)

or

Post to our postal address  
PO Box 42  
Belconnen ACT 2616

# COOL URLS

Compiled by Anne Greiner



## CHAUCER: THE CANTERBURY TALES

Quite apart from the information in this page, which is considerable and comprehensive, the graphics are quite simply delectable. They come from a fifteenth century manuscript of the chronicle of Jean Froissart, a contemporary of Chaucer's, and has reference to the source in the page. It has been designed to provide an extra resource for Eng 404 students, and contains sound bites of readings of Canterbury Tales in the original Old English and in modern translations, a complete annotated bibliography of Chaucer studies. There is also a wonderful chronology of important events in the fourteenth century, beginning with the 100 Years' War in 1338, and covering the Peasants Revolt, and the death of Watt Tyler. An absolute joy of a page.

<http://www.siue.edu/CHAUCER/>



## THE PRINCIPALITY OF HUTT RIVER

And now for something completely different. This is the homepage of Prince

Leonard of Hutt River Principality, and gives the history of the formation of the province and then the principality, the secession from Australia, and the legal arguments provided to the West Australian Government and Governor. It covers how to apply for citizenship, and describes the investiture ceremonies and titles. They have a Royal Mint, a Royal Post, and Embassies around Australia and overseas. The principality is tiny, (295 sq miles), and has a population of only 14,000, but just see what can happen if the Government imposes inappropriate wheat quotas. I wonder, now, about the tax laws?

<http://www.wps.com.au/huttriver>



## DIABETES

All you ever really wanted to know about Diabetes, and what is interesting here is that the information is presented in a number of different ways. The page asks if the reader is: a diabetic, friend or relative of a diabetic, doing a school project, a researcher, a doctor, or an allied health professional, and scales the content accordingly. There is a quiz to fill out to check at risk status, and numerous links to both Australian and American sites, and has links to all sorts of ancillary sites, such as diets and so on. The site is rather ordinary in appearance, but the information is solid, which is what matters.

<http://www.idi.org.au/>



## FISHNET

This is a blokes' page. Did you ever want to tell the whole world about the one that didn't

get away? Well now, not only can you *tell* the whole world, you can publish your picture of yourself and your fish! It's true, there are all these blokes holding large and not so large fish, with some text telling us ignorant people what sort of fish it is, and what collection of picene technology they used to lure the poor little thing to its doom. There are chat rooms to boast in, shopping malls to buy all that oh so expensive equipment (whatever happened to a handline with a hook and sinker?), weather reports, news, fishing clubs, and lots more that I didn't investigate (yawn). There are also lots of fishing infolines, and lots of fishy links. Despite my lack of enthusiasm about the sport, the page is excellent.

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



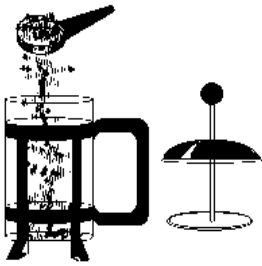
## Gabi's Küche

### GABI'S KÜCHE

Translated, this is "Gabi's Kitchen", and this site reminds me of my mother-in-law who was a wonderful cook. The page is devoted to German recipes, and let me tell you, the disclaimer at the beginning of the page is absolutely accurate. "As you can see, they are not low in fat, nor are they low in calories." There are recipes for bread dumplings, potato pancakes, sauerbraten (roast meat) with all the pan drippings poured over the bread dumplings, yeast pastries of all descriptions, and a lot of other traditional goodies that Deutsche Muttis make. There is a guest book that has as many comments in German as English, and links to a Recipe Ring. Just reading the site will harden the arteries, make any of the recipes at your own risk, but like all things that are not so good for us, they taste wonderful.

<http://www.gabiscott.com/pages/gabi.html>





### COFFEE FOR CONOISSEURS

This a commercial site, but they say they have a great range of different coffees to buy, a free sample offer and all sorts of information of what type of coffee to buy, what sort of equipment to use, and how to use it. For instance, did you know that most of us who make plunger coffee don't really do it properly! See the site for detailed instructions. They also advocate the use of something called a coffee syphon, which looks like something that should be on the Mars Landing Vehicle, and say that it is the very best way to make coffee. If I can't handle a plunger, what hope do I have with this! But anyway, coffee is one vice I am not prepared to give up, and I've sent off for my free sample.

<http://www.ozemail.com.au/~alanfrew/index.html>

### HORSEFUN



Are you a Saddle Club fan??? Are you under 16, and possibly female?? Then this site is for you! There is information and history on the various breeds and quantities of other equine facts and fables. There are horsey competitions with prizes, games, online correspondence pages and pen pal lists. Pony Club is looked at, and a number of Australian Pony Clubs have unofficial sites within this site. There links to magazines, and numerous other horsey links, here in Oz, and overseas. Yeeehhhaaaarrrrr!

<http://www.horsefun.com/index.html>



### GANG GANG

This is a great site that has organised and categorised the huge amounts of shareware out there. How often have you downloaded something, only to find that not only was it not what you really wanted, but that it had inserted itself into the ini and registry files, and even after vigorous efforts, traces still remain, or worse still, it takes up residence with the other 105 other bits of shareware and demos that haven't been used in months or years, and are taking up valuable space. (This is not a confession, really). Gang Gang have not only categorised a large selection of available shareware and software, they have given a brief description of the program, assessed the usability, and given it a rating. A good one to bookmark.

<http://www.ganggang.com.au/default.htm>



### STROMLO EXPLORATORY

Stromlo Exploratory is a new visitors' Centre situated among the telescope domes of Mount Stromlo Observatory. The site, like the Exploratory itself, is still under construction, but there are a few lovely bits already in operation. There is a calculator that will give Sun, Moon, and Bright Planet rise and set times, and information about existing an upcoming exhibits, but best of all is the fund-raising idea they have come up with to help raise \$1.2 million needed to build these exciting, hands-on, high tech, fun exhibits. We are asked to adopt a star, for a price, and there is a scale of prices from \$50 for the least bright stars, to \$150 for rather bright ones, and the two brightest categories are auctioned. For this price you will get a number of things, including your name recorded on the Exploratory Display as sponsor of that star. I found the list of sponsors interesting reading.

<http://msowwww.anu.edu.au/exploratory/funds/adopt.html>



### YIKES!

This page was rather confusing to navigate initially (and latterly), but the thought of having those 3D fried eggs on the homepage I have yet to write was more than I could resist. The author, a college student ("I have a lot of school works to do") has crammed as many graphics and as much dialog and as many ads as possible into the available space, and used lots of black backgrounds, making the whole thing rather difficult to read, but the graphics are great fun, if a bit slow to download. There is also an offer to design web graphics to order. Worth looking.

<http://www.dewa.com/yikes/>



### THE LAB

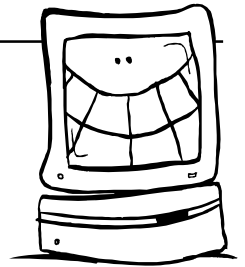
Many of us have looked at the ABC site, but have you looked since The Lab has opened? The Lab is the page for Science on the ABC, and includes Karl K. from JJJ, Robin Williams from the Science Show on Radio National, plus Quantum etc. from television. Who said Auntie was a fuddy-duddy. The site is visually and intellectually stimulating, and at the moment, even leans slightly towards a feminine viewpoint in their investigation not of gravity and electromagnetism, but the grand unifying theory of shopping, with particular emphasis on the cosmetic industry. And then there is the article on the Boys Club, and I quote: "...it would be another two centuries before women were admitted into the boys club of physics." Or you could join the Virus of the Month Club. Terrific page.

<http://www.abc.net.au/science/sitemap.htm>



# Bits & Bytes

Contributed by Andrew Clayton



## Some Unforseen consequences of the 'Millenium Bug':

- \* ATO demands a hundred years worth of interest from stunned taxpayers.
- \* "99 bottles of beer on the wall" song gets stuck in infinite loop.
- \* Microsoft declares the year 1900 to be the new standard of the 'Gatesian' calendar.

## 'This is really true' department:

When a cat is dropped, it always lands on its feet, and when toast is dropped, it always lands with the buttered side facing down. I propose to strap buttered toast to the back of a cat; the two will hover, spinning inches above the ground. With a giant buttered cat array, a high-speed monorail could easily link Canberra with Sydney.

If an infinite number of rednecks riding in an infinite number of pickup trucks fire an infinite number of shotgun rounds at an infinite number of highway signs, they will eventually produce all the world's great literary works in Braille.

Why Yawning Is Contagious: You yawn to equalize the pressure on your eardrums. This pressure change outside your eardrums unbalances other people's ear pressures, so they must yawn to even it out.

Communist China is technologically underdeveloped because they have no alphabet and therefore cannot use acronyms to communicate ideas at a faster rate.

The earth may spin faster on its axis due to deforestation. Just as a figure skater's rate of spin increases when the arms are brought in close to the body, the cutting of tall trees may cause our planet to spin dangerously fast.

Birds take off at sunrise. On the opposite side of the world, they are landing at sunset. This causes the earth to spin on its axis.

The reason hot-rod owners raise the backs of their cars is that it's easier to go faster when you're always going downhill.

## Groan Department:

An Indian chief had three wives, each of whom was pregnant. The first gave birth to a boy. The chief was so elated he built

her a teepee made of deer hide. A few days later, the second gave birth, also to a boy. The chief was very happy. He built her a teepee made of antelope hide. The third wife gave birth a few days later, but the chief kept the details a secret. He built this one a two story teepee, made out of a hippopotamus hide. He challenged the tribe to guess what had occurred. Many tried, unsuccessfully. Finally, one young brave declared that the third wife had given birth to twin boys. 'Correct,' said the chief. 'How did you figure it out?' The warrior answered, 'It's elementary. The value of the squaw of the hippopotamus is equal to the sons of the squaws of the other two hides.'

For the luddites (people who hate technology), check out

<http://www.luddites.com/index2.html>

For those of you with a penchant for all things backwards, try

<http://smeg.com/backwards/>

Dear Vic (re Puzzle Corner)

With reference first to my age spread on p.27 March 1998, it is 74 years.

And a solution of the pickled thingamy in Feb: This is an algebraic problem confused by a rather ornate description. Define A = Peter Piper, B = Papa Piper, x = pick time, y = pack time, then the rather ornate details can be reduced to 4 equations:

$$x(A) = x(B)/2$$

$$x(B) = 3*y(A)/2$$

$$x(A) = 3*y(B)/2$$

$$y(A) = x(B)+y(B)-20$$

and a question: How much is  $(x(A)+y(A))$  Eliminate  $x(B)$  and  $y(B)$  using equations 2 and 3, and solve the 2 remaining equations to find  $x(A)$  and  $y(A)$ , and the total time, 35 minutes.

Please keep the puzzle corner going, especially if you can find a few problems which require several hundred steps.

Ewen Drummond

PS The ACT went metric a moderate fraction of a century ago.

*(aah, but metric is not nearly so alliterative - Ed.)*



August 29, 1997-- 7:43 am : Wayne Lorenzowski's coffee maker becomes self-aware.

# puzzle corner

compiled by Victor Bushell

## Last month's puzzle ---

The snail will reach the top of the wall in 7 hours and descend in 1 hour.

The ascent is the easy bit. After 1 hour it is at 5 feet, after 2 hours at 2 feet, after 3 hours at 7 feet, after 4 hours at 4 feet, after 5 hours at 9 feet, after 6 hours at 6 feet, after 7 hours at 11 feet (on top).

Now for the tricky bit. Since the snail slips three feet during an hour's rest, it is clear that, for every hour spent on the wall, it must contend with 3 feet of 'slippage'. On a non-slip wall it would therefore cover in an hour not a distance of 5 feet, but of 8 feet. During this hour, if it is actively descending a slippery wall, it will also slip another 3 feet, making a total of 11 feet in 1 hour? which happens to be the height of the wall.

And at the risk of giving everyone indigestion? Pickled Peppers revisited.

No one, apart from our two original contributors, Joshua McKinney and Lindsay Graham, took up the extended offer to submit an answer (hmmm) but here is one solution method. A natural approach is to attack the

problem from the top down but this does lead to some unnecessary algebra (four equations in four unknowns). But if we start from **Papa's packing, rather than Peter's picking**, we have the following simpler and more elegant solution.

Suppose Papa *packs* in  $t$  minutes; then Peter *picks* in  $1\frac{1}{2}t$  minutes; so Papa *picks* in 3t minutes; so Peter *packs* in 2t minutes, which is 20 minutes less than Papa's time for picking and packing, which is 4t minutes. So if 4t minus 2t is 20, then t must be 10. Then Peter's time for picking and packing (ie  $1\frac{1}{2}t$  plus 2t which is  $3\frac{1}{2}t$  altogether) must be 35 minutes.

## And the winner is ----

Congratulations to Martin D'Souza for the first correct answer. Honourable mention to Peter Foster and Graham Carter.

## And the answer is ----

The snail will reach the top of the wall in 7 hours and descend in 1 hour.

## This month---

And so to this month's puzzle? Fathers and Sons.

Old Pennywhistle, the senior partner of the law firm, Pennywhistle, Leacock, Massingham, Norris, Oliphant & Sons was explaining the firm's structure to a new recruit.

'The five original members of the firm are all old friends and it was my cousin Edward who suggested that when we all got married we should each name our eldest son after one of the other five partners. That is how young Leacock came to be called Archibald, and young Oliphant happens to be named Daffyd. Norris named his son after young Edward's father, and Massingham's son is named after young Bertram's father.'

'And your own son?' the recruit required.  
'Ah, he's named after the father of young Cecil.'

Can you give the full name of each of the ten members of the firm consisting of the five fathers and five sons?

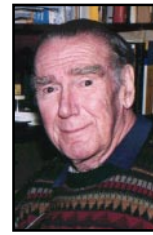
## Ten Years ago in Sixteen Bits ...

Compiled by Andrew Clayton from the  
March/April 1988 Sixteen Bits (Vol 5, No 3/4)

This edition was another dual issue. The secretary of the group, Will Faithful, announced the proposed start of the New Members diskette scheme. Plans were for 360K 5.25" floppy disks, with information on the group's committee, getting onto the BBS, the group's constitution, and other stuff. Michael Lightfoot wrote an article on why Unix was his choice of PC operating system, his 1988 comment was "The definition of a UNIX wizard, is a person who knows what AWK stands for"; (ed. clearly this aphorism still holds true). Michael's comments on why MSDOS sucks were suitably pithy. Malcolm Street's Street Talk article contained the classic line

"The (IBM PC) has the ability to access staggering amounts of memory, up to 640K, but who would ever use it?" Malcolm warned that various hacks to EGA cards to make them support the 'new' VGA standard, did NOT make them VGA compatible. Alan Salmon 'drooled' over some Melbourne BBS setups "Compaq 386's, IBM PS/2 Model 80 with 200MB+ of hard disk, VGA, etc. etc." (ed. "Heh!") And went on to detail political infighting within Fidonet, the PCUG BBS offering 'point' systems, how to send netmail, and other BBS wizardry.

# SOFTWARE Library



Phil Trudinger

**Phil Trudinger Ph: 6248 8939  
(11am-6pm)**

**Email: ptruding@pcug.org.au**

## NEW AND UPDATED WINDOWS FILES

(An asterisk denotes Windows 95  
specificity or compatibility)

### ACCOUNTING

#### AP650H\* (2688856)

Account Pro 95 6.5 is a 32-bit double-entry accounting/financial planning package for business, association/club and private use. It can handle up to 2,000 books with 1,000 accounts/16,300 transactions each. Requires Win95/NT. Reg Fee 148 Fran

#### BS1SB\* (3321588)

BS/1 Small Business 1.1f is a suite of accounting programs designed for use by small to medium-sized businesses. Features included multi-currency support to facilitate international selling and purchasing, the ability to print invoices and cheques, and much more. Requires Win95/NT. Reg Fee \$49+

The files described in this article are on the February 1998 CD-ROM (PsL Vol 6, #2) which is currently on the Bulletin Board: all are ZIP files. Please quote the month or Vol/# when ordering files on disk.

The text files, CD1 to 7 inclusive, in Area 1 of the Bulletin Board, are the monthly CD-ROM file lists.

#### Reminder

Most CD-ROM programs are Shareware. A reasonable time (generally one month) is allowed for evaluation, but if you continue to use a program beyond this time you should comply with the author's conditions that usually require payment of a registration fee. Bear in mind that this is the only way by which an author receives any reward for his/her efforts. Unless otherwise stated registration fees are in US dollars.

### DATABASES

#### HOME98\* (2199958)

HomeBase98 5.0 is a complete home database solution. It can store names, addresses, and phone numbers plus extra memo information. If you have a modem you can speed-dial the currently displayed phone number, or manually dial a different number. Requires Win95. Reg Fee \$12

#### IDEXW210 (1676932)

Infodex for Windows 2010 is a versatile database manager used to keep track of business contacts, equipment, computer software, passwords, etc. Features include support for custom databases, an easy-to-use drag and drop layout, import/export facilities, the ability to search for text in any field, a print preview option, and much more. Reg Fee \$50

#### LLWIN10 (1230077)

Little Lists for Windows 1.00 is a database program designed for users who want to keep things simple. You can easily create exactly the kind of list you want, without any prior knowledge of programming database systems. You can add, view, and change records, browse through the list, print a columnar report or labels including only the fields you want, sort the records any way you like, perform simple math functions, and more. Reg Fee \$19

#### NAME202 (1411842)

NameBase for Windows 2.02 keeps track of names, addresses, phone numbers, dates, notes and other miscellaneous data about persons and organisations. A unique feature allows you to organise entries into any category you wish, then view these categories separately or combined. Other features include sorting on any field, SQL syntax for searches, a variety of print options, and more. Reg Fee \$29



### ASCII20 (7829)

ASCII Master 2.0 makes it easy to insert accented characters, fractions, copyright symbols, trademark symbols, and more. Just open this program with your word processor, click upon the character you need, and copy and paste in any document. Reg Fee \$0

### TYPO40E\* (759719)

Typograf 4.0 allows you to view, print and manage TrueType, Type 1 and printer fonts in Win95/NT. Reg Fee \$35

## GAMES

### 16ANBJ12 (520590)

### 2ANBJ12\* (534632)

Animated Blackjack 1.2 is a computerised blackjack game for up to six human or computer players. You have the option to set almost any of the table rules, and pop up hints help you achieve a winning strategy. Amusing graphics and digitised sound effects add to the fun. Reg Fee \$20

### ATRIS\_10\* (2807643)

Alphatris 1.0 is a cross between classic arcade game Tetris with the classic board game Scrabble. Players must move falling letters to form words. Power-zap, bonus letters, double letter pieces, and bonus words all add to this games excitement and challenge. Other features include great sound effects plus a 20-song background soundtrack. Requires Win95. Reg Fee \$12

### BALUT11 (156094)

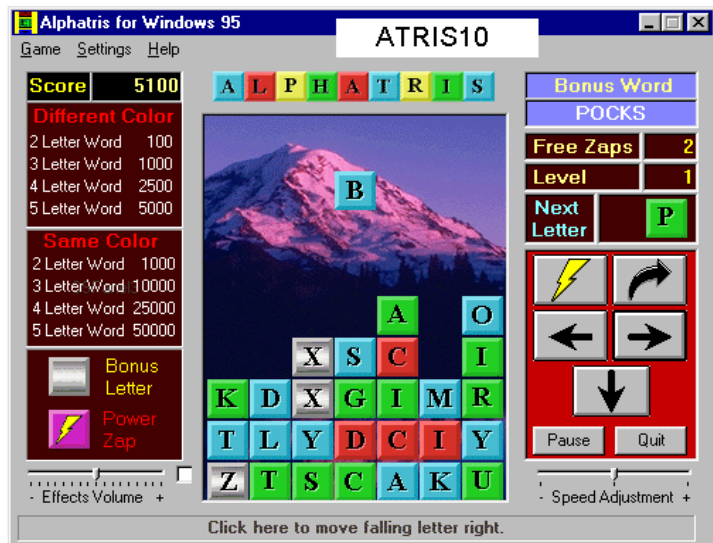
Balut for Windows 95 1.1 is an interesting dice game from Denmark. You play with five dice, and you may roll the dice three times in an effort to achieve a target score. Reg Fee \$10

### BRAINCEL\* (1060526)

Brain Cell 1.0 is a traditional-style logic puzzle for Win95. The player is presented with five people of various heights, weights, ages, and so on. The object of the puzzle is to determine the order in which they are standing and the characteristics of each person. Reg Fee \$10-\$12

### BZZZ\* (213211)

Bzzz! is a fast and furious arcade game where you assume the role of a frog trying to catch as many flies as you can within the allotted time. An occasional butterfly appears with special power-ups (longer tongue, stickier tongue, bonus flies), but watch out for the wasps! This is a fun game for the whole family. Requires



Win95 with an 800x600 or larger display. Reg Fee \$16

### KNUDELQ\* (1883463)

KnuddelsQuest is a unique action/adventure puzzle game for Win95. You must direct poor Knuddel around 15 different mazes full of thought-provoking puzzles and deadly traps in an effort to find the exit to the next level. Features include excellent 3D graphics, fun sound effects, a special training level, and more. Requires DirectX 3.0+. Reg Fee \$30

### PHARAOHS (2358538)

Pharaoh's Ascent 1.4.3 is an excellent puzzle game that transports you to the ancient tombs of Egypt. You must find a way to roll the key stone to the exit of each level while avoiding deadly traps. Features include excellent graphics, a musical soundtrack, and more. Reg Fee \$30

### WINPAC2\* (1685343)

WinPac 2 1.00 is a 'pacman'-type game for Win95. It features stereo sounds, beautiful ray-traced graphics, one- or two-player simultaneous play, and more. This version has five levels. Reg Fee \$20

## GRAPHICS

### 3DIMAGES (1417513)

3D Images is a collection of eight 3D images in BMP format. Reg Fee \$0

### AIPICT10 (513028)

AI Picture Utility 1.0 is a fast 32-bit JPEG viewer for Windows95/NT. Features include fast previewing, a flexible and easy to use interface, support for VidFun AVL slide-shows, common image functions (gamma, contrast, brightness, etc.), and more. Reg Fee \$25

### ACDC1621 (661066)

### ACDC3222\* (874427)

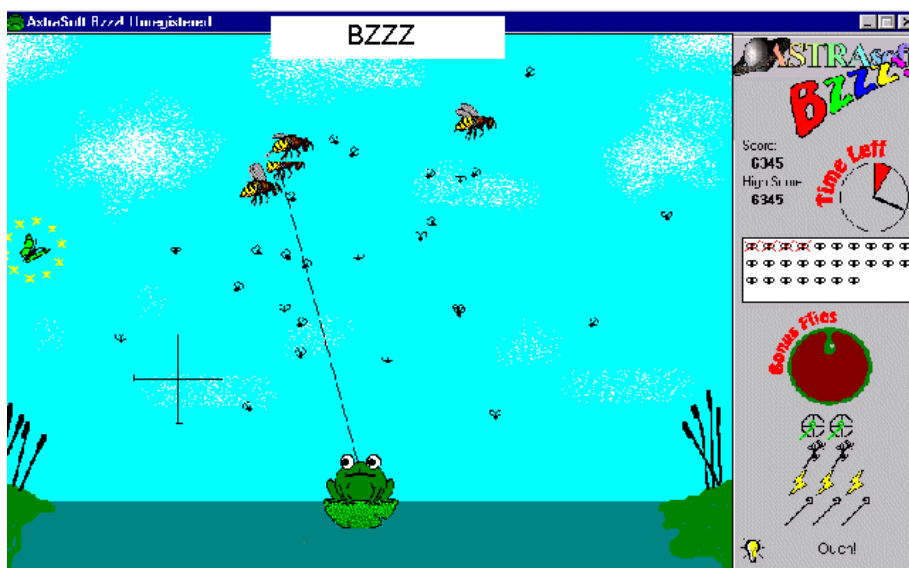
ACDSee 2.1 is a fast JPEG, GIF, BMP, PCX and TGA graphics viewer for Windows. Features include rapid decompression, the ability to view the image as it is being decompressed, image panning during decompression, support for 256 to 16 million colour modes, and support for most JFIF compliant image files. Reg Fee \$18

### FRACTALS (549405)

Fractal Images contains seven impressive images of fractal in BMP format. Reg Fee \$0

### IVIEW250\* (271739)

IrfanView32 2.50 is a fast image viewer/converter for Win95/NT. Supported file formats include JPEG, GIF, BMP, DIB, RLE, PCX, PNG, TIFF, TGA, RAS, ICO, AVI, WMF, EMF and Photo-CD. Other features include drag and drop support, fast directory viewing, a print option, and more. Reg Fee \$0



**ND\_TRIAL (2214283)**

NetDraw Plus 3.0 is a tool for creating explicit network diagrams for business presentations and sales proposals. More than 2,000 full-colour network computing images are tightly integrated with a powerful, intuitive drawing application. You can easily attach text files, Word documents, other programs, or even Web hyperlinks directly to images. Reg Fee \$149

**NEKO95\* (55755)**

Neko 2.6 animates a cute kitten on your Win95 desktop that chases the mouse cursor. Reg Fee \$0

**SETUP6\* (694585)**

Digital Greeting Card Builder 1.2 allows you to combine images, sounds and a wide variety of transition effects to create multimedia greeting cards for Win95. It comes with sample background images and sounds, but can also accept existing images in popular formats such as GIF and BMP. Reg Fee \$20

**VISUA2\* (557016)**

Visua 2.3 allows you to view, convert, and manage your graphics files in Win95/NT. Features include support for a multitude of file formats, a Twain interface for scanning, a thumbnail viewer, print preview capabilities, a variety of special effects, and full file management functions. Reg Fee \$0

**WWWALL (1314024)**

New Age WWWallpaper is a collection of five 16-million colour 3D BMP files. Reg Fee \$0

**INTERNET**

**32PSDH10\* (2526725)**

PrimaSoft DB-HTML Converter 1.00 generates HTML reports from dBASE, Paradox, FoxPro, and Clipper databases. You simply select fields to be included in the report and push a button. Features include GIF/JPEG graphics support, sort/filter options, and more. Requires Win95. Reg Fee \$50

**A2T100 (88665)**

AscToTab 1.00 will convert a plain text file containing a table into a fully-fledged HTML table. Reg Fee \$0

**AUTOWN20 (913131)**

AutoWinNet 2.0 is a tool to help automate your Internet sessions. It allows you to download/upload files, send email, and more without forcing you to sit in front of your computer for hours. Features include internal archive support for most popular formats, a mailing list tracker, Windows '95 support, password support, and much more. This is recommended for experienced Internet users. Requires WINSOCK.DLL. Reg Fee \$30

**BLACKWDO (1107316)**

BlackWidow 3.26 will completely reconstruct a web site in an FTP like window. The site's profile is presented in a Windows Explorer format showing file sizes and last modified dates. It can be used to download all files (or selectively across folders) from a web site. You may save the site's profile for later use, and/or merge other profiles together. Reg Fee \$40

**COOKIE16\* (824463)**

Cookie Crusher 1.6 automatically rejects "cookies" (a profile of your visiting habits) before they hit your hard drive. Both Netscape and Internet Explorer are supported. Requires Win95/NT. Reg Fee \$15

**CRUNCHIE (1544336)**

Crunchie 1.4.4 is an HTML compressor that hides your document from the casual looker. It replaces the linefeeds/carriage returns and replaces the tabs, making everything in one line. You can even add pointed comments such as "Are you planning to steal my code?". Reg Fee \$?

**DTRACKER (2455917)**

Download Tracker (NP) 2.11 is a tool that can be used on the Internet to track down certain sources of trouble. It can send a ping to a certain host to make sure it is responding well, and can trace the route from your system to the remote system. It can also launch the default browser, and email applications. Reg Fee \$10

**FTPCTLR\* (2035291)**

TransSoft's FTP Control 1.9 is a powerful FTP client for Win95/NT. Features include a scheduling wizard that will let you easily schedule uploads and downloads, and a Windows Explorer-like interface that will let you drag and drop files as well as rename them both on your machine and on an FTP server. It can also resume aborted file transfers, provided that the server you're downloading from supports it. Reg Fee \$20

**GETRT302 (658571)**

GetRight 3.02 allows your browser to resume a failed download and only retrieve the remaining part of the file. You simply copy a URL to the Clipboard and the file immediately starts to download. You can also schedule file downloads to occur at a later time, and give the program a list of alternative download locations to try. It can also be run from the command line. Reg Fee \$18

### ICWS18 (490762)

Internet Commander - Web Search Edition 1.8 provides a quick method of jumping to the various search engines on the Internet. It comes with over ninety link selections pointing to search engines, and can hold up to 300 links. Reg Fee \$10

### INSINT10 (309493)

Instant Internet for Windows 1.00 allows you to easily connect, surf, search and send email on the Internet. Instead of manually loading your browser and typing in your URL, you can just type it in and let Instant Internet get you there while you work on other tasks. If you type in an email address it will automatically load your email software. Requires the VB4 runtimes. Reg Fee \$15

### MORNDST\* (114451)

Morning Paper 1.3 automatically visits your favorite web sites every so often to find out what's new, and presents a summary of what's new on each page as part of a 'newspaper' which it displays in your web browser. You can control the update scheduling, the length of the summary, and the browser to use. Requires Win95/NT. Reg Fee \$25

### SK153 (1294326)

SpamKiller 1.53 quietly monitors your mail box, and deletes incoming junk email before it reaches your inbox. It works by checking incoming mail against a list of several thousand known spammers. It can be customised to scan the subject line for specific words. Junk email can be automatically deleted or marked and left in your mailbox and the program can automatically send an anti-spam reply message to the sender. Reg Fee \$?

## MISCELLANEOUS

### AB98SX02\* (1259431)

Above & Beyond 98 is an advanced time management package for Win95/NT. Reg Fee \$50

### BDCODE20 (1495527)

Bible Decoder+ 1.2 performs text and code searches on the text of the Pentateuch. The text searches enable simultaneous searches of the Hebrew and English texts of the Bible and the results are displayed with both texts synchronised. Reg Fee \$25

### CONV16 (515295)

### CONV32\* (1325850)

Convert It! SE 3.56 is a unit of measure conversion utility with 14 categories of conversions and a 15th for custom conversions. You can edit the conversion factors, add or delete units. Convert temperature, mass, volume, time, area, angle and more. On-line context-sensitive help is provided and a section is included on other conversion factors that you might use. Reg Fee \$25

### CONVERT1 (536932)

Convert 1.1 provides a quick and easy means of converting numbers from one unit to another. You can add your own custom conversion factors and descriptions. A list of conversion formulas may be printed. Reg Fee \$25

### CRI115D (942734)

Classical Recording Index 1.15 provides the means to help categorise and inventory your personal classical recordings. You may also enter free-form comments which may be attached at either the album level or the composition level. Optionally, you may attach multimedia sound files to a composition and actually hear a section of the recording. Reg Fee \$20

### DIGIBAND (4057054)

DigiBand Radio 3.2.82 offers playback of RealAudio streaming audio over the Internet.

Features include 100 preset buttons arranged in 5 user-defined banks, the ability to use downloaded channel lists, four scanning modes, and more. Reg Fee \$19

### DSTUDIO (666857)

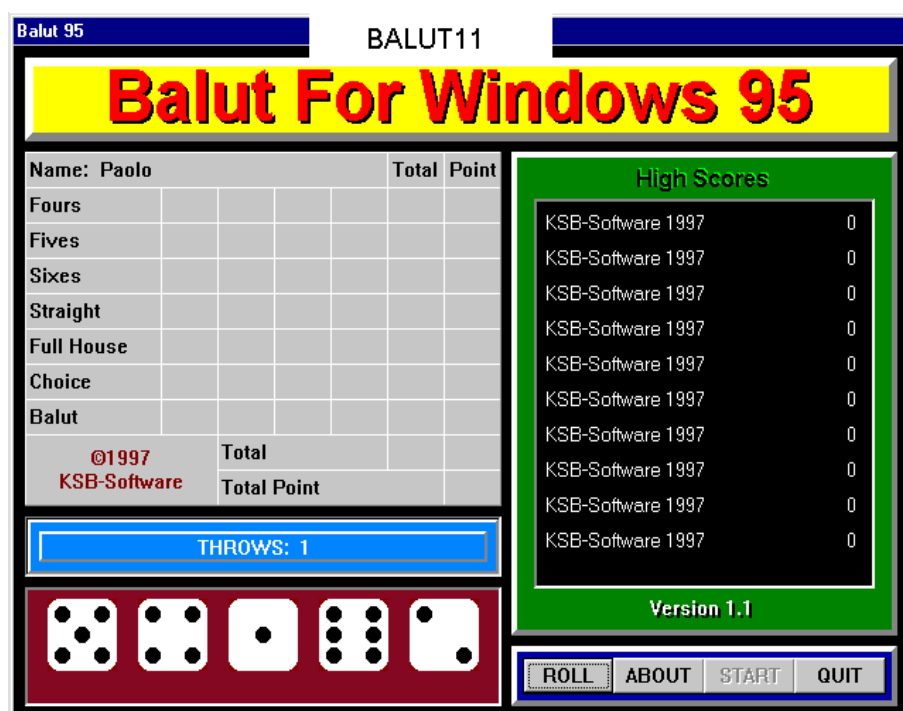
Digital Studio 1.1 allows you to record, edit and play MIDI data in Windows. Segments can be edited in standard musical notation, or graphically via a 'piano roll' method. Reg Fee \$30

### HSMT50 (1039032)

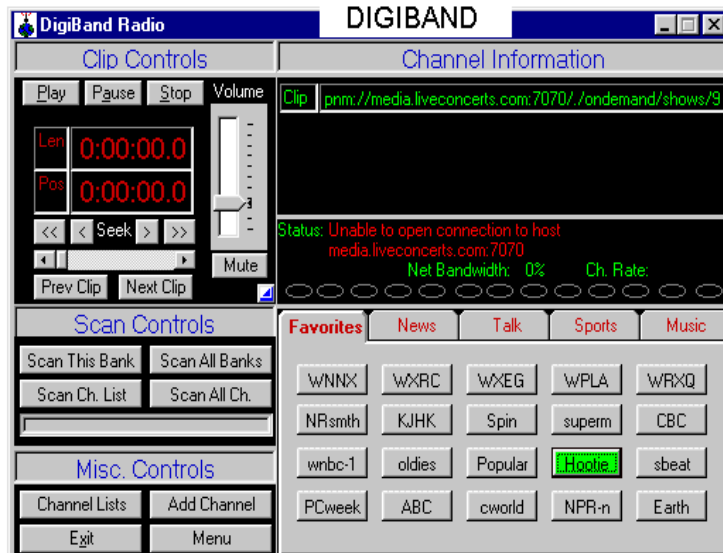
Heart Smart Weekly Menu Planner 5.01 helps monitor calories, protein, carbohydrates, fat, sodium, and cholesterol in your diet. The program includes a 900 item modifiable food list, and allows you to build your menus with drag and drop from the food list and much more. Reg Fee \$20

### RTINST98 (1010255)

Recorder Teacher 98 0.4 is a multimedia program for learning to write and read music, and to play the recorder. The view of the animated recorder is the same as your own instrument. You can compose a tune in the Tune Editor and the computer shows you how to play it. This version works with the first five notes, and expires after 10 days of use. Reg Fee \$40



## SCREEN SAVERS



The Arts (256-colour display recommended; all \$16):

**DALISCR (2703718)** - paintings from the master of surrealism, Salvador Dali.

**FANTSCR1 (2521879)** - paintings that explore the world of science fiction, and fantasy.

**GOUGHSC1 (3471347)** - paintings by the master, Vincent Van Gogh.

**IMPRSC1 (3035132)** - Impressionist paintings, including Sisley, Pissarro, Monet, Manet, Renoir and Whistler.

**MODRTSC1 (2710420)** - paintings from the late 19th and early 20th Century including Picasso, Matisse, Beckmann, Klimt, Munch and Gauguin.

**PICASCR1 (2955150)** - works by Pablo Picasso.

**RENASCR1 (2956690)** - works by masters like DaVinci, Michelangelo, and Raphael.

**SHAKSCR1 (2366559)** - over 1500 quotations by William Shakespeare with 30 paintings inspired by his genius.

**TWAINSC1 (1992314)** - over 1800 quotes from Mark Twain with a collection of 30 photographs of the author.

**WILDESC1 (1416800)** - almost 400 quips, observations and quotes from Oscar Wilde.

**ASCREEN\* (1511331)**

The Ultimate Horse Site Screen Saver displays 13 images of horses done in chalk, watercolour, and acrylic renderings. Options let you choose the time delay between images (in seconds or minutes), the ability to stretch the images to fit the screen, and sequential or random display. Requires Win95. Reg Fee \$10

**BLAZETR (1611582)**

Blaze 4.0 displays a roaring fire on your desktop. Reg Fee \$10

**CLICKSAV\* (24477)**

ClickSave 1.0 appears in the Win95 taskbar tray and allows you to launch your screen-saver with a simple double-click. This provides a quick way to lock your screen while you are away from your desk. It also has menu items for quickly logging off and shutting down your system. Reg Fee \$0

**DOCEM (611373)**

Doc.Em 1.11 manages "active corners" or corners on your screen that can be set to temporarily disable or engage immediately your screen saver. Reg Fee 15 Pnds.

## SINGT (227893)

Singing Tutor for Windows 95 is designed for training vocal skills and tuning musical instruments. It allows you to measure voice and music pitch with high precision in real time by using the microphone input of the sound card. Reg Fee \$29

## SEEDW16 (974602)

The Seed Program for Windows 2.3 is a comprehensive database system for garden seeds. It can keep track of what seeds you have purchased, where they are from, how old they are and what seeds you need to buy. It can print a planting schedule for the seeds you have entered, so you know exactly when and how to plant all of your seeds. The database includes extensive information for a wide variety of vegetable and herb seeds. Reg Fee \$25

## STELLA10\* (1593663)

Stella 2000 1.00 is a powerful astronomy package for Win95 that allows users to examine realistic skies in real time. Other features include an observing log, live ephemeris, a location browser, and a sophisticated search embracing planets, comets, DSOs, and over 9000 stars. Reg Fee \$45

## REMINDERS

### JAR\_3\_02 (379289)

Just a Reminder 3.02 is a powerful appointment reminder with a pleasant digitised female voice that announces it's time to pay bills, make a phone call, attend a meeting, buy a birthday present, and more. Reg Fee \$20

### MYDIARY (3073851)

My Diary 1.00 is an easy-to-use daily diary for Windows. Fields are provided for the date, day of the week, things I did today, and comments. Reg Fee \$5

### NMO502\* (147901)

Noah Mini Organizer 5.02 is an easy-to-use "to-do" list for Win95/NT. It provides six scrolling boxes for tasks, as well as a miscellaneous note field. A printing option is provided. Reg Fee \$?

### RBO201\* (1392633)

RedBox Organizer 2.01 is an all-in-one personal information package with a calendar, To-Do list, anniversary list, business plan scheduler, a contact manager, sticky notes, report generator, alarm reminder, message notification and more. Requires Win95/NT. Reg Fee \$40



**KALEID95\* (84729)**

Kaleidoscope 95 is a colourful screen saver for Win95/NT. It has a variety of user-defined parameters that can control the images, or you can choose to have the kaleidoscope flow and change in time to music transmitted through your sound card. Reg Fee \$15-\$25

**NOVA\_GNT (109327)**

Gnatts Screen Saver 5.0 is an unusual screen saver that displays gnats buzzing around your Windows desktop. Reg Fee \$5

**SBRail10\* (2433447)**

SBRail ScreenSaver 1.0 is a model railroad screensaver for Win95. Requires DirectX. Reg Fee \$15

**SPACESC1 (2099947)**

Outer Space Screen Saver 1.0 displays 30 beautiful photographs that turn your monitor into a tour of the solar system and beyond. Reg Fee

**WALLY96\* (308960)**

Weird Wally's Revenge 1.3 is a screen saver for Win95 that allows you to create your own animated 'cartoon'. You can have Weird Wally walk about the screen, strike humorous poses, and have text balloons pop up with witty sayings. Reg Fee \$?

**UTILITIES****APL24WIN (684992)**

Apple II Oasis for Windows 1.5 lets you run Apple II software in Windows environment. This package includes Apple II Emulator, Apple II Disk Manager, and Apple II Disk Server. Reg Fee \$25

**AUTOSTRT\* (1084591)**

Auto Start Manager 1.3 extends the functionality of the Win95 StartUp folder by giving the ability to conditionally start programs at startup time. Reg Fee \$10

**BATTIME1\* (6806)**

Battime 1.0 allows you to launch series of Win95/NT programs with only one icon. Requires VB40032. Reg Fee \$0

**CBSHARE\* (46243)**

Clipboard Switcher 1.1 allows users to copy/cut to 10 different clipboards, and paste from any of those clipboards. Requires Win95/NT. Reg Fee \$20

**CLG95T\* (1313043)**

Configuration LifeGuard 1.0 makes duplicates of the Win95 configuration files as well as the

main system files. These duplicates are stored at an easily accessible but safe place on the hard disk. You can restore any or all of these files at any time from either DOS or Windows 95. This can be a lifesaver in the case of a system crash or installation that throws your system out of whack. Reg Fee \$15

**CM95\_10\* (2642652)**

ClockMan95 1.0.70 is a powerful automation utility for Win95. It allows you to perform automatic downloads, backups, virus scans, and much more at user-specified times. Other features include reminder facilities and a date and time bar. Reg Fee \$80

**DLLSHOW\* (112314)**

DLL Show 2.8 displays a list of all tasks and processes currently running on your Win95 system. Reg Fee \$0

**HEDITPRO\* (383595)**

HEdit Pro 2.1 is a hexadecimal editor for binary files. Features include unlimited file size, drag-and-drop support, binary and text search, selectable fonts, clipboard support, and a multiple document interface. Requires Win95/NT. Reg Fee \$35

**HYSNP308\* (449691)**

HyperSnap-DX 3.08 allows you to capture the desktop, highlighted window areas, or user-defined areas in Win95/NT. Features include hotkey support, cropping facilities, the ability to

save images in BMP/GIF/JPEG format, and much more. Reg Fee \$20

**NOREM010 (1497376)**

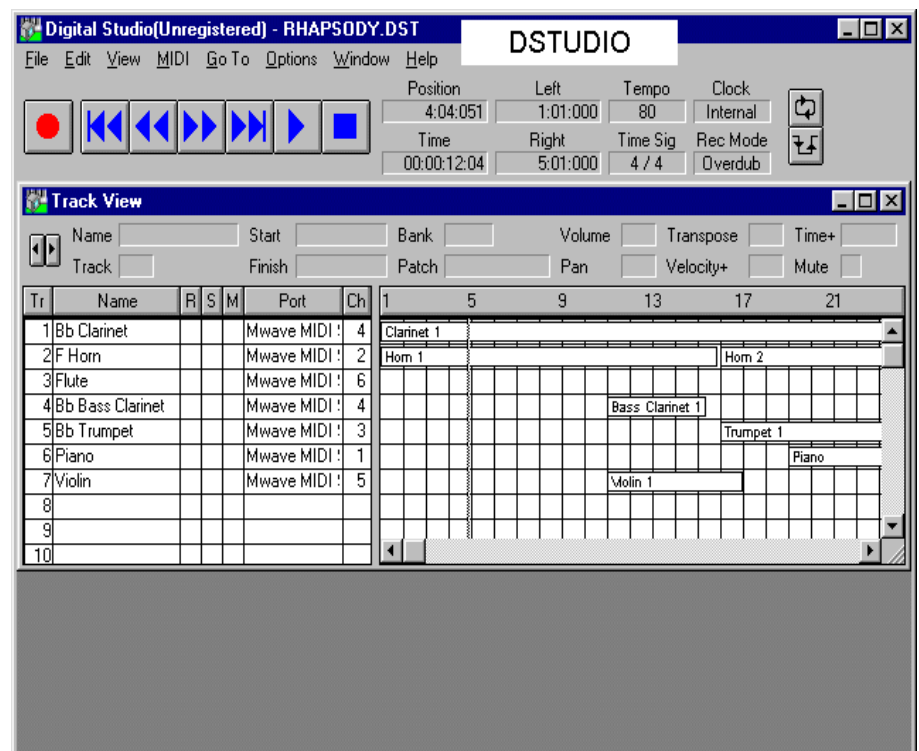
noRemove 0.1.0a tricks Windows 95 or NT into thinking that a removable drive is really a fixed hard drive. This is useful for fooling various applications (such as DriveSpace) and installation programs that don't handle removable drives gracefully. Reg Fee \$15

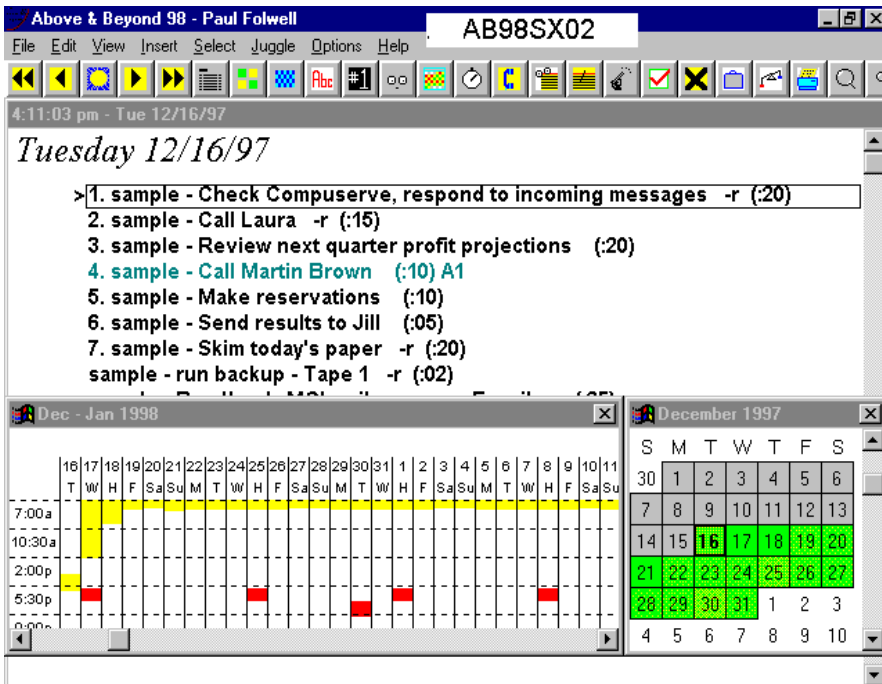
**PROFIL\_T\* (966375)**

Pro-File98 is a powerful file management package for Win95. Features include improved copy/delete/rename functions, the ability to edit file date/time stamps and attributes, 'directory bookmarks' that allow you to return to a deeply nested directory with just one click of a mouse, a special command that permanently deletes files by overwriting them, and much more. Reg Fee \$40

**SD220 (313531)**

Shortcut Doctor 2.20 allows you to check all your links/shortcuts and see which contain targets that can no longer be found. You can then delete the shortcuts, resolve them or replace all shortcuts pointing to a certain drive or directory with another (after validation of new path is made). Individual shortcuts can be edited and all shortcuts on a drive can be displayed, regardless of whether they are valid or not. Reg Fee \$11





**V95I312E\* (4908066)**

VirusScan 3.1.2 is a native Win95 application that detects and removes computer viruses. Reg Fee \$65

**VS95V25\* (3541020)**

VirusSave 95 2.5 detects and removes viruses active in Win95. Features include both on-line and off-line virus scanners, a wizard for quick virus removal, a virus list, configuration tools, the ability to download updated information via the Internet, and more. Reg Fee \$30-\$65

**WIT025\* (472806)**

What is This? 1.6 will help you to manage your files and remember their descriptions. It integrates with your Win95/NT shell and is always ready to use in the right click context menu of Explorer and on Desktop objects. This uses only a little disk space and stores your data in a small, quick database. Reg Fee \$15

**WSNFFR14\* (58914)**

Word Sniffer 1.4 allows you to search for words in files when you don't know the exact spelling of a word. It is useful when you need to search for names of people, places, etc. and all you know is how to pronounce the word and the approximate location of the files this word might be in. You simply type in the search term and the program will list all words found together with the filenames. Requires Win95/NT. Reg Fee \$10

**Z\_START\* (311325)**

Z-Start 01.00 provides total control over auto-startup tasks in Win95, including

specific startup order, wait for completion, wait for fixed amount of time, launch programs only on certain days, and launch programs only once per day.

Multiple launch configurations can be maintained. Requires the 32-bit VB4 runtime files. Reg Fee \$15

**ZVET\_21\* (872936)**

Zvet 21 is a powerful file compression utility for Win95. Features include drag and drop support, the ability to right-click on a ZIP file to view/test/extract its contents, and much more. Reg Fee \$30-\$40

**NEW OR  
UPDATED  
DOS FILES**

**MOUSEKEY (110541)**

MouseKey 1.02 assigns up to seven user-defined macros to your mouse buttons. Whenever you press a certain mouse button or combination of mouse buttons, your assigned macro is played by simulating the input of a key sequence on the keyboard,

according to which the active application is able to react. Reg Fee \$14

**POETRY (515838)**

Poetry Generator 2.5b creates poems from a vocabulary of thousands of phrases and several different formats which are randomly chosen and combined by the program. For the most part, the words are organised into short phrases which are then combined into poems of four to twelve lines. The underlying structures of most of the poems are based on the author's original work. Personalised poems can be produced. Reg Fee \$19

**PORTS11 (8176)**

PORTS 1.1 reports the serial port UART address and UART type (8250, 16450, or 16550) for all ports. Reg Fee \$0

**REAPING (168639)**

Reaping the Dungeon 1.1 is a game that lets you go below the surface of the planet Jupiter, through a complex series of mazes, in search of treasure. Along the way, you can collect weapons for fighting the various creatures you may encounter. Find the drop chute to go to the next level. Reg Fee \$16

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**TALTECH SOLUTIONS Pty Ltd**

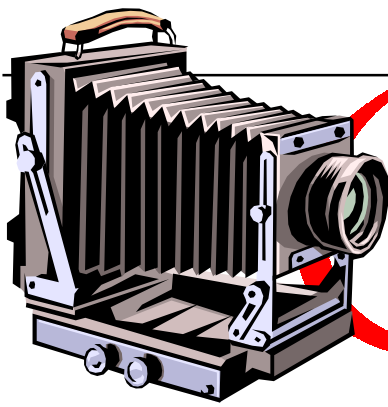
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# n the **RECORD**



## **THE BEAR IS NOT SO GRIZZLEY**

of the story as far as Eddie's cancer is concerned. In 1990 he had a further relapse, and recently, after some seven and a half years and thinking that he had bet it completely, Eddie was diagnosed with a recurrence in February of this year.

Following his retirement, however, and to compensate him for the lose of his beloved computers, however, Eddie started what has now become a collection of home computers. Since his first computer - a 286 with 640K memory and 42 meg MFM hard drive - Eddie has gone on to have his own network at home which includes 2 x 486 DX2 66 and a Pentium Pro 200. Eddie and Sharon have recently moved from their little govvie cottage in Kaleen to a bigger home in Amaroo to give the growing computer collection room to expand a bit more!

Eddie joined the PCUG in 1991 and has spent one day a month every month since then helping with the stuffing - particularly the transporting of the mail bags to the Post Office, and has seen the circulation numbers increase at least threefold in that time. When he first started, the bags where placed in his 4WD van, but as the club expanded he has had to fix up his box trailer and fills that and his 4WD each month. With the current member numbers so high Eddie is only grateful that with the on-line catalogue on the BBS that the PCUG no longer publish an annual catalogue - he does not know where he could get a semi from. Eddie has also helped out at the ACT Alive shows, and has also lent a hand on occasion

Eddie de Bear is a quiet achiever. His name has been on the list of 'Stuffers' for a little more than 7 years, and in that time he has missed only 2 stuffings, one when he was inconsiderate enough to go on holidays, and one recently when he was in hospital and even then he sent his wife Sharon and son Eddie jnr to deputise for him. I believe he sat up in bed at TCH and sorted out the paperwork!

Although Eddie was born in the Netherland in 1949, as he immigrated with his parents, sister and two brothers in 1954, he has very few memories of his country of birth, except being nearly run over by a train while riding on the back of a bicycle being ridden by his mother.

It was while Eddie was in the Public Service, that he was given his first opportunity to dabble in another of his passions - Computers! In 1978 he was promoted to a clerical position supporting the Honeywell Computers at Department of Defence - taking charge of all those 1/2 inch and 3/4 inch tapes and distributing all those thousands of kilometres of paper output. In 1982 he undertook a Trainee Computer Operator Course with DSS Melbourne. His training completed, he worked on many mainframe systems at Special Minister of State, Aviation and Australian Tax Office.

Starting at the ATO was the start also of another chapter in Eddie's life. And a chapter which led him to the PCUG. Eddie started work in October 1985, worked one day and went of on sick leave. After many investigations, Eddie was diagnosed with cancer - lymphoma. Although he successfully fought this, it was to return again in 1989. It was at this time that his wife and doctor ganged up on him and all but forced him to resign from his job. Unfortunately 1989 was not the end



assisting other over the phone with their computer problems.

# Putting on the rubber gloves

...by Bill Olson

Less than \$200 now buys a new ink jet printer. The print quality is better than ever, the paper feeds in without jamming and the speed is often faster than four pages a minute. So how can the ink makers afford to sell these better products at such low prices and still make big dollars?

The ink jet makers charge plenty for their replacement cartridges, which is where the profit lies. The manufacturers could probably afford to give away printers and still make a profit from replacement cartridge sales.

Unfortunately a new ink jet owner is well into four or five hundred sheets of paper before the first ink well dries up. They then discover that buying a new cartridge drains the wallet of almost \$50. In some cases the cost of a replacement cartridge is almost a third the new price of the printer. Buy four cartridges and you yourself have more than paid for a new printer.

The other option is putting on the rubber gloves and loading a big syringe with enough ink to refill the empties. This is also an environmentally sound idea because the print heads on the original cartridges will work for about six refills.

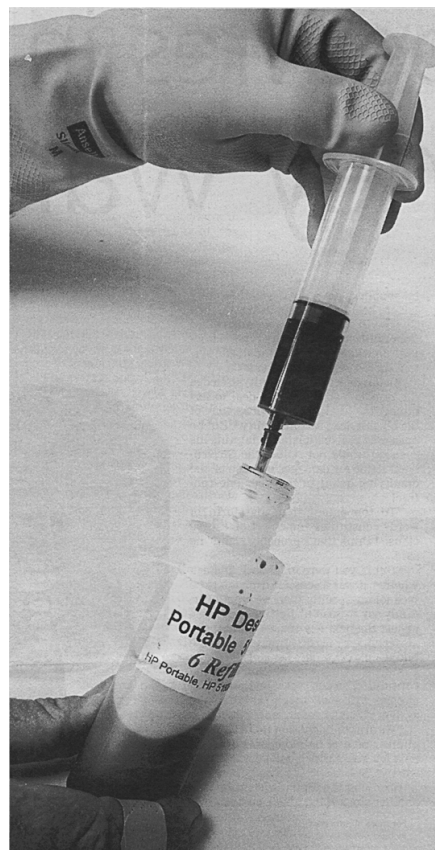
Unfortunately the manufacturers have tried to stop this by pressure sealing their cartridges. Once the little seal on top is drilled out for refilling, the ink leaks out through the print head. You can try overcoming this by either resealing the hole in the top or buying cartridges which fit portable ink jet printers designed for laptop computers. These cartridges are not pressurized so that they can be carried safely on aircraft. Drilling them out for refilling does not cause the ink to leak through the printer heads.

Although the manufacturers deny this, the portable cartridges will often fit a desktop printer. There are also cheaper generic cartridges which can be safely refilled.

The initial cost, however of a generic cartridge kit is close to \$100. An inkjet refill kit costs about \$50 which includes the tiny hand drill, a 25ml syringe, a 100 ml bottle of ink and of course a green rubber glove. The glove is essential because any ink stains are hard to

remove. The two most popular types of cartridge, Canon and HP, have vastly different capacities. The HP holds 30ml and can be refilled three times from a 10.0ml bottle of replacement ink. The Canon is much smaller at 18ml and can be refilled five times. Extra bottles of ink cost \$40 from local cartridge refiller PCR and there are other refillers listed in the yellow pages. PCR will also call in and demonstrate how use their refill kit as part of the initial \$50 kit price.

*This article first appeared in the On Section of the Canberra Times on February 10, 1998, and is reprinted with their kind permission and that of the author*



## Oz User Groups

### Adelaide PC Users Group

PO Box 2231

Port Adelaide SA 5015

(08) 8331 0766

Meet: 7.45pm, 3rd Wednesday of the month at Enterprise House, 136 Greenhill Road, Unley. Visitors \$5.

### Brisbane PC Users Group (Brisbug)

PO Box 985

Toowong QLD 4066

(07) 3299 3943

Info Line

(07) 3209 4980 (fax)

Pam Kirk (Pres)

Home page <http://www.brisbug.asn.au>

Meet: Kelvin Grove High School, Kelvin Grove, Brisbane. 9am-5pm approx, 3rd Sunday of the month.

### Darwin Computer Users Club

Gary Drake (Vice President)

(08) 8932 4107 h

(08) 8945 0091 w

Email [acsnt@acslink.net.au](mailto:acsnt@acslink.net.au)

### Melbourne PC User Group

2nd Floor, 66 Albert Road

South Melbourne VIC 3205

(03) 9699 6222

10am - 3.30pm

(03) 9699 6499

Fax

Email [office@melbpc.org.au](mailto:office@melbpc.org.au)

Home Page <http://www.melbpc.org.au>

Meet: 6pm, 1st Wednesday of the month (except Jan) at Pharmacy College, 381 Royal Parade, Parkville.

### Perth PC Users Group

PO Box 997

West Perth WA 6872

(08) 9399 7264

Terry Vernon (Pres)

Meet 6.00pm, 1st Wednesday of the month at Ross Lecture Theatre, Physics Building, University of WA, Nedlands.

### Sydney PC Users Group

PO Box A2162

Sydney South NSW 2000

(02) 9972 2133

Meet 6pm, 1st Tuesday of the month at main auditorium, Teachers Federation, 300 Sussex Street, Sydney.

## The Internet Clinic

Internet Clinics are normally held at the PCUG Centre, Northpoint Plaza Belconnen the first Saturday of each month 9.30am to 1pm. There is no cost involved.

So if you (or another PCUG member you know of) are having problems you (or they) will be welcome to attend. It is suggested that you call the PCUG Centre on the day and check with the staffer that we are not overloaded before coming along.

To get a problem on your PC resolved it is essential that you bring *all* of the following items with you:

- PC and Monitor, plus all interconnecting cables
- Mouse
- Keyboard
- Modem
- Modem power supply
- Modem cables - from PC to modem and from modem to telephone socket
- Modem and PC manuals & documentation
- All of your software disks -  
i.e Win3.1. or Windows95 disks/CD

If you don't have a PC to "fix" but you want to get some guidance on some particular aspect of using TIP, please feel free to come along and simply talk to us.

Clinics are not a free software/modem installation service. We do expect you to have made a reasonable attempt at getting the software installed & working.

Owen Cook [rcook@pcug.org.au](mailto:rcook@pcug.org.au)

## ACT Alive

I would like to make a public thank you to the following people who helped to make our stand at ACT Alive so successful.

**John Saxon, Gloria Roberts** who opened up the stand and took the first orders of the day.

**Bert Blink** - Who kept my place warm while I raced off to get more photocopies.

**Chess Krawczyk**, who was there from opening to close, with his computer with all the latest bells and whistles and gave continuing demonstrations.

**Ken Livingston** who set up the laptop with power point extolling the virtues of the group.

**Bob Ecclestone** - Who insisted he had no clue what to do then proceeded to cope brilliantly.

**Anne Greiner**, who was slightly late but made up for it by staying till close and charming all who came close to the stand

**Brian Williamson**, who despite being in hospital a week ago turned up as always to lend a hand.

**Bob Deane**, yet again another of the stalwarts of the group who always puts his hand up when there's volunteers needed.

**Mike Dinn**, manning the front table, looking very impressive and convincing most people he spoke to that they needed us.

**Eddy Mandavy** - Who took on the onerous task of making sure that every female between 18 and 30 who walked by the stand personally received a brochure on the group.

**Michael Lightfoot**, still complaining about Microsoft to all who would listen. :-)

**Andre Sweneson** - young and cluey and a great help to the luddites

**Don Nicol** - who seemed to appear from nowhere and disappear the same way. :-)

Special thanks to **Wolfe Leiske and Gordon Urquhart**, who apart from taking the last shift also did all the delivery and packing up removing of equipment.

Much appreciated one and all - **Ann Byrne**  
*(who was there all day! Ed.)*

Journal of the PC Users Group (ACT) Inc  
**SIXTEEN BITS**  
*Online*

<http://www.pcug.org.au/pcug/16bits/>

Now in Adobe Acrobat format!

# WHAT'S



Compiled by Malcolm Morrison

## NEWS?

### HITACHI

#### Ready for DVD?

#### Hitachi Goes DVD-RAM

Hitachi is offering DVD-RAM standard format drives with up to 5.2 GB (dual-sided media) of rewritable storage capacity. With internal models, available in both ATAPI and SCSI interface versions, and an external SCSI model, Hitachi DVD-RAM drives offer a single, removable data storage solution for the PC market. In addition to fast recording of program and data files on DVD-RAM media, the drives can read data on single and multi-layer DVD-ROM discs and all types of pre-recorded and recordable CDs. First reports suggest a price around \$1,600.



#### Curious About Win98?

Microsoft Corp. has announced the opportunity for consumers in North America to see the latest in cutting-edge computer software from the company by offering the second in a series of free events open to the public. "Microsoft Extreme" will include live product demonstrations and an audience question and answer period, showcasing the most advanced features of the Microsoft Windows 98 operating system and other Microsoft products. The live show will be satellite broadcast to 38 movie theatres in the United States and Canada on Saturday, April 4 - or log onto the Microsoft Web site at [www.microsoft.com/magazine/extreme/](http://www.microsoft.com/magazine/extreme/). "Interest in Windows 98 is growing," said Steve Schiro, vice president of the end user customer unit at Microsoft. "We think there are some very compelling reasons for consumers to upgrade, and this is a great opportunity for us to show people how and why."

Attendees will see an in-depth, 45-minute demonstration of why Windows 98 works and plays better than Windows 95, its predecessor. Key areas of product improvements to be covered include new features and functionality for using the Internet, accessing entertainment features, and support for the latest hardware. Attendees will learn how applications on Windows 98 launch faster than on Windows 95, and how they can recover up to 28 percent of hard disk space without compression. Attendees will also learn how Windows 98 includes built-in support for the latest entertainment and hardware technologies such as DVD drives, the DirectX 5.0 API, MMX, and universal serial bus (USB). Also, this interactive event will include a question and answer session during which some attendees' questions about Windows 98 will be answered. "Microsoft Extreme" will blend live product demonstrations, interviews with Microsoft employees and an audience question and answer period. CD-ROM demonstration software, T-shirts (for the first 400 people at each of the 38 theatres), and popcorn and soda will be distributed free to all attendees.

TOSHIBA

FRIEND

#### Toshiba - Professional Power at Consumer Prices

Toshiba has released the Toshiba Satellite 300CDT and 310CDS notebook computers. These are full-featured notebooks which offering unprecedented value-for-money, the Toshiba Satellite 300CDT and 310CDS notebooks are priced at \$5175 inc. tax and \$4370 inc. tax respectively. According to Mr. Bruce Lakin, General Manager, Information Systems Division, Toshiba (Australia) Pty. Ltd., the new Toshiba Satellite notebooks offer a far broader market the convenience and independence of mobile computers. "Toshiba has listened to its customers' demands to deliver the major advantages of notebook computing to a far wider range of users. This has been achieved by offering full

featured Toshiba Satellite notebooks at a competitive price.

"What the 300CDT means is that a greater number of technology users can be liberated from being bound to their desktop to complete the functions that have made computers so important to them."

While giving the new Toshiba Satellite notebooks a low price tag, Toshiba has ensured that the functionality, the reliability and richness of features which are consistent with the Toshiba notebook families are carried through to these new systems. Built around a 166MHz or 200MHz Intel Pentium processor with MMX, Satellite 300CDT features 16MB of RAM and a large 12.1 inch display. For quick and easy access, the 2.1GB hard drive, CD-ROM and floppy disk drive are all in one unit.

According to Mr. Lakin, the Toshiba Satellite 300CDT offers many more small business, home office and corporate computer users a chance to reap the benefits of remote computers with the latest of technological features and software.

"Before the Toshiba Satellite 300CDT and 310CDS came onto the market, notebook computers were priced out of reach for many people. A lot of thought has been put into ensuring this product came to market at an affordable price with all the latest and most relevant features," he said. "We are totally confident that customers will be pleasantly surprised at the quality of features they receive for such a low price."

#### Stand Out on the Web with Adobe PageMill 3.0

For small businesses, being on the Web provides an opportunity to grow revenues by directly reaching customers at lower costs. Building a compelling Web presence, however, can take time and resources that quickly diminish the return on their Web investment. AdobePageMill 3.0 software, is claimed as the solution for small businesses needing to build a unique and professional-quality Web presence without sacrificing day-to-day business resources. A free preview version of Adobe PageMill 3.0 is available

now for download from Adobe's Web site at <http://www.adobe.com>



### NaturallySpeaking with Corel WordPerfect

Dragon Systems, Inc. of Newton, Mass. and Corel Corporation have announced a strategic multi-product, multi-national, multi-year alliance. This alliance is designed to bring speech recognition capabilities to millions of Corel WordPerfect word processing users worldwide.

Under the terms of the agreement, a copy of Dragon NaturallySpeaking, the world's first large vocabulary continuous speech recognition product for general purpose use, will be integrated into Corel WordPerfect. It will also be incorporated into the Corel WordPerfect product line, including the English versions of the Corel WordPerfect Suite 8 and Corel WordPerfect Suite 8 Legal Edition due to ship this spring. International language versions are scheduled to be available later this year. It is believed to be one of the largest product contracts in the history of personal computer continuous speech recognition.

### Corel PHOTO-PAINT 8 Standalone

Corel Corporation has released Corel PHOTO-PAINT 8. Currently available in the popular CorelDRAW 8 graphics suite, Corel PHOTO-PAINT 8 delivers powerful image correction, photo retouching and painting. The Corel PHOTO-PAINT 8 standalone is available for a suggested retail price of \$629 AU for the full version and \$199 AU for the competitive upgrade. Prices subject to change without notice. Dealers may sell for less. "Corel PHOTO-PAINT 8 is one of the strongest photo-editing applications on the market today" said Dr. Michael Cowpland, president and chief executive officer of Corel Corporation. "With the addition of customisation tools and enhanced Internet support, Corel PHOTO-PAINT 8 may be the only photo-editing program a professional artist needs.

"Corel PHOTO-PAINT 8 jumpstarts the imagination by providing tools to bridge the gap between the artist's imagination and the

screen," said David Huss, Corel PHOTO-PAINT 8 beta tester, author of Corel PHOTO-PAINT 8: The Official Guide and a Grand Prize winner in Corel's 1997 World Design Contest. "With powerful new features such as Low-res image editing, on-screen preview for filters, Transparency Adjustment tools and object Clip Masks, everything on the screen now happens in 'real time'. Everything I could do in version 7 I can now do faster and easier in version 8 giving me more time to invest in the creative process."

System Requirements. Corel PHOTO-PAINT 8 requires Windows 95 or Windows NT 4.0, a Pentium 90 processor (Pentium 133 recommended), 16 MB RAM (32 MB RAM strongly recommended), 80 MB of hard drive space to install Corel PHOTO-PAINT 8 Help, filters and fonts, a CD-ROM drive, SVGA monitor and a mouse or tablet.

### Now Claris = FileMaker Inc

Apple Computer, Inc. has announced that its Claris subsidiary will restructure to focus exclusively on its award-winning FileMaker



### What's New

Pro line of database software. This restructuring will include changing the company name to FileMaker, Inc., divesting of products other than the FileMaker Pro line, and laying-off approximately 300 Claris employees.

FileMaker Pro is the most popular database software for the Macintosh and is the second most popular database software for Windows, with about 3 million units sold and 2,500 developers. Sales of the FileMaker Pro line were \$73 million in FY97, and \$24 million in the most recent quarter which ended Dec. 26, 1997. Sales of the Windows versions more than tripled during the past two years (from \$9 million to \$28 million) and grew 77 percent during the most recent quarter over the same quarter a year ago.

"As FileMaker, Inc. we can now focus all our energies on our very successful File-Maker business," said Dominique Goupil, President of Claris. "We are totally committed to growing this business dramatically during the coming year."

Beginning February 1, Apple will distribute all Apple-branded software, including Mac OS 8 in the U.S. In addition, Apple will develop, distribute and support the award-winning ClarisWorks integrated productivity software. ClarisWorks is the leading productivity

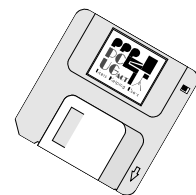
software in the K-12 education market, a key market focus for Apple. The Claris Emailer, ClarisDraw, ClarisImpact and Claris Organizer product lines will move to Apple. Apple's home page on the World Wide Web: <http://www.apple.com.au/>

### Claris Retires Originals

Claris Corporation has also announced the retirement of four software titles, including some of the original Macintosh software titles. Claris ceased developing and selling MacPaint, MacWrite II, MacWrite Pro and MacProject Pro as of January 1, 1998. Claris will continue to provide technical support to registered customers of these products through December 31, 1998.

Sales of these products dwindled to very small levels in most cases because ClarisWorks evolved to be a superior solution, Claris said. Registered customers of the following products will be able to purchase ClarisWorks Office 5.0 for the special upgrade price of \$69 (plus shipping and handling) in Australia and New Zealand - MacPaint, MacWrite II and MacWrite Pro. ClarisWorks Office 5.0 is the latest version of the award-winning productivity software for Windows 95, Windows NT and Mac OS, which has gained more than 15 million users worldwide firming its position as an industry-leading product. ClarisWorks Office 5.0 provides ease-of-use with seamlessly integrated word processing, spreadsheet, database, graphics and presentation capabilities. The new version features a customisable button bar, Internet enabling and linking, and enhanced HTML translation for immediate productivity on the desktop or on the World Wide Web. ClarisWorks Office 5.0 also opens and converts MacWrite Pro and MacPaint files.

For MacProject Pro customers who wish to transition to other solutions, Claris has identified other project-management vendors. This list and contact information is available on the Claris website at [www.claris.com.au](http://www.claris.com.au)



# The INTERNET Project

## Applicant Details (mandatory)

First Name \_\_\_\_\_

Last Name \_\_\_\_\_

Principal Organisation

AUUG  PCUG

Membership Number \_\_\_\_\_

I, the applicant, declare that I have read the terms of this application, and affirm that the details that I have provided are correct.

Signed: \_\_\_\_\_

## Existing Accounts

Change from LIMITED to FULL ACCESS

Renewal for FULL ACCESS - 12 months

Current Login Name \_\_\_\_\_

## New Accounts

NEW Application for FULL ACCESS

NEW Application for LIMITED ACCESS

Login name request, in order of preference (optional)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Your login name must be 2 to 8 characters long. It may contain only letters and numbers, and **MUST be clearly based on your real name**

## Payment (Full Access only)

Please make cheques payable to:

**PC Users Group (ACT) Inc.**

Payment: 12 months: **\$120.00**

6 months: **\$65.00**

3 months: **\$35.00**

Method of payment:  Cash  Cheque

Visa  Bankcard  Mastercard

Card Number: \_\_\_\_\_

Expiry Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Name on Card: \_\_\_\_\_

Signature: \_\_\_\_\_

## PCUG Office Use Only

Processed by Accounts: \_\_\_\_/\_\_\_\_/\_\_\_\_

Signature: \_\_\_\_\_

## Important Notes - please read

1. Access to The Internet Project is available only to members of PCUG or AUUG and is governed by the Internet Project Acceptable Use Policy, copies of which can be obtained at the PCUG Centre, or downloaded from the PCUG BBS or from The Internet Project.
2. The Internet Project is managed and administered by volunteers. The Internet Project aims to offer affordable access to as many members as possible, allowing members to experience all the resources of the Internet. *No minimum level of access or service is offered or guaranteed.*
3. There is a limit of one Internet account per non-corporate membership. Corporate members may sponsor up to three individuals, who are then *personally* responsible for the operation of their accounts. Please complete one application for each person.
4. Part of your email address will be determined by the principal organisation. If your membership of that organisation expires, so too does your membership of The Internet Project. In this event, no refunds for unused allocation will be made.
5. The Internet Project reserves the right to alter prices and services offered at any time. Fees paid for Internet access are non-refundable and non-transferable.

## Access Categories

6. Note: Hours debited do not necessarily equate to real hours on-line; time allocation will be debited in a *non-linear* fashion depending on the amount of time spent on-line in any given day. The debit rate is set from time to time by the Internet Project Management Committee. For more details, refer to <http://www.tip.net.au/tip/charging>
7. Limited Access
  - a) Limited Access provides terminal-based email and news only.
  - b) Limited Access is free on application.
  - c) In any calendar year, calculated from the 1<sup>st</sup> February, Limited Access provides up to 100 'hours' usage.
8. Full Access
  - a) Full Access provides PPP or SLIP access and includes email, news, WWW, etc.
  - b) Advance Access is not free. Current rates are shown at left with up to 25 'hours' per month usage over the period.
  - c) When your Full Access subscription expires OR you use up your hours of access (whichever is earlier), you will be required to purchase another subscription.
  - d) Full Access users also receive a Limited Access allocation - see above.
9. All users joining The Internet Project receive a one-off, free five hour allocation of Full Access.

## Collecting Your Login Details

10. For existing members, please allow up to two weeks for your application to be processed.
11. Login details can be collected - *in person by the applicant* - from the PC Users Group Centre. We recommend that you phone the Centre first to check that the details are waiting for you.
12. You (and your parent/guardian if you are under 18 years of age) will be required to sign an Acceptable Use Policy Declaration when you pick up your login details. Proof of identification will be required at that time.



# Member Services

*These special offers and services are only available to PCUG members.  
Please bring your membership card with you when collecting orders.*

## Disks & Tapes

We offer high quality disks and tape cartridges in various formats at very reasonable prices.

**Disks & tapes** are available from the PCUG Centre Monday, Wednesday & Friday 10am to 2pm or between 9am and 5pm on weekends.

## BBS Access

New members wishing to access the PC Users Group (ACT) InterActive Bulletin Board Service (BBS) should dial (02) 6253 4933 and create an account on the system. Once the main menu is presented, select the 'Goodbye' option followed by the 'Yes' option to leave a message to the Sysop.

In this message state your membership number (from your card or magazine address label) and request an access upgrade. This will usually occur within a few days.

## Shareware

Members have access to a huge selection of 'shareware' software. The PCUG subscribes to a CD-ROM which provides over 250 Mb of

new and updated software titles on each monthly CD.

One complete section of the permanent library is also contained on each CD-ROM. In addition, there are many programs on the PCUG BBS which members have uploaded or which come from other sources.

This software is provided as 'shareware'. If you continue to use it, you must register the software with the author. The Group does not 'sell' the software - it charges a fee to cover the cost of obtaining the software, maintaining the library and copying the software to the member.

Computers are available at the Centre which are connected to the BBS enabling members to download software.

## Hardware & Video Library

The hardware and video library is located at the PC Users Group Centre. Items may be collected and returned on Saturdays and Sundays between 9am and 5pm (loans are for

>Cause as sure as I'm a poet, the sucker's gonna hang!

>

one week). Please bring your membership card with you.

The library provides access to equipment which members would not normally have readily available. Most items have instructions manuals and software where appropriate. Modems do not include software; check the Shareware Library for suitable packages. Items may be borrowed for one week. There is no charge, but you must collect and return the items yourself.

Equipment available includes:

- modems (33.6k and 14.4k)
- zip drives.

Videos include:

- Developing Applications with Microsoft Office
- Using Windows 95

## Stuffed Again

We would like to thank the following members and friends for assisting with the mailing out of our Journal.

**Eddie de Bear Jnr**  
**Raymond de Bear**  
**Kama-jay Myles**  
**Sharon de Bear**  
**Graham Dieter**  
**John Ellis**  
**Tony Fitzpatrick**  
**John Hemperstall**  
**Geoff Lau**  
**Don Nicol**  
**Rod Smith**  
**Carol Syms**  
**Charlie Syms**  
**Graeme Taylor**  
**Peter Watney**  
**Keith Kloosterman**  
**Marion van Wely**

**Sylvia and Lew Yardley**  
**John Loggie**  
**Neville Maddern**  
**Rufus Garcia**  
**Lou Wallington**  
**Allan Mikkelsen**  
**Owen Cook**  
**Anne Greiner**

We are *always* looking for volunteers to assist us with the 'stuffing' of our journal. We start around 5.00pm (latecomers are welcome) *usually* on the 2nd last Monday of every month and are generally finished by 8.00pm. Refreshments are provided. If you would like to help, please ring Petra Dwyer at the PCUG Centre on 6253 4911.

### Next Stuffing

5.00pm **Monday 20 April 1998**  
at Northpoint Plaza, Belconnen.  
(see map page 3)

**We now have a  
Giveaway Table at the  
PCUG Centre.**

**If you have any SMALL  
items of computer related  
equipment (software or  
hardware) that you no  
longer need or use and  
don't want to throw  
away, put them on the  
table and someone else  
may find a use for them.**

**Just bring them to the  
Centre when it's open and  
we'll pass them on  
for you.**

# Special Interest Groups



## The Internet SIG

This is a get together of those members of the PCUG who love to explore the Internet for interesting sites, new Internet tools and novel applications. It holds an informal meeting once a month on the first Thursday (January excepted), at 7.30pm. The meeting has no set agenda but free flowing chat on various Internet related topics and events. On occasion, we had presentations of interesting software. Among topics that are discussed from time to time are the upgrade of TIP, cable and wireless access to the Internet and the regulation of the Internet. The web page for the SIG is at: <http://www.pcug.org.au/~amikkels/intsig.html>



## Bytes

The Bytes SIG is designed for those who like to talk about computing over a meal. It meets from 6 pm at the Asian Bistro, Australian National University Union, on the PCUG meeting nights. There are no Bytes SIG meetings in November, December, or January. Contact person: Andrew Freeman Phone: 6258 7411 Email: [afreeman@pcug.org.au](mailto:afreeman@pcug.org.au) or WWW at <http://www.pcug.org.au/~afreeman/cvsig.html>

## AutoCAD

Geoffrey May 6295 5942 Monday-Fri 4-5pm. Please call for details.

## C/C++

Peter Corcoran . [peterc@pcug.org.au](mailto:peterc@pcug.org.au) 2nd Tuesday 7.30pm PCUG Centre

## GUI Developers

Peter Harris 6287 1484  
[pharris@pcug.org.au](mailto:pharris@pcug.org.au) Please call for details

## The Investment SIG

The group meets at the PCUG Centre at 7.30pm on the fourth Thursday of every month except for December to discuss investment affairs, especially the stock market and share ideas and information. Matters covered may be someone's hot stock, or a tax problem or an interesting Web site, and sometimes a software demo. We are looking for volunteers to present brief reviews of a favourite stock. Contact Mick Preskett ph 6252 5036.



## The OS/2 SIG

An enthusiastic forum for those operating or interested in OS/2 Warp. Meetings include wide ranging discussion and interesting hands on demonstrations. Meetings are held on the third Thursday (except January) at 7.00pm for 7.30pm at the IBM Building 8 Brisbane Ave, Barton.

Contact David Thrum Phone 6201 8806 (bh). Full details about the OS/2 SIG can be obtained from <http://www.pcug.org.au/~aacton/os2/welcome.htm>.



## The Delphi SIG

A lively forum for software developers who are working with or interested in Delphi. Our meetings include wide ranging discussion and interesting hands-on demonstrations. Come and see why Delphi is RAD! Some of our recent meetings have discussed Delphi components, best shareware tools, database applications, and HTML tools. Meeting 3rd Tuesday of each month 7.30pm at PCUG Centre. Convenor Al Kabaila email [akabaila@pcug.org.au](mailto:akabaila@pcug.org.au). You are welcome to also subscribe to the PCUG Delphi mailing list by sending message 'subscribe act-delphi-1@pcug.org.au [your email address]' to [Majordomo@auug.org.au](mailto:Majordomo@auug.org.au)

## Linux User Group

Stephen Rothwell 6291 6550 (ah) Stephen Rothwell@canb.auug.org.au 4th Thursday 7.30pm Room N101 Computer Science Dept ANU.

## Networks

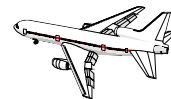
Garry Thomson 6241 2399  
[gthomson@pcug.org.au](mailto:gthomson@pcug.org.au) Thursday after main meeting Please call for venue.

## Computers and Vegetarianism

This SIG is designed for those who have an interest in both computers and vegetarianism. It generally meets with the Bytes SIG. No meetings are held in November, December, or January. Contact person: Andrew Freeman Phone: 6258 7411 Email [freeman@pcug.org.au](mailto:freeman@pcug.org.au) or WWW at <http://www.pcug.org.au/~afreeman/cvsig.html>



The Coffee and Chat Group meet at the PCUG Centre in Belconnen on alternate Tuesdays from 10.30am to 11.30am with another 30 minutes to 12.00 for those who want to stay. The dates of these meetings are shown in the Calendar of Events.



## Flight Simulator

Meets 1.30 - 3.30 on Tuesday afternoons following Coffee and Chat at the PCUG Centre. Enquiries welcome. Roger Lowery (02) 6258 1583  
[lowery@pcug.org.au](mailto:lowery@pcug.org.au)

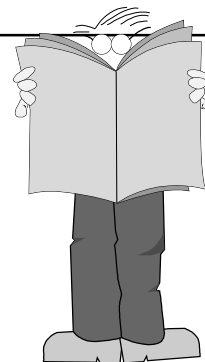
## Internet Daytime Demo and Discussion SIG

Meets every second Monday at the PCUG Centre from 10.00am to noon. We meet to discuss internet issues, software, sites (and anything else of relevance), and demonstrate, on Centre equipment, selected software and techniques. The meeting starts with informal discussion and coffee, followed by a more in-depth look at a particular topic of interest. There is also time for discussion (and hopefully solving) of members problems with the internet. A home page for the SIG is at <http://www.pcug.org.au/~amikkels/intddd.html> Enquiries or suggestions for topics are welcome at [amikkels@pcug.org.au](mailto:amikkels@pcug.org.au).

Please email any changes in contacts, venue or information about SIG activities by the first Friday in the month of publication to [pcug.editor@pcug.org.au](mailto:pcug.editor@pcug.org.au).

# Training News

by Peter Elliott



**Expression of Interests:** There have been numerous requests/enquires about running particular courses such as a publisher or desktop publishing at the Centre. To arrange these courses I would need at least some indication from members by way of an expression of interest in that particular course, before I would be able to organise one. Therefore, could I ask all members that are interested in one or more of the following courses to either e-mail me at [pelliott@pcug.org.au](mailto:pelliott@pcug.org.au) or leave their preferences with Petra at the Centre;

1. **Microsoft Publisher course:** Design your own Xmas cards, letter or banners and more, using this simple but effective publishing software.
2. **Desktop Publishing, e.g. basic Pagemaker 6.0, 6.5**
3. **Basic intro to computers:** designed for members with little or no exposure to computers, and find the whole concept daunting. These courses would cover very basic computing, and would be suitable for those who have had minimal or no exposure to computers, either at work or at home.
4. **Any course** that you are interested in? Tell us about it.

The program for 1998 has been adjusted to meet the demand for particular courses especially Windows95 and Internet courses.

PCUG Training is able to, and willing, to conduct a variety of courses in other areas of computing.

Our training courses are very popular. Unfortunately, some people book and then do not turn up for their course. Someone on the waiting list for the course could have filled the spot left vacant. If you have booked for a course and are unable to attend please let Petra know as early as possible so that another member can attend.

## Courses

Please note: The Centre will be closed on the weekend of 11-12 April (Easter). Subsequently there will no training that weekend.

The **Full Access intro to the Internet** course is an introduction to the programs used to access the World Wide Web, send and receive e-mail, participate in news groups, and transfer files. If you would like to attend the course, you will need Full Access (Advanced Access) to the Internet.

**Microsoft Excel 5 - Intermediate:** In early May an intermediate course on Microsoft's Excel 7 will be held at the Centre. This powerful spreadsheet program is ideal for those members who would like to learn some of the more advanced features of using spreadsheets. Excel 5 forms part of the Microsoft Office suite and offers the ability to

create charts, databases, macro's and linking and embedding (OLE) Excel to other Window's applications. Note: Excel 7 is fully compatible with Excel 5.



## Contacts

**COURSE BOOKINGS: Petra Dwyer, at the PCUG Centre on 6253 4911**

Training coordinator and course information (**not** bookings): Peter Elliott  
6258 1995 (h) 7.00pm to 9.00pm

Microsoft Product courses (**not** bookings): Henk Brummelaar 6258 9332 (h) 7.00pm to 9.00pm

**All courses are held at the PCUG Centre, Northpoint Plaza, Belconnen - maximum 8 people.**

**Courses cost \$35 unless otherwise indicated. Full day courses run from 9.30am to approximately 3.00pm. AM Courses commence at 9.30am. PM courses commence at 1.30pm.**

	Date	Day	Course	Length
April	4	Sat	<i>Sixteen Bits</i> Layout Day/Internet Clinic	Clinic:Morning
	5	Sun	Intro to the Internet - Full access	Full Day
	11	Sat	Closed	Full Day
	12	Sun	Closed	Full Day
	18	Sat	Intro to Databases - Intro	Full Day
	19	Sun	C Programming - Intro	Full Day
	25	Sat	Intro to the Internet - Full access	Full Day
	26	Sun	Intro to Win95	Full Day
May	2	Sat	<i>Sixteen Bits</i> Layout Day/Internet Clinic	Clinic:Morning
	3	Sun	Excel 7 - Intermediate	Full Day
	9	Sat	Intro to Win95	Full Day
	10	Sun	Intro to the Internet - Full access	Full Day
	16	Sat	Databases - Intermediate	Full Day
	17	Sun	C Programming - Intermediate	Full Day
	23	Sat	Word 7 - Intro	Full Day
	24	Sun	Visual Basic Programming - Intro	Full Day
	30	Sat	Intro to the Internet - Full access	Full Day
	31	Sun	Intro to Win95	Full Day

# Vendor Discount Scheme

The following local vendors offer discounts to PCUG members

- Present your PCUG membership card when making a purchase
- Benefits may not apply to some sale items
- The PCUG does not necessarily recommend or endorse the products being offered

If you offer a discount to PCUG members and are not in this list, please contact our advertising manager listed on page 2.

BUSINESS	SERVICES/PRODUCTS	PHONE/FAX/EMAIL	ADDRESS	DISCOUNT
<b>Accountants</b>				
Peng Lee BA, BEc(ANU), FCA Chartered accountant Registered tax agent Holder of Certificate of Public Practice	Accounting and taxation services <i>A fee schedule published 1 year in advance will be forwarded upon request</i>	Ph: 6258 0156 Fax: 6258 0157 Mobile: 0419 625 801 Email: leep@pcug.org.au	6 McGuinness Place McKellar ACT 2617	10% discount off the published fee schedule to PCUG members
Lesley Piko Certified practising accountant, registered tax agent	Personal and business taxation services General accounting services	Ph: 6288 8888	Suite 1 17 Trenerry St Weston ACT	15% discount off quoted fee
<b>Books</b>				
Collins Booksellers	A wide selection of computer titles for the novice and also advanced computer user	Ph: 6251 4813 Fax: 6251 3926	Belconnen Mall	10% discount off computer book purchases only
Daltons Books	No. 1 for computer and business books	Ph: 6249 1844 Fax: 6247 5753	54 Marcus Clarke St Canberra City	10% off RRP of computer books
<b>Computer related</b>				
ACT Valley Computer Repairs	Repairs, upgrades, new systems, software installation. Low rates Open 7 days	Ph: 6294 2592 Mobile: 019 323 435		10% discount on upgrades and repairs
Amalgamated Business Machines		Ph: 6280 4887	65 Kembla St Fyshwick	5% discount on repairs
Capital Simulations		Fax/message: 6258 0110	PO Box 329 Belconnen ACT 2616	Free postage and handling (normally \$4) and 2 free modem opponents 'wanted' notices (normally \$10)
Clarion Database Systems	Computer consulting Business applications, development Software sales	Mobile: 041 108 7754		10% off RRP on Microsoft and other vendor products and consulting services
The Cartridge Factory		Ph.: 6295 5935	Canberra Business Centre 49 Wentworth Ave Kingston	10% discount on remanufactured laser toner cartridges 10% discount on inkjet refill kits No discount available on new ink or toner cartridges

BUSINESS	SERVICES/PRODUCTS	PHONE/FAX/EMAIL	ADDRESS	DISCOUNT
<b>Computer related (cont)</b>				
Bettowind & Taltech Solutions	Prompt, guaranteed, fixed price repairs to monitors and terminals	Ph: 6239 1043	Unit 5, Centrecourt 1 Pirie St, Fyshwick	5% discount
Hi-Micro Computers		Ph: 6280 7520 Fax: 6280 7540	6/18 Whyalla St Fyshwick	5% discount on accessories and upgrade installation
L & S Associates		Ph: 6257 7555	69 Paterson St Ainslie	Special price on any Microsoft product: dealer price plus 5%
NCH-Swift Sound	Email to wav Professional voice overs, music and SFX for multimedia, IVR, games, software	Ph: 6281 6124		25% discount to non-corporate members
PE Computers & Software Solutions	New systems Upgrades Hardware and software installation, setup and home PC support Software tuition including Win95 and Internet software	Ph/fax: 6258 9806 Mobile: 015 484 711 Email: pelliot@pcug.org.au		5% discount on all new systems and upgrades 20% discount on installation, tuition and home PC support
Rob's Computer Help Desk	Telephone and on-site help for <i>all</i> your computer and support needs	Ph: 6292 3211 (24 hours/7 days)		5% discount on consulting services
The Software Shop		Ph: 6285 4622	42 Townsend St Phillip	5% discount off our already low prices
Sproatley Computer Services Pty Ltd	Upgrades New and used PCs MYOB specialists Software installation 24 hour help desk	Mobile: 0412 231 224 Fax: 6231 3605		10% discount on all services
Michael Vetz/Mobile PC Support	Home PC support available for all PC problems including upgrades and tuition at your place – all hours	Ph: 6251 2184 Fax/Message: 62512184 Mvetz@pcug.org.au	P.O. Box 485 Belconnen ACT 2617	Discount of \$25 per hour – maximum charge \$50
WinBBS Australia (Doohan OK! BBS (ACT))	Windows-based BBS featuring the latest Web browsers, anti-virus software, games and demos, and electronic versions of PCUG in Adobe Acrobat format plus much more! Operating 24 hours per day, 7 days a week.	Ph: 6242 8696 or 6265 6752 Fax: 6234 0400 Mobile: 0411 508 169 Email: webmaster@dynamite.com.au Dial-up number: 6241 1323	'Belongapedi' 2/13 Murrung Cres Ngunnawal ACT 2913 Canberra, Australia	Free life membership to PCUG members when membership number quoted to the SysOp (usually \$10-\$20). Call for details.
World Wide Web Consultants Canberra (W3C2)	Your key to the Internet. Training, consulting and web site services.	Ph: 02 6292 3211 Fax: 02 6292 3914 Mobile: 019 440 608 Email: fcmoore@w3c2.com.au	PO Box 5145 Chisholm 2905	5% to a maximum of \$100 on web site services.
<b>Other</b>				
ANU Union Asian Bistro			Upstairs, Union Building, Union Court, ANU (next to main meeting venue)	Union member discount on PCUG main meeting nights <b>ONLY</b>
Green-Grass Mower Service	Lawn mower service, spares and repairs	Ph: 6291 1458	8 Hutchinson St Monash	10% discount
Aspect Computing Education Services		Ph: 6247 7608	86 Northbourne Ave Braddon	10% discount
Australian Management Control		Ph: 6285 4888	Suite 4, 32-36 Colbee Court, Phillip	5% discount on recordkeeping and payroll courses
Net Maths Tutor	Email-based maths tutoring service provided by experienced teacher (high school to uni level)	Ph: 6258 4791 Email: plavers@canberra.teknet.net.au www.teknet.net.au/~plavers/		10% discount

# Members' Ads

## FOR SALE

**PC. PENTIUM 100,**  
 250Mb HDD,  
 3.5" FDD,  
 16Mb RAM,  
 13" Monitor,  
 18xCDROM,  
 28.8 modem,  
 HP Inkjet printer,  
 KB and mouse,  
 Soundblaster, Speakers,  
 Windows,  
 IBM DOS6.3.,  
 Fax, and Internet ready,  
 \$975.

**Colin Whittaker**  
 9 Parsons St  
 TORRENS



## WANTED

Wanted:  
**Secondhand computer and printer**

Needs:  
 Word Processing, Spread sheet, some games, Internet, (expected use 1 Hour per week), speed not important.

**Contact Jim Carroll**  
 6258 1262 (home)

## PC Users Group Membership Application / Renewal

### Annual Fees Applicable ( one)

- General<sup>1</sup> \$ 50
- Concessional<sup>2</sup> \$ 25
- Corporate<sup>3</sup> \$130
- Additional Corporate<sup>4</sup> \$ 50
- International (Air Mail) \$130

#### Notes

- 1 General membership covers all members of a household except for BBS and Internet access. Two month waiting period applies to Internet access.
- 2 Concessions apply to full time students and pensioners.
- 3 Corporate Membership covers up to three nominees.
- 4 Additional Corporate nominees may be added at \$50 each.

### I am paying by ( one)

- Cash (if paying by person)     Cheque to *PC Users Group (ACT) Inc*
- Credit card — Bankcard, Mastercard or Visa

Title	Given Name	Surname
Organisation (if applicable)		PCUG Membership Number (if applicable)
Postal Address		
Phone (h)	Phone (w)	Concession Type (if applicable)
Credit Card Type / Number	Expiry Date	Signature

### I would like to ( one or more)

- Become a new member for \_\_\_\_ year(s)
- Renew for \_\_\_\_ year(s)
- Change my address details
- Change Corporate nominees
- Take my address off advertising list
- Access the Bulletin Board (BBS)

### Reasons for Joining ( (one or more)

- Sixteen Bits Magazine     Training Courses
- The Internet Project     Advice and help

Other \_\_\_\_\_

**TOTAL PAYMENT DUE** \$ \_\_\_\_\_

Please Post your application with payment to:  
**PC Users Group (ACT) Inc**  
**PO Box 42 Belconnen ACT 2616**

Additional Corporate Membership Nominees

Title	Given Name	Surname
Position (if applicable)		Phone (h)    Phone (w)
Title    Given Name    Surname		
Position (if applicable)		Phone (h)    Phone (w)























# The Help Directory

The people in this directory are *volunteers* so please observe the times given. The Help Directory is designed to help individual users and should not be used as a substitute for corporate support calls to vendors! This service is provided for *members only*. Please quote your membership number to the helper. For those helpers with an asterisk \*, messages may be left on the BBS in either the General message area or as a Netmail message on 3:620/243. Send updates to [pcug.editor@pcug.org.au](mailto:pcug.editor@pcug.org.au) or via post to the PCUG Centre.

Subject	Name / Email	Phone	Days	Times
Access for Windows	Graham Fry	6288 3138	All days	7.30pm - 8.30pm
Assembly Language	Thomas McCoy	6294 2226	Mon - Fri	8.00pm - 10.00pm
Audio	Peter van Runt	6288 5556	Mon - Fri Weekends	All day 12noon - 8pm
AutoCad	Geoffrey May *	6295 5942	Mon - Fri	4.00pm - 5.00pm
AutoCAD Rel 12, 13 and LT	Neil Moffat	6292 7108	All days	Noon - 10.00pm
BASIC + Machine Language	George McLintock	6295 6590	All days	8.30pm -10.00pm
Bluewave	Jorge Garcia	6282 2681	All Days	7.00pm - 9.00pm
Batch Files, TSRs, Utilities	Bill Ghysen	6287 1234	Mon - Fri	8.00pm - 10.00pm
Braille transcription (Duxbury and Megadots)	Carolyn Simpson <a href="mailto:ryn@effect.net.au">ryn@effect.net.au</a>	6230 4795	All days	Anytime
Bulletin Board Service	Michael Phillips *	6253 4966	All days	7.30pm - 8.30pm
C/C++	Nhan Tran <a href="mailto:ntran@pcug.org.au">ntran@pcug.org.au</a>	6254 5293	All except w'end &Tue	7.00pm - 9.00pm
Chinese Star for Windows	Peng Lee	6258 0156	All days	1.00pm - 9.00pm
Eudora	Nhan Tran <a href="mailto:ntran@pcug.org.au">ntran@pcug.org.au</a>	6254 5293	All except w'end & Tue	7.00pm - 9.00pm
Excel	Graheme Fry	6288 3138	All days	7.30pm - 8.30pm
Flight Simulation	Roger Lowery <a href="mailto:lowery@pcug.org.au">lowery@pcug.org.au</a>	6258 1583	All days	Anytime
Free Agent / Agent Newsreading	Allan Mikkelsen	6278 3164	All days	Noon - 9.00pm
Front Page	Peter Tilbrook <a href="mailto:webmaster@dynamite.com.au">webmaster@dynamite.com.au</a>	6242 4000	All days	Anytime
General Help	Brian Gosling	6259 1116	All days	7.30pm - 8.30pm
GEOS/GeoWorks	Phil Jones	6288 5288	All days	6.00pm - 10.00pm
Hardware	Anthony Glenn	6288 8332	All days	Anytime
HDK	Lis Shelley <a href="mailto:lis@nullarbor.com.au">lis@nullarbor.com.au</a>			
HDK	Ivana Leonard	6231 4169	Mon - Thu	7.00pm - 9.00pm
Internet connection	Nhan Tran <a href="mailto:ntran@pcug.org.au">ntran@pcug.org.au</a>	6254 5293	All except w'end & Tue	7.00pm - 9.00pm
Internet Explorer (Microsoft)	Peter Tilbrook <a href="mailto:webmaster@dynamite.com.au">webmaster@dynamite.com.au</a>	6242 8696	All days	Anytime
Internet (Netscape, Eudora)	Carolyn Simpson <a href="mailto:ryn@effect.net.au">ryn@effect.net.au</a>	6230 4795	All days	Anytime
ISR CADDSMAN Modeller (Win)	Neil Moffat	6292 7108	All days	Noon - 10.00pm
Lotus Ami Pro 3 / Word Pro 96 ed	Peter Tilbrook <a href="mailto:webmaster@dynamite.com.au">webmaster@dynamite.com.au</a>	6242 4000	All days	Anytime
Microstation Cad	Andrew Novinc	6258 1907	All days	6.00pm - 10.00pm
Midi	Peter van Runt	6288 5556	Mon - Fri Weekends	All day 12noon - 8pm
Modem Communications	Michael Phillips *	6281 1980 or	All days	7.30pm - 8.30pm
Noteworthy Composer	Andrew Purdam <a href="mailto:apurdam@pcug.org.au">apurdam@pcug.org.au</a>	6230 2231	All days	Anytime
Online doc using Help Compiler (Win3)	John Carroll <a href="mailto:jcarroll@pcug.org.au">jcarroll@pcug.org.au</a>	6248 0781	All days	7.30pm - 10.00pm
OS/2	Andrew Acton <a href="mailto:aacton@pcug.org.au">aacton@pcug.org.au</a>	6293 1684	All days	9am-9pm
OS/2	Dave Thrum <a href="mailto:davet@ozemail.com.au">davet@ozemail.com.au</a>	6201 8806	Mon-Fri	8am-6pm
OS/2	Michael Lightfoot *	6258 8185	All days	7.30pm - 9.30pm
Scream Tracker 3 (3SM) / MOD Music	Chris Collins	6258 8276	Mon - Fri	7.30pm - 9.00pm
Small Business Computing	Nick Thomson	6241 3239	Mon - Thu	7.30pm - 9.30pm
SuperBase	Paul Blair	6288 3584	All days	7.30pm - 9.30pm
Telix	Michael Phillips *	6281 1980	All days	7.30pm - 8.30pm
SCO Unix & Xenix	Jeremy Bishop	6291 0478	All days	7.00pm - 9.00pm
Unix	Michael Lightfoot *	6258 8185	All days	7.30pm - 9.30pm
Unix/Linux/*BSD	Jonathon Ross	6288 1428	All days	6.00pm - 10.00pm
Turbo Pascal	Michael Phillips *	6281 1980	All days	7.30pm - 8.30pm
Visual Basic for Windows	Cedric Bear <a href="mailto:cbear@interact.net.au">cbear@interact.net.au</a>	6258 3169	All days	7.30pm - 8.30pm
WinBBS Australia	Peter Tilbrook <a href="mailto:webmaster@dynamite.com.au">webmaster@dynamite.com.au</a>	6242 4000	All days	Anytime
Windows 95	Graeme Challinor <a href="mailto:gchallin@pcug.org.au">gchallin@pcug.org.au</a>	6236 8166	All days	10.00am - 4.00pm
Windows 95 (basic help)	Carolyn Simpson <a href="mailto:ryn@effect.net.au">ryn@effect.net.au</a>	6230 4795	All days	Anytime
Word 6 & 7 (Mac or PC)	Carolyn Simpson <a href="mailto:ryn@effect.net.au">ryn@effect.net.au</a>	6230 4795	All days	Anytime
Word for Windows	Lis Shelley <a href="mailto:lis@nullarbor.com.au">lis@nullarbor.com.au</a>			
WordPerfect 5.1 DOS, 6.1 Win	Gayle Scott <a href="mailto:gayles@pcug.org.au">gayles@pcug.org.au</a>	6254 1579	All days	7.30pm - 9.30pm
WordPerfect for Windows	Peter Tilbrook <a href="mailto:webmaster@dynamite.com.au">webmaster@dynamite.com.au</a>	6242 4000	All days	Anytime
WordStar	Dave Hay	6258 7310	All days	7.00pm - 9.00pm

# April

*Monday Tuesday Wednesday Thursday Friday Saturday Sunday*

			<p>Networks SIG (Call 6241 2399 for venue)</p>  <p>1</p>	<p>Sixteen Bits Commercial ad deadline for May</p>  <p>2</p>	<p>Internet Clinic PCUG Centre 9.30– 1.00pm</p>  <p>Layout Day for Sixteen Bits 10.00am</p>  <p>3</p>	<p>TRAINING DAY PCUG Centre</p> <p>9.30am Internet: Full Access Intro</p>  <p>4</p>
<p>New Members' Night PCUG Centre 7.30pm</p>  <p>6</p>	<p>Flight Simulator PCUG Centre 1.30pm–3.30pm</p>  <p>Coffee and Chat PCUG Centre 9.30am– 12.00</p>  <p>7</p>			<b>CENTRE CLOSED</b>	<b>CENTRE CLOSED</b>	<b>CENTRE CLOSED</b>
<b>CENTRE CLOSED</b>	<p>C /C++ SIG PCUG Centre 7.30pm</p>  <p>13</p>	<p>Committee Meeting PCUG Centre 7.30pm</p>  <p>14</p>	<p>OS/2 SIG IBM Building 8 Brisbane Ave Barton 7.00 for 7.30pm</p> <p>OS/2WARP</p> <p>15</p>		<p>TRAINING DAY PCUG Centre</p> <p>9.30am Databases – Introduction</p>  <p>17</p>	<p>TRAINING DAY PCUG Centre</p> <p>9.30am C Programming – Introduction</p>  <p>18</p>
<p>16 Bits Stuffing and Mailing PCUG Centre 5.00pm</p>  <p>20</p>	<p>Coffee and Chat PCUG Centre 9.30am–12.00</p> <p>Flight Simulator PCUG Centre 1.30pm–3.30pm</p> <p>Delphi SIG PCUG Centre 7.30pm</p> <p>21</p>		<p>Linux Users Group Room N101 Computer Science Dept ANU 7.30pm</p>  <p>Investment SIG PCUG Centre 7.30pm</p> <p>22</p>	<p>Sixteen Bits Article deadline for June</p>  <p>23</p>	<p>TRAINING DAY PCUG Centre</p> <p>9.30am Internet: Full Access – Intro</p>  <p>24</p>	<p>TRAINING DAY PCUG Centre</p> <p>9.30am Intro to Win 95</p>  <p>25</p>
<p>Internet Daytime Demo &amp; Discussion SIG, PCUG Centre 10.00am–2.00pm</p> <p><b>Main Meeting</b> Manning Clark Theatre 1 Crisp Bldg. ANU 7.00 for 7.30</p> <p>Bytes SIG Asian Bistro ANU 6.00pm (before PCUG meeting)</p> <p>27</p>			<p>Networks SIG (Call 6241 2399 for venue)</p>  <p>28</p>	<p>Sixteen Bits Commercial ad deadline for June</p>  <p>1 May</p>	<p>Internet Clinic PCUG Centre 9.30– 1.00pm</p>  <p>Layout Day for Sixteen Bits 10.00am</p>  <p>2 May</p>	<p>TRAINING DAY PCUG Centre</p> <p>9.30am Excel - Interme- diate</p>  <p>3 May</p>