Australian Beginner's Guide to the
INTERNET
By MARK NEELY

All you need to get started TODAY!

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FIVE HOURS INTERNET ACCESS
PLUS HUGE SAVING ON HIGH-SPEED MODEM
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This is the book I wish I had when I first used the Internet. I can remember the day well. I was in the second year of my law degree studying in the university library when the Law Librarian came up to me and started raving about how the library had finally obtained access to the Internet.

I had heard vague references to “the Net” previously, but never really had much of an idea what it was about. In fact, I had only recently used my first computer, to word process lecture notes.

However, keen not to miss out on the excitement, I asked her to let me have a look at this wonderful system, which she said would let me connect to libraries in other countries to do research; and read electronic news from around the world!

She took me into an office in a far corner of the library, and sat me at a table which had a keyboard and a monochrome screen (it was, I subsequently discovered, connected to the University’s VAX network). She whizzed her fingers across the keyboard, telling me she was “logging in”. The screen filled with some non-descript messages, then cleared leaving only a “$” prompt and a flashing cursor.

“There,” she said, “go and explore.” She then turned and left. I had no idea what was going on, what it was really all about, or where to start!

And this is precisely the reaction many people have when they first get access to the Internet, or consider whether they should connect. For that very reason, many people elect not to bother.

Unfortunately, they miss out on one of the most exciting developments in electronic communications invented by Man. And it can only get better.

**What’s out there on the Internet?**

So what exciting new world of cyberspace awaits you and your family when you log on to the Internet?

There are thousands of different Australian and international library, university and research computers which make their vast information databases available to the Internet masses. You can connect to the CSIRO’s computer to find the results of its soil-erosion studies, or connect to NASA’s computers to find details of the latest Shuttle launch or view pictures of Mars. Fishermen, pilots and picnic-planners around Australia can delight in con-
Connecting to the Bureau of Meteorology's computers to get the latest tide charts or view up-to-the-minute weather maps. More recently, a number of mainstream newspapers such as Britain’s Daily Telegraph and newspapers such as CNN have made their libraries and news reports available to the online masses.

Computer hardware and software companies now understand the unique marketing opportunities available via the Internet. All the big names, including Hewlett-Packard, IBM, Apple, Novell, Adobe, Microsoft and Sun are already on the Internet, offering technical support and making product information and software available to Internet users.

Increasingly, software houses are making their commercial games and programs available in demonstration form, finally allowing users to “try before they buy”.

But there’s much, much more waiting in cyberspace for you. Here’s a sampling:

The Internet already connects more than 30 million people around the globe, and it is attracting thousands of new users a day. It connects a diverse range of cultures and countries, who use the Internet to swap experiences, debate points of view and learn about other places (places they might never see or might never have heard about, but for the Internet). The Internet provides the perfect forum for learning about other cultures.

Because information travels the Internet in electronic form, and because there are no artificial barriers to entry, everyone can instantly become a publisher. It is just a matter of creating your document or graphics in your favourite word processor or desktop publishing program, and uploading it to other computers on the Internet. Suddenly, you have a new forum for discussing that favourite hobby that no-one in your neighbourhood is interested in, or a medium in which your poetry skills are finally recognised.

The World Wide Web has astounded many Internet veterans with the speed with which it has grown. The Web, as it is affectionately known, offers users a truly graphical interface to the Internet, and incorporates pictures, text, audio and video. It has opened

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Cricket on the World Wide Web

- The Mighty Blues of NSW page
- Today In Cricket
- The Bill Lawry Page
- The David Boon Page
- The Dennis Lillee (no, not that one!) Page
- Leg-Spinners in One-Day Cricket
- Leg-Spinners in England 1995
- The Australian Coodabeen XI
- Rick's other cricketing XI's
- Coming Test matches, Oct 95-Feb 96 (10K GIF)

Cricket on Usenet

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Howzat! If you're an Aussie and into cricket, there's plenty of action waiting for you on the Web with a wide range of links to follow. There's up to the minute cricketing information and pages devoted to the stars, past and present, at http://www.ozemail.com.au/~reyre/cricket.html
the world of the Internet, especially to new users, due to its ease of use — allowing users to traverse the globe at the click of a mouse.

😊 The Internet has provided many enterprising individuals and companies with new tools with which to market their goods and services. Software vendors are beginning to appreciate the benefits of pre-releasing demonstration versions of their programs — be it the latest shoot-'em-up or a more serious business application — and allowing potential customers to test drive their software.

😊 Internet users have access to a massive pool of shareware that can be downloaded and evaluated before purchase. There are thousands of programs for almost every imaginable computer available online, including utilities, word processors, financial software, printer programs, do-it-yourself desktop publishing programs, antivirus programs, screensavers, personal information managers (PIMs), communications programs ... and much, much more. You need never buy public domain or shareware software from a distributor again. What’s more, you’ll also find patches, updates and help files for all your favourite (and even the not-so-well-known) programs.

😊 If interactive games are more your style, how about matching your wits playing chess or backgammon against an opponent on the other side of the world? Or flying a fighter plane in real time against opponents who are thousands of kilometres away? Many games from different genres, including fantasy and strategy, have been adapted for use over the Internet.

😊 Read the latest, hottest gossip about your favourite soapie stars.

😊 Download video clips of new movies direct from Universal Studios or other Hollywood dreammakers.

😊 Play the latest offerings from your favourite

HINT

If you’re looking for great software or if you want to “surf” to some very exciting (even bizarre) Internet sites, try a few of the addresses listed in Appendix A.
DEAR OLD AUNTIE

Even Auntie has her very own spot on the Web! At ABC ONLINE you’ll find everything you ever wanted to know about our national broadcaster (and lots you never dreamed about!). Find out about ABC-TV, Classic FM, Asia Business Connection, and much, much more when you tune into cyberspace at http://www.abc.net.au/

musician, or discover a new world of music at the Internet Underground Music Archive (or one of the many similar sites), with online audio and video clips of both established and new musicians from around the world.

 Read about famous court trials as they happen, when they happen.

 Order flowers, groceries, records, videos, books, computer software or hardware at your local Internet Shopping Centre, and have the goods delivered direct to your door.

 Visit the Australian Parliament online and browse the records of daily happenings there. Or, if foreign politics is more your cup of tea, send email to the President of the United States, or lobby your favourite US Senator.

 Buying a new car? Research your purchase without leaving the comfort of your home or office.

 Tour the electronic art galleries, from the Louvre and beyond, downloading copies of your favourite works of art.

 Visit the Vatican and say a prayer. Or do confession with a computer.

How can you do all this? Well, it is all out there, and this book aims to teach you. A host of useful, interesting and most unusual Internet addresses are provided in Appendix A.

The book in a nutshell

 Chapter 2 briefly examines the history of the Internet.

 Chapter 3 discusses what hardware you will need to connect, and who you can talk to about getting connected. More importantly, we will provide advice on the issues you should look at when deciding where to obtain a connection.

 Chapter 4 looks at the Domain Name System and explains how computers connected to the Internet are addressed and how they talk to each other. We also explain how to read such odd-sounding addresses as:

  smithj@domain.com.au.

 Chapter 5 looks at one of the most popular Internet resources, the World Wide Web.

 Chapter 6 explains the basics of email, and how to send email to other users.

 Chapter 7 looks at how to obtain software or program files over the Internet using anonymous ftp.

 Chapter 8 discusses how to find information resources on the Internet, using Gopher and Veronica.

 Chapter 9 will show you how to connect to other computers on the Internet using telnet to explore their resources.

 Chapter 10 details how to find programs on the Internet, and speed up your ftp sessions using Archie.

 Chapters 11 and 12 examine the massive information exchange that occurs every day via Usenet, and how to make sense of it all.

 Chapter 13 explains how you can "finger" the Internet to find out details about various Internet users and then "talk" to them in real time.

 Chapter 14 will show you how to use Internet Relay Chat (IRC) services to make new friends and talk with many other users simultaneously, as well as introduce you to the popular world of MUDs (Multi-User Dungeons).

 Chapter 15 looks at the serious issue of protecting children from some of the more seedier aspects of Internet life.

 Chapter 16 looks at miscellaneous Internet issues.

 A list of interesting Internet locations is provided in Appendix A.

 To help you on your way with some software, we have compiled a list of popular programs you can get from computers on the Internet to make your Internet travels easier. See Appendix A for details.

The Glossary explains some keywords you will come across in your Internet travels.

How to use this book

This book is intended as a general introduction to the Internet, how it came about, what keeps it together, and some resources to access.
It is not designed to be read from cover to cover. Nor is it designed to give you a thorough introduction to the principles of networking or the Internet. It is aimed at people who are considering connecting to the Internet, and want to know a bit more about it before they do, as well as those who have already connected, but are somewhat confused about it all.

This book will take you through the types of resources you will come across on the Internet, and how you will probably use them.

In writing this book, and preparing the examples and screen shots, I have focused mainly on Unix systems, which are the preferred computers for Internet Service Providers.

If you have dial-up access to your Internet Service Provider (ISP), you are likely to obtain access to the Internet using what is known as a "Unix shell account". That is, your account will be on a Unix machine and the commands you use will be Unix-based.

The commands and examples in the chapters that follow are taken from such Unix shells.

However, not all Internet users who gain access via a Unix shell account on their ISP’s computer will have to use Unix commands. This is because some ISPs provide software (for Windows and Macintosh) which you install on your computer and which acts as an interface to the ISP’s Unix computer. This is a preferable setup, as Unix can be very daunting for new users.

You may have purchased or installed software that makes use of a SLIP/PPP connection. In that case, the software will also provide an interface for your ISP’s computer and the Internet as a whole, which in turn will make accessing the Internet even easier.

In either case, what we discuss in the following chapters is still of importance, as we explain the way the particular Internet resources operate, as well as how to find them. Possibly the commands themselves may not always work on your computer. Rather, you will have to be guided by the manuals or documentation that come with your software.

Generally, however, this book will paint a broad picture of the Internet which will ensure you better understand how to use your Internet access software.

If you want to contact me with comments (even criticisms) about the book, you can do so to:

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c/- Maximedia Pty Ltd
PO Box 529
Kiama, NSW 2533
Australia
Fax: 042-331773

You can also contact me direct via the Internet at:
accessnt@ozemail.com.au.

What’s new in the 1996 Edition?

Many people contacted me after reading the first (1995) edition with both comments and criticisms. Thank you to all who wrote or emailed. It was gratifying to read how the book helped many of you in your Internet explorations.

Those who commented about the lack of coverage of Internet resources such as Internet Relay Chat (IRC) and MUDs will be pleased to find them covered in this new edition.

Some readers requested information about issues such as computer viruses (which may be propagated over the Internet) or security and privacy, such as programs which encrypt the contents of email messages, to ensure they will not be read by persons other than the intended recipient(s).

These are valid issues, which do require the attention of anyone using the Internet for more than casual entertainment. Unfortunately, due to lack of space, I cannot give them the in-depth treatment they deserve. There are, however, a number of excellent books which canvas these issues. I also discuss these issues in my new book, *The Australian Business Guide to the Internet*, due for release in mid-1996.

Finally, another issue of some concern to many readers is the apparent widespread availability of pornographic and other objectionable material on the Internet. I do provide some advice to parents and educators in this edition on how to prevent impressionable eyes from stumbling across such material.

**KEEPPING UP APPEARANCES**

Minding your manners while on the Net has never been easier, thanks to the NET USER GUIDELINES AND NETIQUETTE. You’ll find this handy guide to what to do — and what NOT to do — when you’re on line at http://rs6000.adm.fau.edu/rinaldi/netiquette.html
Chapter 2

What is the Internet?

This is probably the hardest question I will have to answer in the entire book. Outlining the types of resources available via the Internet and the programs used to access them become child's play when faced with the question: Just what is the Internet?

The Internet is best described as a "network of networks". It is a loose collection of thousands of smaller (by that I mean non-global) networks in different countries around the globe. It links hundreds of thousands of academic, government, military and public computer systems, enabling literally millions of people from diverse cultures to share information and other resources.

Even veteran Internet users find it difficult to comprehend the many different computer networks which are connected to form the Net. They, like most newcomers, just accept that it all works in a cohesive fashion, and concentrate instead on "surfing the Net".

A bit of history

You cannot help reading or hearing about the Internet. Almost every newspaper and computer magazine extols its virtues (usually in conjunction with a discussion of the much vaunted Information Superhighway) in a "gee-whiz" fashion. Thousands of pages of newsprint and hundreds of hours of broadcasts have been devoted to discussing and debating the benefits and evils of the Internet.

You could be forgiven for thinking the Internet is a recent invention.

The Internet was "born" almost 30 years ago. In the cold-war years of the early sixties, the US Department of Defense was afraid that its strategically important military computer network could be crippled by a few well-placed Russian nuclear bombs.

In those days, computer networks were very rigid affairs, with hierarchical structures. At the "top" of every computer network was a central computer, which coordinated the activities of all other computers connected to it. If one computer wanted to talk to another, it would first need to get the "OK" from the central computer.

This type of network was particularly vulnerable to attack. A nuclear bomb could destroy the central military computer, effectively cutting off communications to all computers below it in the hierarchy. This would have the undesirable effect of "blinding" the military, which relied heavily on its network to coordinate missile attacks, and so on.

Being "blinded" was a prospect that horrified military chiefs, and so several brilliant computer engineers were drawn together by
the Advance Research Projects Administration (ARPA) to design a new network model which could withstand such attacks. The result of their toils became known as ARPANet.

ARPANet, a military network, was designed around the principle of “unreliable computers”. That is, it had to be able to withstand the destruction of one or more computers, while still allowing the other computers to communicate effectively.

The network was designed so that each computer on it had to ensure its communications were successfully carried out. Unique addresses stored on a distributed database, which painted an overall network “map”, made sure each computer knew the location of every other network computer.

Every computer was regarded as equal to every other computer, so it did not require permission to communicate with the other computers. And, most importantly, it presumed that every other computer was “unreliable” — that is, might fail at any time — and probed each of them at regular intervals to ensure the lines of communications were still open. If it found one or more computers were unreachable (because they had been nuked or the telephone lines were down), it would simply note that on its “map”, and not use those computers when passing on information until the situation was remedied.

The design was quite successful. Central to the design was the TCP/IP (Transmission Control Protocol/Internet Protocol) software, which regulated how the computers would interact with each other. We discuss TCP/IP a little further on.

The network was used to link the military’s computers, as well as a small number of academic sites (to allow further study and refinement of the networking principles). The academics were very excited by this new networking model, and many other sites wanted access as well. From those early days, ARPANet quickly grew, linking most US universities, and even some UK and other European computers.

This growth worried the Department of Defense, which severed its computers from the network and started MILNet — a network purely for military use, but based on the same network model.

The flexibility of the ARPANet networking environment was very attractive to governments and academic groups worldwide. Providing a computer could understand and implement the networking protocols upon which ARPANet was based, it could talk to any other computer which also understood that protocol. This was seen as a cheap and practical means of connecting different types of computers, allowing them to share information.

Who owns the Internet?

Today the Internet spans the globe, connecting hundreds of thousands of computers on many different networks. Such a large network must give its owner serious power and influence!

It doesn’t. Because no-one owns the Internet. This may sound incredible, but no one person, group or government owns or controls the Net! The owners of each individual network connected to the Internet (whether it is a corporate network linking machines in one building to the Internet, or a regional network providing Internet access for computers across an entire State) make their own decisions about whether to connect and what services they will allow their users to access. They are each responsible for their own little part of the Internet, and the associated costs.

Accordingly, there is no centralised body that controls or regulates the Internet. Because of this, the Internet is considered to be somewhat anarchic. To a large extent that is true. It leads to a lot of duplication of services, and means that there is no one authoritative source of information about who is connected and what is available on the Internet.

But it also means that no one person, group or country has the ability to censor or restrict access to the Internet’s resources. As a result, it is seen by some as the cornerstone of a possible future electronic democracy.

However, this very “anarchy” has caused concern among legislators of countries connected to the Internet. How can anyone possibly hope to control the flow of information on the Internet if no one can claim jurisdiction?

CHANGING CAREERS?

Who has the power to enforce obscenity legislation or to protect the interests of people who are defamed on the Internet or have their trade secrets stolen by a wily hacker? The answers to these questions are by no means easy.

Who pays for the Internet?

One of the more enduring myths about the Internet today is that it is free. Not so. Someone must pay for the computers and permanent telephone and satellite connections which allow the Internet to operate locally, nationally and internationally.

The Internet requires all computers linked to it to have a permanent connection. They are connected by thousands of kilometres of telephone lines and optical fibres, all of which require modems, routers (which are discussed below) and computers to coordinate the flow of information.

Some users, particularly those on government or university networks, don’t pay for their access because it is paid for by their employers. But the vast majority of users pay for access on an hourly or monthly basis.

Internet fundamentals

Before you read the rest of this book, you may find it useful to cover some networking fundamentals, including what a network is, how networks are connected, and how they exchange information. If you already know a bit about networked computers, you might like to skip this section. For those who are new to all this, this part’s for you.

What is a network?

So what is a network? Well, let’s start with LANs.

A LAN, or Local Area Network, is a collection of computers directly linked together (usually via cable) in a room or in a single building. This connection enables users to share common peripherals, such as printers or a Fileserver (a central computer that stores information and software).

A peripheral is an item of hardware that is connected to a computer (again, usually via a cable) to perform a particular function. Scanners, printers and modems are examples of peripherals.

Each computer connected to a LAN can share information and communicate with every other computer and peripheral connected to the LAN.

When one or two LANs are connected, you create a WAN, or Wide Area Network. The individual LANs that comprise the WAN may be in different buildings or in different States. Most WANs are connected via leased (that is, dedicated) telephone lines. In more sophisticated networks, satellites may be used to share or swap data between the respective LANs that comprise the WAN.

In essence, the Internet is a massive Wide Area Network, connecting many thousands of computer networks from around the world via
leased telephone lines, optical fibres and satel-
ites.

**How are the computers connected?**

The job of connecting LANs is carried out by a
router (politely pronounced “r-oww-ter”) — a
hardware device which ensures that data sent
over a network arrives at its intended destina-
tion in one piece and as quickly as possible.

How do the different computers talk to
each other?

How does my IBM PC talk to my friend’s
Macintosh?

All computers connected to the Internet
share a common language, or more accurately,
a *protocol*, known as TCP/IP. This gets a little
technical, and is not required knowledge. How-
ever, it is handy to have a background knowl-
edge of TCP/IP and what it does, as it will as-
sist you in understanding concepts discussed
later in the book.

TCP/IP is an acronym for Transmission
Control Protocol/Internet Protocol. This is a
standard which regulates how all computers
connected to the Internet act when communi-
cating with one another.

As mentioned earlier, TCP/IP was origi-
nally devised by ARPA scientists to design a new
network model.

Every computer on a network running
TCP/IP software is aware of every other com-
puter on that network, and knows their posi-
tion on the “network map”. Using this knowl-
edge, a computer can send information to the
intended recipient via the fastest route, without
having to follow a predetermined path (which
might be blocked or congested). If a computer
does not respond, or is too busy, then the origin-
ating computer simply consults the network
map (referred to as the “network topology”) to
find another computer that can pass on the
information.

This ability to find the best, fastest, most
expedient means of sending information was
a major step in computer intercommunication.

TCP/IP was designed for powerful Unix
machines, but, as the years progressed, new
breeds, such as IBM and Macintosh PCs, were
added to the network.

To ensure that all kinds of computers con-
nected to ARPANet could communicate and ex-
change information, different versions of TCP/
IP software were written for each platform.

As far as computers on the network are
concerned, as long as a computer speaks TCP/
IP, they don’t care if it is a massive Unix
machine occupying the basement of a building,
or a (comparatively) small PC. If the computer
can talk TCP/IP, it can join the club!

But how does a Unix machine swap infor-
mination with an IBM or Mac?

Because different types of computers store
and manipulate data in different ways, software
programs known as *gateways* have been writ-
ten for TCP/IP networks.

Information from, for example, an IBM
network, can be passed through a gateway
program which will translate it into Mac’inese
or Unix. A person with an IBM PC, therefore,
can send email to a colleague who can call it
up and read it on a Mac. This translation proc-
ess is invisible to both users and occurs almost
instantaneously.

**Packet Switching Networks**

Most large computer networks are connected
by telephone lines. When two computers
connect by telephone they hold conversations
electronically, in much the same way as two
people hold a telephone conversation. But there
the similarity ends.

When you telephone a friend, you use a
circuit switching network. This means that,
for the duration of your call, one circuit (or tel-
phone line) is set aside for you. No one else
can use that line, even if you are not using it
(for example, if you are put on hold or put down
the phone to answer the front door). But when
networked computers talk over telephone lines,
they make use of a packet switching network
— where one telephone line is used by all com-
puters connected to the network. All the data
sent by individual computers are bundled to-
gether and sent via this single telephone line.
Once it is received, the other network handles
the distribution.

How this occurs is discussed in a little more
detail when we look at how email is sent across
the Internet, in Chapter 6.
JOINING THE NET

One of the first questions newcomers ask is: How do I connect?

Well, for a number of people, the answer is simple — you probably already have access.

Most universities, schools and government departments are linked to the Internet via established networks, so the computer on your desk may have all you need to gain access. Similarly, some public libraries have publicly accessible computers which are connected to the Internet. They may, however, place a limit on when you can use their machines, and what you can do on them.

Failing the above possibilities, you will need to consider getting access yourself.

WHAT IS AN INTERNET SERVICE PROVIDER?

The term "Internet Service Provider" (ISP), describes a company that provides Internet access to users on a pay-per-use basis. ISPs have a dedicated connection to the Internet, and allow users to connect to their computers via modem (discussed below) to obtain access.

Providing access to the Internet costs money. First, ISPs must invest in the necessary hardware — computers, modems, routers, telephone connections and so on. Then they spend time writing software to help their users access their systems. And, of course, they need staff to keep their machines running, and to answer any queries users may have. Therefore, ISPs expect you to pay for their service.

Internet access in Australia isn't as cheap as it is in, say, the USA. But then most things aren't. However, access doesn't cost as much as you might think.

The market for Internet services is fairly intense, with the result that prices are slowly decreasing. It is possible to find ISPs offering access at around $1 an hour! Try dialling a computer in Japan or Europe direct — it would cost much more.

COMPARING COSTS

When I first considered writing this guide, I planned to include a chart listing all the ISPs in Australia, the services they offered, and access charges.

However, 1995 (during which the first edition was released) was the year the Australian
Joining the Net

Internet scene really came of age. New ISPs, providing local call access in all capital cities and most regional areas were established, which led to increased competition and lower prices.

Therefore, a checklist of points to consider when evaluating ISPs may be more useful.

**ISP checklist**

- **Do they provide local access?** That is, is the call to the ISP’s computer a local call (no STD charges)? The only costs when connecting to an ISP should be the initial telephone call to the ISP’s computer and whatever hourly charge is levied. Even if you are not in a capital city, a number of ISPs offer 13XXX numbers.

- **Is there an up-front account establishment charge?** Some ISPs charge a one-off account creation fee, which covers the administrative costs of setting up your account. If so, are you credited with any free online hours in exchange?

- **What is the hourly rate?** Most ISPs simply charge users a set rate for each hour spent connected to their system. This rate usually varies depending on whether you connect during or after normal office hours.

- **Are there monthly/annual charges?** Some ISPs give you the option of paying a monthly access fee, in return for a lower hourly rate. Whether this is cost effective depends on how many hours you are likely to “clock up” online in a month.

- **How much information do they allow you to store on their computer?** Occasionally you might want to download a large file, such as the latest shareware version of your favourite shoot-’em-up. If your ISP only provides a small storage space on its computer for each user, it might not be big enough to store this file until you download it to your computer. Some ISPs set a maximum file storage space per user, and charge you extra if you exceed this. Ask for charging details in this case.

- **What Internet services do they provide access to?** Do they provide full access to all Internet services, or only to only a few, such as email and Usenet? Are there different access rates for different types of resources? For example, are users who only access email charged one amount, and those who access ftp or the World Wide Web charged another?

- **Do they have dedicated HelpDesk staff, who will answer basic connection queries over the telephone?** If so, is there a charge for the service? (Steer clear of ISPs who charge for this kind of user support.) Also, before signing up, ring the HelpDesk number and see how long it takes to get connected.

- **Finally, what type of access do they allow?** Do they have only dial-up access, or do they offer SLIP/PPP access (we’ll explain the difference later). How fast are their modems?

**What do I need to connect?**

**Computer**

You will need a fairly new computer (such as an IBM or Mac); one bought within the last two years should be suitable. You will require some hard disk space to store the software used to connect to the ISP and navigate the Internet, and to store information you download.

**Modem**

A modem is a hardware device (or peripheral) which is connected to your computer (either as a card inside your computer, or as an external device that sits on your desk or on top of your computer).

Basically, a modem is a device which lets your computer talk to other computers over a telephone line. The word *modem* stands for “modulate-demodulate”, which is what modems do.

Your modem sits between your computer and the telephone line. At the other end, there is another modem, which sits between your ISP’s computer and the telephone line.

The function of a modem is to translate data into audio tones for transmission across normal telephone lines and then back into electronic data.

**Modulation** is the process of turning electronic information into audio, and **demodulation** is the act of reconverting it to electronic form.

If you don’t already have a modem, spend a bit of time shopping around and researching.
your purchase. There are a number of different brands on the market, but in essence they all do the same thing.

Modem buying checklist

☐ Austel Approval — before a modem can be connected to a telephone line, it must first obtain Austel (an Australian telecommunications regulatory body) approval. Look for the Austel approval sticker. If in doubt, ask the dealer. Do not buy a non-Austel approved modem.

☐ The modem should have a speed of at least 14.4kbps. The bps rating indicates how much information the modem can send or receive per second. Until recently, 14.4kbps was the industry standard for affordable modems. Most ISPs support access at this speed (that is, they have 14.4kbps or faster modems attached to their computers). However, there are now faster, but still affordable, modems on the market: the 28.8kbps models.

If you can afford it, buy a 28.8kbps modem (which will cost around $500, compared to 14.4kbps modems which retail for about $300), as it will generally increase the amount of data you can send or receive online. Given that most ISPs charge you for each hour of use, and not per megabyte of data retrieved, this can only work to your advantage.

However, before you buy a 28.8kbps modem, make sure your preferred ISP supports this access speed. If it doesn’t, find out when or if it intends to do so. Also, ask the site administrator if the ISP’s software has any known conflicts with certain brands of modem.

☐ Make sure you buy a “fax modem”. Fax modems are simply modems that can also be used to send and receive faxes, just like a normal fax machine. This is not terribly useful for connecting to the Internet, but it is a smart investment — you never know when you might want to send or receive a fax when away from the office.

☐ Make sure your modem comes with associated modem software. Many modems on the market today come bundled with Internet software preconfigured to access a particular (or a number of) ISPs. Ordinary communications software, which you can use to connect to any number of Bulletin Board Services (BBSs) in your area, is also usually included.

HINT

If you have the Call Waiting facility on your telephone line, it is a good idea to disable it whenever you are using your modem, as it can disrupt your modem communications. As you have probably experienced, when you are using the telephone and another person rings you, an audible beep is given. This is no problem for you, as you can put one caller on hold while you answer the other call. But modems can’t do this. What’s more, the audible beep might interfere with the data they are transferring in audio form.

If you buy a fax modem, make sure it comes with software that allows you to send and receive faxes. More importantly, make sure the software isn’t “crippled” — that is, that you can only use it a limited number of times before having to buy another, more expensive, software product.

☐ Finally, make sure the modem comes with all the necessary cables to connect it to your computer and the telephone jack at home or in your office, and that it comes with its own power supply (if one is required). Most modems sold these days come with an offer of free introductory access to one ISP or another.

You might like to use this offer to take your modem on a test drive! If yours doesn’t, or if you already have a modem, you can use the coupon on Page 96 to obtain access to Internet Options of OzEmail, both leading Australian ISPs offering local call access from many parts of Australia.

Telephone Line

A modem needs a telephone line to work. Simply unplug your telephone and connect the modem.

Remember, when your modem is connected to the telephone jack and you are connected to your ISP, you are making a telephone call. If someone were to ring you while you are using your modem, s/he would get an engaged signal. So it is not a good idea to use a modem on an important business line.

Software

The software you need depends very much on the type of computer you are using, and what you intend doing on the Internet.
For instance, if you only intend connecting to your ISP to send or receive the occasional email message (which is basically a text-based service), then you really only need the communications software which should come with your modem.

But if you want to explore the whole gamut of Internet resources, you should consider buying software custom written for the Internet.

Before you do, check whether your ISP has software especially written for its service (which many do, such as Internet Options, OzEmail or Compuserve), or if the ISP prefers a particular software package. Your ISP may be able to provide it to you at a reduced cost.

For those of you who don’t mind fiddling around with your computer and tinkering with software, I suggest you spend some time exploring the hundreds of Internet software programs and packages available as shareware or in demonstration versions via the Internet. You can download and test these until you find the combination of programs which best suits you. Don’t forget to do the right thing if you use shareware or demonstration software and register them!

Better still, two leading Australian ISPs have agreed to provide every reader of this book with a FREE copy of their introductory software, which will allow you to connect to their computer systems and instantly set out on your Internet adventures.

To find out how to obtain your FREE copy of these starter disks, as well as up to FIVE HOURS FREE INTERNET ACCESS, please turn to Page 96.

To make getting to know the Internet easier, most Service Providers have an extensive range of free online papers and texts which describe various Internet resources. They make it easy for you to link up with hundreds of different Internet services, including Gophers around the world, libraries from hundreds of different research institutions, online weather maps and reports, electronic magazines, and HUGE software collections.

**Dial-up or SLIP/PPP Access?**

This is all a bit confusing, so please excuse me if I spend a while trying explain the difference between ordinary dial-up access, and SLIP/PPP access.

If you connect to your ISP without any special software, except perhaps using the software which came with your modem, it is more than likely that you will establish what is known as a dial-up connection.

This is no different to the connection you would make if you were to call a local Bulletin Board Service, or connect to your company’s computer from home to work on some documents. In essence, you connect to the other computer, known as a “remote” host (see Chapter 16 for a discussion of remote and local hosts), and access the software and resources it has available.

When you are connected this way, you can only access programs which are available on the remote host to manipulate its data (there are a few exceptions to this, but we needn’t worry about them for present purposes).

As a result, using a dial-up connection you will only be able to access the software and Internet services provided by your ISP. In addition, the other remote hosts that you connect to on the Internet, such as Archie or Gopher, won’t actually know it is your machine that is requesting the information.

For reasons which are too complex to cover in any detail here, only those computers connected to the Internet which share a common language, TCP/IP, are able to “see” and communicate with one another. (We discuss TCP/IP in the next chapter.)

Your ISP’s computer is one such machine. It has a direct connection to the Internet, and speaks TCP/IP, the universal Internet language. When it is connected to the ISP via ordinary dial-up access, your computer does not speak TCP/IP. Therefore, the other computers on the Internet do not see your computer and cannot send information to it. Instead, your ISP’s computer will do the talking, and forward the information it receives to your computer.

For normal Internet use, assuming your ISP provides access to all the facilities you wish to reach, there is nothing wrong with this type of connection. In fact, dial-up connections tend to be cheaper.

However, some users might want the type of access SLIP/PPP accounts provide.

SLIP/PPP accounts require special software to connect to your ISP. SLIP stands for “Serial Line Internet Protocol”, and PPP stands for “Point-to-Point”. What this type of software does is very technical, but suffice it to say that when
you connect to your ISP using either SLIP or PPP software, you are assigned your very own Internet Address (or, more accurately, an IP address) for the duration of that connection. Your computer will also be talking TCP/IP!

What all of this means is that, while connected, your computer becomes an Internet host of sorts. It can be recognised by all other hosts, and they can talk directly to it.

This type of connection has a number of benefits. First, because your computer is able to communicate directly with other computers on the Internet, you can install and use SLIP/PPP-compatible software programs to access Internet services, regardless of whether those services are offered by your ISP. However, most ISPs charge more for these types of accounts (but not much more). For the added flexibility they provide, many users consider the additional cost worthwhile.

Shareware & freeware

There is a great deal of software available for Macintosh and Windows-based computers to access the Internet. Most programs are configurable, so you can set them up specifically for use with your ISP. More importantly, most of them are free, or require only a nominal registration fee to be paid. A lot of this software, including SLIP/PPP, is available on the Internet via ftp (see Chapter 7). Appendix A has a list of sites containing Internet software.

The only pitfall with shareware or freeware is that it usually doesn’t come with manuals — only basic help files which aren’t much use to the beginner. But not to worry. Other users will have had the same difficulties when starting out, and may even offer “expert” help. If not, your site administrator (see below) should be able to offer assistance. Failing all of these options, you can always post a query to Usenet asking for help (see Chapters 11 and 12).

Other Places for Help

There are many books about the Internet in bookshops and computer shops. Some of these are quite detailed and technical, and focus on one or a few different operating systems and programs. Once you have had an opportunity to explore the Internet, and want to learn more, these books will help you.

Alternatively, there are a number of magazines devoted entirely to discussing the Internet and life online. These are a good source of up-to-date information about what is happening on the Internet and new developments.

HINT

A FAQ is a document containing Frequently Asked Questions about the Internet, how to access it, or certain types of Internet resources. There are a number of different FAQs available free online, which contain a wealth of information, tips, tricks and advice.

Finally, you can always refer to the FAQs. Each year the Internet attracts wave after wave of new users, all of whom face the same hurdles as those before them. To make the task of connecting a little easier, many kind souls have written what are called FAQ files.

FAQ stands for Frequently Asked Questions. There are a number of these files around which cover a host of problems encountered by new users. These can be obtained via Usenet (in the newusers newsgroups), or via ftp. Most ISPs recognise that these are handy files to have around, and put them on their computers for their users to read or download. But if you get really stuck, ask your site administrator.

Who is the Site Administrator?

Being a site administrator is a thankless task! This is the person whose job it is to make sure everything is running smoothly, and to deal with frustrated users. Most ISPs have a HelpDesk which you can call or email to discuss problems you might have with their service, or with connecting to the Internet.

When you talk to or email your site administrators, please remember they are there to help you, but sometimes events are beyond their control. They weren’t born knowing the nuances of every piece of communications software ever written. But they’re pretty good, and can usually solve most of your problems fairly quickly.

SHAREWARE

Shareware and freeware abound in cyberspace — and it’s all yours for the downloading! The easiest way to find useful and exciting new software is at:

http://www.shareware.com/
Chapter 4

DNS: Mapping the Internet

The Domain Name System (DNS) is the method by which the many hundreds of thousands of separate and diverse networks linked to the Internet are "mapped".

The DNS is the key to understanding the Internet, and how to navigate your way around it. It is also the most difficult concept to grasp when dealing with the Internet. It is in no way necessary for you to fully understand the DNS, but a rough idea of how it all comes together will make your journeys much smoother.

Every time you connect to a computer over the Internet or send email to a colleague, you make use of the DNS.

The DNS is essentially a collection of large databases, used by computers on the Internet to locate other Internet computers and their users.

**IP Addresses**

Computers on the Internet can communicate with each other because they use a standard protocol known as TCP/IP (Transmission Control Protocol/Internet Protocol).

A fundamental component of this protocol is IP (Internet Protocol) addressing — a system of 32-bit numerical addresses. When connected to the Internet, every host has a unique IP address which other computers use to send information to it.

Now for some technical information. The 32-bit addresses are represented by four eight-bit numbers, which are expressed as decimal numbers in the range of 0-255 (inclusive), separated by periods ("."). Each eight-bit component of the 32-bit address is referred to as an octet.

An IP address might look something like this:

123.45.2.91

Every host computer connected to the Internet has an address similar to the one above. However, it is unlikely you will ever see them referred to in this manner. This is basically because humans have considerable difficulty remembering numbers represented in such a fashion. To alleviate these difficulties, the computers are also given "English" (read human-friendly) names (known as domainnames), such as:

mydomain.com.au

which are significantly easier to remember.

(By the way, you pronounce the above domainname as "mydomain dot com dot a u". It might sound a little strange at first, but you will soon get used to it!)

Computers, being what they are, prefer to communicate with each other using numeri-
DNS: Mapping the Internet

cal IP addresses. So that humans can use addresses which they can understand, the two names must be linked, or cross-referenced.

The DNS takes care of this cross-referencing.

When you specify an “English” domain name, your ISP’s computer will first access a database, known as a DNS nameserver (see below), which contains both the “English” domain names and numerical IP addresses of all computers connected to the Internet. If it finds the domain name you specify, it will look up the corresponding IP address, and use that to carry out the requested function (be it sending email or connecting to another computer on the Internet). As a result, you need never bother yourself with memorising numerical IP addresses.

The DNS also imposes a uniform naming system onto an otherwise chaotic network or networks. To allow the disparate computer networks which make up the Internet to act cohesively, they must all recognise each other’s existence, and be able to pass information between each other without any confusion as to where the information is going.

For this reason, every machine on the Internet must have a unique address.

Think of the DNS as a tree (a very tall one, with innumerable roots and branches). At the very top of that tree is the InterNIC — the Internet Network Information Centre. Its function is to maintain a list of every computer connected to the Internet.

The list contains both their domain name and IP address. Without this central compilation of addresses, every computer would need to keep track of all new additions to the Internet. With estimates that tens of thousands of people connect to the Internet daily, this would be a difficult and time-consuming task. Accordingly, one group, InterNIC, is assigned that duty. It in turn makes the list available to other Internet users.

To avoid every computer on the Internet having to connect to InterNIC’s computers each time it wants to locate another computer, a number of other hosts have “mirrored” (that is, have maintained copies of) the information stored on InterNIC’s databases. These mirror sites are referred to as nameservers.

Each nameserver supports (or serves) several intermediate computers in the hierarchical DNS tree, each of which is referred to as a top-level domain.

There are several top-level domains currently supported by InterNIC:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>com</td>
<td>Commercial bodies</td>
</tr>
<tr>
<td>edu</td>
<td>Educational bodies (universities etc.)</td>
</tr>
<tr>
<td>org</td>
<td>Non-profit bodies</td>
</tr>
<tr>
<td>net</td>
<td>Networks (usually connected to the Internet via a gateway)</td>
</tr>
<tr>
<td>gov</td>
<td>Non-military government organisations</td>
</tr>
<tr>
<td>mil</td>
<td>Military government organisations</td>
</tr>
<tr>
<td>int</td>
<td>International organisations</td>
</tr>
<tr>
<td>au</td>
<td>Two-letter (ISO) country codes, such as fr &amp; uk. au is the code for Australia</td>
</tr>
</tbody>
</table>

If an email or Internet address does not include a two-letter country code, it is a safe bet that the machine is located in the United States. The reason for this is that the original TCP/IP standard was designed on behalf of the US military, who never expected to share their networks with computers outside the US. Therefore, the software just assumed all computers on the network would be within the US.

As times changed and the network grew, computers from around the world were connected, and the two-letter code was added for computers outside the US. By default, if there is no country code, computers will assume the address is within the US.

Top-level domains in turn have subdomains. Subdomains are referred to as second-level domains, because they are beneath the top-level domains on the DNS tree.

Second-level domain names are usually assigned to entire organisations. For example, the hypothetical company isp.com.au is a second-level domain of the com and au top-level domains.

By referring to the list on the previous page, we can see that isp.com.au is a computer in Australia (.au) and it belongs to a com-

**HINT**

InterNIC, or Internet Network Information Centre, is the closest thing the Internet has to a central regulating body. Every new computer connecting to the Internet must register with InterNIC to receive a unique address, so that other Internet computers can find them.

20
mercial organisation (.com) called ISP (isp). Most Internet addresses can be interpreted in this fashion. Each portion of the domainname (ie., .au, .com, .isp) is referred to as a domain, and in total become the site’s domainname.

You might find that a domainname has more than 3 domains in it, such as flower.domain.edu.au. This is because that particular site might have several computers connected to the Internet, each of which is given a distinctive name (such as flower). But they are all part of the one site, whose domainname is domain.edu.au.

Don’t worry if some of this doesn’t immediately make sense to you. All you need to glean from this is the first time round is that the DNS organises host computers into different categories to ensure compliance with naming conventions, and also acts as a point-of-contact for computers on the Internet to obtain the information needed to find and connect to other computers on the Internet.

It is unlikely that the average Internet user will ever deal with a DNS nameserver or worry about how domainnames and IP addresses are assigned, but it is very useful to know that the naming conventions do exist and that they exist for a reason.

Interpreting email addresses

Internet email addresses usually look like this:
userid@domain.name.country

As with IP addresses, the segments of the domainname are separated by full-stops ("."). The best way to read email addresses is from right to left.

The part of the email address to the right of the @ is called the domainname. This is simply the name of the machine on which the user has an account.

These details (domain.name.country) are sufficient to let any computer connected to the Internet find a particular computer.

The part to the left is called the userid. This is the user’s account name. Normally it is derived from their actual name. For example, my userid might have been “neelym” or “mneely”.

For the main part, users are allowed to select their own userids, so you might find colourful ones that don’t always correlate to that actual user.

Summary

Well, hopefully, by now you will understand a little more about how the different machines on the Internet are able to find each other, and pass information along.

You should also have some idea of how to read a user’s email address and from that, have some idea of where s/he is (eg. which country) and what type of machine s/he is logged on to (i.e. military, educational).

We will talk a little more about userids and Internet addresses when we discuss email in Chapter 6.
The World Wide Web has taken the Internet by storm. More attention has been paid to the Web in the last year than any other Internet resource or development. It puts within the grasp of even the most computer illiterate user the mind-numbing expanse of information which is spread over the Internet.

The WWW has captured the hearts of educators, as well as the imagination of big businesses, who see it as the next generation of storefronts, allowing consumers from around the globe to shop at their leisure.

In essence, the WWW, or more accurately the Web browsers which are used to navigate the Web (discussed below), hide what was previously an unwieldy collection of commands and dreary text-based menus. Instead, the Web displays the Internet via a graphical-user-interface ("GUI", pronounced "gooey") environment.

The WWW is, some say, the "killer app": the one computer application that will bring the masses to the Internet.

At the click of a mouse button or the touch of a key, users can crisscross the global information maze without requiring any technical understanding of how, where, why or by whom the connections are being made.

Since its humble beginnings as a tool developed to help research scientists disseminate documents quickly and easily among colleagues, the WWW has evolved to cover a wide variety of possible uses.

You can order groceries, holidays and numerous other consumer goods online via the Web, browse vast libraries of regularly updated information complete with photos, video and audio (a living encyclopedia, for want of a better description).

You can gamble, read personally tailored daily newspapers and watch news broadcasts, tour hundreds of online museums and art galleries, browse newstands for the most recent edition of your favourite magazines, obtain the latest demo software, or interact with technical support staff about that nagging problem with your favourite program, car, or appliance.

The number of uses being made of the Web grows each day. If you can sell or do something using pictures, audio, video or textual descriptions, then chances are it will be on the Web.

Hypertext

The power of the Web lies with the concept of hypertext.

Hypertext is the name given to the process of displaying or arranging text on a computer screen in a manner that emulates human thought processes.

In a printed ("hardcopy") reference book, users must read sequentially through the text.
or manually skip through the pages and paragraphs in an attempt to locate information of specific interest to them, usually with the aid of an index or table of contents.

The same applies when information is displayed in electronic form — users must page through the information to locate sections of relevance or interest.

The human brain, however, isn’t always at its most efficient when it receives information in a sequential manner.

For instance, you may be reading a passage of text when a word or concept catches your attention. You might continue reading through the text, waiting patiently until the concept is developed later on. But more likely, you’ll move on and read the connected passage, before eventually returning to where you left off.

Hypertext software allows information to be arranged and accessed in a manner similar to this.

Hypertext documents are associative, not linear. This is achieved by incorporating links in texts which enable users to jump to another part of the document which contains related information and then return to where they left off.

On the Web, keywords are linked to the other passages or documents. These keywords are displayed on screen in a different colour, italicised or underlined, allowing them to be readily identified by readers. By moving the cursor or mouse pointer to that highlighted keyword and clicking, readers are taken to the related information.

These concepts form the basis of the WWW.

Let’s say you are interested in finding information about cars. In a document that you find online about cars, you notice that the name of each model is highlighted in a certain way (different colour, in italics, and so on). You would know that if you wanted to find more information about any of those highlighted models, you could move your cursor or mouse pointer to that highlighted text, and click on it.

Your screen would then display a secondary document about that model, which itself might contain highlighted words, allowing you to access more specific information about that model.

The documents might also have links to other information on related topics, such as combustion engines or car import regulations.

**Viewing documents on the WWW**

These hypertext links are contained in documents, and the software you use to view them are called browsers, or Web browsers. A Web browser is simply a software application which can interpret the links embedded in online documents and access the related documents upon demand.

On plain hypertext systems, all the documents linked to each other are usually on the same computer. But when this software has access to the connectivity of the Internet, it brings into play a whole new realm of information retrieval.

WWW documents can contain links which automatically connect the user to other documents anywhere on the Internet, even on the other side of the globe.

You might be logged into an Australian university library via the Internet reading a document about The Endeavour. A reference to Captain James Cook is highlighted, so you click on the highlighted keyword. The link might refer to a document stored on a machine at Cambridge University in the United Kingdom. Your Web browser, in accordance with instructions contained in the link, would automatically connect to the Cambridge University’s computer and retrieve the related document.

All of this happens seamlessly in the background. You are not required to know or understand all the commands necessary to make the connection across the Atlantic, nor how to retrieve the file in question, download or view it. Those commands are preconfigured into the document, and are acted upon by the Web browser.

As you can imagine, this represents a powerful tool for accessing information. It will allow even the computer illiterate to make full use of the Internet.
The World Wide Web

A World Wide Web Page

Buttons for navigating between Web Sites

URL of Web site

The Netscape Web browser

Australian Internet Directories

- Softcom Home Page
- Internet Directories
- Web Directory
- Email Directory
- News Directory
- Other Directories
- Add to Directory
- Pick of the Day

WWW.AU - The Australian Web Directory

WWW.AU is the full directory of Australian World Wide Web sites. You can type in any string, word or part of a word to find all sites which match:

Search

Hyperlink to Email Directory: click and see

EMAIL.AU - The Australian Email Directory

Trying to find someone's email address anywhere in Australia? You can type in any string, word or part of a word to find all names, email addresses, or organisations which match.

If you type in both search terms, you can narrow your search to just those email addresses which match them both.

First Search Term: 
Second Search Term: (optional)
Ignore case @ Allow partial matching of words.

Search

If you know of a new email address, you can add it to the EMAIL.AU directory. Australian addresses only, please.
**What about other resources?**

The WWW is not limited to displaying documents. A link can contain commands instructing the Web browser to access gopher or Archie sites, or to make telnet or ftp connections, or even link users to Usenet groups (all of these resources are discussed later).

**Accessing the Web**

Like most Internet resources, the WWW is based on the client/server concept. Users install (or use) client software (Web browsers) to connect to Web servers, whose function it is to receive connections from Web browsers and pass on the information or documents requested.

Today, there are literally tens of thousands of Web servers around the world, containing hundreds of thousands of gigabytes of information, software, graphics and so on. As the WWW grows in popularity, more and more Web servers are including links to other servers around the world, allowing users to jump from server to server across the Internet.

There is also a growing number of Web servers dedicated to providing search facilities to help users track down information available via the WWW. All of this makes users’ lives much easier.

**Where do I get a browser?**

Which browsers you can use depends on what type of computer you own. For most users, this will be with an IBM (running Windows), a Macintosh or a Unix machine.

Most Internet Service Providers give their users the software necessary to access the WWW. Alternatively, most modems sold today include basic Internet software packages, which usually include a Web browser (such as Netscape or Mosaic).

If you weren’t given any Web browsing software, contact your site administrator and enquire whether they have Web browser software for their users.

If they don’t, you can either download Web browser software via ftp or use a publicly telnet-able host which offers WWW access. See Page 27 for details.

To run Web browser software on your computer, you must first have a SLIP/PPP account with your ISP. As a general rule, Web browser software will not work if you only have a dial-up account (for an explanation of the difference between SLIP/PPP and dial-up access, see Chapter 3).

There are exceptions to this rule; for example, there are programs such as The Internet Adaptor (or TIA for short), discussed below.

To use Web browser software with a SLIP/PPP account, you also need SLIP/PPP compatible software to connect to your ISP (such as Winsock, or MacPPP). It is this software that allows your computer to talk TCP/IP.

Most Web browser software available on the Internet contain detailed instructions on configuring the software, and getting it up and running. For a list of some excellent SLIP/PPP software available via ftp, see Appendix A.

**The Internet Adaptor (“TIA”)**

The Internet Adaptor (by a company called Cyberspace Development, Inc.) has come to the rescue of users who do not have access to, or cannot afford, SLIP/PPP accounts.

It allows users with only shell accounts on Unix hosts to access the Web (as well as a number of other Internet resources) via an interface that displays both text and graphics (as distinct from a text-only format).

There are versions of TIA available for both Windows-based and Macintosh computers, but installation and configuration require a bit of work. Copies of TIA are available at ftp sites around the globe, so you can do a Veronica or Archie search for the site closest to you (Archie and Veronica are discussed in Chapters 8 and 10).

Alternatively, you can get a copy of the program (along with the associated help texts) from Cyberspace Development direct at:

\[ ftp\ market\ place.com \]

in the directory

\[ /tia \]

or send them email at:

\[ tia\-info@market\ place.com \]

See Page 30 for a list of sites where you can download Web browsers (including some browsers which do not require SLIP/PPP access).

**Using the WWW**

As with all Internet resources, how you use the WWW depends upon the software you are running to access it.

If you are using a Web client, such as Netscape or Mosaic, you should refer to the
online help reference which comes with the software. Alternately, there are a number of detailed reference guides available at most major bookshops. Failing this, you can always get detailed help from any of the number of FAQ files which cover Web browsers, or the WWW-specific newsgroups.

**Public Browsers**

There are essentially two types of public browsers available via telnet:

(a) line mode browsers; and

(b) screen mode browsers.

**Line Mode Browsers**

These are the simplest types of Web browsers. The output of your searches is displayed line by line on your screen — scrolling from the bottom to the top.

Because of this, the output is limited to text only.

The benefit of such a browser is that it doesn’t care what type of computer screen (monitor) you use to read its output.

**Screen Mode Browsers**

These, like line mode browsers, are also limited to text. However, they are a little more sophisticated, in that they can place text on any part of your screen (rather than make it scroll line by line). Therefore, they can display more complex screens.

But before the screen mode browser is able to display characters on your screen, it must know a little more about what screen you are using to view its display and the number of characters per line it should display.

Almost every system (Unix, IBM and Mac) can display or emulate “VT-100” displays (which is the default used by telnet). This is the type of display you are likely to use. If you are unsure whether your software can emulate VT-100, ask your site administrator.

**Example of a telnet WWW session**

Following is an example WWW session in which we will connect to the Web server at fatty.law.cornell.edu via telnet. However, this is only one of a number of public Web browsers around. Try a few of them out to get a feel for the different browsers. See Page 27 for a list of publicly telnettable hosts.

To connect to the Web browser, use the telnet command:

```
telnet fatty.law.cornell.edu
```

Not all Web browsers will start automatically. Some will require a userid. In this case,

<table>
<thead>
<tr>
<th>Command</th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt;number&gt;</td>
<td>Enter a number to follow a particular link.</td>
</tr>
<tr>
<td>back</td>
<td>b</td>
<td>Jump to a document previously displayed.</td>
</tr>
<tr>
<td>bottom</td>
<td>bo</td>
<td>Go to the end (bottom) of the current document.</td>
</tr>
<tr>
<td>find &lt;words&gt;</td>
<td>f &lt;words&gt;</td>
<td>Use the index to find the specified keywords.</td>
</tr>
<tr>
<td>go URL</td>
<td>g URL</td>
<td>Go to a specific document.</td>
</tr>
<tr>
<td>help</td>
<td>h</td>
<td>Display a summary of commands.</td>
</tr>
<tr>
<td>list</td>
<td>l</td>
<td>Display a list of links in the current document.</td>
</tr>
<tr>
<td>manual</td>
<td>m</td>
<td>Display the online manual for the Web browser (if available).</td>
</tr>
<tr>
<td>next</td>
<td>n</td>
<td>Jump to the next link within the last document.</td>
</tr>
<tr>
<td>previous</td>
<td>p</td>
<td>Go back to the previous link from the last document.</td>
</tr>
<tr>
<td>quit</td>
<td>(no abbrev.)</td>
<td>Quit the Web browser.</td>
</tr>
<tr>
<td>recall</td>
<td>r</td>
<td>Recall a list of previously displayed documents.</td>
</tr>
<tr>
<td>recall &lt;no.&gt;</td>
<td>r &lt;no.&gt;</td>
<td>Recall a specific document from the recall list.</td>
</tr>
<tr>
<td>&lt;RETURN&gt;</td>
<td>t</td>
<td>Display the next screen.</td>
</tr>
<tr>
<td>top</td>
<td>t</td>
<td>Go to the beginning of the current document.</td>
</tr>
<tr>
<td>up</td>
<td>u</td>
<td>Display the previous screen of the current document.</td>
</tr>
</tbody>
</table>
The World Wide Web

Legal Information Institute (p1 of 7)

WWW-SITE MAINTAINED BY

The Legal Information Institute
Cornell Law School [IMAGE]

This WWW-server integrates both the Gopher-based and the WWW-based offerings of the Legal Information Institute (LII), Cornell Law School. All Internet hypertext (HTML) publications of the LII are mounted here, with links to other relevant legal materials on the LII's Gopher server and elsewhere on the Internet.

This server offers the LII's hypertext front-end to recent Supreme Court decisions (which are distributed on the day of decision under project Hermes), the LII's collection of recent decisions of the New York Court of Appeals and the AlbanyBulletin-ny (which provides analysis of selected decisions), the LII's hypertext version of the full U.S. Code and many other important legal documents. It holds the LII's

use www as the userid.

Your screen will indicate how the connection request is progressing until a connection is made (see above).

In the top right-hand corner of the screen, you will see a reference to "p1 of 7". This indicates that the screen is displaying page 1 of a 7-page document.

On the bottom line, you can see a list of commands available to you.

The reference to [IMAGE] after the Cornell Law School means that, ordinarily, an image or graphic picture would be displayed.

But because we have accessed the site using telnet, which only displays plain text, the image was not able to be displayed.

Depending on the WWW server the particular host is running, keywords will either be underlined or highlighted, or have numbers in brackets next to them (or sometimes both).

To follow a particular link, simply press the corresponding number, or use your arrow keys to move the cursor over the highlighted text, and press RETURN. (Because the browsers available by telnet operate in line or screen mode, they are not sophisticated enough to allow the use of a mouse.)

To re-display the previous screen, enter the command up. If you’ve skimmed through a number of pages, to go back to the first screen, enter the command top. Conversely, to go to the last screen, enter bottom.

At any time, you can type help for a list of commands (we will cover these in more detail shortly). To exit the Web server, use the quit command.

Other Publicly Telnettable WWW hosts

info.finet.fi (no login required)
fserv.kfki.hu (login as “www”)
www.njit.edu (login as “www”)
ukanaix.cc.ukans.edu (login as “www”)

For more information about how to access the World Wide Web without a Web browser, use one of the above WWW hosts or lynx (see below) to connect to the following URL:

www.w3.org/hypertext/WWW/FAQ/Bootstrap.html
The World Wide Web

What’s a URL?

You will notice above that we use the term “URL” in conjunction with the go command. URL is an acronym for Universal Resource Locator. Every document or service available on the WWW has a URL. URLs are simply a standardised shorthand method of referring to documents or other resources available on the Internet. These are interpreted by Web browsers when you instruct them to retrieve documents and so on.

For example, a hypertext document called mytext.txt, stored on a computer called www.example.com.au in the /pub/www directory, would have a URL of


All the information is the same as that set out in the above paragraph. However, it is recorded in a specific order: machine first; then directory; then document name. This tells the browser all it needs to know to connect to the specified computer and call up the document.

You will often see documents or services referred to by their URL. This is handy, as the information is presented to you in the order in which you must specify it for your WWW browser.

A URL must be used in conjunction with one of several commands, such as the http:// command. This tells the browser that it should expect the document specified in the URL to be in hypertext (or WWW) format and that it should act accordingly.

We will give an example of how to use a URL in the next section, where we discuss lynx.

Not all browsers are alike...

The list of commands on page 26 are the ones you are likely to use on most publicly telnetable Web browsers. New browsers might have different commands (such as the lynx browser, discussed below.) However, this list of commands will give you the basic idea. If in doubt, make use of the help option.
The lynx browser

Many ISPs now provide access to a text-based Web browser called lynx. Lynx is more advanced and easier to use than the other text-based public WWW servers accessible via telnet.

To find out if your ISP has installed lynx on its computer, type lynx at the normal prompt of your shell account.

Alternatively, if your ISP has created an index to help navigate its system and the Internet, you might find it under the WWW menu options.

If lynx is installed, it will start and automatically connect to a preconfigured WWW server (usually that of your ISP).

If your ISP doesn't have lynx installed, contact your site administrator and ask if there are plans to install it, or if there is any similar software installed for you to use.

With lynx, there are three ways to navigate the Internet:

1. Start lynx on its own (by simply typing lynx at the command prompt) and follow the links to other WWW servers provided by the default WWW server.

2. Start lynx as above, and select "go" from the options displayed on the bottom of your screen. You will then be prompted to specify the URL you wish to view (discussed below).

3. Specify a URL when starting lynx. Lynx will automatically attempt to connect to that URL:

 lynx <URL>

Specifying a URL

As mentioned above, URLs must be specified in conjunction with a command which instructs the browser (whether it is lynx, Netscape or some other Web browser) as to what type of resource you wish it to access.

For example, to connect to our hypothetical ISP's WWW server and access a hypertext document (which has a URL of www.isp.com.au/~accessnl) using lynx, you
The World Wide Web

could use either of the following steps.

Use the command:

```
```
at your command prompt, or start lynx and then select the go command, and enter:

```
```
when prompted for the URL.

http is an acronym for hypertext transfer protocol, which is the protocol defining how information is to be sent or retrieved via the World Wide Web. By using the http:// command in conjunction with the URL, you are telling the Web browser that it should expect the document to be in Web format and it will act accordingly.

Similarly, if you wish to access a gopher service or retrieve a file via anonymous ftp with your Web browser (which is much easier than doing it manually), you would use the commands gopher:// and ftp:// respectively (in conjunction with the URL of the gopher site or ftp file).

If your Web browser is correctly configured, it will attempt to log into the gopher or anonymous ftp server and retrieve the document specified.

To find out more about lynx, you can read the Lynx Users Guide, which is available at:

```
http://www.cc.ukans.edu/lynx_help/
Lynx_users_guide.html
```

**GUI interface to the Web**

There are a number of Web browsers you can download via ftp and install on your computer which will allow you to view the WWW via a truly graphical user-interface. Let’s look at a number of sites, but this time using Netscape, one of the most popular Web browsers.

As you can see from the screens captured in this chapter, there is quite a difference between the text and graphical interfaces.

Most of these Web browsers are free (at least for non-commercial users), or shareware. Your site administrator will no doubt have made copies available online for download, or will at least be able to point you in the direction where you can obtain copies.

Almost all modems sold today have basic Internet software, such as a Web browser, bundled with them. Alternatively, you could use Archie or Veronica to locate and then download a browser via ftp.

If all else fails, contact your local compu-
ter club or BBS (Bulletin Board Service) to see whether it has the necessary software.

With the advent of the WWW, knowledge of long telnet or Archie commands became redundant, as did a detailed knowledge of Internet domainnames and IP addresses.

All of this could be pre-programmed into online documents, allowing a user (whether a computer guru or novice) to navigate the Internet with a single click of a mouse or the press of a key.

So why do you need to read any further? Why torment your brain with the intricacies of those old, arcane commands?

Well, because it will help you understand the bigger picture: How the Internet came to be and, perhaps, where it is going.

One day you might not be able to access the Web, because you are on the road or in a different city, or because your computer gave up the ghost.

But you will still need your Internet “fix”. With a background knowledge of how to “manually” access Internet resources via ftp, Gopher, Archie, telnet and the like, you need never be stuck hitchhiking on the Information Superhighway.

By all means take advantage of the World Wide Web. But don’t ignore the other aspects of this global online village.

A list of interesting WWW sites appears in Appendix A. To download a Web browser, try visiting these sites:

```
ftp://ftp7.netscape.com/
```

- Home of the Netscape Web browser

```
ftp://ftp.ncsa.uiuc.edu/Web/Mosaic/
```

- Home of the Mosaic Web browser

```
ftp://ftp.qdeck.com/pub/demo/
```

- QuarterDeck Mosaic (aka Qmosaic)

```
```

- IComm (does not require SLIP/PPP)

```
ftp://interport.net/pub/pbrooks/ftp-knot/
```

- SlipKnot (does not require SLIP/PPP)

For details of other Web browsers, visit the Consummate Winsock Apps List site, listed in Appendix A.

**The Multimedia Web**

The past year has seen some very exciting developments on the Web. Software which allows
you to listen to music, watch live video performances, make telephone calls via the Internet (at a fraction of the normal STD costs), and even video conferencing is now available for almost all computer platforms.

Multimedia has hit the Internet in a big way!

**Online Audio & Video**

In the olden days (that is, a year or two ago) listening to audio files was a time-consuming and complicated process. Large files containing compressed audio needed to be downloaded, saved onto your computer’s hard disk, and then played using audio software. This process could take several hours, and usually resulted in only between thirty seconds and two minutes of average quality audio playback. Video files were usually larger … and even more tedious.

Recently, things have changed dramatically. A number of companies have released software packages which allow you to listen to audio or watch video in real time, using your SLIP/PPP Web browser. This means that you can play the audio or display the video footage at the same time as the audio/video file is being downloaded. You don’t even need to store it on disk.

This new software has proven a boon for online radio stations, music stores and movie studios, all of which put samples of their work online for users to view or listen to. It also means that Web sites can “talk” to their visitors, as well as display text or pictures. As you can imagine, these developments have opened a whole new field of interactivity for the visually and hearing impaired.

Where can you go to find out more?:

http://www.vocaltec.com

http://www.realaudio.com

http://www.vdolive.com

http://www.shockwave.com

**Internet Telephone**

Gaining access to the Internet costs on average about five dollars an hour. Once connected, you can travel the network — at a frac-
The World Wide Web

HINT

URL is an acronym of Uniform Resource Locator. URLs are a shorthand method of referring to Internet resources.

tion of what you would pay if you used IDD.

Global access to computers via the Internet can be provided cheaply because there are certain economies of scale at work. For instance, it is possible for hundreds of users to send and receive data over a single telephone line (using the packet switching network model) rather than one circuit being set aside for each user.

Now, using the Internet, you can make telephone calls using the same system – and save substantially!

Several packages have been released which allow you (with the help of a soundcard, microphone and speakers) to talk to your friends overseas at the cost of connecting to the Internet.

However, this new technology won't put Telstra and Optus into liquidation just yet, as there are a number of limitations: the calls can only be made to someone who is using similar software/hardware; the software (except for the more expensive commercial versions) only works in “half-duplex” mode (which is a technical way of saying that only one person can talk at a time, much like a CB radio); and the audio quality is not exactly perfect.

Add to these limitations the fact that at certain times of the day the Internet gets quite congested and the flow of data slows down quite noticeably (which impairs the quality of the voice transmissions), and you can see that this process still needs refining.

However, the technology is there, and as more users see the benefits of this type of Internet resource, it will develop rapidly.

Soon you will have the choice of turning to your phone or to your computer to make that important interstate or overseas phonecall.

Find out more by visiting these sites:

http://www.vocaltec.com/
- Internet Phone
http://www.emagic.com/
- NetPhone (Mac)
http://www.itelco.com/
- WebPhone

http://www.fourmilab.ch/netfone/windows/speak_friendly.html
- Speak Freely
http://www.planeteers.com/
- DigiPhone
http://www.qdeck.com/qdeck/demosoft/webltalk/
- Web Talk
http://www.northcoast.com/savetz/voice-faq.html
- FAQ: How can I use the Internet as a telephone?

CU-SeeMe

Another recent development on the Internet is video conferencing software, such as CU-SeeMe. With the aid of a soundcard, microphone and a small video camera, you can send and receive real time video and audio across the Internet.

Developed at Cornell University (hence the “CU”) and available for both Macintosh and Windows systems, the software combines video and audio input and sends it over the Internet, while playing/displaying audio and video received from other users.

However, the software is a distinct “bandwidth” hog, and is particularly Internet-unfriendly. Because of its huge data requirements, the video is usually of poor quality (7-8 frames per second), and rarely in-sync with the audio (especially when the Internet is congested).

But CU-SeeMe will give you a taste of things to come. It is available at a number of ftp sites, and the best source of information about installing it and using it is the developer itself at:

http://cu-seeme.cornell.edu/

Other sites related to CU-SeeMe can be found at:

http://www.wpine.com/cu-seeme.html
- White Pine Software (a source of commercial grade software)
http://www.indstate.edu/CU-SeeMe/index.html
http://www-bcf.usc.edu/~vanman/reflector.html
- The Reflector Ezine

http://www.fourmilab.ch/netfone/windows/speak_friendly.html
- Speak Freely
http://www.planeteers.com/
- DigiPhone
http://www.qdeck.com/qdeck/demosoft/webltalk/
- Web Talk
http://www.northcoast.com/savetz/voice-faq.html
- FAQ: How can I use the Internet as a telephone?
CHAPTER 6

Electronic Mail (Email)

Email, or electronic mail, is exactly what the name suggests: mail sent between users electronically.

Email is the most popular, and probably the most productive, resource available on the Internet.

The ability to send messages electronically to users around the globe has "made the world smaller", enabling millions to share information and participate in discussions on an unprecedented level.

The software and terminology used when sending or discussing email can be particularly daunting, but once you have grasped a few fundamental concepts, the path is cleared for a better understanding.

According to The New Hacker's Dictionary, the term "email" is derived from the French word emmalleure, meaning "network".

In essence, email is mail (correspondence) sent over a network (whether it be a Local Area Network [LAN] where all the users are in the same building and using the same computer system, or across the globe on non-related computer systems).

A computer need not be directly connected to the Internet to send and receive email from other Internet users. Some Bulletin Board Systems (BBSs) and other online services offer an email "gateway", through which email can be sent to the wider Internet community.

As such, it is important to remember that just because a person has an email address, doesn't mean s/he has access to all the Internet's resources.

**Email Addresses**

Probably the most important piece of information you need to know when using email is your own email address.

Because of the nature of the Internet, the
Electronic mail (Email)

way it has grown and spread in pretty much a haphazard fashion, with no one group or government regulating or coordinating it, no centralised records have been kept (or can be kept) of individual email addresses.

As discussed in Chapter 4, there is a centralised database administered by InterNIC which contains a list of every machine connected to the Internet.

But it does not contain a list of the individual users who use or have access to those machines. As such, there is no "white pages" for the Internet where you can look up your own or a colleague’s email address, although this has not stopped people from attempting to publish authoritative listings of email addresses.

These are at best ad hoc, as there is no compulsion on the part of Internet users to register their details with sites such as these. However, you may wish to give them a go:

http://www.infop.com/phone/isearch.html
- InfoPlus Internet Directory
http://www.four11.com/
- Four11 Directory Services (I found my own email address at this site)
http://www.liszt.com/
- A generic search engine for searching for Usenet newsgroups, mailing lists, email addresses etc. A good general resource
http://worldemail.com/
- World Email Directory
- The Australian Email Directory

Because people are transient beings, email addresses tend to be short lived. People move to different cities, or change jobs, lose Internet access or change Internet Service Providers.

So even though you find an email address of a person in one of the above search engines, there are no guarantees that it is still valid. And what is to say that there are not two Mark Neelys or whoever in the world?

Primitive as it may sound, the best way to ascertain someone’s email address is, and will probably remain, to telephone and ask!

So, how do you work out your own email address?

Your email address is normally your userid, plus the domainname of the computer to which you connect to gain access to the Internet (your Internet Service Provider’s computer), separated by the "@" symbol.

Your userid

When you connect to your ISP’s computer using your modem, it will normally request that you enter your account name (sometimes called a login id or login name) and a password. The account name is your userid. This is not always your real name.

For example, when I created my account, I called it accessnt after the name of my company, as I intended using it for company business.

If I were to create an account for purely personal use, I might have selected an account name closer to my actual name, such as neelym or mneely.

Most ISPs allow you to select your own userid when you first establish your account on their service (a well-known exception being Compuserve, which uses digits for its userid).

Usually, the first time you connect to the ISP’s machine, it will ask for certain details about yourself (generally for administration and billing purposes), and then prompt you to select a userid (but beware, it might not actually refer to it as a userid).

Most ISPs require you to select a userid of between 8-12 characters.

It is generally advisable to select a userid that is similar to your own name, if only to make it easier for other people to guess your email address when trying to contact you.

Put the two together and...

As we have said, your email address consists of your userid, the "@" symbol, and the domainname of your ISP’s computer.

Hence, because my account is on OzEmail’s machine, my email address is: accessnt@ozemail.com.au

A user Joe Smith with an account on
Electronic mail (Email)

**HINT**
The recipient’s email address must contain a valid userid and domainname, separated by the “@” symbol. Make sure there are no spaces, and check for typos before sending.

Internet Options’ machine might have an email address of:

- smithj@netoptions.com.au
- jsmith@netoptions.com.au
- elvis@netoptions.com.au

depending on what he chose as his userid.

Thus, the userid is (normally) selected by the particular user, whereas the balance of the email address is determined by the ISP’s domainname.

With this knowledge, even in the absence of a central database to look up email addresses, it is fairly easy to guess someone’s email address (providing s/he is not living out a fantasy as a famous singer).

**Sending email**

You cannot send email without having the recipient’s full email address. This information is required by your ISP’s computer before it can send your email message.

Without this, it is like mailing an envelope with no address on it — Australia Post wouldn’t even know where to start.

Actually, the Australia Post example is a fairly good analogy.

If you think of sending email in terms of sending an ordinary letter, much of the information required to complete the task makes more sense.

To send written correspondence, you must provide Australia Post (in our example, the equivalent of the Internet email system), with the following details:

- The recipient’s name (userid).
- The recipient’s street address (domainname).
- If not within Australia, the country in which the recipient lives (domainname).

Not essential, but Australia Post likes to know:
- The sender’s name.

- The sender’s address (in case it can’t be delivered or to allow the recipient to reply).
- The time, date and place of posting.

The Internet email system works in the same fashion and requires the same information.

When you invoke your email program, it will require you to provide certain information before it can do its job.

The order in which your email program requires the information, and how it is entered, depends entirely upon the email program you are running and the type of machine you are using.

We will deal here with the general principles applicable to all email programs and systems. However, you might find that your email program has special “bells and whistles”. Read the online help for further information, or ask your site administrator for assistance.

**Recipient’s name & address**

Here you must specify the recipient’s full email address. If you don’t supply both the userid and domainname, then your email program will probably refuse to send the mail or unsuccessfully try to send it.

There are a few hazards here. If you mistype the domainname component of the email address, then it is unlikely the email will be delivered.

Your email software will attempt to look up the recipient’s email address (using the Domain Name System), find it is not a valid domainname, and abort.

It will probably also send you an error message to that effect.

However, if you specify a correct domainname, but make a typo in the userid, it is possible that the mail will be delivered, but to the wrong person.

For example, if you were trying to send email to the user:

- smithj@domain.com.au

but mistyped it as:

- smithk@domain.com.au

it may be that there is a user with the userid of “smithk” on the machine domain.com.au, in addition to a user “smithj”. As far as your email program is concerned, you have specified a correct email address (because there exists a user “smithk@domain.com.au”), and it will deliver your email, albeit to the wrong person.
Electronic mail (Email)

You can well imagine the possibilities for embarrassment!

Of course, this could also happen when you mistype the domain name, but the possibility of a misspelt domain name being a valid domain name which has a user with the same userid is fairly slim. Nonetheless, this is a cogent reason for being careful when you enter email addresses.

Many email programs have "address books", in which you can store email addresses, to save you from having to type them each time you want to send email.

These not only save the ol' fingers, but they can decrease the likelihood of a typo in the email address.

Subject

After you have specified the full email address of the recipient, you will be prompted for a subject header. The subject header will be displayed by the recipient's email program, so that he or she will have an idea of what your email is about.

The use of a subject header is voluntary, but advisable. It also makes sense to make your subject headers as accurate as possible.

If your email contains information of importance to the recipient, s/he may have trouble finding it on a later occasion if you simply use a subject header such as "hello", as you did the previous 20 times you sent email.

Also, a subject header of "Urgent! Must read", would give the recipient some idea that it should be read sooner rather than later.

Time, Date & Sender

This information is usually automatically in-
sented by your email program, so that recipients will know where to email their response.

But it is also used by the email program itself. When you wish to reply to email received from another user, you don’t always have to laboriously type his or her email address.

Your email program will have a reply command, which will instruct it to prepare an email reply to go to the sender of the email. Your email program will automatically insert the sender’s email address, and provide a subject header (which will make reference to the original subject heading).

However, you will have an opportunity to edit this before the mail is sent. When replying to an email message, you will also have the option of including the text of the original email, so that you may refer to or quote from it in your response.

You’re probably wondering why it is so important to have the time and date included in the email. Well, there are basically two reasons for this.

If you were to send “Urgent” email to someone on the Monday, and the recipient did not have a chance to read it until Friday, s/he would have some idea that this might be a little late.

Having a time and date stamp allows users to prioritise their reading of email, and keep their messages in order.

But the time and date information also allows the computers to regulate themselves. Perhaps it is worthwhile to discuss here how email is sent from your machine to the recipient’s machine. It is a little technical, and it is not required knowledge, but it is handy to have an idea about the operation of the system.

**Transmission Control Protocol (TCP)**

You will recall that in Chapter 2 we mentioned that all computers connected to the Internet share a common language or protocol: TCP/IP. You will also recall that the “IP” or “Internet Protocol” part of that standard regulates the naming and addressing of computers on the Internet. (See Chapter 4 for details of how the names and addresses are assigned.)

The other aspect of the protocol, “TCP” or “Transmission Control Protocol”, regulates how those computers talk to one another and share information.

When information is sent from one machine to another across a network, whether it be an email message or a file, it isn’t all sent in one hit. Rather, it is broken down into smaller pieces, which are sent one by one. These smaller pieces are referred to as packets.

The reason files are broken down into packets is fairly straightforward.

As discussed in Chapter 2, when you use a telephone to call a friend, you are in fact using a network of sorts. Most modern telephone exchanges use what are called circuit switching networks.

For the duration of your phone call, you are assigned a circuit (or a phone line). When you hang up, the circuit may be used by another party, but for the duration of your call, only you and your friend can use that phone line.

Networks interact differently. Several computers may use one telephone line at the same time. This is known as packet switching.

Basically, to allow several computers to send information over the same telephone line, no one computer has a monopoly over the line at any one time. If this were the case, then a computer sending a very large file would prevent the other computers from sending information, causing backlogs and congestion.

To ensure all computers have equal access to the line, the information they are sending is broken down into equal sized packets, which are sent down the line, interspersed with packets from other computers. In this way, all computers can use the one line.

To ensure the information doesn’t get lost, each packet is electronically “stamped” with the Internet addresses of the intended recipient and the original sender. They are also sequentially numbered, so they can be correctly reassembled by the recipient’s computer.

If you were sending email from your computer in Gundagai to a friend in Tokyo, it is unlikely that there would be a direct Internet connection from Gundagai to Tokyo (in fact, there isn’t).

However, your ISP’s computer will know, from the email address you supplied, exactly where on the Internet your friend is, and will pass it on to a computer on the Internet which is closer to Tokyo.

That computer might not be in Tokyo either, but it will examine the recipient’s address contained in the packets it receives, and send
Electronic mail (Email)

them on to another computer which is even closer to the destination. This “pass-the-packets” procedure will continue until eventually all are received by the Tokyo computer.

On occasion, individual packets may get lost in the cracks of cyberspace. If this occurs, the receiving computer will soon discover the fact when it attempts to reassemble the packets into the file etc. that was originally sent, and will issue a request to the sending machine to re-send those lost packets so that it may reassemble the complete file.

As you can see, the packets comprising your email message may pass through the “hands” of many computers until they are received and re-assembled at the other end, then placed in the recipient’s email box.

What’s more, all the packets might not follow the same path, but be handled by different computers. Wherever they might pass, rest assured that they will all end up at the right place (providing you specified the correct Internet email address).

**An email analogy**

This might sound a little complex, but it is no different to the modern postal system.

This book contains several chapters. Let’s say I sent each chapter to my publisher in New South Wales from Darwin in a different envelope, all numbered sequentially.

When I hand the envelopes to Australia Post in Darwin, they wouldn’t assign one postal worker to personally deliver my mail to New South Wales.

No, the envelopes would be put into a huge basket at my local GPO, where all mail is sorted according to destination.

My envelopes would go into a satchel with all the other mail destined for the same area and be flown to NSW. There it would be collected by a postal worker, and resorted. It would then be forwarded to the Post Office nearest my publisher’s address.

Only then would one person be assigned to deliver it to my publisher’s mail box (together will all the other mail for that area).

My envelopes would be placed into my publisher’s mail box, but they wouldn’t neces-
sarily be in sequential order. My publisher would get the mail and sort them himself, before opening the envelopes.

In this example, each of my envelopes would be the equivalent of a packet, each separately addressed to the recipient, each one containing only a portion of the final product, this book. Australia Post is the equivalent of a packet switching network, handling a number of envelopes (packets) at any one time.

Now, returning to my original point about the need for time and date stamps on email messages.

Each packet is given a time and date stamp as it is sent. As they are passed from computer to computer, this information is examined to see how long the last step of the journey took.

If it took longer than expected, it is probably because part of the network is congested, or there is a problem with the machine that passed it on.

This information is noted and that section of the network will be avoided by other computers until the congestion clears or the problem is fixed. Here, the network is attending to some preventative maintenance.

One final point I should make is that all of the above steps (breaking the email or files into packets; individually addressing them; passing them on; and being inspected by the different hosts along the way) occur in fractions of a second.

It would probably take less than a minute for email to get from one end of Australia to the other, and a little longer to get from one end of the Internet to the other. **That** is why Internauts refer to ordinary mail as “snail mail”!

**How useful is email?**

In a word: VERY! Depending on what your ISP charges for Internet access, it is usually cheaper to send a document via email than by facsimile.

It is also more useful than faxes. If you have an important report that you want to get to a colleague in San Francisco for comment and possible amendment, there are a few ways you can do it.

You could send him a disk containing the files comprising the report by express air mail. You have no guarantee the disk will get to the eventual recipient (but it usually will), or that the disk itself won’t get damaged, or have a bad sector, or suffer any number of things that can go wrong with disks.

**HINT**

If you are not sure what your email address is, ask your site administrator.
Alternatively, you could fax him a copy of the report. If it is a long report, this could cost a bit in STD charges, and your colleague could only mark amendments on the fax and fax the pages back to you.

This works fine for small documents with minor amendments, but if it is over 10 or so pages, the whole process can be messy.

Enter email. You can email the document, which will be received in one piece within minutes. Your colleague could then save the email message, import it into her/his favourite word processor, make the necessary changes and email the new document to you for further work if necessary.

Email has opened the way for a whole new form of electronic commerce. A medium-sized company might have offices in several different cities, States or countries. It probably couldn’t afford a dedicated network connecting all the offices. But it could afford Internet accounts for each office.

The company could use the Internet as a de facto Wide Area Network (WAN) for its offices. Each branch could email regular financial reports or monthly inventory tallies for inclusion in the main records stored at head office.

Soon, companies will be corresponding with each other and their clients via email, answering product queries, sending out regular news updates, and keeping in touch with their employees around the country.

Within a few years, it will be commonplace to send email containing audio and video, as well as text and graphics.

**Internet Mailing Lists**

Email can be very useful for person-to-person communication. But it can also be used to keep in touch with a number of other individuals who share a common interest.

Internet email lists (or mailing lists) allow discussion between many users on a topic that interests them. Mailing lists begin when a user writes a document (referred to as a “charter”) which outlines the purpose of the mailing list and the scope of the discussion.

S/he then posts a notice in relevant newsgroups (and perhaps on other related mailing lists) inviting all interested parties to join the new mailing list.

Anyone who is interested in joining in the discussion can then send email to the originator of that mailing list (usually called the “list owner”), who compiles a list of participants’ email addresses.

Subsequently, every email message sent to the list will be distributed to all users who have subscribed to the mailing list.

If you find a particular message of interest, you have the option of sending your response directly to the original poster of the email message, or to the entire list, for their consideration.

Participating in mailing lists exposes people to different approaches or views on the same topic, which often leads to (sometimes heated) debates and analysis.

For example, to join the (as yet imaginary) list for discussing Australian Internet culture, called AIC-L, you might be instructed to send email to listserv@mydomain.com.au with the command:

```
subscribe AIC-L <your email address>
```

in the body of the email message.

The automated mailing list software (in this case called listserv) processes your request to be added to the mailing list, and sends you an email message advising whether or not your request was successful.

If it was, the message generally includes a note describing the purpose of the mailing list, and advising you how to unsubscribe from the list should you so desire. It is generally prudent to print or retain a copy of this notice for future reference.

If your request was unsuccessful, the mailing list software will send you a message explaining why.

One listserv may handle subscription requests for a large number of mailing lists, and may have had difficulty determining which list you wished to be subscribed to.

You could also have misspelt the name of the list, or forgotten to include your email ad-

---

**EMAIL SOFTWARE**

- **EUDORA** *(my favourite)*
  - quest/eudora/
- **PEGASUS** *(free!)*
  - ftp://ftp.enterprise.net/pub/mirror/winsock-l/mail/
Electronic mail (Email)

DomainNames

Below is a list of the more popular Australian ISPs and their domainnames. However, the list is by no means exhaustive. There are a number of monthly Australian Internet magazines, such as Internet.au and Internet Australasia which carry lists of Internet Service Providers and their contact details.

These can be helpful when you want to find an Internet Service Provider that provides local call access in your area and to obtain a list of commercial domainnames.

<table>
<thead>
<tr>
<th>ISP</th>
<th>DomainName</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access One</td>
<td>aone.net.au</td>
</tr>
<tr>
<td>Apana</td>
<td>apana.org.au</td>
</tr>
<tr>
<td>AusNet</td>
<td>world.net</td>
</tr>
<tr>
<td>Australia Online</td>
<td>ozonline.com.au</td>
</tr>
<tr>
<td>Brisnet</td>
<td>ozspace.brisnet.org.au</td>
</tr>
<tr>
<td>Camtech</td>
<td>camtech.com.au</td>
</tr>
<tr>
<td>Compuserve Pacific</td>
<td>compuserve.com</td>
</tr>
<tr>
<td>Connect.Com</td>
<td>connect.com.au</td>
</tr>
<tr>
<td>Dialix</td>
<td>dialix.com</td>
</tr>
<tr>
<td>Geko</td>
<td>geko.com.au</td>
</tr>
<tr>
<td>Global Infolinks</td>
<td>ipswichcity.qld.gov.au</td>
</tr>
<tr>
<td>IINet Technologies</td>
<td>iinet.net.au</td>
</tr>
<tr>
<td>Informed Technologies</td>
<td>it.com.au</td>
</tr>
<tr>
<td>Interconnect Australia</td>
<td>interconnect.com.au</td>
</tr>
<tr>
<td>Internet Access Australia</td>
<td>iaccess.com.au</td>
</tr>
<tr>
<td>Internet Options</td>
<td>netoptions.com.au</td>
</tr>
<tr>
<td>Internet Services</td>
<td>ci.com.au</td>
</tr>
<tr>
<td>Magnadatal</td>
<td>magna.com.au</td>
</tr>
<tr>
<td>On The Net</td>
<td>onthenet.com.au</td>
</tr>
<tr>
<td>OzEmail</td>
<td>ozemail.com.au</td>
</tr>
<tr>
<td>Pegasus</td>
<td>peg.apc.org</td>
</tr>
<tr>
<td>TMX</td>
<td>tmx.com.au</td>
</tr>
</tbody>
</table>

dress. The listserv message should give you instructions on how to get further help.

Some email lists are moderated, which means that all messages are examined for suitability before being forwarded to the other list members. This is usually the case with mailing lists which discuss highly specialised, technical or sensitive topics. The moderator may weed out irrelevant or inaccurate postings.

Also, on rare occasions, the list owner will reserve the right to review all requests to join a mailing list. In this case you will receive an email message to the effect that your subscription request has been forwarded to the list owner for approval.

To obtain a list of publicly accessible mailing lists, check out the news.lists newsgroup. Alternatively, you can send email to:

mail-server@rtfm.mit.edu

with the command:

send usenet/news.lists/
Publicly-Accessible_Mailing_Lists_Part_01_14

(Note: the mail-server software is case sensitive, so type the command exactly as it appears above.)

There are 14 parts, each of which can be requested individually by changing the 01 in the above command to 02, 03 etc.

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CHAPTER 7

Secrets of file transfer protocol

It is difficult to imagine how you could effectively explore the online world without ftp, or file transfer protocol. Although use of the command has largely been replaced by Web browsers, ftp is still the primary method of transferring or copying files over the Internet.

In the near future it is likely that you will be able to download any information or program you may desire via Web browsers, using hypertext links. Web authors now include ftp commands as part of their online documents, and these are automatically acted upon by your Web browser to locate and download files.

ftp can be a difficult concept to grasp. ftp is the name of the protocol that regulates how computers (whether they are the same kind or not) exchange files. However, the program you use to connect to a computer in order to copy or download files is also referred to as an ftp program.

But you should always remember the difference. file transfer protocol on the one hand is a specification for how computers connected to the Internet exchange files, but the program you use to actually copy the files is also called ftp or (occasionally) an ftp client.

Remote & Local Hosts

In Chapter 16 we discuss the difference between “host” and “client” programs. We also discuss the concepts of “local” and “remote” computers.

When you are linked to the Internet, the computer to which you are connected (usually your Internet Service Provider’s machine) is known as the local host. When you use the local host to connect to another machine on the Internet, the other machine is referred to as a remote host.

In this chapter, we will use the term remote host to refer to the machine to which you connect and copy files from. The machine you copy the files to, that is, your ISP’s computer, is referred to as the local host.

When you use ftp to connect to a remote host, the remote host will expect you to enter login details before you can access its directories and files. That is, it will require a valid userid and password.
This is a fairly large limitation for most Internet users. The ability to login and download the latest printer driver or software patch is fairly useless if you must first obtain an account on each machine you wish to visit.

To get around this problem, the very generous administrators of thousands of Internet computers around the globe allow users to connect to their machines using a generic userid which does not require a password.

**Anonymous ftp**

It was decided that a standard userid, anonymous, would be used to allow guests (that is, users without an account on the remote host) to login. This allows anyone with Internet access to peruse and download files on any machine allowing anonymous ftp connections.

**Connecting via ftp**

There are two methods of connecting to a remote host via ftp.

The first method is by invoking the ftp program and specifying the remote host you wish to connect to. For example:

```plaintext
ftp ftp.domainname.com.au
```

The above command tells the ftp program to establish a connection with a remote host called ftp.domainname.com.au. As always, you must specify the complete Internet address of the remote host. You can use either the domain name or the IP address.

**An ftp session**

An example ftp session might look like:

```plaintext
ftp ftp.domainname.com.au
Connected to ftp.domainname.com.au
```

As the above example shows, once you invoke the ftp program and specify a correct Internet address, the ftp program attempts to establish a connection with the remote host. If the site is configured to accept ftp logins (of any nature), your system will inform you that connection was successful by displaying:

```plaintext
Connected to ftp.domainname.com.au
Name:(ftp.domainname.com.au:accessnt):
```

You must then enter a valid userid. Enter anonymous as your userid. You will notice that the remote host’s ftp server has your userid preselected (in my case, accessnt). This is because your computer supplies the remote host with your details (both your userid and the domain name of your ISP’s computer) as part of its request to connect to it. If you had a real account on the machine you were ftp-ing to, and it has the same userid as your account on the computer you are ftp-ing from, then you could simply hit RETURN. But this is rarely the case.

**Ensure you enter anonymous in lower case.** Unix software, which most machines connected to the Internet run, differentiates between upper and lower case.

Therefore ANONYMOUS, anonymous and Anonymous would all be treated as different userids by a Unix machine.

Accordingly, it is prudent to assume that all computers you come across do differentiate between case.

After a second or two delay while the remote host verifies that the userid entered is a valid one, you will be prompted to enter a password:

```plaintext
Guest login ok, please send e-mail address as password
```

As we mentioned before, you do not need a password to log in anonymously. If you were to hit the RETURN key at the password prompt, the remote host’s ftp software would still allow you to log in. However, system administrators generally like to have an idea of who connects to their computer and from where.

For this reason, it is accepted practice (and good Internet etiquette) to enter your full email address as the password (as you are prompted to do in the above example).

When you type your email address, the characters will not be echoed to the screen. This is for security reasons, as authorised users log in the same way and it prevents snoopers from seeing their passwords displayed on the screen.

Once you enter the userid of anonymous and enter your email address as the password, the system will insert a message similar to:

```plaintext
Guest login ok, access restrictions apply
```

Note that some computer systems have been programmed to verify the email address supplied during an anonymous login is correct. If you do not supply your real email address when logging onto machines that do these checks, you are likely to be refused access or, at the very least, will receive a message on the
screen reminding you to supply your correct email address next time. If only for these reasons, you should always enter your full email address as the password.

You will then be presented with the ftp prompt:

```
ftp>
```
as the remote host’s ftp server awaits your command.

**Access restrictions**

It is quite likely that a machine that allows anonymous ftp logins has program files or other documents which the remote hosts’ administrators do not want to be made available to the general public.

To maintain the security of their site, and to protect sensitive information from prying eyes, when you log into a remote host via anonymous ftp, you will only be given restricted access to the information and files stored on that machine.

That this is so is reflected in the example message on the previous page: “access restrictions apply”.

You will probably notice as you wander through the directory structure of various machines that there are directories with interesting names that do not have files in them.

Alternatively, you might find a file you want to download, but when you ask the remote host to send it, it informs you that access is denied. This is because the host’s administrator has elected not to allow you to see or download those files. Please respect that decision and don’t try to circumvent it.

**The Second Connection Method**

As with telnet (See Chapter 9), you can establish an ftp session either by specifying the address of the remote host at the time of issuing the ftp command, or by simply issuing the ftp command without specifying the remote host’s name.

If you start an ftp session using the latter approach, your ftp client will display the prompt:

```
ftp>
```

and await details of which remote host you wish to connect to.

Once you are at the ftp prompt, you can tell your ftp client which remote host to connect to using the `open` command:

```
ftp> open domainname.com.au
```

To exit the ftp prompt, use the `quit` command.

**Connection difficulties**

If you misspell the remote host’s address, or if the address is not valid, then ftp will return an error message similar to:

```
dudname.com.au: unknown host
```

You will then be returned to the ftp prompt, where you can try to connect again with the correct name.

If the remote host’s ftp service is temporarily unavailable, or if it does not allow ftp connections, it will respond with:

```
ftp: connect: Connection refused
```

If the specific network to which the remote host is connected is heavily congested or is experiencing a problem, then you will receive a message such as:

```
ftp: connect: Host is unreachable
```

In this case, the ftp client has confirmed that the remote host’s address is a valid one, but it cannot connect to it due to some problem with the network.

In the example above, when we tried to connect to a remote host whose address was misspelt, the ftp program returned an error message, and then showed the ftp prompt.

At the ftp prompt, you can try connecting again with the open command:

```
open ftp.domainname.com.au
```

If you decide you want to give up, exit the ftp prompt by typing `quit`.

**ftp commands**

To get a list of commands which may be used with ftp, enter `?` or `help` after you have established a connection. The screen shot on Page 44 shows what you should see.

If the list of commands you get differs slightly, it doesn’t really matter, as all the important commands will be standard.

If there are commands available that aren’t discussed here, you can get a quick summary of the command by entering `?` followed by the command name.

For example, to get help on changing directories, you type:

```
? cd
```
ftp> help
Commands may be abbreviated. Commands are:

<table>
<thead>
<tr>
<th>Command</th>
<th>Command</th>
<th>Command</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>.</td>
<td>cr</td>
<td>macdef</td>
<td>proxy</td>
</tr>
<tr>
<td>$</td>
<td>delete</td>
<td>mdelete</td>
<td>send</td>
</tr>
<tr>
<td>account</td>
<td>debug</td>
<td>mkdir</td>
<td>sendport</td>
</tr>
<tr>
<td>append</td>
<td>dir</td>
<td>mget</td>
<td>put</td>
</tr>
<tr>
<td>ascii</td>
<td>disconnect</td>
<td>mkdir</td>
<td>pwd</td>
</tr>
<tr>
<td>bell</td>
<td>form</td>
<td>ms</td>
<td>quit</td>
</tr>
<tr>
<td>binary</td>
<td>get</td>
<td>mode</td>
<td>quote</td>
</tr>
<tr>
<td>bye</td>
<td>glob</td>
<td>mput</td>
<td>recv</td>
</tr>
<tr>
<td>case</td>
<td>hash</td>
<td>mmap</td>
<td>remotehelp</td>
</tr>
<tr>
<td>cd</td>
<td>help</td>
<td>ns</td>
<td>rename</td>
</tr>
<tr>
<td>ed</td>
<td>lcd</td>
<td>open</td>
<td>reset</td>
</tr>
<tr>
<td>close</td>
<td>ls</td>
<td>prompt</td>
<td>rmdir</td>
</tr>
<tr>
<td>ftp&gt;</td>
<td></td>
<td></td>
<td>runique</td>
</tr>
</tbody>
</table>

Using the help command

**Connection commands**

We have already dealt with the basic connection commands (open and ftp).

To disconnect from an ftp session, enter the close command. This will close the current connection, and return you to the ftp prompt, where you can establish a further connection using the open command.

On occasion, you might connect to a remote host and misspell your login userid (anonymous has the right combination of different characters to make it a minefield to type after a few hours at the keyboard!).

If you misspell or mistype anonymous, the remote host will treat what you type as a userid, and expect a password. It will then check the details entered against its list of valid userids and passwords.

Once it ascertainst that what you typed is not correct, the remote host’s ftp server may automatically terminate the connection or (depending on what software the remote host is running) it will await a second login attempt.

In this case, to tell the remote host’s ftp server you wish to attempt to login again, you must enter the user command. You will then be asked for a userid and password again.

To speed matters up, you could enter all the details on one line:

ftp> user anonymous accessnt@ozemail.com.au

In the above example, we specify the userid of anonymous and the password as accessnt@ozemail.com.au.

**Navigating around the Remote Host**

Once you have logged in, unless you already know the directory and file name of the particular file you are looking for (for instance, where you have conducted an Archie search before starting), you will need to have a look around the file and directory structure of the remote host to get some idea where the information you are looking for might be stored.

This can be done via a number of simple (or, at least, easy to remember) commands, entered at the ftp> prompt.

**The Dir command**

Before we look at this command, there are a few terminology matters we should deal with.

For instance, the term home directory will be used to refer to the directory you are currently logged into (your current directory).

You can find the name of your home directory at any time with the pwd command. Enter pwd at the ftp prompt and you will see a message similar to:

/pub/games/doom is current directory

Okay. Now for the dir command. This command displays a list of files and directories in the home directory.
As a general rule, when you log into a machine via anonymous ftp, you will be logged into the root directory; that is, the main directory, from which all other directories and subdirectories spawn.

But this isn’t always the case. A particular machine might be set up to take anonymous or guest users to a specific directory many directories deep on the computer’s directory structure, and only allow them to view that particular directory or its subdirectories.

This precaution is taken for security reasons to keep prying eyes away from files in the other directories.

But these days, you are very unlikely to come across such setups, as it is generally accepted that confidential files should not be stored on anonymous ftp servers.

The dir command is entered at the ftp prompt:

ftp> dir

Now let’s say we are looking for a file called internet.doc, which is stored in the /pub/Internet/Manual directory.

Many IBM users will recognise the directory name /pub/Internet/Manual. This type of directory structure is similar to the DOS directory structure.

But there are some important differences. The main difference is the “/” separator between directories in the directory name.

On DOS-based machines, a “\” (or backslash) is used between directory names, whereas on Unix systems, the “/” (or forward-slash) is used. They are not interchangeable, and \pub\Internet\Manual will not be recognised.

You’ll note here that I am referring only to Unix directory structures and commands. That’s not to say that Unix machines are the only types of machines used as anonymous ftp servers. But they constitute a large proportion of servers.

Another type of machine you might stumble across is a VAX machine. Unfortunately, this has an entirely different directory structure again! It is not the purpose of this book to cover different operating systems or their directory structures. There are three reasons for this:

(a) We’d be here forever.
(b) It is increasingly unlikely that you will come across a VAX host on your Internet journeys, as more and more academic sites are changing to Unix machines.
(c) It is likely that you will be running Internet-specific software on your machine which offers a GUI frontend, so all you need to do is “point-and-click”.

Changing directories

After performing a directory listing we know that this machine does have a subdirectory called /pub. Hopefully it will also have further subdirectories called /Internet and /Manual.

To get from the root directory to the /pub directory, we need to tell the computer to “change directories”. To do this, we use the cd command, which is simply an abbreviation of “change directory”.

For instance:

ftp> cd pub

tells the remote host to change from the root directory (or whatever the home directory is) to the specified directory (assuming it is a subdirectory of the home directory).

Once we have issued the cd command, we could then issue another dir command to ascertain whether there is a further subdirectory called /Internet. We shall assume there is. To get from the /pub directory to the /pub/Internet directory, we must again use the cd command:

ftp> cd Internet

To change from the /pub/Internet directory to the /pub/Internet/Manual directory, we would issue the command:

ftp> cd Manual

You might have guessed that we could have saved ourselves a few steps by simply typing one command:

ftp> cd /pub/Internet/Manual

However, using the first method, we were able to make sure that the directories we expected to find did in fact exist (and it also lets us look for any other files of interest on the way through!).

If the directory we are trying to cd to does not exist (i.e., cd wrongdir), the remote host’s ftp server will respond with an error message:

wrongdir: no such file or directory

(If the directory existed, we would have been taken directly there.)

Getting files

To retrieve or download files from the remote host, use the get command:

ftp> get <filename>
In the present example, we would use the command:

```
ftp> get internet.doc
```

We’re in the right directory, and we know the file is there since we issued the
```
ftp> dir
```
command and checked the listing of files it displayed.

**Getting multiple files**

If you want to download several associated files in the one directory, you can use the `mget` command (“mget” is short for “multiple get”). Using `mget`, you can specify (using wildcard switches) several files to download.

For example, suppose `internet.doc` had two companion files, `internet2.doc` and `internet3.doc`. You could get all three files with the command:

```
ftp> mget internet*.doc
```

This would tell the `ftp` software to send all files with “internet” in their filename. Similarly, if the files were named `internet.1`, `internet.2` and `internet.3`, you could get all files with the command:

```
ftp> mget internet.*
```

**Are all files the same?**

Before we start downloading files, we had better tell the remote host what type of file it is sending, and our machine what type of file to expect! There are two types of files that your `ftp` software will recognise: ascii and binary.

An **ascii file** is a file which comprises raw text, without any special formatting codes. A text file created by most modern word-processing packages would not qualify as a plain ascii file.

A word processor, in addition to the text you type, also adds formatting codes, so that next time it or a compatible word-processing program reads the file, it knows where to put in the paragraph and page breaks, and which characters to present in italics, bold, and so on.

Files which are stored in raw ascii are generally denoted by the file extension `.txt` or `.asc`. If a file has that extension, you can be fairly sure it is an ascii file.

Any other file types should be assumed to be binary files.

A **binary file** is a file which has non-ascii (computer readable) characters in it. Application programs and their data files are examples of binary files. Wordprocessing files with formatting codes are treated as binary files as the formatting codes will contain non-ascii characters.

To tell the `ftp` software what file to expect, there are two different commands: **ascii** or **binary**, which can be entered at the `ftp` prompt (`ftp>` once you are connected:

```
ftp> ascii
```
or

```
ftp> binary
```

The host computer will then respond with the (rather cryptic) message:

**Type set to A** (i.e. ascii) or

**Type set to I** (i.e. binary)

Remember, you must set the file types before you `get` or `mget` the files.

**Archived files**

Because of the time it takes to transfer files, especially large application program files, and the costs of sending and receiving those files (on a user-pays system at least), software was developed to compress files ready for transmission which could be decompressed once they were received.

This type of software is generically referred to as archiving or compression software. There is software of this nature for every type of machine.

In essence, a compression program examines the file and runs the contents through a compression algorithm, and then rewrites the data in a compressed form.

To make compressed files readily identifiable, they are usually given an extension unique to the compression program.

**PKZip/PkUnzip** is the most common file compression/decompression software used on the Internet today (and creates compressed files with the extension `.zip`), principally because it is very flexible and has been adapted for many different types of computers.

---

Almost every machine on the Internet will allow `ftp` connections. However, only those which specifically allow you to login as a guest user will let you login with the user id of *anonymous.*
If you come across a file which appears to be compressed and you don’t recognise the file format, ask your site administrator or your local computer store or computer club for help.

Most anonymous ftp servers have a directory with copies of the popular types of compression/decompression software available for download.

These normally come with very detailed instruction documentation that you can print out for future reference.

**Ftp Client Programs**

Many users who obtain Internet access via a commercial Internet Service Provider use SLIP/PPP compatible ftp clients. These programs hide all the commands discussed above and instead provide a simple point-and-click interface. WS_FTP (for Windows) and Fetch (for Macintosh) are examples of such programs.

When first installed on your computer, ftp client usually request information they will need for future sessions, such as your full email address and the domain name of your isp.

When connecting to an ftp site, the client will ask for the domain name (or IP address) of the remote host, and for the filename and directory details of the file you wish to retrieve. The program will then attempt to connect to the remote host, and will log you in anonymously (automatically supplying your email address as the password).

Once connected, the program will display the contents of the root directory (or the directory you specified), including all files and subdirectories. Navigation usually involves double-clicking on directories to change them, and clicking once to highlight files to be downloaded.

Downloading is usually a simple matter of pressing a combination of keys (such as Alt-D) or selecting download from a menu.

More advanced ftp clients will automatically detect what type of file is being downloaded (otherwise you should be prompted for these details) and will allow you to choose in which directory the file should be saved.

The advantage of a client program is that it makes downloading a one-step process. On dial-up Unix shell accounts, manual ftp commands are needed to connect to a remote host, navigate, and download files.

When using a dial-up account your computer is not directly connected to the Internet, but uses the ISP’s machine to contact a remote host. This host then sends the files which you request to the ISP’s computer, which deposits them into your account.

You will then need to go through the additional step of downloading the file from the ISP’s computer to your own.

When using a SLIP/PPP-compatible client program, your computer is directly connected to the Internet, and has its own IP address.

The remote host can therefore send the file directly to your computer, and you will not need to download it from your ISP. This can speed up the process immensely.

**Using a Web browser to ftp files**

As mentioned in the Chapter 5, many Web browsers allow you to perform ftp file transfers.

Using information about a file which is revealed by Archie searches (such as the filename, directory and remote host) in conjunction with the `ftp://` command, your Web browser can connect to the remote host, change to the desired directory and download the file.

For example, to download the `internet.doc` file discussed earlier using a Web browser, we could use the following command:

```
```

which provides the Web browser with all the information it needs to connect to the remote host and download the file. If you didn’t have a particular file in mind, you could use the command:

```
```

which will connect you to the ftp server. Your Web browser will then display the contents of the root directory. Changing directories or downloading files is simply a matter of clicking on them.

**FTP CLIENT PROGRAMS**

**Fetch (Mac)**
http://www.dartmouth.edu/pages/softdev/fetch.html

**WS_FTP (Windows)**
CHAPTER 8

Net catalogue: Gopher & Veronica

Gopher has long been the standard resource tool for Internet users. It provides access to a broad range of information services around the globe via a menu interface.

Before Gopher, there was very little formal organisation of information on the Internet. A huge amount of information was available, but there was no standard means of accessing or indexing it.

Navigating your way around the Information Superhighway was very much a word-of-mouth affair — resources were found by asking for directions and hoping that someone in the know could help.

Gopher is, in essence, a menu interface to the Internet's information resources. Using Gopher is similar to using a library catalogue where you select information from menus.

Gopher menu headings contain links to submenus and document descriptions. You navigate the menu using arrow keys or by entering specific commands (discussed later). If you select a submenu, Gopher will display its contents and await your next command. If you select a document from the menu, Gopher will retrieve and display it on screen.

The real advantage of Gopher is that the documents listed on its menus can be located anywhere on the Internet. Gopher can connect to the machine which stores the document you want, and retrieve it.

If you think this is beginning to sound familiar, then you're right. Gopher operates in a similar fashion to the World Wide Web. How-
ever, it cannot display graphics or audio, and the interface is not as intuitive.

Although the World Wide Web is becoming the preferred tool for indexing and publishing information, there are still many valuable information repositories available using Gopher, which means that it will remain an important tool.

**Navigating GopherSpace**

GopherSpace is the term given to the electronic information available around the globe via Gopher (or similar search tools).

Quite literally, the amount of information available in GopherSpace is incomprehensible. And it increases by the day, as more organisations make information available to Internet users.

We'll use a fictional Gopher session to demonstrate how Gophers work.

Let's say you've just connected to a Gopher server operated by the School of Hard Knocks (we'll explain later how to connect to Gopher servers). Each department at the School has its own submenu.

The opening screen might look a little like this:

```
School of Hard Knocks Gopher Server

1. About the School of Hard Knocks/
2. Enrolment Details/
3. The Science Department/
4. The Archaeology Department/
5. The Law Department/
6. Our On-Line Guide to Internet Services
7. Other Internet Gopher Services/
Press ? for Help, q to Quit, u to go up a menu
Page 1/1
```

You can see from the above menu selections that, except for Option 6, all end with a "/" (forward-slash). The forward-slash indicates that the menu option contains links to submenus. Option 6, which doesn't have a forward-slash, contains a link to a particular document, which would be displayed page by page if you selected it.

You're thinking of pursuing a career in law, so you decide to have a look at the information available about the Law Department, which is menu item 5.

You can select that menu item by scrolling the pointer down to the menu option (using your arrow keys) or by entering "5" and pressing RETURN.

The Gopher server will then retrieve the chosen submenu information. To keep you informed about what is happening, it will display the message:

**Receiving Information...**

After a few seconds, it will display the submenu:

```
Department of Law
1. About the Dean/
2. Course Modules/
3. Tuition Guidelines/
4. Post-Graduate courses/
5. Law School publications/
```

You decide to check out what publications are available online, so you select option 5. The Gopher server retrieves the information and displays your options:

```
OnLine Publications
1. Environmental Litigation: Rights & Wrongs
2. Anti-Stalking laws protecting Internet users
3. Defamation law and Email
4. Copyright in WWW pages
5. Government Censorship of Online Communications
6. Calculating the economic impact of Computer Crime
```

The article on defamation law interests you, so you select menu choice 3.

Gopher will then retrieve the selected article (wherever it may be stored) and display the article on your screen.

As it is a large document, only one page at a time will be displayed. To page through the document, use the SPACE bar.
The top menu of the Gopher server provided by the IT department of Adelaide University

Once you reach the end of the article, you will be provided with a few options:
Press <RETURN> to continue, <m> to mail, or <s> to save.

Hitting the RETURN key will take you back to the previous menu containing the list of online articles.

If you want to get a copy of the article, you could either save the file or mail it to yourself. You are not always able to save files found on Gopher, as we mention later on.

If you use the mail command, Gopher will prompt you to enter your email address. You can enter your own or anyone else’s email address.

Providing you supply a correct email address (with no typos), Gopher will email a copy of the file to the address supplied.

Starting a Gopher session

There are several ways to use Gopher.

The best one is to have your own Gopher client installed on your computer. There are many different Gopher clients available for various computer systems.

The most widely used is the Unix client called gopher, but there are also Gopher clients available for Windows and Macintosh.

To install a Gopher client on your computer, you will generally require a SLIP/PPP connection to your ISP. Connecting to a Gopher server using your client is simply a matter of connecting to your ISP’s computer, starting the Gopher client, and providing it with the address of the Gopher server to which you wish to connect.

Some Gopher client programs have a list of popular sites available for you to choose from.

If you don’t have a SLIP/PPP connection to your ISP, or if your ISP only allows dial-up connections, it is likely that the ISP will have the necessary software installed on its computer to access Gopher.

You will be able to use Gopher by selecting it from a menu of services provided by your ISP, or by typing “gopher” at the normal prompt.

Basic Gopher commands

We have already discussed the m (mail) and s (save) commands, the use of arrow keys to scroll through menu options, and the selection of menu options by entering the corresponding menu option number.

To get help at any stage during a Gopher session, use the ? (help) command. To exit Gopher, use the q (quit) command. Gopher will ask you to confirm whether you really want to quit the program by prompting you to enter n (no) or y (yes). If you’re in a hurry and want to exit Gopher without being prompted, use Q.
When using any of these commands, you need only type the command key — you do not have to press RETURN.

If your keyboard doesn’t have arrow keys, use the k or CTRL-P keys to move up, and j or CTRL-N to move down.

If there are several pages of menu options (indicated at the bottom right-hand of the screen), you can page through screens using the SPACE bar, or the > or + keys. To go back to the previous screen, use either the b, < or — keys.

If you have descended a few menus down from the original menu, you can go up one menu at a time with the u (up) command. To go back down, use the d (down) command.

To go back to the beginning, use the m (main) command which will return you to the main menu.

---

**Public Gopher services**

If you’re in too much of a hurry to work out if you have the necessary Gopher client software, you might want to connect to a public Gopher client. There are a number of these on the Internet. Public Gopher clients are accessible via telnet.

You simply telnet to the Gopher client and log in using a specific userid (if one is required at all). The following is a list of publically telnettable gopher sites, from the Gopher FAQ (details of how to obtain the FAQ are provided on Page 52):

<table>
<thead>
<tr>
<th>Hostname</th>
<th>IP#</th>
<th>Login</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>consultant.micro.umn.edu</td>
<td>134.84.132.4</td>
<td>gopher</td>
<td>North America</td>
</tr>
<tr>
<td>ux1.cso.uiuc.edu</td>
<td>128.174.5.59</td>
<td>gopher</td>
<td>North America</td>
</tr>
<tr>
<td>sailor.lib.md.us</td>
<td>192.188.199.5</td>
<td>gopher</td>
<td>North America</td>
</tr>
<tr>
<td>panda.uiowa.edu</td>
<td>128.255.40.201</td>
<td>panda</td>
<td>North America</td>
</tr>
<tr>
<td>gopher.msu.edu</td>
<td>35.8.2.61</td>
<td>gopher</td>
<td>North America</td>
</tr>
<tr>
<td>gopher.ebone.net</td>
<td>192.36.125.2</td>
<td>gopher</td>
<td>Europe</td>
</tr>
<tr>
<td>gopher.sunet.se</td>
<td>192.36.125.10</td>
<td>gopher</td>
<td>Sweden</td>
</tr>
<tr>
<td>info.anu.edu.au</td>
<td>150.203.84.20</td>
<td>info</td>
<td>Australia</td>
</tr>
<tr>
<td>tolten.puc.cl</td>
<td>146.155.1.16</td>
<td>gopher</td>
<td>South America</td>
</tr>
<tr>
<td>ecnet.ec</td>
<td>157.100.45.2</td>
<td>gopher</td>
<td>Ecuador</td>
</tr>
<tr>
<td>gan.ncc.go.jp</td>
<td>160.190.10.1</td>
<td>gopher</td>
<td>Japan</td>
</tr>
<tr>
<td>gopher.th-darmstadt.de</td>
<td>130.83.55.75</td>
<td>gopher</td>
<td>Germany</td>
</tr>
<tr>
<td>hugin.ub2.lu.se1</td>
<td>30.235.162.12</td>
<td>gopher</td>
<td>Sweden</td>
</tr>
<tr>
<td>gopher.uv.es</td>
<td>147.156.1.12</td>
<td>gopher</td>
<td>Spain</td>
</tr>
<tr>
<td>hugin.ub2.lu.se</td>
<td>130.235.162.12</td>
<td>gopher</td>
<td>Sweden</td>
</tr>
</tbody>
</table>
pher server on a remote host. Thus some Gopher servers do not offer you the option of saving files at all.

But this doesn’t mean you can’t get a copy of the file. You can still email it to yourself, and then save it to a file once it is received.

Or you can download the file, using the D command. When downloading, Gopher will ask which protocol to use, and will then copy the file to your home directory. The protocol you should use will depend on the software your ISP has installed on its computer. Ask your site administrator for help in this regard.

**Taming GopherSpace with Veronica**

Gopher has made finding information on the Internet much easier. But it can still be time consuming.

There are thousands of Gopher sites around the Internet. Connecting to server after server and browsing through the menu options for information of interest can become exasperating.

However, as GopherSpace grows, this problem is being addressed. Many Gopher servers now contain links to others, and some even have menus which link to servers divided into different subject headings. This can save many hours at the keyboard.

But Internauts are lazy people, always looking for ways to automate mundane tasks. Evidence of this is Veronica.

Veronica is a Gopher-based resource which can be used to search GopherSpace. It will search hundreds of different Gopher menus using keywords.

Veronica is similar to Archie (discussed in Chapter 10), but searches for information available via Gopher, as distinct from files available via anonymous ftp.

To use Veronica, you supply a few keywords which describe the information you are looking for, and it will scour GopherSpace for documents containing those keywords.

Veronica then presents you with a list of the documents found, which you can navigate as you would a normal Gopher menu.

Veronica searches are available as options on many Gopher sites. Veronica can be accessed via menus such as:

- Search GopherSpace using Veronica/
- or something a little more generic, such as:
- Other Gopher and Information Services/

Once you elect to do a search using Veronica, you will be prompted to enter the search keywords. Try to be as specific as possible.

For instance, if you were looking for the latest cheats for Doom II, you wouldn’t use “computers” or “computer games” as the keywords, or you’d spend hours wading through the responses. Instead you should try “doom” or “cheats”.

You can also use wildcards when performing Veronica searches. For example, *motor* would search for motor, motorbike, motorboat, and so on.

Most Veronica menus contain online documentation which will give you further assistance in composing Veronica searches.

You can read these online, save or email them to yourself.

To find out more about Veronica, point your Web browser to:

- gopher://gopher.scs.unr.edu/00/veronica/
- veronica-faq

**Connect to a Gopher site with a browser**

As with ftp, Gopher sites can be accessed using your Web browser.

You can instruct your Web browser to connect to a Gopher site using the `gopher://` command, together with the sites’ Internet address. For example, if the domain name of the School of Hard Knocks was `gopher.hardknocks.edu.au`, you could instruct your Web browser to connect to it with the following command:

- gopher://gopher.hardknocks.edu.au/

Navigating your way through the Gopher site is a simple matter of pointing and clicking on the various menu and submenu options.

There are a number of WWW-based Gopher indexes (indexes of Gopher sites). One of the better indexes can be found at:

- `http://galaxy.einet.net/GJ/`
- EINet’s Gopher Jewels
- For a comprehensive online FAQ discussing Gopher, point your Web browser to:
- gopher://mudhoney.micro.umn.edu:70/00/
- Gopher FAQ

**HINT**

Being able to save files you find on Gopher is handy, but you cannot do so when you are connected to Gopher via telnet.
CHAPTER 9

Remote access with telnet

There are hundreds of thousands of computers connected to the Internet, many of them there solely to offer services to Internet users.

Some universities and research institutions allow access to their massive databases and online catalogues via the Internet, and encourage users to log onto their systems and browse their catalogues.

But before you can use this wealth of information, you must know a little about how to connect your computer to others on the Internet.

Remote access

The act of connecting to another computer (whether across the Internet or across the street) is known as remote access. That is, you access the computer via a remote terminal (your computer).

Any computer that is fitted with a modem and some basic software can be accessed remotely.

Your company may have a modem connected to one of its computers to allow technicians to log in and troubleshoot in the event of a system failure, or (as is increasingly likely) to allow employees who want to work from home to log in and access the company's computer system.

Once you connect to a computer using a remote terminal, you can control the computer as if you were sitting in front of it, providing you supply the necessary login details. Your computer interacts with the "host" computer,
which carries out the commands entered via the remote terminal.

We discuss the concepts of “host” and “client” computers in Chapter 16.

Starting a telnet session

Telnet enables you to connect to other machines across the Internet, and access their resources as a remote user.

To start a telnet session, issue the telnet command followed by the full Internet address of the machine you want to connect to.

Example:

telnet archie.au

would connect you to the Australian Archie server, from which you could search Archies' databases for programs available on the Internet. Archie is discussed in more detail in Chapter 10.

You must supply the full Internet address of the computer you wish to connect to, or telnet will not be able to locate it or establish a connection.

Troubleshooting

Before we look at the commands used with telnet, it is prudent to mention a known problem with this program.

As discussed in Chapter 4, all machines connected to the Internet have a dual name — the IP address (numerical) and the domain name (“English”). On occasion, if you attempt to telnet to a computer using its domain name, such as:

telnet archie.au

telnet may respond with the error message: “host unknown”. This means it wasn’t able to locate the IP address of the remote host when it looked up the domain name using a nameserver.

If this occurs, check that the domain name was spelt correctly. If it was, and the connection attempt was unsuccessful, you will probably need to specify the IP address of the computer you wish to connect to. Ascertain the IP address of a computer is not an easy task, so ask your site administrator for assistance.

A telnet connection

Once you initialise a telnet session, the telnet program will attempt to connect to the remote computer you specified. Telnet will indicate that it is trying to connect by displaying:

Tryng...

on your screen. Once the connection is made, it will display a message confirming that connection has been established:

Connected to archie.au
Escape character is ‘^]’
(We look at the escape command a little later)

Error messages: Host unreachable & Unknown host

On occasion, the telnet program will be unable for one reason or another to connect to the remote host. If so, it will display an error message to give you some idea of what the problem is.

For example, if you were to issue the command:

telnet dudname.com

(where the host “dudname.com” does not exist), you will probably get an error message which states:

dudname.com: unknown host

There are three possible reasons for this error:

1. You misspelled the remote host’s name.
2. The remote host is temporarily unavailable (although this will generally result in a host unreachable error).
3. The remote computer specified is not connected to the Internet.

If you know that the address you typed is correct (because you have telnetted to it before), then the route normally used to connect to that computer may be congested, or the lines could be severed (the ol’ builders’ shovel through the fibre optic trick).

Either way, you will probably be able to login if you try again later.

If you know the address is valid, but telnet returns an error message, contact your site administrator for assistance. It may be that your s/he has placed machines in that area off-limits for security reasons.

HINT

When you type your password, the characters you type won’t be displayed (or “echoed”) on your screen — this is to ensure no one can read your password over your shoulder.
Remote access with telnet

After the connection

Once the connection is established, the remote computer will wait for you to enter the necessary login details, such as a valid userid (or login name) and password.

Without a valid userid and password you won’t get much further.

Public access to remote computers

If every one of the many thousands of computers connected to the Internet required you to have a valid userid and password to login, life on the Net wouldn’t be very easy.

With this in mind, many remote computers allow access by the general public. A specific userid or password is not required to login to these machines; instead, a generic userid such as “guest” or “library” is used.

Ending a telnet session

Once you have finished your telnet session, you simply logout of the remote host in the normal fashion (usually via the quit or exit commands). If you’re in a hurry to disconnect, you can use the escape command (discussed later). Once you logout, the telnet session will automatically terminate.

Alternative ways to a telnet connection

Rather than typing “telnet” together with the remote host’s name, you can start telnet by simply entering:

```
telnet
```

The telnet program will start, but won’t make a connection — because you haven’t specified which remote host you wish to connect to. Instead, it will wait for you to enter these details. You will see the telnet prompt:

```
telnet>
```

To make a connection from the telnet prompt, use the command:

```
telnet open <remote hostname>
```

For example:

```
telnet open archie.au
```

Alternatively, you can shorten “open” to just “o” — as in:

```
telnet o archie.au
```

If you intend to contact a number of hosts via telnet, this is the preferable method for establishing a connection. Each time you exit the telnet session, you will be returned to the telnet prompt, from which you can make another request.

It is also useful to open telnet in this manner if you are trying a few addresses that you are not sure are correct. Every time telnet returns an error message, you are returned to the telnet prompt to retry.

If you decide to give up, or simply want to exit, type quit. This will exit the telnet program.

Summary of commands

1. Starting telnet
   
   telnet archie.au
   
   or
   
   telnet
   
   then
   
   open archie.au

2. Stopping telnet

   If you are connected to a remote host, logout in the normal fashion (usually with an exit or quit command). You will automatically exit the telnet program.

   If you connected via the telnet> prompt, you will be returned to the prompt when you exit from a remote host. From there, exit using the quit command.

PORT command

Computers that allow public access are often also used for other purposes (for example, a single computer may serve as an ftp, Gopher and telnet server). In such cases, users must often connect to a specific port on the remote host, which will tell it the type of service you want to access.

Logging onto a specific port is achieved by specifying a port number in the telnet command.

For example:

```
telnet whitehouse.gov 80
```
Remote access with telnet

The Library of Congress has an extensive database of books in print at locis.loc.gov

(port 80 is the port number for Gopher servers)

or

open whitehouse.gov 80

(if connecting via the telnet prompt)

(The domain name whitehouse.gov should look familiar. It is the Internet address of the White House in Washington DC.)

Because you are telnetting to a host that has a port set aside to accept logins of a specific nature, you generally won’t need to enter a userid or password. The program or service you are connecting to should start immediately.

Most computers you will connect to on the Internet will be Unix machines, which are preferred by most academic/research institutions and commercial sites. If a remote host does not accept or recognize the port you specified, it may be a Vax machine, running VMS.

These machines were commonly used by academic/research institutions many years ago.

If you are connecting to a Vax machine, you will need to specify the port number in a different way. The command structure you use is:

telnet whitehouse.gov /port=80

If both commands are unsuccessful, ask your site administrator for assistance.

Escape Command — Ctrl-]

There are times when you might want to put your telnet session on hold, to let you use other telnet commands. For instance, you might want to initialize a connection to a new remote host, but not lose your connection to the current one.

The escape command, executed by pressing the control (Ctrl) and ] (right square bracket) keys contemporaneously, will return you to the telnet prompt

telnet>

and the telnet program will await your next command. Once telnet has obeyed the command, it will either return you to your earlier session, or to the prompt (depending upon the command entered).

If you are returned to the telnet prompt, just hit the RETURN key and it will revert to the earlier (suspended) session.

Close Command

If you want to exit the remote host quickly, without having to logout in the usual manner, or if the remote host stops responding (that is, the screen “freezes”), use the escape command (Ctrl-]) to return to the telnet prompt and, from there, to execute the close command:
Remote access with telnet

HINT

Not all systems will support the "z" suspend command. If you try it and you are unable to suspend your remote session, ask your site administrator for assistance.

telnet> close

This will close your connection to the remote host, without exiting you from the telnet program. You can then reconnect to the same or another remote host.

Other telnet commands

You can get a list of telnet commands by typing ? at the telnet prompt.

telnet> ?

Commands may be abbreviated. Commands are:

display  display operating parameters
mode     try to enter line-by-line or character-at-a-time mode
open     connect to a site
quit     exit telnet
send     transmit special characters ("send ?" for more)
set      set operating parameters ("set ?"

for more)

status   print status information
toggle   toggle operating parameters ("toggle ?" for more)
z        suspend telnet
?         print help information

If you want to find out more about the individual commands, enter the name of the command followed by ?

Example:

telnet> mode ?

Suspending a telnet session

While you are logged on to a remote host via telnet, you might want to exit briefly to work on something else (for example, check some email that you sent to yourself while connected to a Gopher server via telnet).

To do this, first enter the escape command (Ctrl-Z), then type z. This will suspend your telnet session and return you to the familiar prompt. From there you can enter any command you might normally use.

Once you have completed your task, you can return to the telnet session by entering the command

fg

Note, however, that some computers have this feature disabled.
Keeping track with Archie

In Chapter 7 we discussed how anonymous ftp can be used to download files from machines across the Internet. There are literally thousands of computers that allow users to log in via a guest account (anonymous) and explore the files on offer.

Unless you know the file you are looking for, the directory it is located in and the Internet address of the machine (or machines) it is stored on, finding it using anonymous ftp can be an arduous task.

This is where Archie comes in. Archie, or more accurately, an Archie server, is a computer that keeps track of all the anonymous ftp sites on the Internet, and the files and directories they contain. You can ask Archie to search its database for details of where you might find the file you are looking for. The name Archie comes from archive, which is essentially what Archie is.

The inner workings of Archie

There are several Archie servers around the world. The Australian Archie may be found at:

archie.au

The role of the Australian Archie is to keep track of all Australian anonymous ftp sites, and the files and directories they contain. The Australian Archie server regularly connects to all Australian anonymous ftp sites to check and update its list of files and directories.

About once a month the Australian Archie connects to several other Archie servers around the world to exchange lists with them. They in turn would have connected to several other Archie servers and exchanged details, providing a simple mechanism for ensuring that all Archie servers have up-to-date information of all anonymous ftp sites around the world.

Using Archie

To use an Archie server, all you need to do is telnet to it, and login with the user id archie.

In this example, we will log into archie.au, but there is no reason why you can't log into any of the Archie servers around the world. Having said that, it is generally considered courteous to connect to an Archie server near you, rather than use the resources of computers in other countries. It is recommended that you at least first attempt to log into the Australian Archie:

telnet archie.au

Once you are connected, you will see the message shown in the screen shot on page 59.

This screen confirms that you have successfully connected to Archie, and prompts you to select which service you require. Indicate which one at the login prompt:

login: archie

You will then be taken to the Archie prompt
Welcome to Archie.info.AU (aka plaza.aarnet.edu.au)

We acknowledge the support of Sun Microsystems Australia who donated an additional CPU module for this machine.

Public access services provided on this machine are

  archie  The Archie System
  de     Directory Service
  netfind Network Search Utility

Unauthorized access to any other account is prohibited.

Local time is 4:54PM on Sunday, 7 May 1995

login: archie
Last login: Sun May 7 16:53:19 from morinda.cs.nctu.e
SunOS Release 4.1.3 (PLAZA) #13: Sun Mar 5 00:23:45 EST 1995


# Terminal type set to 'vt100 24 80'.
# 'erase' character is '^?'.
# 'search' (type string) has the value 'sub'.
Archie.AU>

  [Alt-E for Help | VT102 | 38400:N81:FDX] | Online 00:07

(Archie.AU>, where Archie will await your search commands. It will also display some information about the default settings used when performing your search request:

  # Terminal type set to 'vt220 24 80'.
  # 'erase' character is '^?'.
  # 'search' (type string) has the value 'sub'.
Archie.AU>

To exit Archie, use the quit command. The help command gives online help.

**Search variables**

Before you perform an Archie search, it is helpful to customise the search environment. You do this by changing or setting certain variables.

The show command will list set variables. Using the show command without specifying a variable will display a list of all variables and what they have been set to.

To show only the settings of a particular variable, use the command:

  show <variable>

Below are the default settings for an Archie search at Archie.Au (don’t worry if they don’t make any sense, they will shortly):

Archie.AU>show

  # 'autologout' (type numeric) has the value '60'.

  # 'compress' (type string) has the value 'none'.
  # 'encode' (type string) has the value 'none'.
  # 'language' (type string) has the value 'english'.
  # 'mailto' (type string) is not set.
  # 'match_domain' (type string) is not set.
  # 'match_path' (type string) is not set.
  # 'max_split_size' (type numeric) has the value '51200'.
  # 'maxhits' (type numeric) has the value '100'.
  # 'maxhitspm' (type numeric) has the value '100'.
  # 'maxmatch' (type numeric) has the value '100'.
  # 'output_format' (type string) has the value 'verbatim'.
  # 'pager' (type boolean) is not set.
  # 'search' (type string) has the value 'sub'.
  # 'server' (type string) has the value 'localhost'.
  # 'sortby' (type string) has the value 'none'.
  # 'status' (type boolean) is set.
Keeping track with Archie

# 'term' (type string) has the value 'vt220 24 80'.

Much of the information shown above is of little interest to the casual user. We will discuss only the main variables.

**The set command**

To change or set a variable, use the `set` command, together with any additional details where there is more than one setting for a particular variable. For example, to set the `maxhits` variable (discussed below) use the command:

```
set maxhits 10
```

**The variables**

To request that Archie pause at the end of each screen of information before scrolling onto the next page, the search results must first be sent to a program called a pager. If a pager is used, the information is displayed one page at a time. By default, the pager variable is not set (that is, not turned on):

# 'pager' (type boolean) is not set.

Unless this is changed, Archie will simply print page after page of information to your screen, until it reaches the end of the search results.

This is fine if the file or directory you are searching for is only found on a few machines, and the search results can all be displayed on one screen. But if the search results are lengthy, you may not have a chance to read all the information as it flashes past.

The `set pager` command can solve this problem:

```
Archie.Au > set pager
```

The next setting you may wish to modify is the `autologout` variable. This controls how long Archie will allow your terminal to be idle before automatically logging you off.

By default the Archie server will log you off after 60 minutes of inactivity:

# 'autologout' (type numeric) has the value '60'.

When setting `autologout`, the maximum time limit is 300 minutes, and the minimum is 1.

Of most importance to the avid Archie searcher is the `maxhits` variable, which specifies the maximum number of "hits" Archie will report back to you.

For example, if you were to use Archie to search for "games", you would expect hundreds of "hits" (or matches) — and Archie would display them all. This would prolong both the time Archie spends searching its database, and the time spent displaying the results on your screen.

If you were to set the `maxhits` to a lower number, say 20, Archie would cease searching and report back to you once it finds 20 matches. This would speed up the search process, but decrease the probability that Archie will find the file you are looking for.

By default, the `maxhits` variable is set to 100, which is probably a good balance:

# 'maxhits' (type numeric) has the value '100'

You can change this with the `set maxhits <number>` command.

The `mail` command can be used to keep a copy of your Archie search:

```
Archie.Au > mail userid@domain.com.au
```

The results of the search will be placed in a text file and emailed to the address specified in the `mail` command. You can then save or print the email message for future reference when you are flipping.

If you intend doing this a few times during a search session, you might save a few keystrokes by setting the address you wish to email the results to before you begin your searches. This is done by setting the `mailto` variable:

```
Archie.Au > set mailto userid@domain.com.au
```

Thereafter, you need only use the `mail` command, and Archie will automatically use the email address specified in the `mailto` command. If you want to email the results to an address other than the one specified in the `mailto` command, the `mail <email address>` command will override any address previously set.

When performing searches you can limit the information Archie reports, by changing the `output_format` variable. There are three different settings of this variable: terse, verbose and machine. These are set with the

```
set output_format <setting>
```

command.

**HINT**

When sending Archie email, don't add a subject header because Archie will ignore it.
Keeping track with Archie

By default, Archie.Au’s output is set to verbose:

```
# 'output_format' (type string) has the value 'verbose'
```

A verbose output of a search for “doom” would look like this:
```
Host ftp.next.com.au (203.8.88.5)
Last updated 23:22 5 May 1995
Location: /pub/doom/game/sgi
FILE -rw-r--r-- 2008837 bytes 10:00 28 Oct 1994 sgixdoom.tar.gz
```

This information tells us:
(a) The name of the host (both the domain name and IP address).
(b) How recent Archie’s records of that site are.
(c) The directory the file is contained in.
(d) The filename, its size and date and time stamp.

The terse output for the same search would look like this:
```
```

You’ll notice some of the details are missing, but there is still enough to tell us where to log in and which directory to look in.

The machine output contains even less detail:
```
```

The `sortby` variable specifies the order in which Archie displays its results.

As with the `output_format` variable, this variable has a number of settings:
```
none - don’t sort the results.
filename - sort the results by filename (alphabetical).
hostname - sort the results by hostname (alphabetical).
size - sort the results by size (largest to smallest).
```

You can reverse the orders by adding an `r` to the beginning of the variables, for example:
```
set sortby rhostname (reverse alphabetical hostnames)
```

By default, Archie.Au does not sort its search results:
```
# 'sortby' (type string) has the value 'none'
```

You can limit Archie’s searches by domain. For example, you can set Archie to search for anonymous ftp sites in Australia only or on specific machines (such as educational or government machines), by setting the `match_domain` variable.

The command:
```
set match_domain au
```
would limit your searches to Australia. The command:
```
set match_domain edu.au
```
would limit your searches to educational domains within Australia.

**Online help**

At any time, you can read the online help information by issuing the `help` command at the Archie prompt.

To find out more information about Archie variables, use the `help set` command.

**Searching Archie**

Once you have set the necessary variables, you are ready to search. To perform an Archie search, use the `find` command:
```
Archie.Au > find <keyword>
```
where `<keyword>` is the name of the program or directory you are looking for. Alternatively, you can use the `prog` command, which is interchangeable with `find`.

Once you issue the `find` command, Archie will confirm the type of search it is performing (discussed below), show how many other searches it is doing at that time, and indicate how long it anticipates your search will take.
```
# Search type: sub.
# Your queue position: 1
# Estimated time for completion: 5 seconds.
working...
```
You can customise how Archie performs its searches with several settings, the most important of which are **exact** and **sub**.

By default, Archie.Au performs **sub** searches:

- '# 'search' (type string) has the value 'sub'.

A **sub** search tells Archie to search for the keyword as if it were a **substring**; that is, to find all words which contain the keyword.

- If we performed a sub search:

  Archie.Au > find red

it would match files such as bigred.exe and redherring.txt. When conducting these searches, Archie does not distinguish between upper and lower case (to perform a case sensitive search, use the **subcase** setting).

An **exact** search will return only exact matches with the keyword. An exact search:

- Archie.Au > find doom

would not find doom2. However, the search is not case sensitive.

Set the search criteria with the **set search** command.

---

**Searching Archie via email**

As discussed, you can ask Archie to email search results to you. But you can achieve the same result without first having to telnet to Archie to do the search.

Archie will allow you to search its database via email.

To do this, send email to the userid **archie** at the Archie server you wish to use. To search the Australian Archie, send email to:

archie@archie.au

Your request should be set out in exactly the same manner as normal email, except that you can leave off the **subject** header, as Archie will ignore this.

In the body of your email, you can set any variable as if you had connected via telnet. Archie will perform the searches you request, and email the results to you.

Archie will obtain your email address from the headers of the email you send it. However, occasionally it may have difficulties doing this.

If you send email to an Archie server and
do not get a response within 30 minutes (which is normally more than sufficient for it to process your search request), resend the email, but use the set maillto <your email address> command as the first line. Archie will use the address specified by this command when it emails the search results.

**Archie clients**

Archie has been with us for many years now, but only recently have Archie client programs been written to act as a more user-friendly interface.

There are a number of Archie clients for Macintosh, Windows and Unix systems which make interacting with Archie servers a little more intuitive. Your Internet Service Provider can probably supply you with this software.

If not, there are a number of different shareware or free client programs available via ftp. See our list of SLIP/PPP software in Appendix A to find out where you can download Archie client software to install on your computer.

Once again, if you have any problems, ask your site administrator for assistance.
CHAPTER 11

What's News on the Net

For most users, Usenet is the Internet. Among new users, there is a great deal of confusion between Usenet and the Internet. Untamed, Usenet can expand to fill all available online time.

On Usenet you can discuss almost any conceivable topic with people around the world. More than 30 million people have access to the Internet, and, in theory, all of them could participate in Usenet discussions.

This makes Usenet one of the largest (if not the largest) forums for information exchange in the world.

Usenet is often compared with public notice boards. You might, for example, have a notice board at your office. Anyone in the office is free to pin notices to it, which can be read by everyone else in the office.

A person might place a notice advertising a car for sale. Anyone interested in the car could contact the advertiser in private and make an offer.

Or, alternatively, the interested party could pin a further message on the board with her/his offer, or one requesting the advertiser to contact her/him.

Usenet works in a similar fashion. It is a collection of electronic noticeboards (called newsgroups) about a wide variety of subjects. There are over 15,000 different newsgroups covering various topics.

Topics range from the serious (science, medicine, law) to the not-so-serious (hobbies, politics, jokes) to the downright bizarre — sex, magic, cults and the like.

If you have a particular interest you'd like to discuss with members of the global community, there will almost certainly be a newsgroup for you. And if there isn't one, then you can always start one yourself.

The most admirable feature of Usenet is that no central body organizes or controls topics or discussions.

Terminology

Usenet is a concatenation of Users Network. I'm not entirely sure why it was given that name — it doesn't exactly reflect what Usenet is. Consequently, Usenet is commonly referred to as Internet news or simply news.
The act of placing a “notice” (which is usually referred to as an article) on Usenet, is referred to as posting. That is, a user posts an article.

When you respond to an article and make your response available on Usenet (as distinct from sending a private email message to the poster), it is called a followup.

**Using Usenet**

Articles in Usenet newsgroups are read with a newsreader. This is a software program which displays and orders (by date) the many thousands of different articles in a newsgroup. The newsgroups themselves will be (or should be) displayed in alphabetical order.

Newsreaders display certain information about the postings in newsgroups, such as the name or userid of the person posting the article or followup, the subject (if any) of the article, the date it was received, and the number of lines in the article.

You may have several different newsreaders to choose from (such as tin or nn on Unix systems), and it is a good idea to experiment a bit to find one you feel comfortable with. Like many users, you might find yourself devoting a fair amount of time to newsgroups.

**The size of Usenet**

As mentioned earlier, there are well over 15,000 different newsgroups available via Usenet. However, you may not be able to read them all.

Aside from the fact that it would take a lifetime, the amount of storage space required to hold over 15,000 newsgroups with postings from people around the world is massive.

There are literally hundreds of thousands of postings, ranging in length from a few lines to many pages.

Because of this, not all Internet Service Providers “carry” (that is, store) all the newsgroups. But you will probably have access to at least 5000.

The ISP administrators must decide which newsgroups to carry. “Local” newsgroups tend to be relevant only to certain cities or states, and it is unlikely that distant ISPs will carry them.

For example, a newsgroup called local.ntu (we’ll discuss naming conventions shortly) carries notices posted by, and therefore probably only of interest to, staff and students at the Northern Territory University.

The first time you use your newsreader, it will display a list of all newsgroups carried by your ISP. It is a good idea to spend a bit of time skimming through these newsgroups, working out which are of interest to you, and which you’d like to avoid.

This can be a time-consuming task, but one you won’t have to do too often.

You can subscribe and unsubscribe to any
newsgroup you choose. Your newsreader allows you to customise your Usenet environment by displaying either all newsgroups, or only those to which you have subscribed. You can change this option at any time.

Once your newsreader displays the newsgroups that interest you, you can read, post or followup articles. You can also save copies of articles, email them to yourself or friends, or reply privately to the poster of the article.

**Spreading the news**

Usenet has no coordinating or regulatory body. Rather, each site which provides Usenet access controls which newsgroups and information are available to their users.

When you post an article or followup, it is stored on your site's computer system. At regular intervals (daily, sometimes hourly) your site's computer connects to other systems which carry Usenet newsgroups, and exchanges recent site additions. Those computers in turn contact other sites, passing on the new messages.

This is a simple but effective way of distributing articles all around the world. Your article should be circulated around all the Australian sites within 24 hours, and around the world within two to three days.

If all the articles from around the world were collected and stored on every site, they would soon run out of storage space. Even the largest hard disk would fill very quickly if thousands and thousands of new pages of articles were added each day. Current "guessimates" are that 60 megabytes (60 million characters) of new articles are created each day around the world.

Because of this, articles are given expiry dates. That is, after a predetermined number of days (or even weeks), a site will delete the old articles.

How long articles are kept is decided by a person known as the news administrator of your site. Different newsgroups may have different expiry dates. A less-used group may retain articles longer, because it has "low traffic" (that is, a low number of new articles).

On the other hand, a popular newsgroup (such as one discussing a sensational trial) might delete articles after only a few days.

Expiry dates may also vary. For example, a newsgroup which discusses a popular TV soapie might have its expiry date shortened to ensure that space is available for a more important (at least, from the administrator's point of view) newsgroup discussing greenhouse gases.

At times the decisions may seem arbitrary, but in the end they are made to ensure a smooth Usenet service.

**Newsgroup naming conventions**

With over 15,000 newsgroups discussing a wide variety of topics, it is vital to have a for-
mal hierarchy and naming conventions which allow users to find newsgroups of interest to them.

Newsgroups are divided into hierarchies. Each hierarchy has its own name and covers a specific area of interest. Some of the main newsgroup hierarchies are:

<table>
<thead>
<tr>
<th>Name</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>alt</td>
<td>Alternative newsgroups covering a wide variety of topics</td>
</tr>
<tr>
<td>biz</td>
<td>Business-oriented newsgroups</td>
</tr>
<tr>
<td>comp</td>
<td>Computer-related newsgroups</td>
</tr>
<tr>
<td>misc</td>
<td>Miscellaneous — everything that doesn’t fit into any of the other categories</td>
</tr>
<tr>
<td>news</td>
<td>Newsgroups covering different aspects of Usenet itself</td>
</tr>
<tr>
<td>rec</td>
<td>Recreational/hobby newsgroups</td>
</tr>
<tr>
<td>sci</td>
<td>Science-oriented newsgroups</td>
</tr>
<tr>
<td>soc</td>
<td>Discussions of social issues</td>
</tr>
<tr>
<td>talk</td>
<td>Newsgroups for discussing (often) controversial issues</td>
</tr>
</tbody>
</table>

Within each hierarchy are a number of categories and subcategories. Newsgroups are named according to the hierarchy in which they appear, and most have names with three components which are separated by full-stops (".").

The first part of a newsgroup name is the hierarchy in which it appears. For example, all newsgroups discussing computers or computer-related topics use comp as the first section of their names.

However, naming is not always as straightforward as it seems. For instance, alt.games.doom is a newsgroup for discussing the computer game Doom (and a popular group it is!). This newsgroup was probably put in the "alt." rather than the "comp" hierarchy because someone decided that it doesn’t relate sufficiently to computers (though others might disagree!).

The second component of the name is the category. For example, comp.mac.newsgroups discuss Macintosh computers. Within categories, there may be subcategories, such as comp.mac.advocacy, which is a newsgroup discussing Mac issues.

Other hierarchies

As well as the main hierarchies shown, there are newsgroups referred to as cultural, organisational, and local.

Moderated newsgroups

Most newsgroups are open for all users to read and post articles to. However, some are moderated by a volunteer, who determines which postings are accepted. Moderation aims to ensure postings are accurate and worthwhile.

The aus.legal newsgroup is a newsgroup for discussing legal issues, with a focus on Australian law. It is read by lawyers and non-lawyers alike.
How Usenet postings work

In the previous chapter we discussed what Usenet is (and isn’t) and how it is organised. In this chapter we will discuss what Usenet articles look like, and how to understand some of the more technical aspects of postings.

Articles

Just as email has certain essential and optional elements, so too do Usenet articles.

Usenet articles contain headers, a main body and, optionally, signatures.

Headers contain information telling readers about the posting: where it originated; who posted it; what the subject of the posting is; and whether it has been posted to other newsgroups as well (called crossposting).

Headers can also contain keywords and summaries, which help readers find articles of interest to them.

The body of the article is simply the text. If the body contains a quote (for example, followups often include text from an earlier post), the quoted material should be clearly identified as such by being displayed as indented text (or by some other means).

It is considered bad form to quote from an earlier text without proper attribution.

A signature (or .sig) is simply a text file that is appended to a user’s post. This normally contains the user’s contact details and, occasionally, a witty saying or quote.

Signatures are customised by each user, and are automatically appended to each posting by their newsreader.

Article headers

For the beginner, headers seldom make any sense. For the main part, they can safely be ignored. However, they contain information that can paint a picture about the origin of the posting, and how it came to be on your system.

Below is the header from a posting in the aus.general newsgroup, which discusses issues of general interest to Australians (names have been changed to protect the innocent!):

Date: Sat, 6 May 1995 11:39:47 +0930
aubruce.cs.monash.edu.au!harbinger.
How Usenet postings work

cc.monash.edu.au!news.cs.swt.uoz.au!
metro!wabbit.cc.uow.edu.au!lfif!uio.no!
trane.uninett.no!unic!sunet.sunet.
sea!unet!caen!newsxfer.umdich.edu!
agatel!spool.mu.edu!howland.reston.ans.
netix.netcom.com!netcoms!uucp3.netcom.
com!aps!Emily Newposterg
From: Emily_Newsposterg@APS-Online.org
(Emily Newposterg)
Reply-To: Emily_Newsposterg@APS-
Online.org
Newsgroups: aus.general
Distribution: world
Subject: Hello Aussie friends
Date: 21 Apr 1995 06:00:09 GMT
Message-ID: <1751121886.4312735@APS-
Online.org>
Organisation: APS-Online.org
Lines: 3
Hi everyone, I am living in Canada and I
would love to chat with Aussie
people.
Emily

Not all newreaders will display this in-
formation, and some will only display it if
specifically requested. If, after reading your
newreader’s online help file, you are still not
sure whether it will display this information, ask
your site administrator.

The first lines of the header shown above
contain a path statement. This simply indicates
the Internet addresses of the machines which
the article passed through before it arrived at
your ISP system. Each address is separated by
a “bang” (“!”).

The next line displays the email address
of the user who posted the article, and is called
the from field. It may also show the full name
of the user (if s/he has customised her/his news-
reader to pass on such information).

The next line is the reply-to field. This
should be the same as the from field, unless
the user, for any reason, prefers private replies
to be sent to a different address.

The fourth line contains a list of all the
newsgroups to which the article has been
posted.

While not too difficult to achieve, it is gen-
erally not acceptable to post articles to dozens
of newsgroups.

Articles should be posted to as few
newsgroups as possible, and only to those
which are relevant to the topic discussed.

This rule of “netiquette” was adopted be-
cause an article may be duplicated several times
on each system if it is posted to several
newsgroups—therefore adding to the space
required to store the articles.

There have been instances of individuals
posting articles to every newsgroup—known as
spamming.

Nothing incurs the wrath of Internauts
more than spamming. On the few occasions
this has occurred, the flood of complaints from
users around the globe cost the individuals their
Internet accounts.

So, please resist the temptation, and ex-
ercise some constraint when posting articles.

The distribution field controls whether the
article is allowed to leave a user’s site, region
or country.

However, it does not always guarantee
that distribution of the article will be restricted
to the areas specified.

The next line is the subject field, which is
the title of the posting. This should give users
an idea of the contents of the posting and

WRITTEN IN THE STARS

What does your future hold? Find out the easy
way at
INTERNET HOROSCOPES
http://www.ws.pipex.com/tis/horoscop/index.htm
YOUR DAILY HOROSCOPE
http://www.sentex.net/~guido/horoscope.html
PSYCHIC ADVICE LINE
http://www.weblifeipro.com/pal/hscope.html
How Usenet postings work

<table>
<thead>
<tr>
<th>Group Selection (news.ozemail.com.au 147)</th>
<th>h=help</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 201 comp.org.cpcs.talk</td>
<td>Where can I find talk</td>
</tr>
<tr>
<td>2 640 news.groups.questions</td>
<td>AOUUG Inc - Australian</td>
</tr>
<tr>
<td>3 2 aus.org.auug</td>
<td>Discussion of Unix se</td>
</tr>
<tr>
<td>4 177 comp.security.unix</td>
<td>New product announced</td>
</tr>
<tr>
<td>5 biz.oreily.announce</td>
<td>The news system.</td>
</tr>
<tr>
<td>6 23 aus.net.news</td>
<td>Mail systems, address</td>
</tr>
<tr>
<td>7 10 aus.net.mail</td>
<td>Discussions of ACSnet</td>
</tr>
<tr>
<td>8 aus.net.acsnet</td>
<td>Discussion of matters</td>
</tr>
<tr>
<td>9 103 aus.sex</td>
<td></td>
</tr>
<tr>
<td>10 1 alt.security.index</td>
<td></td>
</tr>
<tr>
<td>11 9 alt.humor.best-of-useenet</td>
<td></td>
</tr>
<tr>
<td>12 78 alt.bbs.allsyso</td>
<td></td>
</tr>
<tr>
<td>13 278 alt.bbs.internet</td>
<td></td>
</tr>
<tr>
<td>14 983 alt.censorship</td>
<td></td>
</tr>
<tr>
<td>15 alt.comp.acad-freedom.news</td>
<td></td>
</tr>
<tr>
<td>16 alt.comp.acad-freedom.talk</td>
<td></td>
</tr>
</tbody>
</table>

<n>=set current to n, TAB=next unread, /=search pattern, c=catchup, g=goto, j=jump down, k=jump up, h=help, m=move, q=quit, r=toggle all/unread, s=subscribe, S=unsubscribe, U=unsub pattern, y=yank in/out

Alt-Z for Help | VT102 | 38400-N81-386 | | | Online 06:16

A selection of newsgroups displayed by the Unix newsreader, Tin

whether they wish to read it.

The date field contains the date and time the article was posted.

The message-ID field is generated by your newsreader. Each article is given a unique message-ID, which is used by systems to exchange articles.

The Organisation field details the organisation which owns or runs the computer from which the article was posted.

The length of the article is indicated in the lines field. Only the body and signature is counted here, not the article headings.

Other types of information might also appear in article headers:

The Internet address of the machine used to post the article is given in the NNTP-Posting Host field. This is not always displayed.

The keywords field is optional. Most newsreaders have a search function, which helps users to find postings on a certain topic. The use of keywords facilitates those searches.

Sender indicates the machine from which the message originates — usually the machine on the poster's site that handles Usenet articles. This is not always displayed.

The Control field indicates whether the distribution of the article or newsgroup has been restricted. This would be the case with local newsgroups.

The Approved field is used with moderated newsgroups, and identifies the person who approved the article.

Each site's news administrator controls how long an article will be kept on the system. The Expires field allows users to recommend this period. However, the final decision is the administrator's.

Generally, a followup is posted to the same newsgroup as the original article. However, if this article was posted to several related newsgroups, and the author wants discussion to be held in a certain newsgroup, s/he can specify this in the Followup-To field. All followups should be posted to this newsgroup.

QUICK BYTES

Feeling hungry? Take a byte at The Internet Restaurant, Auntie Bo's Kitchen and the Chocolate Page at http://192.216.191.71/ng/palate/palate.htm

Or sample Aussie delicacies such as damper and pavlova at http://www.cs.cmu.edu/~mjw/recipes/ethnic/aus-coll.html

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Netting users with Finger & Talk

How do you find out information about people on the Internet? Before you worry about infringement of privacy rights, what we are talking about is finding out such details as whether someone is logged on and whether s/he is available to talk to you. (We discuss talking to other users below.)

Finger is a program used to find out certain public information about a particular user on a specific machine on the Internet. Using finger, you can determine:

- Whether the email address you have for a user is correct.
- What that user's full name is.
- Whether s/he is logged on and what program or programs s/he is running.
- How long it has been since s/he last logged on.
- Whether s/he has any unread mail.
- Whether her/his terminal is idle.

For security reasons, not all hosts will allow you to request this type of information. In this case, when you attempt to finger the host, it will generally return an error message or a message indicating that it refuses to pass on this information.

Accessing the finger command

Most Unix hosts have the finger program software installed. If you have access via a dial-up Unix shell account, you may therefore be able to use the program by simply typing finger at the command prompt. If finger is installed, a listing of users currently logged onto your ISP's system will appear.
Netting users with Finger & Talk

If you do not have access to the command, an error message will be displayed. In this case, you may wish to contact the system administrator to ask whether the necessary software can be installed.

If you access the Internet via a SLIP/PPP account, there are a number of finger programs you can install on your own computer. (See Consummate Winsock Apps List on Page 90.) To use this software, select the command from the pull-down menu and enter the details of the user you wish to ‘finger’.

Whether using finger via a shell or SLIP/PPP account, the general command structure remains the same.

Using finger

There are two ways to use the finger command. The first is:

finger userid@domainname

For instance:

finger smith@ihost.com.au

Using this method, the finger program requests information about the userid smith from the specified host. The host should reply with the following details (which will be explained later):

[ihost.com.au]
Login Name: smith   In real life: Joe Smith
Directory: /usr/smith   Shell: /bin/sh
Last login Thu December 14 3:04 on ttyd4
No unread mail
Project: Waiting for my copy of the third edition of The Australian Beginner’s Guide to the Internet
Plan: Nothing much in mind

Alternatively, you can issue the finger command without specifying a particular userid:

finger @ihost.com.au

In this case, finger will ask the host for details of everyone using that machine at the time of the request. The host should respond with details of who is logged on, what they are doing (email, telnet, finger and so on), and possibly contact details such as a phone number. Remember, however, that not all computers will reveal this information.

Guessing a userid

If you need to send someone email, but are unsure of her/his userid, finger can help.

To verify someone’s userid, use the finger command with that person’s first or second name as the userid. For example, if you were trying to locate Berryl Berry on jam.com.au, you might try the following:

finger berryl@jam.com.au
finger berryl@jam.com.au

If there are users on the machine jam.com.au with a real name or userid of either Berryl or Berry, their details (including their userid) will be displayed.

Should I capitalise first or second names?

As a rule, it is sensible to assume that all computers on the Internet treat commands as case sensitive. Therefore:

smith@ihost.com.au

is not the same as:

Smith@ihost.com.au

Most machines require userids to be in lower case. Therefore, it is likely that the userid of the person you are trying to finger will be in lower case.

Understanding the finger display

In our first example, when we fingered smith@ihost.com.au, we received the information shown in the box in the previous column.

Let’s take a look at this information line by line:

[ihost.com.au]
Login Name: smith   In real life: Joe Smith
tells you Joe Smith’s real name, and that his
userid is smith.

On certain systems, you may receive an
additional piece of information in this first line, such as:

Login Name: smith (messages off)
In real life: Joe Smith
The messages off notice indicates that the user does not want messages sent to her/his screen. This is important if you want to try and talk to her/him. (We discuss the talk command later in this chapter.)

Directory: /usr/smith
Shell: /bin/csh

This information merely tells you which directory the user’s files are stored in on the host computer, and what type of Unix shell s/he is using (assuming s/he has an account on a Unix machine). If the user makes her/his files freely available to other Internet users, this will tell you which directory the files are stored in.

Last login Thur December 14 3:04 on ttyd4

This message records the user’s last login date. It has been some months since the user logged in, it would probably be futile to send her/him an urgent email message. The time is reported in 24-hour clock format — so we can see above that Joe Smith keeps odd hours.

No unread mail

Lets you know whether the user has read all of her/his new mail. This is handy if you have sent email to someone and need to know whether s/he has had an opportunity to read it.

Project: Waiting for my copy of the third edition of The Australian Beginner’s Guide to the Internet

Plan: Nothing much in mind

Such information is made available by users who add special files to their accounts. This can usually only be done on Unix machines, where each user has a “home” directory.

If that directory contains a file called .project, the finger command will show the first line of that file. If a .plan file is found in the home directory, the finger command will show the entire file.

If a .plan file does not exist, the message “No plan” will be displayed.

The .plan and .project files can be used to give other users information, such as your contact details (phone, fax, mail etc.), or simply a cheery “hello”.

Talk Programs

“Talk” is the name given to a nifty program that allows you to connect your computer to that of another Internet user, in order for you to type messages to each other’s screens. It doesn’t matter where that other person is, or what type of computer s/he is using, just as long as you both have access to the Internet and the necessary “talk” software.

The talk command is available on both dial-up Unix shell accounts and SLIP/PPP-compliant software (which you can install on your computer). Although we will use examples of the talk command from a shell account, the principles discussed apply to both types of access.

How to use talk

The main use of the finger command is to determine whether a particular user is logged on and able to respond to a talk request.

To talk to someone, issue the talk command, followed by that person’s email address:

talk userid@domain.com.au

The talk program then sends a message to that person’s screen which says that you wish to establish a talk session with her/him. This message is usually accompanied by a beep, in case s/he is away from the terminal when the message is displayed:

Message from TalkDaemon@domain at 12.50 ...

talk: connection requested by [your details]
talk: respond with: talk [your details]

For example, if I issued a talk request to the President of the United States (president@whitehouse.gov), his screen might look like this:

Message from
TalkDaemon@whitehouse.org
talk: connection requested by accessnt@isp.com.au
talk: respond with: talk accessnt@isp.com.au

The President could then issue the com-
Netting users with Finger & Talk

Command:

talk accessnt@isp.com.au

as he is prompted to do, and establish a talk session with me.

If the party you are trying to contact does not answer the request after a few seconds, a new message will be displayed on her/his screen until you “hang up” (by typing ctrl-c on a Unix system).

When talk receives the connection request message, it will indicate this on your screen by displaying the message:

[Ringing your party again]

Talking

Once the other user responds with the necessary command, you will see the message:

[Connection established]

displayed on your screen.

Then, depending on the software you are running, your screen should divide into two, with a line across the centre. Whatever you type will be displayed on the top of your screen, while the other user’s message will appear on the bottom. Both users can type at the same time, and whatever is typed will be displayed at the same time as it is typed.

If you make a typo, you can backspace over it, or use ctrl-h. But remember, everything you type is displayed as you type. Therefore, the type will remain on the other user’s screen until you have deleted it.

If you are using a Unix machine and the screen gets too messy (because someone else has tried to talk to you while you are already in a talk session, or your system has flashed a message indicating you have received new mail), you can “redraw” it using ctrl-l.

To end a talk session, either party can use ctrl-c. The message:

[Connection closing. Exiting]

is then displayed.

Troubleshooting

It’s a good idea to finger a user before you try to talk to ensure s/he is logged on.

If you try to talk to someone who is not logged on, the following error message will be displayed:

[Your party is not logged on]

However, this message can be misleading. When talk tries to connect to the specified user’s machine, it merely checks whether a person with that userid is logged on – and not if the userid supplied is valid. If the userid is invalid there obviously won’t be anyone logged on with that userid, and talk will reply that the user is not logged on.

So beware: just because talk reports that the user is not logged on, it does not mean the userid you are specifying is correct!

You may also come across an error message which states:

[dudname.com is an unknown host]

This could indicate that the domain name is misspelt, or that the computer the user receives email on is not directly linked to the Internet. Merely because a person has an email address does not mean s/he has access to all Internet services and resources.

Turning off Talk

On occasion, finger will return the following information:

Login Name: smith (messages off)

“Messages off” indicates that the user does not want any messages, including talk requests, displayed on her/his screen.

You can turn off messages with the command:

mesg n

or turn them back on with:

mesg y

By default, messages are turned on. If you are in doubt as to the current status of messages, just use:

mesg

by itself, and the current status will be displayed.

If you turn messages off anyone who issues a talk command to you will be advised:

[Your party is refusing messages]

If you are using a SLIP/PPP connection, then unless you are running the appropriate talk software, you will not be able to receive talk requests.

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CHAPTER 14

IRC and MUDs

In the previous chapter we discussed the talk command, which allows users anywhere on the Internet to interact with one another by sending messages to each other's screens.

While talking allows only one-on-one conversations, Internet Relay Chat (IRC) enables you to talk with many different people at once. In fact, some of the popular IRC Servers play host to hundreds of people at the same time.

To use IRC, you must connect (via telnet or an IRC client) to a machine set up as a dedicated IRC Server. You can then join online conversations which are similar to talk sessions, in that everything each other person types is sent to your screen, and everything you type is sent to theirs.

The messages from each user are prefixed with her/his name, so that you can keep track of who is saying what. Engaging in an IRC discussion is somewhat like reading a script, where each participant is a character who writes her/his own lines.

Every IRC Server hosts a number of channels, each devoted to its own topic — be it discussing Baywatch, or horticulture. Given that there are hundreds of IRC Servers, you're likely to find a group with interests similar to yours.

Since its inception in 1988, IRC has become one of the most popular Internet resources. It allows people to be open about their points of view without worrying about making a fool of themselves in public, and opens up friendships with people from different cultures with various points of view.

On IRC you look the same as everyone else ... like ascii text! What's more, you don't need to speak above the music to be heard.

**A typical IRC session.**

Normally, IRC is accessed via a SLIP/PPP IRC client program, such as mIRC. Alternatively, most Internet Service Providers make IRC available via an online menu option.

However, using a client program (instead of, say, telnet) makes life much easier. IRC is a command-driven environment, much like the Unix or MS-DOS operating systems.

For the majority of us who don't relish the
idea of memorising commands and then fumbling to use them while trying to keep track of a fast-paced conversation, IRC clients are a godsend, as most commands are available via menu selections.

When you start your client program, it will ask which IRC Server you wish to connect to. Most clients have a pre-configured list to choose from, although IRC resources can be very volatile.

Where possible, try to connect to an Australian Server. This will minimise the load on overseas resources, and you will generally get faster service, as the data has a shorter distance to travel. In fact, some IRC Servers refuse access to users from a different county (though they'll usually point you in the direction of a closer Server).

### The PORT command

You may remember from our chapter on telnet that the `/port` command is used when connecting to some machines which dedicate resources to Internet services.

IRC Server addresses, for example, are followed by four-digit numbers (such as "6667"), which are used by client software (or telnet via the `/port` command) to connect to the IRC Server. If you forget to include this information, your attempts to connect will probably fail.

Once you have selected and connected to an IRC Server, you need to choose an alias, or nickname. It is considered bad form to connect to an IRC Server without using an alias, as it adds to the mystique of online chatting — as well as providing some degree of anonymity.

When online, I use the alias Xcavier (don't ask, it's a long story). You will come across some very imaginative aliases online, some funny, some medieval, others downright crude! Nicknames must be unique, so if there is already someone on IRC with your proposed nickname, access will be denied until you select another.

### The Channels

So, suitably cloaked in your alias, the next step is to request a list of channels. This is usually a matter of selecting from a menu, on which you'll find a unique name for every channel, beginning with the # character. For example, a channel for discussing life and culture in Adelaide is called `#Adelaide`.

To manually display a list of all channels, use the `/list` command. On some IRC Servers, there are literally thousands of different channels. However, not all of them may be "active". Some may contain only one user, the channel operator, who has remained logged in to maintain the channel.

If you want to cull inactive groups like these from your listing, use the `-min` command, followed by a number. For example, the command:

```
/list -min 10
```

will list only those channels which have 10 or more users on them. Similarly, the:

```
/list -max <number>
```

command will restrict the listing to channels with no more than the maximum number you specify.

For more information about a channel that interests you, use the `/list <channelname>` command. For example:

```
/list #Adelaide
```

will tell you a bit about the `#Adelaide` channel.

Anyone can join a public channel, but private channels can only be joined with the consent of the channel operator. This is the person who first started (or created) that channel. A channel operator (or Op) has various privileges, such as choosing to make the channel public or private, kicking users off the channel (for instance, if they abuse or annoy other channel participants), and restricting the number of people who may be on the channel at any one time.

### Joining Channels

To join a channel, simply use the `/join <channel>` command. For example, to join the `#Adelaide` channel, type:

```
/join #Adelaide
```
A partial list of channels, the number of participants in each, and a few brief descriptions, as viewed using mIRC

If the channel is public, you will be connected. If it is private, you will receive a message to the effect that you cannot join the channel, or you will be asked to email the channel operator to request access.

When you join a channel, all other members are notified of your presence by a notice that prints to their screens (eg. "Xavier has joined the channel").

Once you have joined, messages written by other people on the channel will be displayed on your screen, preceded by the alias of the person typing it. When you type your own message (it is usually a good idea to say “Hi” as your first message), it will appear on everyone’s screen (even yours) preceded by your alias.

Unlike talk, your message is not broadcast until you hit the RETURN key, so you can edit it before transmission.

Leaving a Channel

The /leave command allows you to exit a channel. When you issue this command, a message that you have left the channel is displayed to all other users on the channel.

The default setting on most IRC Servers only allows you to be on one channel at a time. So, if you issue a /join command when already on a channel, you will leave it and join the new channel. To get around this, use the command: /set novice off

This command also allows you to circumvent other limitations. For more information, use:

/help set novice

Getting Help

At all times during IRC, help is a mere /help command away. It’s a good idea to spend a few minutes scanning through the help screens when you begin your session, to refresh your memory of the more frequent commands used.

For more information about IRC, ftp to ftp.roombs.anu.edu.au and have a look in the /pub/irc/docs directory.

Actions speak louder than words

If words can't express what you're feeling, you can use the /me command (or /action) to make a more vigorous contribution. For example, the command:

/me hits John on the head with a wet cod
Here we see some of the action in the Australia and Aussinet channels. Note the names of the participants in the channel are listed on the right of the screen. As each person "chats", the words are preceded by her/his alias.

---

*** How talking in Aussinet
<Arcadia> Jaymz?????still here?
<mssam> ac....luxury in this country!
<Jaymz> Yep i'm here
<mssam> so are closer
<Arcadia> Hey did you see the N/P?
<mssam> ret
<mssam> tell me
<Jaymz> Yep, been right thru most of it
<Tejano> where is that sam?
<Arcadia> Jaymz...And????
<ret> sam what do you want to hear
<mssam> australia, of course
<Arcadia> what did you think?
<Jaymz> Arcadia: It's cool, i guess......
<mssam> what do you want to tell
<Arcadia> No of the pics.silly!
<ret> Tejano we are still here hurt by rejection fron
<Jaymz> Arcadia: BOH! They're very ......gr........ nice
<Tejano> sniff....
<mssam> aww i still love ya, guys
<Tejano> ret...i cant go on...
<Arcadia> Dee Jaymz.....i don't know what to say (sarcasm!) Thanks!
<Arcadia> -0-
<ret> Tejano ask and you shall receive
<Jaymz> i'm not too good with words.....
<mssam> Jaymz, you're so funny
<Arcadia> hadn't noticed??? *giggle*
would result in the following message being displayed to all present:

_Xcavier_ hits John on the head with a wet cod
Or, for the more imaginative:
_/me_ leaps forth onto his magic carpet and slowly levitates into the air, and then smites poor John with a single blow from his Flaming Sword

**Changing your nickname**

If you decide midway through an IRC to change your nickname, use the _/nick_ <new nickname> command.

The other users will be advised of your new nickname (“_Xcavier_ is now known as _Helmut_”). Remember, however, that you are not allowed to use a nickname already being used by another person.

**Finding out who someone is**

If you want to find out who is hiding behind a particular alias, you can use the _/whois_ <nickname> command. The _/who_ command will do the same, but in less detail.

If you specify the _/whois_ or _/who_ command without a nickname, you will be shown details of everyone on the channel (the command _/who_ * or _/whois_ * will achieve the same thing). But be careful — if you issue the command when you are not on a channel, the IRC Server may interpret it as a request for information about everyone using the Server ... this could be a long list!

If you get caught out, use the _/flush_ command, which tells the Server to cancel the remaining information generated by the command. This can be very useful, as it works with any command.

Finally, a word of caution. A lot of people use IRC to escape the dreariness of everyday life and become someone else. Some users take on the personas of magical beasts, others hide behind the obscurity offered by aliases in a crowd, males pretend they’re females, and vice versa.

If you do know who someone is behind the alias, it is good Netiquette to call her/him by the alias anyway.

**MUDding**

Many many years ago, long before we had full-colour screens and fancy graphics, computers only had black-and-white or monochrome (amber or fluorescent green) monitors, with very little support for graphics other than lines and text characters.

These computers also had very small amounts of memory, and limited disk space. Yet despite these limitations, computer games still flourished and were very popular with those who could afford computers.

Those computer users had to rely on their imaginations to transport them into distant worlds. No digitised animation or stereo sound here. Games were text-only, and users interacted with them using a limited vocabulary of commands.

Instead of a screen depicting a cave or a spaceship, the game’s author would describe the player’s surroundings, including details such as:

- You are in a darkened room. In the distance you can hear a running stream, and the slow creaking grind of a Windmill. As your eyes become accustomed to the darkness, you can make out the shapes of a table, a few chairs and a chest. There is a doorway leading south.

The player would respond with simple commands such as open chest or go south. When the commands were entered, the game would unfold, presenting the player with numerous options, rooms, tools and traps.

The player would wander through the game, opening chests, finding tools and weapons, and trying to solve the game.

Although games of this nature appear quite primitive compared to the games we play today, they kept gamers entranced for hours, even days on end.

Games of a similar nature are still popu-
lar today. You can find them on the Internet, and they are called MUDs — Multi-User Dungeons. There are a number of variations of the MUD theme, with such strange-sounding names as MOOs, MUSHes, tiny-MUDs and the like. But they all share similar characteristics.

**What is a MUD?**

A MUD is an online text-based game. When you connect to the computer hosting the game, you are asked a few preliminary questions such as your preferred name (or alias), which sex you wish to play and, depending on the nature of the game, whether you wish to be a wizard, a fighter, cleric, druid or any number of different characters.

Once a character is selected, players are generally deposited in an opening room, which contains messages for new players describing how the game works and listing the rules (such as: no killing other players — only the monsters you come across in the game — no hoarding of potions, and so on).

As a new player, your first task will normally be to arm yourself or to find food, which you will generally be able to do in the first few rooms or areas you come across. From there, it is simply a matter of exploring the game until you have had enough.

Some MUDs have been online for a number of years, with the players and the MUD operator continually adding to the “world”.

Now, all of this may sound fairly dull: who wants to play in a text-based world when you can sit on your home computer and play the latest and greatest multimedia hit?

Well, MUDs have a few other characteristics which may endear them to you. For a start, there may be many hundreds of people playing on the MUD at any one time, whom you will stumble across as you venture through the game. You can talk with them (using chat commands similar to IRC), join forces with them (safety and strength in numbers!), and swap items, such as gold coins, weapons, or potions to help each other in the game.

In short, MUDs offer a level of interactivity not available in any game for a standalone computer.

You will meet people, become friends, swap “war stories” and no doubt get killed a few times along the way. MUDding is a highly involved process, and there are literally hundreds of thousands of enthusiasts around the world.

Once you have played with MUDs for a while, you will no doubt hear stories of people meeting online via MUDs, and falling in love. There have been quite a number MUD-weddings, with lovers exchanging vows online. In short, MUDs are evolving into virtual communities, complete with friends and foes, action and adventure.

Each MUD is different. It is impossible to catalogue all the commands needed to play each different MUD. You will usually be able to obtain a list of commands for use in the MUD by using the `help` command. Be sure to read any notices that are available in the first room.

To use a MUD, you simply telnet to the MUD host, and follow the prompts you will receive. There are a number of MUD clients available; however, none of them has really captured the flexibility of a simple telnet connection.

MUD sites tend to come and go. Some years ago, most MUDs were run by university students using campus computing facilities.

Then universities notified both how much time students were “wasting” playing MUDs, and how much of a burden these additional activities were placing on their already strained computer systems. So most Australian universities have banned MUDs, with the result that most of the good MUDs are overseas.

There are a number of places you can visit to find up-to-the-minute information about the different MUDs around the world.

Firstly, have a look at a few MUD-related newsgroups, such as `rec.games.mud`.

There is a Totally Unofficial Guide to MUDs which is posted to these newsgroups on a regular basis (usually fortnightly). There is also a general collection of MUD FAQs stored at `ftp.tcp.com`, available via anonymous ftp, in the `/pub/mud` directory.

And you can also visit the Generic MUD Resource Page at:

`http://bunda.gb.nrao.edu/muds/muds.html`
The Darker Side of the Net

Many readers will have heard or read about the "undesirable" side of the Internet. News reports claim that paedophiles use the Net to communicate with one another, and even to lure potential victims. Pornography, we are told, is rife and freely available.

There have even been reports of schoolchildren making homemade bombs with recipes retrieved from the Internet, and concern about the availability of such information has grown following the bombing of the World Trade Centre in the USA.

Parliaments both in Australia and overseas have debated the perils of obscene and dangerous material, weighed against the danger to freedom of speech that any attempt to censor or regulate the Internet may create. To date, there has been no consensus on how, or whether, the Internet should be censored.

Parents and educators are justifiably concerned about the prospect of allowing their young charges onto the Internet if — according to the picture painted by the mass media — they will be bombarded from every direction by dirty old men and unseemly pictures.

Until recently there was little that could be done to prevent children from accessing unsuitable material, other than to ensure that they were supervised when using a computer.

However, in the last year, many compa-
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...cies have developed tools to protect children when they journey on the Net.

The Evils

The prospect of censorship or restricted access to the Internet is opposed by many, even those who would not class themselves as civil libertarians.

Many people point out that the Internet is, by and large, an "information" resource, and draw parallels between online censorship and book burning or prohibited speech.

However, it would be pure fantasy to deny that there is pornographic material (in the form of text, audio, video and photos) on the Internet, or to assert that there aren't documents available online that discuss how to make homemade bombs or how to break into computers.

There are weirdos online in search of prey, and — more recently — virtual gambling dens, looking to make a quick buck from the unwary.

But parents, educators and politicians alike should never lose sight of the fact that the Internet is an interactive medium. Unlike television (which limits user interaction to changing channels), the Internet requires the user to explore and select the material s/he wishes to view or download.

It is thus very unlikely that a user (regardless of age) will ever accidentally stumble across objectionable material. To access material the user must go in search of it (and in some cases, search very diligently and determinedly).

The Cure

In the last year, a myriad of software products which prevent access to information deemed objectionable have hit the market for home, school, and even office computers.

These products screen the activities of the user, and block out selected resources or materials.

Basically, they monitor and search for keywords, and prevent the user from downloading or sending material containing, for example, swearwords, address details, credit card details (to prevent gambling or online purchases),
and picture, video or audio files (although a blanket ban of these can make surfing the Web quite dull).

These programs can also prevent users from accessing known "hot spots", such as the Penthouse site, by maintaining a database of forbidden URLs, newsgroups and addresses.

As the Internet is growing at an astounding rate, these databases quickly become outdated. Therefore, their authors usually make available online up-to-date lists which can be downloaded (mostly free of charge).

These "filter" programs can also block access to specific Internet resources. IRC and MUDs, for example, are particularly difficult to monitor.

The topic for discussion on a channel named #sexchat might be obvious, but who can tell what goes on behind the closed doors of #meethere or #dodropin?

In many instances, keyword detection can block common anti-social words — but then you need not rely on swearwords to corrupt young minds.

Accordingly, many parents block access to IRC and MUDs (Multi-User Dungeons) entirely, or at least when they are not there to supervise.

Some filter programs prevent access to objectionable material even when the user is not online.

They screen out attempts to view photos or pictures (such as .gif and .jpg files which junior might have been given by a friend) or text files with objectionable content — they can even prevent the computer being used during certain hours (such as during designated homework periods).

The Changing Times

Faced with possible government intervention, many online organisations are seeking to establish a universally accepted code of practice to determine how potentially objectionable material is dealt with.

A number of online organisations have established special "kids only" services, which carry material of educational or entertainment value, and which have restricted or no access to the Internet itself.
Welcome to The Cyber Sentry Briefing Room!

The Internet offers tremendous resources and opportunities to businesses. However, corporations are aware that these opportunities can potentially distract employees, affect productivity and endanger the integrity of the network. Cyber Sentry promotes productivity and maintains integrity for organizations that utilize the Internet as a key resource for their mission critical business.

Evaluate Cyber Sentry free for 30 days before you buy!

- To evaluate Cyber Sentry or firewall Sentry (internet filtering and license metering) on your PC network, you must download two files. Please use your FTP client to download: Rp_teardown_pub/internets/sys_setup.exe and Rp_sentry_pub/internets/sys_setup.exe. Launch the sys_setup.exe file and follow the instructions to install your demo. Your opinion will be to install:
  - Internet filtering only (Cyber Sentry)
  - Internet filtering only (Cyber Sentry)
  - License metering only (Software Sentry)

Cyber Sentry is one of several filter tools that enable parents to screen information their children can access on the Internet. You’ll find it at http://www.microsys.com/CYBERS/

Industries are working fast to develop software standards that will enable Web browsers to detect when they are connecting to sites which contain mature or adults-only material, so that appropriate warnings can be given or the material blocked.

Remember, however, that these “kid-safe” features make their writers money. So don’t believe all you hear about the evils of material online – software companies have been known to exaggerate a little to help boost sales!

Parental Guidance Recommended

A number of Internet resources address the issues involved in protecting children online, and discuss tools and techniques which can be used to achieve this.

Several companies which offer filter tools also have information online which may help. These sites may prove useful:

Cyber Sentry
http://www.microsys.com/CYBERS

Net Nanny
http://www.netnanny.com/netnanny

Cyber Patrol
http://www.microsys.com/cyber

Surf Watch
http://www.surfwatch.com

WIZARD OF AUS

Want to find out anything about Australia? The INDEX OF AUSTRALIAN INDEXES is a good compilation of pointers to Australia-related resources both at home and offshore. It’s at http://www.moreinfo.com.au/ausindex/
And now for that chapter every book needs and deserves, where all the odd bits that don’t comfortably fit elsewhere can be mentioned.

The Internet appears more confusing than it actually is because new users are confronted with terminology and technical references they probably have never heard before. One reason is that the Internet, and computers in general, seem to attract people who love talking in acronyms.

FTP, Usenet, TCP/IP, WWW ... all acronyms. And it gets worse. The acronyms can be easily expanded, but the words they stand for usually don’t describe the concepts behind them very well.

So, if you come across some concepts in this book for the first time, don’t worry if you feel a bit lost. In this chapter, we hope to dispel some of the mystery.

**Client/Server**

This is a reference you will come across regularly. Essentially, “client/server” describes a relationship between two or more computers.

A fundamental use of networks, including the Internet, is to allow several users to share resources (such as data and hardware).

A pair of computers does this by using programs that run simultaneously on, and interact with, both machines. During this interaction, one of the programs is referred to as the server (note the lower case “s”), the other is referred to as the client (note the lower case “c”).

The server program allows users on the network access to a particular resource. The client program makes use of that resource. The machine running the server program is often referred to as a Server (note the capital “S”), while the machine running the client program is often called a Client (note the capital “C”).

For instance, a company might have several wordprocessing staff working at different computers, all of which store their files on a central computer. Whenever one of them wants to call up a particular file, the client software would contact the server software on the cen-
tral computer, which would pass along a copy of the file.

In this scenario, the central computer is often referred to as a Server (or, more accurately, as a Fileserver). The individual word processors’ computers would be referred to as Clients.

This concept can become confusing. The individual computers run client or server software, but in so doing, are often referred to as Clients or Servers themselves.

The Internet often uses these concepts, with probably the best example being Gopher Servers (yes, with a capital “S”).

In Chapter 8, we discussed how to logon to Gopher Servers, which act as a menu interface for a collection of files or data. Using Gopher you can browse the list of files available, request to see them, or have them emailed to you.

When you are browsing a Gopher Server, it is in fact running a (lower case “s”) server program, which responds to your requests. It literally serves information to you.

Your computer is using a client program written for use with Gopher server programs.

In this case the particular computer running the Gopher server program can be referred to as a Server, and your machine as a Client.

Local and remote hosts

During Internet sessions in which you connect to another computer to access and utilise a particular resource, that computer may be referred to as a host, or probably as a remote host.

This is a slight variation on the Client/Server theme.

The term host can be used in one of two contexts. First, every computer on the Internet can properly be called a host.

For example, during an ftp session you might receive email from a friend informing you that a file you want can be found on a certain computer, or host.

This computer is referred to as a host because you can connect to it, and browse through its file system.

When you are connected to the computer to download the file, it will be playing host to you.

Similarly, if someone connects to your computer to obtain information, your computer would be referred to as a host.

But, and here is the tricky part, the person connecting to your computer will be using a client program, which is interacting with a server program on your machine. So, it is also accurate to refer to your computer as a Server.

The other context in which a computer can be referred to as a host is when it is accessed by a number of people.

In a large company, for instance, a number of employees may need to access a certain program at the same time (such as in point-of-sale systems).

A computer that can be accessed by a number of users at the same time may be used in this case.

This “multi-user” system can be referred to as a host, because it plays host to the many computers which access the information and programs stored on it.

Your Internet Service Provider’s computer is a good example of a multi-user system. Any number of users, all accessing the Internet, can be logged on at once. For this reason it can be called a host.

But because it is connected to the Internet, and probably also provides services to other Internet users, such as access to World Wide Web pages or a Gopher Server, it can also be called a host in the sense that other users will connect to it and access its services.

To distinguish between the different uses of the term “host”, you will find references to local hosts and remote hosts.

When you are connected to another machine on the Internet (say, via telnet), it can be referred to as the remote host.

Because you can enter commands on your keyboard and have them carried out by the remote host, you are said to have remote access to that machine. The machine you use to connect to the remote host is referred to as the local host.

Normally, only computers with direct connections to the Internet (such as your ISP’s computer) can be referred to as local or remote hosts.

Therefore, when you log into your ISP’s machine via modem, and from there establish a telnet connection to another computer on the Internet, that other machine is the remote host, and your ISP’s computer is the local host.

However, when discussing the relationship between your computer and your ISP’s, it is correct to refer to your computer as the local host,
and the ISP's as the remote host.

**What is a terminal?**

If you aren't yet tired of having several different names for the same computer, here are some more.

When sitting in front of your computer at home, you can probably see the screen, the keyboard, the mouse, and a case containing important hardware such as your CD-ROM player, disk drives, and so on.

But at work you might only have a computer screen, keyboard and maybe a mouse on your desk.

These will be connected by cables to a much larger computer, which probably also connects with several other setups like yours. The screen/keyboard combinations are generically referred to as terminals.

Basically, they are used for entering keystrokes, which are interpreted by the computer they are connected to. This is the standard configuration for multi-user computers.

The individual terminals do not have their own disk storage space or CPUs, so the central computer handles all the work and information. It interprets the commands entered on your keyboard, and displays the results to your screen.

When you connect to a remote host via the Internet, you are essentially in the same position as a terminal on a multi-user system. You enter commands on your keyboard, and the remote host carries them out, and displays the results on your screen.

Because you have connected to the remote host via your ISP's computer (known as the local host), you cannot ask the remote host to send information to your hard disk, even if you have one.

This is because the keyboard commands you enter on your "terminal" first travel via modem to your ISP's computer, which passes them across the Internet to the remote host.

It processes them, forwards the results to the ISP's computer (which is the computer it thinks the request is coming from), which in turn passes the information to your computer.

This is the reason that, for example, you cannot save a file you have found when connected to a Gopher server. If you were physically connected to the Server, it would allow you to save the file to your hard disk.

But if you have obtained access via modem to your ISP, your computer's hard disk (where the file would otherwise be saved to) is twice removed from the remote host.

The situation is different if you access the Internet via a SLIP/PPP account, running SLIP/PPP-compatible software. In this case your computer is assigned its own IP address, and can communicate directly with the remote host (rather than via the ISP's computer). Here, your computer becomes the local host.

**Uploading and downloading files**

Finally, let's briefly discuss the concept of uploading and downloading files. When referring to uploading or downloading files, it is important to remember the distinctions between remote and local hosts.

**Downloading** a file means copying it from a remote host to the local host. When uploading a file, you reverse the direction of the copying, and files are copied to the remote host from the local host.

Imagine the connections between the different computers being like a tree. You are the user, and form the roots of the tree. Your ISP is the first branch above you, and the other Internet computers are branches above it.

The tree trunk is the telephone lines between your modem and your ISP's computer, and the ISP's computer and the rest of the Internet.

Bringing files to you means they are coming down the trunk. Sending files to the other computers means they have to go up the trunk. Hence, uploading and downloading.

There is one problem here that can cause users a few difficulties. If you obtain access to the Internet via your ISP's computer, then, when you download a file from a remote host, that file is copied to the local host (the ISP's computer) rather than to your machine. It is usually then necessary to download the file from the ISP's computer to yours. In this second step, the ISP's computer becomes the remote host, and your computer becomes the local host.

However, this problem is usually avoided (even where you only have a dial-up Unix shell account) thanks to some smart client software. Most software specifically written for use with the Internet is aware of the two-step process involved in transferring files from a remote host to your ISP's computer, and from there to your computer.

Therefore, when you download a file from a remote host, these programs will automatically copy it to your hard disk, without you being aware that there are two steps involved.
Interesting places

To get you off on the right foot, here are some fun, interesting and even weird places to start your Internet travels.

For tailor-made trips try connecting to one of the many Web Search Engines that will help you to track down interesting sites using keywords (some of the bigger and better known Search Engines are listed on Page 90).

Or why not wander around the Web site of your browser, where you'll find up-to-date lists of new and exciting places to visit?

**Usenet newsgroups**

The following newsgroups are considered "required reading" for "newbies" — those new to Usenet, and to the Internet as a whole. Be sure to subscribe to them:

**news.announce.newusers**: This newsgroup consists of articles and FAQs that explain in great detail particular areas of the Internet. A good source of information for newcomers and experienced users alike.

**news.announce.newsgroups**: This is the newsgroup that announces the creation of new newsgroups. Keep an eye on this one to see if anything of interest to you is starting.

**news.newusers.questions**: The Holy Shrine of Usenet, a place where the newly admitted may ask questions of the Oracle.

**news.answers**: The central repository for FAQ files (also available via ftp).

**news.internet.services**: The place to ask questions about Internet services and resources.

**alt.infosystemsannounce**: New Internet resources are announced and discussed here.

Some other interesting newsgroups:

**alt.alien.visitors**: We are not alone!

**alt.beer**: No explanation needed.

**alt.best.of.internet**: Where people discuss Internet happenings, and post articles which are usually only found funny by veteran users.

**alt.censorship**: A raging debate about whether Internet communications and discussions should be regulated. This group discusses cen-
Appendix A: Interesting Places

sorship in all its forms.

alt.british.comedy: Some funny stuff, particularly if you are fond of Monty Python and Black Adder.

alt.comp.virus: Not one for the computerphobes.

alt.hangover: A place to recuperate after trying some of the suggestions in alt.beer.

comp.graphics: A discussion of computer graphics, art and animation.

comp.society: A discussion of the impact of technology on society.

misc.activism.progressive: Activism news from around the globe.

misc.fitness: Come raise a sweat — the group where you find out all you wanted to know about personal fitness.

misc.education: A forum for discussing issues related to education and the education system (predominantly US contributors).

misc.forsale: You can buy or sell just about anything.

misc.invest: For discussing investment issues.

misc.jobs.offered: For announcements of positions vacant.

misc.legal: For discussing legal issues, ranging from parking fines to sentencing.

rec.answers: A collection of articles explaining various parts of the Internet (moderated).

rec.artserotica: Erotic fiction and verse.

rec.autos: Motor vehicles everywhere.

rec.humor: Jokes and humour of all varieties (some lewd).

sci.archaeology: A good digging ground for news of interest to the archaeological world.

sci.med: For discussing medicine and medical products.

soc.culture.australian: A place to discuss Australian culture (which attracts participants from around the world). Get used to being asked if you have a pet kangaroo, and whether we have television here.

soc.penpals: Find an email or snail-mail friend.

talk.aborption: A rousing debate with points of view guaranteed to challenge your own.

talk.bizzare: For exchanging information about the bizarre and the weird.

Gophers

gopher ucsbuxa.ucsb.edu
gopher riceinfo.rice.edu
gopher gopher.counterpoint.com
gopher orion.lib.virginia.edu
gopher gopher.well.sf.ca.us
gopher ocf.berkeley.edu

To learn more about Gopher, subscribe to the automated Gopher news email-list, by sending a blank (empty) email message to:
gopher-news-request@boombox.micro.umn.edu.

You might also like to subscribe to the comp.infosystems.gopher newsgroup.

Internet Software via ftp

Want to know some great places to find software you can use to make exploring the Internet a little easier? Or just software in general (Mac and PC)?

Then check out these sites (they also have other software online, so have a scout around):

ftp ftp.plaza.aarnet.au
ftp ftp.cc.monash.edu.au
ftp ftp.ozemail.com.au
ftp wuarchive.wustl.edu

Hint

Because the Internet grows and changes every day, it is impossible to guarantee the addresses provided above or anywhere in this book will be correct. Machines may break down, or be moved and given a new name. Companies may close. You will find during your travels on the Internet that you have to work hard to keep track of your favourite sites or resources, as they move about the Net. Just as people often move homes, so too do Internet resources.
ftp ftp.cica.indiana.edu
ftp ftp.trumpet.com.au
ftp ftp.microsoft.com
ftp oak.oakland.edu
ftp ftp.std.com
ftp ftp.cdrom.com

Doom freaks should check out ID Software’s ftp site:
ftp ftp.idsoftware.com

**The Consummate Winsock Apps List**

This is perhaps the best available online resource for finding SLIP/PPP software, and keeping abreast of new programs.

The primary site is in the US, but there are a number of ‘mirror’ sites around the world, all of which may be accessed via [http://cwsapps.texas.net/](http://cwsapps.texas.net/)

The Consummate Winsock Apps List conveniently categorises available programs (Web browsers, email programs, and so on), and even provides a rating system (between 1 to 5 stars), as well as online reviews and discussions of technical requirements.

Both Mac and Windows users are catered for.

**Search Engines**

Every day sites appear, move and close down. Therefore, the best way to find what is new or exciting on the Net is to use online resources, which change as rapidly as the information they reflect.

By all means give the sites listed a whirl, but to find more and newer sites, use Internet Search Engines — Web sites with the sole purpose of indexing and searching the Internet for sites of interest.

Three of the most popular are:

**Yahoo!**: [http://www.yahoo.com/](http://www.yahoo.com/)

**Lycos**: [http://www.lycos.com/](http://www.lycos.com/)
or


but there are many others around.

Your Web browser will contain a menu option that will connect you to a site containing an up-to-date list of new places to visit.

**Internet Access in Australia**

In the past year, the Australian Internet industry has experienced a boom.

Quite a number of new Internet Service Providers have sprung up, some offering only local access in a particular State, others providing access on a national basis.

Given this current growth in Internet activity, it would be futile to attempt to print an exhaustive list of Internet Service Providers and their contact details.

Those in the market for an Internet Service Provider would be well advised to check out one of the many Australian Internet magazines which carry updated lists of ISPs and their contact details.

For those who already have Internet access, there is an excellent FAQ online compiled by Zik Saleeba at


which contains a listing of Australian Internet Service Providers divided into State & Territories.

**Australian Sites**

**ABC Online**: [http://www.abc.net.au](http://www.abc.net.au)

The ABC’s Internet point-of-presence, containing information about all its services.


It would do this site injustice to call it simply an online magazine. A must see.


The best place to find an Australian site is, funnily enough, *The Australian World Wide Web Directory* (which has links to similar di-
rectories around the world). Find it at:

Programs

The Happy Puppy: http://
www.happypuppy.com
Every computer gamer’s dream come true
shareware.com: http://www.shareware.com

Microsoft: http://www.microsoft.com/
Everything you might want from Microsoft —
online technical support and FAQ files about
Microsoft products, demos and beta release
software, Windows ’95 Resource guide…and
a lot more.

Adobe: http://www.adobe.com

Computer Stuff

apnpc/familypc/
A computer guide for the rest of us.

Computer Week: http://
Weekly computer news.

Ziff-Davis Magazines: http://www.ziff.com/
A whole host of computer magazines online

Wired: http://www.hotwired.com/
The coolest place to hang out online. Excel-
 lent articles on a broad range of topics.

Virtualy Real

The Simpsons: http://www.springfield.com/

Star Trek: http://voyager.paramount.com/

Star Trek Generations: http://
generations.viacom.com/

Batman Forever: http://
www.batmanforever.com

MCA: http://www.mca.com/
One of the first movie production houses to
promote movies online.

Use a Web Browser to access these sites

A Web browser will take you to the WWW site
of your choice.

Using either a pull-down menu or a com-

bination of keys (for example, ctrl-l in
NetScape) you can select a new location with
your browser.

When prompted for location details, type
in the full site address (for example, http://
generations.viacom.com/).

Using this information your browser will
connect to the site and start downloading in-
formation to your screen.

Once you are connected to a site, be sure
to add it to the bookmarks on your browser
(usually found on a pull-down menu, or using
a keyboard combination, such as alt-a in
NetScape).

If you ever want to return to the site, you
can simply select it from the list, rather than
typing the address out in full.

If you don’t have WWW browsing software
installed on your computer, your ISP might pro-
vide access to line-based Web browsers (such
as lynx).

Publicly available WWW browsers are
listed on Page 27.

Favourite sites
Glossary

account  Before you can access the Internet, you will need an account on a computer that is connected to the Internet. This will allow you to access the computer. Your Internet Service Provider will provide you with an account. The name given to your account will become your userid.

anonymous ftp  The process of connecting to other computers on the Internet which allow public access (that is, which don’t require that you have an account before you connect) in order to retrieve files stored on them. Connection is established using the ftp program, logging in with the username of “anonymous” and entering your email address as the password.

Archie  A service available to all Internet users which is used to search for files or directories on other computers on the Internet which allow anonymous ftp logins. Once you locate the file, you can download it using your Web browser (see below) or an ftp program.

ARPANet  The origin of the global network now called the Internet. In the 1960s ARPANet was created for the US military, which has since developed its own network called MILNet.

article  The name used to refer to messages posted on the Usenet news system.

binary file  A computer file which contains characters other than pure (ascii) text.

bit  The smallest unit of measurement for computer data.

bps  Bits per second. The speed by which modems are rated. It specifies the amount of data they can send and receive each second.

byte  A byte is made up of (usually) 8 bits. The size of a computer file is generally referred to in bytes. A kilobyte is a thousand bytes, a megabyte is a thousand thousand bytes.

chat  The act of “talking” over the Internet. The talk program is used for one-to-one chats, while many-to-many chats use Internet Relay Chat (IRC).

client  A software program, usually installed on your own computer, used to connect to and interact with an Internet resource (such as Gopher or Archie).

dial-up  Can be used in two senses: (1) The act of connecting to another computer using a modem and an ordinary telephone line, or (2) a type of account on a Unix host which allows limited access to its services.

DNS  Domain Name System. The system which regulates the naming of computers on the Net. The name and network address of every computer connected to the Internet is stored in a massive database which other computers access in order to translate computer names (such as domain.com.au) to numeric (IP) addresses (like 123.321.43.34).

domain name  The official Internet name for a computer connected to the Internet. Your email address is comprised of your userid and the domainname of your ISP’s computer, separated by the “@” symbol; ie. userid@domainname.

download  The act of copying files from one computer (referred to as a “remote host”) to your computer.

dumb terminal  In essence a computer screen and keyboard, connected via cable to a central computer. It is called a “dumb” terminal because it lacks storage space (ie. a hard disk) or a “brain” (CPU) of its own.

e-mail  Electronic mail — electronic correspondence sent from one computer to another over a network.

e-mail address  Your email address contains all the information other computers connected to the Internet need to get email to you. It is comprised of your userid and the domainname of your ISP’s computer, separated by the “@” symbol; ie. userid@domainname.

FAQ  Frequently Asked Questions. A FAQ file is a compilation of questions and answers, designed to help newcomers to the Net. These can be found in Usenet newsgroups aimed at new users.

finger  A program which allows you to determine if a user is logged on, plus other useful information about them (such as when they
were last logged on and whether they have any unread email).

**followup** A reply to a Usenet posting which can be read by other Usenet readers. Newsreaders allow you to either reply directly to the author of a particular article (via email), or post your reply to the newsgroup for other subscribers to read.

**ftp** (1) The file transfer protocol: the standard which dictates the manner in which files are copied from computer to computer across the Internet. (2) The program used to copy files from one computer to another across the Internet.

**Gopher** A menu-driven interface used to find information on different computer systems. Usually accessed via telnet or a gopher client.

**host** A computer on the Internet which allows users to connect to it.

**http** hypertext transfer protocol. The protocol which regulates how information is transferred over the World Wide Web.

**hypertext** Documents that contain links to other documents. Hypertext forms the basis of the World Wide Web.

**Internet Service Provider (ISP)** A company which provides Internet access.

**InterNIC** The Internet Network Information Centre, the closest thing to a central Internet organising body.

**Internet Protocol (IP)** One of the many protocols or standards which regulate the way in which information is passed between computers on the Internet.

**mailing list** A list of email addresses of people who share a common interest. When you send an email message via a mailing list it is automatically copied and sent to every other person on that list.

**modem** A device used to connect two computers via a telephone line.

**moderator** The person who scrutinises posts made to certain newsgroups, called moderated newsgroups, to ensure that they are accurate and on topic.

**MUD** Multi-User Dungeon. The name given to text-based online fantasy worlds, where one can fight dragons and other mythical creatures.

**newsgroup** The name given to each of the electronic notice or bulletin boards which comprise Usenet.

**newsreader** A program used to read, post or reply to news articles on Usenet.

**packet** Information which is broken down into chunks of data to be sent across a network.

**password** A secret word or code used, together with your userid, to connect to your account, or to another computer on the Internet.

**PPP** See SLIP/PPP.

**protocol** A standard which dictates how computers on a network interact with each other. The most important protocol for Internet computers is TCP/IP.

**router** A system which connects one or two networks and ensures that the data going between them is delivered quickly and efficiently.

**server** (1) Software which is used to provide access to an Internet resource e.g. a Gopher Server. To access the server software, you usually need a client program. (2) The computer which is running the server software.

**SLIP/PPP** Serial Line Internet Protocol/Point-to-Point. Two different types of software used to connect computers via modem. When you run either SLIP or PPP software on your computer to connect to your ISP's computer, you are assigned an IP address, and become a part of the Internet for the duration of that connection.

**TCP** Transmission Control Protocol. A protocol or standard which regulates how information is shared between computers on a network.

**telnet** A program used to connect to computers over the Internet.

**Usenet** The collection of thousands of electronic notice boards or discussion groups where information and ideas are exchanged on an endless array of topics.

**upload** The act of sending files or information from your computer to another computer, usually referred to as a remote host.

**World Wide Web (WWW)** A hypertext-based system linking information and files on different computers around the Internet. One of the most recent developments on the Internet, it allows users to browse information via an intuitive graphical user interface (GUI).
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**OzEmail**

OzEmail, Australia's largest Internet Service Provider, has local call access nodes in all capital cities and many regional centres. After completing this coupon, you will receive a Starter Kit containing a Web browser and all the software you'll need to make Internet access quick and easy.

After using your five free hours, you pay $5.00 per hour (7 a.m. to midnight) or $2.50 per hour (midnight to 7 a.m.). There is no minimum monthly charge and access is priced by the minute. Instead of an hourly rate, you can also select one of several Frequent User Plans for both home and business users. There is also a one-off registration fee of $25 to join OzEmail. You will receive full pricing and access number details with your free disk.

**Internet Options**

Offering local call access rates in most parts of Australia, Internet Options charges no registration or joining fee. When you receive the disk containing your Internet access software (including a Web browser), you simply load it into your computer, and within minutes you can be surfing the Net with point-and-click ease. There's even online help to show you how to use all that the Internet has to offer.

After your FIVE FREE HOURS, you can continue using Internet Options by registering online. You will need to pay a monthly fee of $45 for 10 hours access — after which you are charged $4.50 per hour for each additional hour you log on during that month. You'll receive full pricing and access number details with your free disk.

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**FIVE HOURS FREE INTERNET ACCESS**

To: Internet Offer, MaxiBooks, PO Box 529, Kiama, NSW 2533. Fax: 042-331773

YES, I want to surf the Internet! Please rush me a FREE starter disk (which entitles me to FIVE hours FREE* access when I join using the software on the disk) with the Service Provider chosen below (please tick one or both boxes):

- [ ] Internet Options
- [ ] OzEmail

I use a:  

- [ ] Windows-based PC  
- [ ] Mac  

(Please tick one)

Name: ___________________________  Street: ___________________________

Town: ___________________________  P/Code: ____________  Phone: (0 ) _______

Note: Pricing and specifications subject to change without notice. *To qualify for five hours free access, you must first register using the supplied disk(s). In the case of OzEmail, you will need to pay a registration fee. Full details of registration, pricing and other conditions are supplied with the disk(s) and/or online when you join.
START SURFING THE INTERNET ... THE EASY WAY!

- Are you intrigued by the Internet ... and considering getting Internet access at home or at the office?
- Unsure about the personal and business benefits Internet access can offer you?
- Confused about the shroud of mystery surrounding the Internet and the technology it uses, not to mention all those acronyms, such as FTP, SLIP/PPP, and so on?
- Interested in FIVE HOURS FREE* ACCESS to the Internet and great discounts on high-speed modems?
- Would you like expert advice at your fingertips on how best to "surf" the Net in easy-to-follow, layperson's language ... so you can make an informed choice today?

Then this is the all-Australian guide for you!

Almost everywhere you turn today — in the media, at schools and universities, in the business world — you are being bombarded with information and reasons why you should be on the Net. But how do you make an informed decision about joining and using the Internet, without spending a small fortune in the process?

This NEW 1996 EDITION by an Australian Internet expert tells you:

★ Where the Internet came from, where it's going, and what it costs to belong.
★ What types of resources are available for private, educational and business use and what software and hardware you need to access them.
★ How to connect and use the Internet via a modem or network and (just as important) exactly what a network and modem is.
★ How to select the modem and Internet Service Provider best suited to your needs, using easy-to-follow checklists.
★ You also qualify for a FREE* disk that contains all the software you will need to get you started on the Internet, together with FIVE HOURS FREE* connect time. And you can buy a high-speed modem, ideal for the Internet, at a whopping discount.

*See Page 96 for details & conditions

Sensible basics plus local knowledge ... a comforting desktop companion ... explained in a practical and methodical fashion. The guide promotes an understanding of each of the elements of the Net ... also contains useful information about choosing a modem and an Internet Service Provider - something only a locally produced book could achieve — THE AUSTRALIAN

About the author

Mark Neely is a veteran Australian Internet user with more than seven years experience exploring the Net on most leading computer platforms. He provides clients with in-house training, technical support and advice on Internet connectivity issues. Mark has conducted numerous Introduction to the Internet courses and has written and spoken on issues affecting the Internet both in Australia and overseas.