



That internet thing

If just thinking about the internet brings you out in a cold sweat, take heart. Eleanor Turton-Hill's Christmas present to you is a guide which even your Granny will understand. And she's got plenty of time to email her Christmas list to Santa, too.

Just recently, I've received a deluge of phone calls and mail from people asking naive but nevertheless strangely astute questions about the internet. Things like: "What is it?".... "Why is it?" ...and more specific questions like "How on earth do you attach your phone cable to the back of your PC?"and "Why would I want to be connected to it anyway?"

All this leads me to the conclusion that it's high time we had a beginners' column on the internet, explaining what it is, what use it may be to you, and how you actually get connected.

What is it?

At present, there's something of a competition going on to define the internet; probably because it's not the easiest thing to explain in a few clear sentences.

Essentially, the internet is a huge network of smaller networks connecting millions of people all over the world. But when people talk about the internet they aren't really talking about the physical machines and wires which make it work. They're actually

referring to the facilities they use and the people they meet when they're online. According to recent statistics there are now over 30 million people using the net worldwide and this is growing by an estimated one million per month.

So, what on earth are all these people doing? You may well ask. The internet is not, (as you might think) a tool for extremely technical people who do incredibly sophisticated things with their computers all day. It's actually a usable facility for people with any level of computer expertise. You can exchange electronic mail, transfer files, search for information, discuss your political opinions, get news updates, place orders to buy things and obtain access to software. The list is end-

less. If you have any kind of specialist interest, or a problem which requires expert advice, the chances are that someone out there will know about it.

TCP/IP

If you have an internet connection in your office, you may have heard your network administrator talking about TCP/IP. To any normal human being this sounds like complete gibberish but it actually refers to a fairly simple concept.

All over the world there are networks of machines connected to the internet, and hence to each other, by whatever means are available. For example, you can make connections using a dedicated leased line, an ordinary telephone line or even a microwave link.

The computers connected to the internet are very different in terms of their hardware platforms and operating systems, so standard communications protocols are needed to ensure compatibility between different setups. The protocols which developed out of the ARPANET project (see the *internet panel*, adjacent) were the Transmission Control Protocol and the Internet Protocol (usually referred to as TCP/IP).

The networks which make up the internet are connected by computers called routers, which decide how to transmit data in the most efficient way from one part of the network to another. The Internet Protocol addresses data in small packets, ensuring that the router knows where to send the data. TCP makes sure that these tiny packets of data are protected by placing them in a kind of electronic "envelope". Without the envelope, the packets of data could very easily get damaged or lost. Essentially what TCP/IP means to you is that it doesn't matter whether you've got a

powerful Pentium PC or an old 8086 — it ensures compatibility between machines

How to connect

Getting onto the internet is a fairly simple operation these days. You don't have to be an academic or a manager in a big corporation to get yourself online.

What you need is a computer and a modem. So if you haven't got either of these, you're going to have to buy them. Next on the list is to find a "service



Netscape is one of the most popular navigating tools for retrieving and viewing documents on the internet

provider" — an organisation which will provide you with an internet connection.

There are three basic types of connection: the direct connection, the SLIP/PPP connection, and the dialup/terminal version.

A direct connection provides you with a permanent and dedicated link to the internet. This is extremely expensive and is generally only available to people in big corporations, academic institutions, and government departments.

The second method is to get your access from a company which has a direct connection itself and allows subscribers to dial in and use it. Using an ordinary telephone line, SLIP and PPP are the protocols which make this technically possible.

There are three main benefits from connecting in this way. You get your own hostname; you can download files direct to your computer; and you can use a graphical browser on the world wide web.

Third is the dialup connection which is offered by commercial service providers like Demon, Delphi or Compuserve. You will be charged on a monthly basis for a range of services and access to their internet gateway. With this type of connection, you are not linked directly to the internet. You're actually connected to their system, which in turn is connected to the net, so you don't have a hostname as such. Instead, you're seen by the rest of the internet as name@bigservice.co.uk.

Downloading files happens in two stages: once to download to the online system and the second time to download to your own machine. See *Net.newbies* in our *Cutting Edge* section for more information on how to get online.

Christmas Wishes

Around this time of year we usually make a few wild wishes about what we'd like for Christmas, or some even wilder wishes about what we'd like the industry to deliver in the near future.

Of course, there are lots of computer products we'd like Father Christmas to dump on our doorsteps on Christmas day, and like a lot of people, I'd be quite partial to a nice Pentium 120 with all the trimmings — preferably with a nice big 17in monitor. I'd also like a nice big flat-bed scanner, a high quality A3 colour laser printer, ...oh and a CD-writer please ...the list could go on and on.

But there are other, more fundamental, wishes on my Christmas list for which I'd gladly sacrifice my Pentium120.

The PC is hampered by a whole load of historical accidents, which have



unfortunately been built one on top of the other. The result is a machine which is intimidating, frustrating and at times very hard to explain, especially to people who have no computer knowledge. If computers are ever going to become a real mass-market product, they have to be usable by ordinary people who are not prepared to spend large amounts of their time struggling with interrupt conflicts.

The Plug and Play standard has gone some way to sorting this out. In case you don't know, Plug and Play is a design philosophy and a set of specifications set up to improve the level of integration between PC components. The ultimate Plug and Play dream is that when you install a new device in your PC, the process should be entirely automatic and transparent: no more endless tinkering with system files and jumper settings to get your hardware bits to talk to each other.

The Windows95 installation procedure has gone some way towards achieving this goal, but unfortunately it's all still very hit and miss. A Plug and Play BIOS in your system will help matters by resolving device conflicts, and these have begun to ship on systems from major manufacturers including Dell, Gateway, and Packard Bell. But perfect Plug and Play still has a

So, where did this internet thing come from?

The original idea for the internet developed out of an American defence department agency called DARPA (Defence Advanced Research Projects Agency). In 1969, it began a project entitled "Resource Sharing Computer Networks", which attempted to provide a system to enable the exchange of military information between distant sites. This project was motivated by a certain amount of paranoid cold-war thinking: ie finding a way to communicate over long distances in the event of a nuclear war. The solution was a simple network of four computers called ARPANET (later changed to ARPANET).

The system was a great success and by 1972, the network had grown to include 37 computers with a well-used email system. By 1983, the system had grown to such an extent that the military research component was moved to a separate network called MILNET. A year later NSFNET was established by the National Science Foundation, another US government agency. This linked together five supercomputers and made their information available to educational establishments. For the first time, the internet had become open to people outside the area of defence work, and the

number of people using the system mushroomed. By 1987, NSFNET had so many sites connected to it that the whole system infrastructure needed a complete overhaul. At this time NSFNET was opened to academics, government employees, educational centres and international research organisations.

During this period, of development a lot of experimental work was carried out to find the best way of connecting computers. Different networking methods were demonstrated using various media including satellite, radio, telephone, and Ethernet and several different packet switching methods were used. All of this experimental work formed the foundations of TCP/IP (Transmission Control Protocol/Internet Protocol), but it wasn't until 1983 that all nodes on ARPANET were required to use it.

There's a lot of debate about precisely when the internet began — it all depends on how you define it. The internet as we now know came into existence in about 1990. It is now available to anyone who has the means to connect to it. Over the past ten years the growth of the internet has been incredible, increasing from 5,000 users to about 30 million.

long way to go, and will probably be on my Christmas wish list for a few years yet.

Following on from this month's column, I'd like more people to be using email. Like a lot of people in the computer industry, I use email for a good proportion of my work-related communication, and I also have a handful of computer-literate friends who have email addresses. But wouldn't it be great if email was just as everyday and universal as the telephone.

You could send your Auntie Ethel (you know, the one you never remember until it's too late) that last minute birthday wish, laced with sound and graphics. You could book up meals in your favourite restaurant at the click of a button, order your shopping from the local supermarket and so on.

Some of these things are beginning to happen already, but so far they're on a very small scale. The email party has only just begun.

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