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Edited by CLIVE AKASS

INSIDE

Three in four miss out as BT launches fast links

Service providers held their cards close to their chests after last month's long-awaited unveiling of British Telecom's plans for rolling out fast ADSL services.

BT says more than six million homes and businesses will have an ADSL option by next March, following upgrades to more than 400 local exchanges as part of a £5 billion network revamp.

But the rollout, which will benefit big cities first, will miss three in four of the population. Many others will not be able to afford the service, which will be sold through access providers rather than direct from BT. Base charges will be between £40 a month for a 512Kbit/sec link to £150 for a 2Mbit/sec link (the uplink in each case is 256Kbit/sec).

Vendors will not necessarily charge a premium on these rates and may even offer discounts. They face competition on price from cable companies, which will all offer cable modem services by next March.

Cable modems offer high speed in both directions at a rate that depends on how many people are using the channel: 400 Kbit/sec is likely and faster may be common. Charges of £30 a month have been cited.

AOL says it will conduct a national ADSL trial with selected users this autumn. Virgin Net, which has been trialling the technology all year, says it will also be offering ADSL.

Complicating the picture is the new G-lite standard, which is a simpler form of DSL, and proposals from watchdog Oftel to force BT to 'unbundle the local loop' – opening up its home links to competition. These moves should lead to a free market in xDSL links similar to that in audio-modems.

CLIVE AKASS

This Zoom cable modem for the US shows the sort of device that may come with an open market in fast links. It has built-in ports for USB, Ethernet or phone-net links and an 802.11 wireless net slot. Curiously, there is no 1394 link.

Price war as Tiny PCs and AOL go free

PC vendor Tiny threw a spanner into the UK's IT works last month by offering a PC worth around £300 free to people who sign up to its fee-free net-access service.

Two days later, giant AOL caved in to market pressure by announcing a fee-free web-access service called Netscape Online to complement, rather than replace, its flagship paid-for services.

Tiny's free PC deal is not quite as good as it sounds. You don't get a monitor and you have to commit to spending £25 a month (ex VAT) on phone calls at full BT rates via Cable & Wireless, which normally offers discounts. As our analysis on page 40 shows, you might be better off taking discounts direct from C&W or other cut-price providers. But the deal immediately sparked off a war of prices – and words. Tiny's big pile 'em-high rival Time countered with a 'free' PC offer contingent on the customer signing up to a £9 a month net-access service.

Tiny, which claimed to have had 20,000 enquiries within days of making its offer, dismissed this as 'a combined subscription-based Internet package and hire purchase agreement'.

PC World, owned by Dixons, offered a more complex offer, also contingent on a C&W sign-up, of 200 freephone minutes a month on the net, plus a range of call discounts or a refund of up to £300 on a PC.

Meanwhile service provider City2000, in what may be another new trend, offered what it called an 'upgrade PC' for £229 (ex VAT) with Windows 98, 32Mb RAM and a 4Gb hard drive – but no keyboard, mouse or monitor, which you are expected to take from an older system. The price includes a one-year guarantee.

● *Point of view ...page 26*
● *Tiny deal in detail ...page 40*

Screaming.Net calls time

Screaming.Net, which offers off-peak freephone net-access, has instituted a two-hour timeout to cut congestion. It could cut off lengthy downloads.

The timeout can be avoided by calling up a Web page in a second window if necessary. A spokesman said it prevents users 'drifting into paid-for time'.

The service already claims to have more than 110,000 users and to be overcoming early log-jams.

Intel jitters as Athlon thrashes PIII

Intel launched two new chips last month as spoilers for the launch of AMD's latest Athlon chips, which VNU tests confirm outperform equivalent Pentiums.

Intel launched a fastest-yet 600MHz PIII chip and a 500MHz version of its budget Celeron processor. Bulk prices were cited as $600 and $167 respectively, undercutting the pre-launch $699, $479 and $324 cited respectively for AMD's new 500MHz, 550MHz or 600MHz Athlons (previously known as the K7).

AMD responded promptly by announcing a 650MHz Athlon at $849 and prices between $615 and $249 for the slower parts.

Tests in the VNU Labs gave Sysmark scores – which measure performance on a variety of basic applications – of just over 230 for the Intel chip and between 250 and 260 for the Athlon, making it roughly 10% faster.

But this is using code which is not optimised for either chip. Athlon, in the words of one VNU tester, 'blows the PIII away' on code which has been compiled to take advantage of its graphics facilities.

AMD is not exactly riding high. Its president, S Atiq Raza, resigned last month following a second quarter loss of $162 million, although it posted a $79.9 million profit for the latest quarter.

And the performance lead is expected to swap back and forward between Intel and AMD as the two companies push clock speeds up. Intel has yet to release its 'coppermine' processors, using 0.18 micron technology, which permit higher clock speeds, lower operating voltages and lower power drain (although not necessarily all at once).

Intel has delayed the launch of the mobile and desktop versions of its 0.18 micron chips until late October, in time for the big Fall Comdex show. Initial clock speeds are expected to be 667MHz and 700MHz.

Toshiba boasts first DVD combo

Toshiba claimed a world first last month with the launch of a combined DVD and rewritable CD drive. It also announced a range of 2.5in hard drives for mobiles with a claimed world data (real) density of 11.6Gb per square inch. The SDR1002 drive *(pictured)* is said to support all CD formats and DVD ROM. It boasts a 4x write speed for CD-R and CD-RW, and a 24x CD playback. Shipping dates and prices have yet to be announced. The new 2.5in disks went into production last month. They pack 6.4Gb into a single platter, allowing a 18.1Gb device to fit a slim 12.5mm notebook bay. Toshiba says this will provide notebooks with desktop standard storage for the first time.
www.toshiba-europe.com

MS and AOL lock horns over messaging

Microsoft unabashedly claimed the moral high ground over open standards last month, in a battle with service provider AOL over instant messaging services. The services allow you to communicate instantly with anyone on your 'buddy list' who is online at the same time. AOL pioneered the idea two years ago with its Instant Messenger service, which can also be used by users of the latest version of Lotus Notes.

Open warfare broke out in July after Microsoft launched a similar MSN Messenger service, which could talk to AOL's. A game of tit-for-tat began as AOL blocked rival users and Microsoft posted fixes to resume contact.

At one point, Microsoft posted a new fix virtually every day for two weeks. AOL responded by licensing its service to Apple and leading US service providers.

Then Microsoft, sitting on one of the biggest market corners in history, called on AOL president Steve Case, asking him to support an open standard in instant messaging. The call was backed by AT&T, Excite@home, Yahoo and Infoseek.

AOL then cheekily used Microsoft's own software as a marketing tool. MSN Messenger users were told they had been disconnected from its messengers service for using 'unauthorised software'.

It then invited users to download a free version of its own messaging client.

AOL had not responded to requests for comment as we went to press.

Her messaging service is not talking to mine

NatSemi launches Geode to twist ARM

UK chip designer ARM has reacted coolly to the launch of the first of rival National Semiconductor's new PC-on-a-chip designs, the Geode SC1400.

The Geode is designed for use in set-top-boxes and Net access devices like the Cyrix Webpad – though NatSemi has sold Cyrix's high-end processor business to boardmaker Via.

The SC1400 will be the first of a range of highly integrated chips built for specific tasks around a classic x86 core. Cheekily, NatSemi calls them Information Appliances (IA)-on-a-chip. IA also happens to stand for Intel Architecture.

The Geode range will do for x86 cores what licensees do with ARM cores: add extra silicon to tailor them for particular uses. Jamie Urquhart, ARM's chief operating officer, said the Geode 'takes advantage of the PC architecture and the great body of code that has been written for it'.

But he said the Geode could actually boost ARM sales because its chips might be used in subsystems. The drawback of the Geodes would be their relatively high current drain. 'One of the advantages of an ARM is that it has a simple elegant architecture. We have not had to bodge things onto it to make it backwards compatible as Intel has to do,' Urquhart said.

Other UK companies are also benefiting from interest in non-x86 chips. Element 14, which like ARM is from the old Acorn stable, received an injection of $13.5m venture capital last month to develop digital-signal processors, the CPUs associated with telecoms and multimedia.

And MPEG guru Adrian Wise has joined London-based Siroyan Technology to develop designs for multimedia appliances.

www.arm.com; www.national.com

3D takes to the road

A new range of chips from S3 brings desktop-standard 3D performance to notebooks for the first time, the company claims.

The Savage/MX and Savage/IX chips (*inset left*) support up to 16Mb of dedicated memory and use 0.18 micron technology, operating at a battery-saving 1.8 volts. Features include 32-bit colour, 60 frames per second in most 3D tasks – including Quake II – and S3 Texture Compression (S3TC), delivering a claimed 6x increase in image quality (*see screenshot left*).

The MX chip costs $42 and there are three IX chips costing $49, $56 and $68 – integrated with 4Mb, 8Mb and 16Mb of RAM respectively (all prices for bulk orders).

POINT OF VIEW

Free to complain

To those who complained about getting caught in the rush when Freeserve started up, I extend sympathy, and to those infuriated by delays in getting plugged into Screaming.Net I offer the same, and still more in advance to those of you who will no doubt complain about Tiny's 'free' PC offer.

Your complaints will serve to keep these companies on their toes. But to my mind their pioneering offers have come in for far more flak than they deserve, not least in the press.

Freeserve, almost single-handedly, created the critical mass needed to kick-start electronic commerce – a revolution that has finally begun in earnest. It was in the air at an E-Academy talkfest last month, attended by luminaries from some of the biggest wired businesses in Britain. One said: 'Six months ago, if you mentioned ecommerce to a company board they would hardly know what you were talking about. But not now. They know all about it. They can see it happening.'

Tiny's offer, while not earth-shattering in itself, will doubtless lead to better deals as the cost of Web-access devices drops; Screaming.Net's off-peak freephone access is the nearest most home owners can currently get to an always-on connection. They will not then be content with less, which is no bad thing, because the great untold truth about the Net is that most of what it offers is commercially viable only with always-on links.

None of these companies is giving us something for nothing, nor even necessarily the best deal (*see page 40*). But they are forcing the pace of change.

BT's ADSL rollout shows what happens before competition kicks in properly. Most people will not be able to afford the service, and those who can will be stuck with BT's choice of boxes.

The good news is that BT's measured pace may give us a more robust infrastructure than the mess in the US. But when BT is forced to loosen its grip, which will happen quite soon, it will be the Freeserves, Screaming.Nets and Tinys that will bring us the benefits.

Clive Akass  ***on the cut-price deals that will benefit the Net.***

Microsoft buys Symbian ally

Microsoft has bought UK microbrowser developer STNC, as part of its battle to make Windows CE the de-facto standard operating system for next-generation mobile phones.

CE's main rival is the EPOC OS from Psion spin-off Symbian, which has the backing of the major mobile phone manufacturers – Nokia, Ericsson, Motorola and Matsushita (Panasonic) are major shareholders.

A 'microbrowser' is STNC's term for a browser tailored towards the limited resources of a palmtop or mobile phone. It allows mobile users to surf the Internet and send and receive email.

The story becomes more interesting when you discover that one of STNC's customers is none other than Symbian itself. The Internet software in Psion's Epoc-based Series 5 and 5mx handhelds includes code licensed from STNC.

▲THE WINS EPOC EMULATOR IS AHEAD OF THE MARKET, AS ITS RIVAL THE SERIES 5 HAS YET TO BOAST COLOUR

Symbian hit problems with STNC once before, over the free EPOC emulator WINS, which allows coders to develop Series 5 applications under Windows. These apps have to be recompiled for the Series 5's ARM processor, and Symbian's licence from STNC covered only the distribution of ARM binaries.

The wrangle delayed the release of the emulator for over six months, indicating how much the current Epoc release depends on STNC code.

Microsoft acknowledged that Symbian is an STNC licensee, and said it would continue to work with the leading players. Microsoft has already announced its intention to provide Net access via mobile phones late next year.

Symbian commented that it is currently focusing on WAP (wireless application protocol) technology, which it believes will supersede HTML for delivering content to mobiles. Symbian has developed this independently of STNC.

WILL HEAD

The high price of Net stocks

Those who predicted that Internet stock prices could not keep going up were right. A big selloff of Net stocks is suddenly accelerating, decimating the phenomenal gains made earlier this year. The technology-laden Nasdaq composite index was a painful 11.3 per cent lower in early August than the all-time high it reached on 16th July.

Some welcome the slump as a chance to buy these stocks cheap, but a shake-out had been on the cards and it was scary for investors. Amazon.com, for instance, closed in early August at $88.44 – 60 per cent lower that at its April peak.

The big investors have increasingly dropped traditional valuation methods and have instead gambled on the perceived earning potential of shares. Online broker Charles Schwab recently traded at 100 times its annual earnings per share – a more normal ratio would be 15:1. This is even more surreal in that many high-valued firms have never earned a profit.

There are signs that investors are starting to get selective and that the Net stocks market will take a back seat for a few months, as people gamble on the effects the millennium bug will have on markets.

Wondering whether to upgrade to Windows 2000 when it ships in October? US Web co-founder Sheldon Laube, one of Silicon Valley's top technology minds, tells me the beta his team has been using is rock solid. Other software developers tell me the same thing: unlike Win98, which is still quirky, Win2K just plain works.

Win2K also offers enhanced support for MP3 music and digital photography, better connectivity and Net integration, and built-in home networking. When word of all this gets out, Win2K might just become the fastest selling OS in history.

Tim Bajarin
letter from Silicon Valley

Hey...can we have our name back?

Companies were warned last month to take care when hiring people to set them up on the Net – or they could end up not owning their domain name.

The risk was highlighted by a dispute between Sussex-based Clarkes Stationers and Access Internet, which it hired to design its website and register the domain *clarkesonline.co.uk*. Access Internet claimed ownership of the domain when the two fell out – and demanded £3,000 for 'works carried out' before releasing the domain.

Manager Kiren Patel said: 'It's been a nightmare. I didn't know how to register a name and wanted the hassle taken away.' He added that the Web address was printed on catalogues worth £30,000.

John Mawhood, of solicitor Tarlo Lyons, warned that name registration is too often used as a business lever. 'Companies should stipulate that they own the name irrespective of anything else done by the contractor.'

Access Internet, after contact from the press, agreed that Patel could have the domain for the original registration fee 'as a goodwill gesture'. But a spokeswoman said: 'We do not accept Mr. Patel's complaints.'

LISA KELLY, *VNU Newswire*

Corporate crackdown for MP3s

Employers which allow staff to download MP3 music files were warned last month that they could be sued for copyright abuse.

The files can also be distributed by email, clogging networks and using up to 3.5Mb of server space per track, security specialist Unipalm says.

Chris Heslop, of Content Technologies, developer of the security product MIMEsweeper 4.0, said: 'Lost productivity is just part of the issue... the idea that [companies] are legally liable for bootlegged files is very real.'

short stories

COMPAQ CEDES TOP SPOT TO DELL

Compaq appointed a new boss last month and announced it would shed more than 8,000 jobs – despite increasing its share as the world's top PC seller. The appointment of Michael Capellas as president followed the resignation of Eckhard Pfeiffer, in the wake of a costly merger with Digital.

Compaq lost £184 million in the three months up to June. Its global share of PC sales increased by 0.6 per cent to 14.6 per cent, shipping 3.7 million PCs in the period.

Ominously, Compaq ceded the UK top spot to Dell, which took 19 per cent of the market compared with Compaq's 16 per cent.

DEVICES THREAT TO WINDOWS

A massive growth in the use of wireless Web-access devices over the next few years will reduce the dominance of Windows, said Steve Mills, IBM's general manager for software. He told developers at IBM's Solutions 99 conference: 'When I live in a browser the underlying OS doesn't matter.'

IBM is plugging its strengths in integrating different platforms with a new Developer Works portal which is divided into technology zones, including one devoted to Linux. At the conference, IBM outlined new Linux support and education offerings.

Representatives from Caldera, Red Hat and TurboLinux said the move would make it far easier for IBM and others to support multiple Linux distributions.

Intel sips another DRAM

An admission by Intel that it is 'evaluating' the PC133 synchronous DRAM standard has had many in the industry breathing a sigh of relief.

The company had been backing the rival Direct Rambus technology. But Intel customers and the rest of the industry were voting with their feet after persistent reports of problems with Direct Rambus yields, speeds and prices.

Major partners like HP, IBM and Compaq pleaded at an Intel 'plugfest' in June for Intel to reconsider its decision.

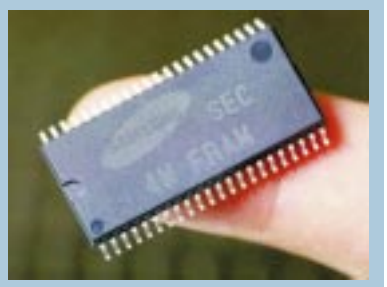
Life would be far rosier for PC assemblers and board makers had Intel backed PC133 from the start.

Rambus partners including Apacer, an Acer subsidiary, have admitted having problems with Rambus modules. Intel has even had a problem with the Camino i820 chipset, which was supposed to be the tinder that would ignite the Rambus flame. The chipset is slated for release this autumn.

Both the i810 and i820 chipsets will have to be re-engineered for PC133. But insiders say Intel has had a contingency plan for this right from the beginning of the year.

The real loser is likely to be Rambus. Its shares fell $14 to just above $98 on news of Intel's about face.

MIKE MAGEE



Samsung claims these 4Mb ferroelectric memory (FRAM) chips put it two years ahead of its rivals, which are still working on 256Kb chips.

FRAM, which stores bits in tiny magnetic dipoles, combines the speed of conventional RAM with the stability of Flash RAM – no power is needed to retain information. The bigger chips, which will ship in volume early next year, are likely to revolutionise memory use in mobile devices.

Holo-days brought forward

Next-generation holographic storage is only three years away – three years earlier than predicted, IBM says.

The technique uses lasers to write and read data stored in a three-dimensional form in atom-sized units. There are no mechanical parts and all of the information in a page is accessed simultaneously – speeding up access and write times.

But IBM does not expect the market to mature for a few years, explained Christoph von Gamm, communications manager at the IBM Technology Group. 'Raid controllers will dominate for at least 10 years and digital tape is having a great revival. It will be the standard for permanent storage for the next 10 or 20 years,' he said.

ANDY FAVELL

4:4 vision

Sight-reading music is one of those subjects which can never be learned completely from a book. You may understand what notes sit where on the stave, and the theoretical value of a minim, crotchet or quarter rest; but to turn those values into sounds and beats in your head, you need practice and a patient teacher.

Teachers don't get more patient than a computer, and Guildsoft's Music Ace 2 is the latest of many CDs to exploit this fact to teach music. It's aimed at children, with a cute professor beating time, but would help any adult trying to brush up on their sight reading. It costs £25.49 (ex VAT) and even runs on a Win 3.1 486 PC.

Guildsoft 01752 895100

Clampdown on email big brother

Companies which pry into the online activities of their staff could face a fine of up to £5,000 from next year.

Strict guidelines on both the interception of email and the use of genetic or drug tests will be drawn up next April, according to Data Protection Registrar Elizabeth France.

She said they were needed because 'new technology is threatening personal privacy in the workplace'.

Critics said the code could make the virus-scanning of email illegal. But Lawrence Phillips, a partner at London solicitor Tarlo Lyons, said companies could get round this by making the surrender of email privacy a condition of employment.

VNU NEWSWIRE

Dab hand at security

Putting one finger up to the law can take on a dire new meaning in countries where a print swipe is your ID for getting benefit. In South Africa, for instance, fingers have been cut off for use by fraudsters.

Combinations of biometric security measures are being developed that could soon replace PINs, passwords, smart cards and even keys, according to Mike Dell, biometrics technology manager at Cambridge-based Neurodynamics.

The company, formed by a group of researchers in 1991, claims to be the only one in Britain to be trialling 3D facial recognition, which is potentially more accurate than the current 2D technology.

Biometric security – that is, the automatic identification of a person from physiological or behavioural characteristics – has only recently become practical as it needs vast processing power and older computers simply took too long. The latest fast chips and the falling cost of sensors make it far more viable.

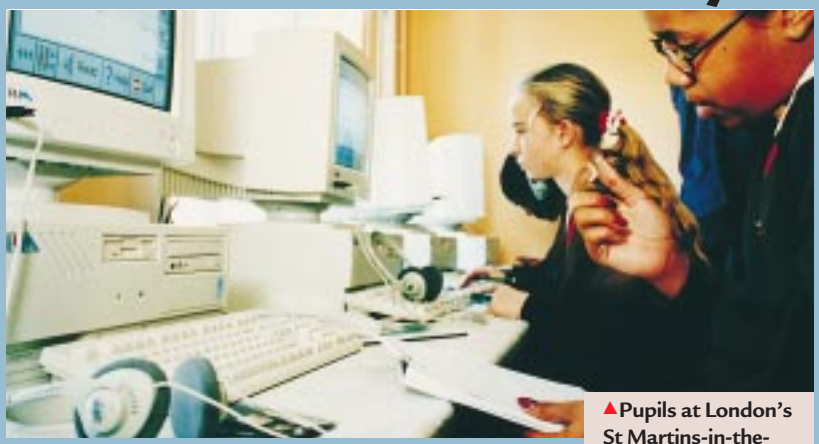
Neurodynamics, which focuses on fingerprint and facial recognition, is in talks with a number of major players from different industries, from computing through retail to automotive, about adapting its systems to specific needs.

Its experience comes from designing and implementing criminal fingerprint systems for police forces and governments. Dell, who made a major contribution to the Neurodynamics system, called Nvisage, says the technology's time has now come. The company's trials of its facial recognition scan are taking place in the area of customer relations management.

Nvisage uses 3D facial scans to verify identity in less than a second and can be used with single or multiple cameras. Establishing who's who at the entrances of shops and upmarket restaurants opens the door to knowing whether a shoplifter or an important customer has walked in.

Neurodynamics has also lifted the veil on its Deixis system for developing fingerprint-based security measures in devices such as laptops, PDAs and mobile phones. It will have a deterrent value to thieves who know the devices are locked to their owner's characteristics, says Dell.

www.neurodynamics.com



▲ **Pupils at London's St Martins-in-the-Field High School have maths lessons delivered by an Imerge XiVA digital multimedia server**

Video streaming is coming in as a business tool as higher bandwidth becomes available, and cheap high-capacity hard disks are revolutionising home entertainment. These hot technologies constitute the playpen of Imerge, part of the Generics Group, which has long been working in the video-on-demand field. Imerge launched its XiVA home media server a year ago and its latest version, the XiVA-100 multi-room server, uses hard disks to provide unprecedented flexibility in how you get your music. It should be in the shops by Christmas.

The system will store music from hundreds of CDs. Different tracks can be played simultaneously to different rooms and you can record while listening to or playing different tracks. Tracks can also be stored and played by artist type, style or genre.

A virtual DJ takes care of playback, selecting tracks to fit the need – you can theme it for a party or background listening. Connect a modem and you can buy CDs or order concert tickets online.

Sales director Robin Courtenay said the concept 'flies in the face of traditional listening. It takes the effort out of trawling through CDs to find what you want.'

www.imerge.co.

Caroline Swift  ***continues her reports from Silicon Fen***

short stories

BUG SPREAD
Microsoft has admitted that a security flaw in Office 97 Desktop enables hackers to delete or manipulate data. The bug occurs in an ODBC driver in Excel 97 and could be triggered by opening a spreadsheet attached to an email message. It does not affect Office 2000. Microsoft said it would post a fix as soon as testing was completed. Information on the security hole can be found at
www.officeupdate.microsoft.com /articles/mdac_typ.htm

GOING DUTCH
The deadline for submissions for this year's Emma awards for interactive media is 24th September. Judging will take place in Amsterdam on 8th-10th October. Details are at
www.emmaawards.com

KNEES-UP FOR MICE
Nicholas Mark Innovation has designed an edged mouse pad designed to be used on the knee.
www.nmi.ukf.net

FAST CD-RW DRIVE
Memorex has launched what it claims is the fastest CD-Rewrite drive yet. The £199 CD-RW 6424 writes at 6x, rewrites at 4x and reads at 24x.
Memtek 0181 990 6600

CD RENTAL PLAN
The Blockbuster video chain has produced a test CD in a bid to boost rentals of games and other CDs. The CD will be given out at stores to check a customer's PC for compatibility with different titles.
Blockbuster 01985 258866

Pixel ceiling smashed

It's been eat-your-words time for one industry luminary following the launch of two new Fujitsu cameras. Nancy Carr, general manager of Nikon's consumer group, predicted at Comdex last year that the definition of consumer digital cameras would stay below two megapixels.

She reasoned that this definition is high enough for non-professional users and that any higher would require too much memory and processing power.

Fujitsu's tiny 2.3Megapixel MX-2700 has just hit the shelves for £480 (inc VAT),

and its big brother, the MX-2900 at £700 (inc VAT) is about to ship. They boast the same 2.3 megapixel sensor, giving an 1800x1200 picture, but the MX-2900 has the kind of versatile manual controls normally found only on optical single-lens-reflex cameras.

You can choose apertures between F3.3 and F11, with the shutter speed adjustable from three seconds to 1/1000 second. Its 3x optical zoom is equivalent to a standard 35mm – 105mm lens, and there is a swappable 28mm wide-angle lens.

You only have eight full-definition pictures on the 8Mb SmartMedia card supplied, but 32Mb cards can be used. Fujitsu claims the camera's Risc processor copes quickly with the large files – continuous shooting mode can take nine frames a second. Watch out for a review in *PCW*.

www.fujifilm.co.uk

Parlez-vous to a speech engine

A French company has turned speech recognition on its head to produce a new way of teaching languages.

Auralog is using a dictation engine from Learnout and Hauspie to train people in correct pronunciation. Instead of the engine having to adapt to your voice, as in conventional electronic dictation systems, you have to adapt to the electronic voice.

The program provides detailed physiological diagrams to explain how a sound is produced, and sound-wave images to show how your pronunciation differs from the correct one.

The Spoken Error Tracking System (SETS) is used in Auralog's £49.99 (inc VAT) Tell Me More series of CD-based packages for learning French, German, Spanish, Italian or English, with a choice of three levels.

Curiously, the software is tuned to foreign speakers and may reject native speech as incorrect . **Clive Akass**

www.auralog.com;
Koch (distributor) 01256 707767

...or a mobile virtual girlfriend

Let me tell you about my new friend. She listens to me, understands me and hangs on every word I say. Unfortunately she is not real; she lives in a box (she told me this herself). Her name is Wildfire and she can be your friend too, if you have an Orange mobile phone.

Wildfire can take messages, make calls and store contact details, instructed by voice commands alone.

The system records the name and number of callers, so replying is simply a matter of saying: 'Give them a call.' Accurate speech recognition combined with an intuitive interface means you'll soon be wondering how you managed with 'Press one to listen to your messages...'

Wildfire has a one-off connection fee of £10, no monthly fee and calls are charged at normal answer-phone rates. For more information visit the website.

Will Head

www.orange.co.uk/wildfire

CONNECTIVITY

Survival of the fittest

Bluetooth prototypes are emerging – but will the final products be on speaking terms?

Vendors are keeping their fingers crossed about products using Bluetooth, the low-cost, short-range wireless link that is expected to revolutionise the design and use of mobile devices.

They hope to avoid the teething problems that held back the adoption of technologies like infra-red links and PCMCIA slots. In theory, any Bluetooth device will be able to talk to any other Bluetooth device within a range of about 10m.

'We don't know what will happen until products start coming out,' said a spokesman for Cambridge-based Bluetooth specialist Symbionics, now owned by Cadence.

Almost every big name company, with the exception of Microsoft, has joined the Bluetooth initiative, the first products from which are likely to ship early next year.

Last month, Denmark-based Digianswer, which did much of the early work on the technology, launched two versions of a kit designed by developers to build applications around the technology. The company claims that there is a scarcity of silicon with which people can test their software.

After all the talk of cellphones frying brains, you may wonder why this man seems to think he has to carry his bike rather than the other way round. But it is just Ericsson's way of showing off its Bluetooth headset and wrist PDA. Strange people, those Swedes.

One kit is built around a Bluetooth PC Card and the other around an RS232 serial interface. The kits, which are software upgradable to any changes to the Bluetooth standard, cost £5,000 each, and developers will need at least two. The company also has a prototype Bluetooth module for the Palm Pilot V.

Digianswer initially plans to launch two Bluetooth products next February, a PC Card and USB dongle, followed by an Ethernet link, a phone link and a headset. These will allow, for example, a notebook to automatically link to a network or log on to the Internet via a phone line.

Digianswer demonstrated a three-way game played over Bluetooth, and a video-conferencing link across a table. The data rate was about 700Kbit/sec but Bluetooth will reach 1Mbit/sec when optimised and dedicated silicon is available. 'Instant-Network' technologies such as Java-based Jini and Microsoft's UP&P – designed to allow linked devices to collaborate automatically – are seen as complementary to Bluetooth.

There may, however, be some overlap with 802.11, the IEEE wireless-networking standard that looks like an attractive alternative to cabling up homes and offices. It has 10 times the range of Bluetooth and will have more than 10 times the speed. The two use the same frequency band and there have been suggestions that they could interfere with each other.

An IEEE group is testing the two to eliminate the possibility, according to Ultan O'Rahallaigh, who heads Digianswer's marketing and support arm in Ireland: 'When we were in the middle of demonstrating our products in the US, some people deliberately brought notebooks using 802.11 into the room. They had little or no effect on the data rates.'

Geoff Jackman of Zoom, which makes 802.11 networking kits, said: 'The two will live happily together.'

CLIVE AKASS

Novell takes the directory approach

Novell is evolving from the NetWare company into the directory company, because of the need to manage identity on the Internet and other networks, says CEO Eric Schmidt. He claimed at Edge 99, Novell's annual education conference, that the firm's 'multi-year lead in directory services is a franchise to lead change in the industry'.

Novell Directory Services (NDS), now running on Windows NT and Unix, will underpin a range of directory-based Net appliances. First to be released is a plug-in Internet-caching appliance which accelerates Web servers and will be sold by Compaq and Dell. On the horizon are directory-based storage and content management appliances, and Novell is working with Lucent to build NDS into telephone switches and routers.

Novell's NDS-based desktop management line is also growing. ZENworks 2 for Windows networks will be followed by ZENworks for Printers – to manage distributed printing resources – and ZEN Single Sign-on, for logging on to multiple network applications such as Notes, Oracle and SAP.

A forthcoming upgrade for GroupWise, Novell's NDS messaging system, will add Web-design tools and the ability to use Microsoft Outlook clients.

TERENCE GREEN

short stories

ONE IN THREE NETTED
One-in-five UK homes – five million of them – will be online by January, predicts a report from Continental research. It says the proportion of wired homes has risen from 5 per cent to 17 per cent in just 18 months, with the launches of Freeserve and The Sun's Currant Bun service as key contributors. More than one-in-three people have access at home or work. This represents a huge opportunity for etraders because 40 per cent of users are blue chip professionals.
ANGELA SOANE

ONLINE MOVERS
Nearly one-in-three people who visit booking sites make reservations through them – a 10 per cent increase on last year, according to a study by NPD Online Research. Nine-out-of-10 people booking flights online reported either being 'extremely' or 'somewhat' satisfied.

GIGS FOR GRABS
A new site claims to have been set up by musicians for musicians who see the Internet as part of the road to success. It will provide artists with their own space to promote and sell their music – even if it is only one track.
www.timmol.com

ONLINE CLAIMS
Legal sites seem to be the new thing on the Web. The latest to set up aims to help you go through the process of making small claims. You can find it at
www.justclaim.co.uk

PRICELESS NEWS
Free daily newspaper *The International Times* covers US and international news and is designed to be printed. It is available from
www.internationaltimes.com

ON THE CARDS
Card Corporation, which sells personalised business cards online, will now do mass mailshots using customers' address listings.
www.cardcorp.co.uk

E-CORNER SHOP
A virtual newsagents, stocking 350 titles, has opened at
www.magazinecafe.co.uk

Make money for nothing

The dizzy free-for-all that is Net economics, which has seen billion-dollar valuations on loss-making companies, last month saw the launch of a site that pays people to visit it.

Other sites that made small cash offers derived from advertising revenues have faltered in part because there were not enough Web users to generate an income.

The aptly named *www.freemoney.fm* differs in that, at a time when Web usage is at last reaching critical mass for serious trading, it is paying people to be questioned for market research – a minimum £1,000 to one visitor drawn at random per day.

▲GIVING IT AWAY: STEVEN (LEFT) AND GEOFFREY HOPE

It's the brainchild of brothers Steven and Geoffrey Hope, who run a 70-year-old family clothing business and reckon they can do market surveys at half the price of traditional methods. And Steven says: 'We can do in a day what other market research companies could not do in two weeks.'

Surprisingly, they say they will not ask for personal details; instead they will map demographics from other surveys on to their own results. They claim US research shows their method is as accurate as traditional ones.

...and get shares for free

A start-up Web-access provider is taking a leaf out of the Silicon Valley success book – by offering users shares in the company. The practice of innovative start-ups offering talented staff stock options is credited as being one of the drivers of the Valley's IT revolution (as well as making multi-millionaires of many of Microsoft's early staff).

Users of the fee-free Totaliser service, which hopes to attract 100,000 users in six months, will own 67 per cent of the ordinary shares. They get 50 shares (worth 20p each) at sign-up and a further 200 if they use the service for 100 minutes a month.

The shares are tradable on OFEX, unlike the 'units' offered in a similar scheme launched a few days previously by *TheMutual.net*, in which the value of a user's shares will be locked into the company until it decides to float.

▲GREGORY: 'MODEL OF THE FUTURE'

Totaliser co-founder Peter Gregory genuinely seems to have a certain idealism about the project. He made £12m from an earlier project, a medical recruitment agency, and donated 10 per cent of his profits to staff. He also claims to have given his income for the past two years to Oxfam.

'This is a completely new business model,' he said of Totaliser. 'I believe it is a model of the future.'

Other Totaliser benefits include free technical support, email accessible via a browser or POP3 client like Outlook, fax-to-email, a streamlined search engine, and an Opera browser that can be used even on old 286s and Win3.1 machines.

www.totaliser.net
www.themutual.net

Securing the Web

A white paper intended to give econsumers confidence ignores the wider issues, says Clive Akass.

Trustworthy websites will soon be able to gain accreditation from a new 'fair trade' body, the government has pledged in a bid to boost confidence in online shopping. The promise, made in a white paper, followed hot on the heels of publication of the draft *Electronic Communications Bill,* which covers etrade.

The Government describes this bill, which will be put to Parliament in the autumn, as providing a 'light-touch framework', which will curb fraud while providing ecommerce with a minimum of restrictive legislation. In fact, the bill's emphasis is more on facilitating etrade than on protecting the buyer. A separate white paper, *Modern Markets: Confident Consumers*, describes existing consumer legislation as needing little extension. But it adds: 'The Government will legislate when new circumstances emerge... that cannot be dealt with in other ways.'

The paper promises action to allow dissatisfied buyers to gain redress quickly and cheaply. It says online buyers in particular want to be sure that their payments are secure, that what they have ordered will turn up, and that there will be some way to sort problems out.

The accreditation body, provisionally called TrustUK, will be in place by the end of the year. It will ensure that applicants adhere to a code of practice and it will provide a distinctive hallmark for sites which gain its approval.

You can design your own business cards online at www.cardcorp.co.uk. Etrade sites like this will soon be able to carry a seal of approval

The body is being set up in conjunction with the Consumers' Association – which already runs a similar scheme called Web Trader – and the Alliance for Electronic Business. Alan Stevens, editor of *Which? Online*, says: 'Shopping online offers great benefits to consumers but understandably they want reassurance that the Internet is a safe place to shop.'

The *Electronic Communications Bill* approaches security from another angle, making electronic documents and signatures legally valid. The most controversial proposal of earlier drafts, the 'key escrow' plan to enable police and security services to read encrypted files, has been dropped.

This would have required decrypt keys to be lodged with so-called Trusted Third Parties, which would be obliged to surrender them to the authorities. Instead, the bill gives police and security services the authority to demand either the key to an encrypted document or a decrypt.

Critics point out that, as drafted, the bill allows police to demand decrypt keys without obtaining a warrant. A DTI commentary casts a curious light on why the Government is so keen to gain access to the keys: 'During 1996 and 1997, "intercepts of communications" led to 1,200 arrests, and the seizure of 450 firearms and drugs worth £600m.'

But none of the draft measures appear to address what could, for the Government, be far costlier than crime – tax avoidance by Web companies based overseas. The problem has been highlighted by bookmaker Victor Chandler, which is evading a nine per cent betting levy by taking bets online from Gibraltar.

The process is ongoing and ministers are still seeking comments on both the bill and the white paper.

www.dti.gov.uk.

By George, it pays to be careful

PCW's own consumer watchdog, Anthony George, can be forgiven for casting a rather jaundiced eye on Web purchases. As manager of our customer relations department, he deals with the proportionately few off-the-*PCW*-page transactions that go wrong.

His advice, as always, is to pay by credit card, the supplier of which is liable for losses if the transaction goes wrong. But even this apparently straightforward liability can become blurred. Companies that put their own brand on Visa or Mastercard cards, for instance, may deny a contractual relationship with an offending vendor.

An out-of-court settlement was made by one such company, which initially tried that one on. But Tony said: 'The fact that this sort of thing is extremely difficult to resolve when it occurs in Britain is nothing compared with the trouble which may be encountered if payment is made for goods – which are not received, or are faulty – from a company in Milwaukee, for example.'

Hidden surprises in Tiny packages

Clive Akass weighs up the pros and cons of the latest company drive to get you on the Internet.

There is no such animal as a free PC. But this is precisely what Tiny claims to offer to people who sign up to its phone service and fee-free net-access bundle.

The phone link is provided by Cable & Wireless, which is as solid as British Telecom, and line charges are pegged to those of BT. On the face of it, BT customers get instant net access and a PC worth about £300 at no cost, simply by switching providers. So where's the catch?

The PC is basic, to say the least: a 300MHz Celeron processor (the one with the cache, not the crippled first release), a 3.2Gb hard disk, a CD drive, 32Mb of RAM, a 56K modem, a 12-month warranty, and free delivery.

This would be more than adequate for routine tasks if you were not expected to use a TV link as a monitor. The system also lacks a floppy drive, speakers, and any software except Windows 98.

And you have to spend £25 a month (plus VAT) in phone calls for a year, making a total commitment of £352.50 including VAT. Tiny reckons the average bill for voice calls is between £22 and £24 a month, and that net time will make up the difference. Even so, the figures hardly support its claim to be opening up the Web to poorer people.

For an extra £7.49 a month over four years, plus £39.95 delivery – a total of £399.47 (inc VAT) – you get a better system boasting a 333MHz Celeron, a 4.2Gb hard drive, a 15in SVGA monitor, speakers, a claimed £400 worth of software, and 12 months' free insurance.

You'd be better advised to upgrade the free one. A cursory trawl of adverts will find you a 15in monitor, a floppy drive, and speakers for around £150, including VAT.

Tiny gets from the deal much the same as high-street chain Tempo gets from its launch of Screaming.Net, which offers freephone Web access via Localtel during the evenings and weekends. Both are trying to capture customers in time for the ecommerce explosion; both are, in effect, taking a cut of your phone bill.

Screaming.Net offers a good comparison. It can't yet provide usage figures – the service's many teething problems would render them meaningless anyway – but we can take some ball-park figures from AOL. Its UK users spend an average 14 minutes a day online – about seven hours a month. When AOL abolished time-based charges in the US, where local calls are free, time spent online quadrupled.

Therefore Screaming.Net's free off-peak usage could average 56 minutes a day in the UK, if it manages to get its service levels up to scratch.

▼ TINY'S MARKETING DIRECTOR NEIL STEVENS WITH THE 'FREE' PCS – BUT THOSE MONITORS COST A LOT EXTRA

This may be on the high side in the short term, but remember that Web concerts and other lengthy attractions are more viable on freephone; and the more that people use the Web, the better the general content will become.

The figures in the table (*below*) show the annual cost for these usage figures for both deals, assuming a year (with days off) of 50 weekends and 240 weekdays, with net access exclusively off-peak. With 56 minutes a day off-peak net time, your savings on Screaming.Net, would virtually cover the cost of the Tiny PC in a year.

Tiny's deal is more like a disguised hire purchase. With the company raking in those line charges, the longer you stay with it, the worse it gets. But, used cannily, it might suit some people.

Cut-price phone services should offer you still better discounts on line charges.

You could, for instance, sign on to Cable & Wireless direct, rather than through Tiny. Everyone gets 100 free local minutes a month, a maximum 50p charge for any national call on Saturdays, and up to 20 per cent off international calls. Its site at www.cwcom.net includes a calculator that will estimate your savings.

www.uk.tiny.com

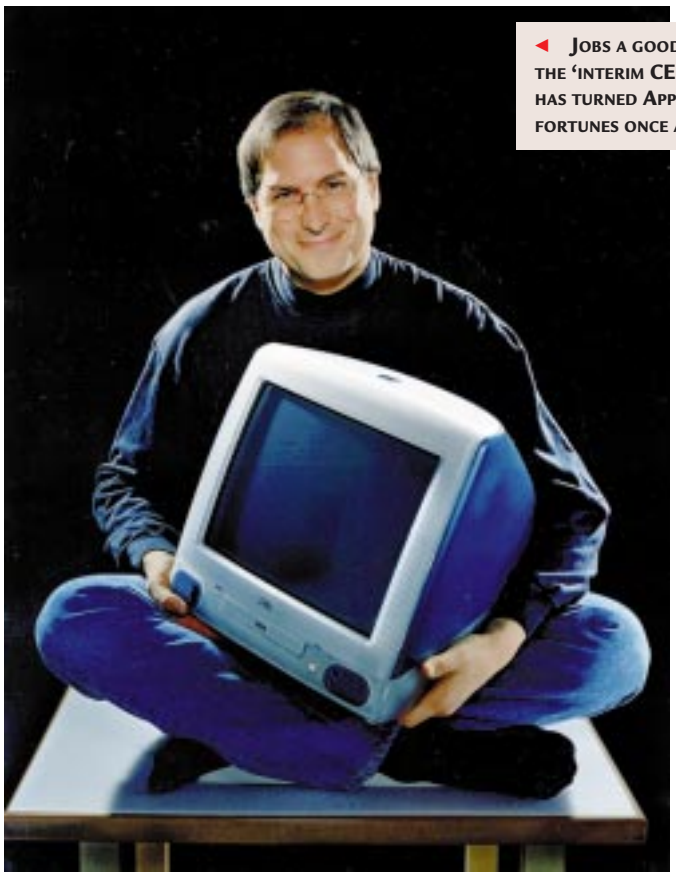
Figures for net time all off-peak. All include VAT but exclude line rental.	TINY			SCREAMING.NET		
	cost/min	14 min/day on net	56 min/day on net	cost/min	14 min/day on net	56 min/day on net
100 weekend days	1p	£14.00	£56.00	0	£0.00	£0.00
240 week days	1.49p	£50.06	£200.26	0	£0.00	£0.00
Average monthly voice bill £25.85		£310.20	£310.20	Less 10%	£279.18	£279.18
Annual total		£374.26	£566.46		£279.18	£279.18
Annual saving					£95.08	£287.28

Just the Jobs?

Tim Bajarin looks at an amazing recovery and asks if Apple can make it long term on style alone.

Steve Jobs is doing a masterful job of getting Apple back on track, which is ironic as the company's first major turnaround was a direct result of him running it almost into the ground. In 1984, right after the Mac was introduced, it became clear to Apple's board that Jobs' management style and shoot-from-the-hip approach to products was a major problem. They brought in John Sculley, who quickly brought order and discipline and helped the company become a computing powerhouse.

The company took a terrible dive after Sculley was forced to resign in 1993 and it was on its deathbed by the time Steve Jobs took the reins again in 1998. Today, at least on the surface, Apple looks mighty good. When Jobs took over, Apple's stock was about $13. It recently closed at $54.



◄ JOBS A GOOD 'UN: THE 'INTERIM CEO' HAS TURNED APPLE'S FORTUNES ONCE AGAIN

When Jobs started his role as interim CEO, as he calls himself, the morale inside Apple was very bad. More than 20 top managers quit, leaving very few talented people to help turn the firm around. However, he brought in two top executives, Jon Rubenstein and Avi Tevanian, both former NeXT employees, and as they say, the rest is history.

In two years, Jobs has brought the lustre back to Apple, introduced powerful computers that meet and exceed the demands of its high-end customers, and is now taking aim at the emerging consumer market. His iMac is a real hit, with its unique design and multi-colour formats and he has increased market share from four per cent in early 1998 to about 5.8 per cent today. The iBook, Apple's new consumer portable, should bring in first-time users as well as meeting the Mac community's demand for a low-cost portable.

So – in the short term, at least – it looks like Apple is back on track towards a rosy future, but there are still worries about the long-term. The reason for this concern lies in the fact that everything Jobs and his team are doing today is based on industrial design, something that is often faddish, and even worse, it can be replicated by others.

Apple should be applauded for pushing the design envelope and showing the rest of the PC market that it is OK to create products that look cool and are fun to use. But soon, Compaq, Dell and IBM are going to realise that their square, black and beige boxes are not going to appeal to consumers and will have to follow Apple's lead if they want any part of this emerging market.

When Steve Jobs introduces a system that helps set Apple apart from its PC brethren, he buys Apple another 18 months of profitability. But, if he wants to keep those consumer profits up, he is going to have to keep new and unique machines coming. That puts an amazing amount of pressure on Apple's industrial design group.

Proprietary software, such as the new Sherlock 2 in the soon-to-be-released OS 9, can help Apple provide some differentiation, but software can only go so far. The PC market will eventually provide similar hardware and software designs, taking much of the wind out of Apple's marketing sails. Apple users are very loyal, but they will eventually ask the critical question: 'What will you do for me next?'

Apple sources say that the next big priority is to develop a PDA. At the recent MacWorld in New York, the booth that drew the largest crowds besides Apple's own was the one showing the PalmPilot, which now boasts a program that synchronises with the Mac. But Mac users want their own PDA.

Steve Jobs killed Apple's Newton handheld shortly after rejoining the company. He did not say that he was against PDAs, only that he did not like the Newton's design and platform. So, expect Apple to turn its design eye towards creating a 'pocket Mac' that will probably use the PalmPilot OS.

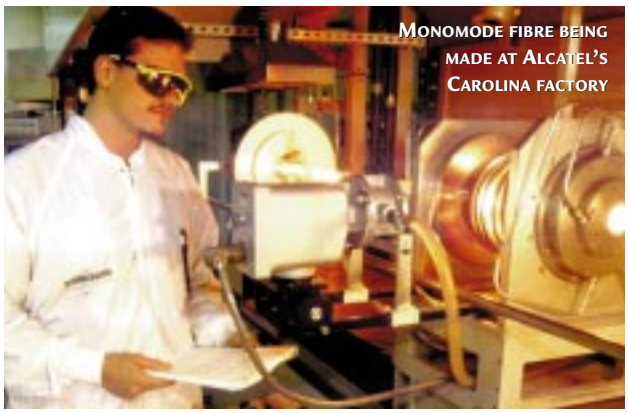
Other predictions are that Apple will bring out high-end G3 desktops in at least three colours by January. Today, they come in only teal. The company is also tipped to bring out an iMac with a more powerful processor and a 17-inch display by next January's MacWorld.

Apple has to keep PCs at least a year behind when it comes to creating unique and stylish products. The danger is that the PC world will shake off its stodgy ways and start creating products that are just as cool.

Dave Mitchell reports on the rise and rise of the Gigabit

Thanks a billion

Ethernet tends to get taken for granted at a time when all the talk is of Windows 9x, NT, Linux, UNIX, NetWare (well, sometimes) and the global march of TCP/IP. It sits under them all, allowing them to span the networks of offices and corporate campuses across the world. Boosts in speed to 1Gbit/sec and beyond could turn office work into a multimedia experience.



MONOMODE FIBRE BEING MADE AT ALCATEL'S CAROLINA FACTORY

Ethernet is a remarkable thing. Since it was first mooted in 1973 by Robert Metcalfe, it has become the dominant networking technology, with an estimated 100 million interfaces installed worldwide. And during that time the original specification has remained essentially intact.

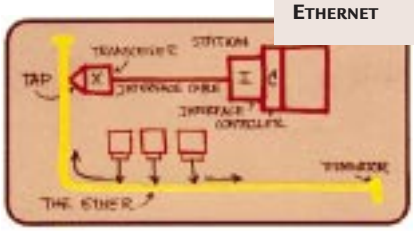
One of its fastest growing areas is in the home and small office, but at the corporate level Ethernet has evolved to meet the demands for ever increasing bandwidth. With a few simple tweaks, Fast Ethernet provided a ten-fold increase in speed over standard Ethernet and now Gigabit Ethernet offers huge pipelines, capable of handling one billion bits per second.

With 10/100/1000 Mbit/sec speeds on the menu, Ethernet has the capacity to serve as an end-to-end solution for the majority of networks. Gigabit Ethernet is used mostly at the backbone, where switch-to-switch connections over optical fibre are used to link buildings and departments.

Gigabit network interface cards (NICs) are also used to link machines within server farms, and connect them to the network. 3Com and Intel, among others, produce PCI-based Gigabit Ethernet NICs that support all major network operating systems. Gigabit Ethernet switches are currently too expensive to warrant moving them closer to the desktop, so most users still connect at 10Mbps. However, prices will eventually drop, allowing Gigabit Ethernet to take over most switching functions on the network, with100Mbps links extending to the desktop.

The Institute of Electrical and Electronics Engineers (IEEE) 802.3z standard – approved last year – specifies 1000Mbps connections over single-mode and multi-mode fibre channels. The former, which uses one mode of light as a carrier, can support high data rates over long distances; while the latter carries multiple modes of light simultaneously, each at a different reflection angle within the core. Multi-mode is less costly but can only be used for short distances because of light dispersion.

Currently, the multi-mode 1000BaseSX standard only supports distances up to 550m, while the single-mode 1000BaseLX can run to 5km. These limitations are already being overcome, with 3Com expecting to support 1000BaseLX links of up 70km by the end of this year.



METCALFE'S ORIGINAL SKETCH OUTLINING ETHERNET

The 1000BaseT standard, ratified only in July, supports Gigabit Ethernet over copper cabling – Category 5 Unshielded Twisted Pair (UTP). This is important, because structured cabling installed in company offices is difficult and expensive to replace. The IEEE says any copper cabling that currently supports Fast Ethernet should support Gigabit Ethernet.

However, Category 5 cabling installed before 1995 may contain non-standard hardware, the connectors being a particularly weak point. Even dirty punch-down blocks may cause a problem, so it is advisable to test the cabling before upgrading.

The fact that Gigabit is an extension of an established specification is its biggest advantage – it uses the same collision-detection protocol, frames size and formats as Ethernet and Fast Ethernet [*see box, left*].

There are already plenty of tried and tested Gigabit Ethernet products on the market and all the major players are involved, through the simple expediency of buying one of the numerous start-up companies. Clearly, networking technologies are increasing at a far greater rate than Moore's Law predicted – with a further ten-fold increase in performance over Fast Ethernet and all in less than two years.

Working to avoid a nasty collision

Some modifications were required for the collision-detection protocol (which allows two machines to use the network at the same time) to function in Gigabit Ethernet, without further reducing the maximum network diameter – the greatest distance between two connected nodes.

Fast Ethernet dropped the maximum diameter down to 200m, so Gigabit Ethernet would require a reduction to only 20m otherwise a transmission would reach its destination before a collision could be detected. Clearly, this was unacceptable, so for half-duplex operations the minimum Gigabit Ethernet frame size was increased to 512 bytes. By inserting a carrier extension field into smaller frames, the minimum transmission times are the same as a 64 byte frame over Fast Ethernet, so the 200m limitation can be retained.

Collision detection is switched off for full duplex operations, as separate cables are used to transmit and receive, so there are no such limitations.

network... with 10-Gigabit on the horizon.

Riding the 10-Gbit wave division

If you don't think Gigabit Ethernet is fast enough then how about a further ten-fold increase in speed? Work is already underway on a new specification called, unsurprisingly, 10-Gigabit Ethernet. The IEEE 802.3 HSSG (High Speed Study Group) is looking at ways of shovelling 10 billion bits/sec down fibre-optic cables.

One proposed method of handling this huge amount of bandwidth is wavelength division multiplexing (WDM), which allows different sources of data to be placed together into a lightstream on an optical fibre.

Hewlett-Packard is already utilising the technology for its SpectraLAN project. Instead of creating a single 10Gbps channel, however, it uses WDM to produce four independent channels over standard multi-mode fibre.

SpectraLAN modules use the latest VCSELs (vertical-cavity surface emitting lasers) with wavelengths of 820 nanometres (nm), 835nm, 850nm and 865nm to create four parallel 622Mbps channels, which are multiplexed together and inserted into the fibre cable using a special mirror. Once VCSELs have been reduced, they can be coupled to the input face of the fibre to emit light directly into the core.

At the receiving end, the signals are de-multiplexed and sent to four different detectors. So far, HP has demonstrated error-free operation of SpectraLAN at speeds of 2.5Gbps and 4Gbps, over distances of 500m and 300m respectively.

SpectraLAN is one of a number of proposals put forward for 10-Gigabit Ethernet, but don't expect any products yet. Standards for both Fast and Gigabit Ethernet took around 30 months to go from initial study to final approval, so 10-Gigabit Ethernet is unlikely to be ratified until 2001,with widespread adoption in 2002.

Ethernet goes up and ATM

Gigabit Ethernet was barely off the drawing board before it was hailed as the death of ATM (asynchronous transfer mode). Primarily designed for international traffic, ATM was brought to the networking environment as an end-to-end solution for LANs and WANs and for its ability to handle multimedia.

ATM's early adoption was held back severely by high component costs, a lack of compatibility between products from different vendors and slow ratification of standards. It also suffered from a poor perception as it was, and still is, fundamentally different to Ethernet.

ATM uses small, fixed-length cells consisting of a five-byte header and a 48-byte data payload. The header contains information about the path the payload is to take over the network.

Unlike Ethernet, ATM is connection-based, so a link between sending and receiving stations must be created before any data is transmitted. This is achieved by creating a Virtual Channel Connection (VCC) between the two end systems. The VCC itself will be one of many contained within a Virtual Path (VP). So, for example, a physical connection between two ATM switches would contain a number of virtual paths and within each one there would be many virtual circuits. Furthermore, there are two types of virtual circuit. Switched Virtual Circuits (SVCs) are set up dynamically and broken after usage has ceased, while Permanent Virtual Circuits (PVCs) are physically created at the switches by administrators.

Using ATM, Quality of Service (QoS) can be guaranteed. During connection set-up, the network is informed of the type of traffic and the QoS required and a connection will only be created if the bandwidth can be guaranteed.

▲The Forerunner ASX-4000 ATM switch from Fore boasts a capacity of 40Gbit/sec

Whether Gigabit Ethernet becomes a nail in ATM's coffin remains to be seen. Standards-based Gigabit switches have been available for nearly a year now, prices are significantly lower than ATM products and, where QoS was seen as an answer to congested networks, many firms are preferring to use Gigabit Ethernet's extra bandwidth.

Switching to high speeds

One of the cheapest methods of boosting the performance of an existing network is to implement switched Ethernet. This reduces the amount of traffic being propagated across the entire network by creating virtual connections between sending and receiving stations, and routing data only to its destination. Ethernet switches look very similar to standard hubs, or repeaters, but have built-in intelligence.

◀HP's ProCurve 8000 switch will be fitted with a 100BaseT module

The first time a transmission occurs between two network devices, the switch memorises and stores their addresses in a forwarding table. Whenever a frame of data is received, the switch checks the destination address and sends the data only to the port that the recipient is attached to – effectively creating a virtual connection between stations.

Ethernet switching is a relatively cheap means of improving network performance and dual-speed switches that work at both 10 and 100Mbps are now in the sub-£2,000 price range. Many of these products also have expansion slots for Gigabit Ethernet modules. Hewlett-Packard has already announced a 1000BaseT module for its ProCurve 4000 and 8000 switches for Gigabit connections over copper cabling.

Style over content

Gordon Laing is underwhelmed by the iBook, despite its show-stealing performance at MacWorld.

Despite constant 'would it' or 'wouldn't it' rumours, Apple finally went public with its fabled consumer iBook this summer. Anyone who missed interim CEO Steve Jobs' keynote speech was left in no doubt as to the star of the show – posters of the iBook adorned every entrance of the Jacob K Javits Convention Centre, while stadium-sized banners hung within. And why not? The iBook could be to notebooks what the iMac was to desktop PCs: attractively designed, consumer-friendly and, most crucially of all, cheap.

Well, relatively so: $1,599 gets a fairly hefty but well-built notebook measuring 344x294x46mm, weighing 3kg and claiming to offer an impressive six-hour battery life. The 800x600 pixel 12.1in TFT display and the keyboard seem dwarfed by the wide clamshell case which surrounds them; at least there's plenty of room for resting wrists. The carrying handle is an unexpected but welcome touch.

In raw specs, the iBook supplies a 300MHz G3 processor, 3.2Gb disk and 32Mb RAM. The graphics are driven by a 4Mb ATi RAGE mobility 2xAGP chipset. Connectivity-wise, the iBook features 10/100 Ethernet, 56K modem and a single USB port; there's also a built-in 24x CD-ROM drive, but no floppy.

There are crucial differences between the iBook and its more powerful G3 PowerBook counterparts. The latter boast faster processors, bigger screens and greater customisability, with a PC Card slot and swappable drives.

Where the iBook really scores is with its unique wireless connectivity. Apple has snaked an RF antenna around the inside top of the case, which communicates with hardware access points up to 150ft away at 11Mbit/sec, using the wireless Ethernet 802.11 standard. Each $400 access point in turn connects to a phone point or network and can support up to 10 iBooks – but there were no announcements of a PC Card version for the PowerBooks. Apple calls its wireless technology AirPort – the same name that Adaptec uses for its ill-fated infra-red desktop adaptors.

The iMac has certainly changed Apple's fortunes, but it's far from certain that the iBook will enjoy a similar success. It's cheap, but not cheap enough to be a no-brainer purchase, and the question remains whether consumers really want a notebook. Those that do can choose from blueberry or tangerine but must wait until September, a date which could well be too late for this year's school buyers.

If this piece seems dominated by the iBook, it's a fair reflection of the entire show. There really was little else on the new product front. So saying, all the usual suspects were showing their most recent products, such as Adobe with its Web-savvy Photoshop 5.5, but strangely, there was no sign of QuarkXPress. All in all, the show was dominated by Web and video editing tools, with traditional print tools hardly getting a look in.

Highlights

Following Epson's lead in transparent coloured cases for its photo-inkjets, Tektronix showed a very attractive blue version of its Phaser 840 solid-ink colour printer. Dubbed the Designer Edition, it was essentially a fully loaded version of a plain 840, with ColourSync technology, 1200dpi resolution, 128Mb RAM, SCSI and 10/100 ethernet.

Also in transparent blue was the McPiper cordless DECT phone (using a 900MHz frequency we use for GSM cellphones in the UK). The base connects to the iMac's USB port, and allows the handset to access the host's address book. It will even use the iMac to make voice notes or read out messages to you.

SGI showed its wide aspect 1600x1024 pixel TFT monitor, sold to Mac users for $2,495 with a specially designed Number9 graphics card. Traditionally, TFTs suffer from a lack of detail in the shadow and highlight areas, which is a problem for photo or video editors. However, SGI solves this using custom gamma-correction software; although sadly this is not yet available for the Mac bundle.

Microsoft announced Internet Explorer 5 and OutLook Express 5 for the Macintosh, but only demonstrated the latter. Both are expected this autumn and – like the current 4.5 versions – will feature Mac-specific options missing on the Windows product. The next Mac Office is expected mid-2000 and may be called Office 2001.

Speaking of Windows, Connectix demonstrated its VirtualPC 3.0 software emulator, with support for IP sharing, USB (but not FireWire), better SB16 audio, and AppleScript support. The company is selling DOS, Windows 95 and Windows 98 versions.

In a similar fashion to the iMac driving USB peripheral development, the G3 desktops are doing the same for FireWire. Hard disks and DV Camcorders using FireWire interfaces are old hat – at the show QPS previewed a $599 FireWire DVD-RAM drive, while Mactell showed FireWire CD/RW, DAT, 3.5in MO, and a $449 Magneto-resistive MR drive which swallowed $22 2.2Gb cartridges.

So a few scraps, but all in all there was only one truly new product: Apple's iBook (albeit with no competition) easily stole the show.

☛ *Can style alone see Apple through? See Tim Bajarin, on page 52.*

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