

## Lexon PC prices

In last month's issue we group-tested ten PCs costing £499+VAT. Shortly after publication of the issue, Lexon (Editor's Choice with its Entra 333) was forced to raise the price of its system to £549+VAT.

Lexon claims this was due to dollar fluctuation following floatation of the euro, resulting in a rise of component prices which could not be swallowed by the original system price.

Lexon posted this change on its web site immediately. In the features table we misprinted details of the Lexon system's processor and on-site warranty. Our apologies to Hi-Grade whose number was printed on Lexon's review.

While at the time of publishing, the costs shown relative to goods reviewed are accurate and in accordance with the details as advised by the supplier, it is nevertheless incumbent upon the consumer to obtain verification prior to placing an order due to third-party fluctuations in the marketplace which may ultimately affect the actual sale price.

## NEW COMMS

# Net gets off B-roads at last — and it's wonderful

ADSL, which pumps up to 2Mbit/sec down a standard phone line, has arrived at last — and it will change lives.

How quickly will depend on the pricing, and on how fast BT can boost its infrastructure, and on how soon people latch on to the potential.

Virgin Net, one of four providers running pilots in London, linked up my home and I was more than impressed. It seemed a momentous occasion, like the advent of mains electricity. ADSL, and cable modems, will surely become so ubiquitous that people will take them for granted.

ADSL does not always seem fast because you can only get data as fast as the web can deliver. One purpose of the pilots is to see what people use it for, to help service providers to cache popular content on fast servers. This will relieve backbone demand and ensure fast delivery.

Still, even the downstream path of 256Kbit/sec or more

ADSL (Asymmetric Digital Subscriber Line) is one of several similar technologies going under the heading xDSL. It piggybacks a high-frequency signal onto a phone line, providing a *permanent* net link. Normal phone functions are unaffected. ADSL requires some tweaking at your exchange, and currently a BT engineer has to fit three boxes at your home: a splitter to filter off the HF signal, an ADSL modem, and a router. A standard for a slightly slower version called UDSL, or DSL, has been agreed. This can be user-installed and may be deployed as a cheaper alternative.

is four times as fast as a single ISDN line. And the upstream speed is well fast enough for video, to which one of the London pilots is dedicated.

Just as important, which I did not fully appreciate until ADSL was in place, is that it is always on. This makes feasible many web features that have never quite taken off, particularly those like magazine delivery that use push technology.

Other obvious uses are security (you can maintain a permanent video 'eye'), game playing, videophones and even standard phone calls using voice-over-IP. A big question is what this will do to standard

phone revenues. The impact on e-trade could be such that ADSL may become free, financed by ads and transaction revenues, says John Swinge-wood, director of BT Internet.

In the short term it will be more costly and the rollout across Britain could take three years or more. Some see a possible conflict between BT's commercial interests and those of users, even Britain's: this is, after all, the IT equivalent of the M1. So be prepared to lobby your MP if prices are set too high or the rollout is too slow.

I've only just got my link and will write more next month on how it pans out. CLIVE AKASS

# Fast graphics boards challenge new PIII

The successor to the PII chip has been named... wait for it...the PIII. Intel says the chip, codenamed Katmai and due to launch at the end of February, will offer faster



graphics thanks partly to 70 new machine-code calls. These are called the 'streaming SIMD extensions' or KNI — Katmai new Instructions.

We will be able to write more about the PIII (right) after the launch. But developers have been using the new code for months as

Intel did not wish to repeat the mistakes of the MMX launch, when there was a wait for supporting apps.

The PIII extends the performance gap over entry-level Celerons, in line with Intel's policy of targeting different chips for different markets, rather than the early one-Pentium-for-all strategy.

But users are starting to question whether KNI is redundant. Geometry acceleration on 3D graphics cards like the Voodoo2 offload most jobs from the CPU. One California graphics

chipset maker plans a card with full geometry acceleration for around £100. So, just to play cutting edge games, should you buy this or Intel's £400-plus Godzilla?

● Fujitsu has picked S3's Savage3D accelerator for a new line of games PCs. It is the only one fully supporting S3TC texture compression, part of the DirectX 6 API. S3TC cuts the band-width needed to get data from RAM, allowing higher-quality textures and boosting performance.

Meanwhile, Diamond

has reiterated its support for nVidia in the wake of 3Dfx's surprise merger with STB, which turns 3Dfx into a major board supplier for new PCs but leaves allies like Diamond in the cold. See page 52.

AJITH RAM



● Chips for 2000 AD ... see page 144

● More chip news ...see page 48

DIGITAL TV

# Microsoft challenges Jini with new global plug-and-play plan

Microsoft has unveiled a rival to Sun's Java-based Jini, which aims to allow all manner of intelligent devices to talk to each other.

The Universal Plug and Play (PnP) technology is based on the net standards TCP/IP and XML (eXtensible Markup Language), Microsoft says.

Sun-developed Java is a source of some contention between the two companies.

Partners backing Microsoft on Universal PnP include Intel, Texas Instruments, 3Com, Cisco, AT&T, Compaq, Dell and Hewlett-Packard. Sun is conspicuously absent. So is IBM, which is reportedly working on similar technology called Tspaces.

**Rumours of a** Microsoft answer to Jini, due to launch by the time you read this, have been around for months. But Sun chief operating officer Ed Zander said at CES: 'We believe we're going into a post-PC era that is non-proprietary.'

Microsoft is downplaying similarities with Jini. Instead the technology is presented as an extension of Windows PnP.

**Universal PnP** amounts to a barebones peer-to-peer networking technology. It allows devices on a network to assign themselves an IP address, locate each other, and publish their functions in an XML document.

It will, says Microsoft, be leaner than Jini, requiring only a 25Kb to 35Kb TCP/IP protocol stack and a 15Kb to 25Kb ultra-small web server. This is about the same as Jini's 48Kb core but, unlike Jini, it will not require a Java virtual machine. Microsoft says it will work on multiple networking layers, including Universal

from Dominique Deckmyn in Las Vegas

Serial Bus (USB), Irda, Firewire and IP. Microsoft showed at the Consumer Electronics Show how a handheld PC could use Universal PnP to use a printer.

'Jini requires everything to be rewritten in Java,' said Phil Holden, Windows group product manager. 'That's

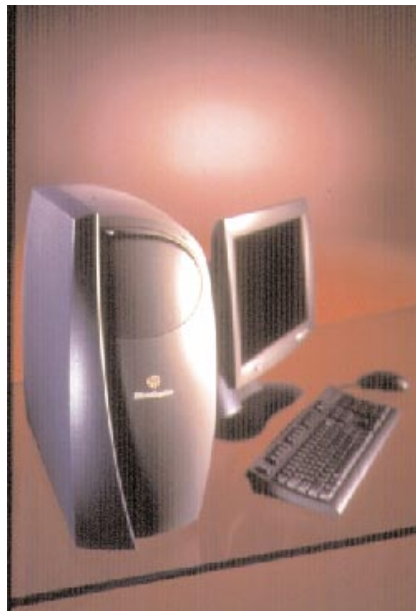
fine, if you like Java. We've chosen a more practical approach.'

Microsoft hopes to present a completed specification and reference design at its WinHEC event in April. The technology will be a feature of Windows 2000.

Products based on Universal Plug and Play are expected by Christmas, said Holden.

● *Microsoft trial - page 38*

● *More from CES - page 31*



Silicon Graphics, famous for its Hollywood-class graphics stations, has launched two revolutionary

**desktop-priced models using Windows NT and Intel processors. They are functionally PCs but use an architecture redesigned around a new Cobalt chipset which directly links the processor(s), graphics system and RAM — an arrangement that's a claimed six times faster than a 2x AGP graphics port. They also boast two 64-bit PCI buses — one dedicated to the hard disk. The entry-level SGI 320, available now, uses up to two 450MHz PII processors and 1Gb of RAM. Prices (all here quoted ex VAT) start at £2,340 with no monitor. Shipping in a few weeks is the SGI 540 which can use up to four 450MHz Xeons. Prices start at £4,130. Both models are optimised for SGI's £1,720 1600x1024 17.3in 1600SW flatpanel monitor. The models are a major win for NT, which has seen a steady drift of graphics applications and users from the Mac platform. SGI 07000 320540; [www.sgi.co.uk/visual](http://www.sgi.co.uk/visual)**

**SGI ships 'Super PC'**

## Air guitarists get real

There's hope at last for all those air guitarists who could play just as well as Jimi Hendrix if only they knew how to play a guitar.

A program called The Axe, from Harmonix, allows you to play like a master with none of the tiresome business of learning technique.

It works like an instrumental karaoke: you play lead to a backing track — except that the software provides

the notes. You do the bending of the notes and other effects using the mouse or keyboard.

You are not restricted to heavy metal, either. You get a choice of electric guitar, jazz guitar, piano, trumpet, sax or scat voice.

I tried it at Comdex last year and it's great fun. You can buy it online for \$19.95 from [www.theaxe.com](http://www.theaxe.com).

CLIVE AKASS



'You were playing Pete Townsend!? Does that mean you had to go smashing up your PC!'

### ISP SPEED TEST

Which net providers offer the fastest access? Do modems matter? Does it make a difference whether you live in Scotland or Southend? Help us find the answers by going to [www.speed.pcw.co.uk](http://www.speed.pcw.co.uk) and taking part in our biggest ISP test ever. It should take less than two minutes and your help will be appreciated. Results will be published in a forthcoming issue of PCW.

### WIN98 NET SHARING

Windows 98 is to allow linked PCs to share a net connection. The feature will be available as a free download and as part of Windows 2000.

## short stories

**HAYES FIGHTS ON**  
Modem pioneer Hayes said it expects to seal a survival deal in February after going into Chapter 11 protection for the second time in five years. Most of its 250 US staff were laid off but at its profitable European division in Surrey, Hayes' small team of sales, marketing and administrative staff are continuing as usual.

VNU NEWSWIRE



This 21in Eizo FlexScan T960 offers a 1600x1200 resolution at a refresh rate of 92Hz on a low-reflection flat screen. It packs a USB hub and twin video inputs and costs £959 ex VAT.

Professional Display Systems  
01483 719500

## DISPLAYS

# Projectors challenge big screens

Digital projector systems are emerging as a serious rival to big gas-plasma screens that can cost £10,000 and more (see Tim Bjarin, opposite).

The projectors use three internal LCD displays, corresponding to a computer's RGB output. The three colour images are merged via a prism and projected onto a screen.

These devices have been used mostly by business people for laptop-based present-

ations, and until recently cost almost as much as plasma displays. In Focus's LP750, featured in last month's gadgets, lists at £7,044 inc VAT.

But prices are falling and the new Ask A4 Compact (pictured, above) lists at just under £4,000 and is selling for just £3,250 ex VAT. Prices could fall to below £2,000 by next year as the number of companies making the gadgetry increases — currently most models are based on an Epson engine.

Those sort of prices could extend the use of these devices to homes and small businesses. They can be used to project video and TV as well as computer displays.

The Ask A4 Compact weighs just 3.5kg and supports resolutions up to 1024x768 (1152x 870 Mac) and includes a remote control.



This is the domestic bliss NatWest envisages you will enjoy with its new online banking service, which is direct dial rather than net-based because of security fears. Facilities include credit transfers, payments, ordering cheque books and statements.

[www.natwest.co.uk](http://www.natwest.co.uk)

## POINT OF VIEW

# The perils of D-I-Y

Being a computer journalist is a bit like working in a busy toyshop: you are surrounded by toys you don't have time to play with. The Christmas break, despite a bout of flu, gave me a few spare hours and I grabbed the chance.

Naturally, I tried to do too much. I gave my venerable Dotlink PC a heart transplant in the form of a Gigabyte GA-5SG100 motherboard, a 350MHz K6-2 processor and 64Mb of RAM, giving me virtually a new PC for just £250 (I was given a 3Dfx graphics card).

I also decided to partition the 3Gb drive on my other home PC, a two-year-old 166MHz MMX running Win95, and install both Windows 98 and the new BeOS 4.0 as a dual-boot system. And then to network the two machines.

Some 24 hours later the revamped Dotlink was up and running — but cutting out every few minutes. And the MMX was a disaster zone. What had

happened was this. The BeOS disk packs Partition Magic for setting up the dual boot. This involves a hair-raising remapping of the hard drive, but it went smoothly enough in my case.

The BeOS install was still more nerve-racking. A screen message warned me that it would wipe all the data on my secondary partition, and was I sure I wanted to go ahead? Of course I wasn't sure, given that I had been given no indication which partition was which.

I went ahead anyway and the BeOS installed itself happily down to the last screen message. Then it announced that it could not write my MBR (master boot record) and could not therefore install a boot manager. I left it there, a ghost on my machine (Windows can't see the BeOS partition) as my priority was to get the PC going. The Win98 install hung when

Setup lost the very CD drive it was running from. It blamed 'incorrect plug and play' information from the secondary IDE port. So there I was with two unusable PCs and a partner complaining loudly that she had nothing on which to write an overdue essay.

Win98 insisted that I needed a BIOS upgrade to get it to run so I reverted to Win95 — Microsoft had provided an easy uninstall procedure. But something odd has happened to the registry, so I cannot get Win95 to use my new plug-and-play D-link network card.

The Dotlink is good news. I resealed the CPU fan, which I'd set slightly askew, and the PC has run fine ever since. In fact, I was impressed at how easy the heart swap was. PCs have become so modular, you can slot them together like Lego.

But the other upgrade shows the hassles you can get into if something does go wrong. If you cost out your time, D-I-Y can be a false economy.

Clive Akass



tells a tale of two PC upgrades



# It's home, home on the range for network firms

IBM and Cisco plan to persuade people to network all kinds of home devices, from PCs to entertainment systems, security devices and fire alarms.

Cisco chief executive John Chambers demonstrated a system using a combination of cable, phone and radio links.

He featured home

from Jan Howells  
in Las Vegas

broadband products, including a Hitachi set-top box that delivers a standard TV signal with a windowed net link.

'The internet revolution was started by big businesses... Today, consumers are the driving force,' he said.

Home networking will generate around \$4 billion by 2002, according to market researcher Wedbush-Morgan (Forrester Research reckons \$2 billion).

IBM is pushing its Home Director which connects home systems such as PCs, security and lighting.

Product manager Craig Merrigan said: 'Home networking will be a way for builders to differentiate new homes.'

Sharewave used CES to launch its new 2.4GHz wireless home net, while Intelogis showed off one based on power lines, writes Tim Bajarin.

Two companies showed me networks based on phone lines, which look perhaps the best approach.

Wireless and phone nets will reach 10Mbit/sec by next year, the developers hope.

## PC or TV -which should be boss?

The most interesting debate on home networks is whether the PC or TV will be the network server. PC companies believe that it should be a PC. But Howard Stringer, president of Sony US, opined in his CES keynote that the digital television will be the server of choice. This is an important issue which will pit the industries against each other. But digital TVs cannot be made without chips and even hard drives from the PC industry.

The PC industry is also ahead in controlling operating systems. Some TV companies want to create their own, but they will be aware of the growing support of software developers for Windows CE and Personal Java. It seems they will be forced to use PC technology whether they like it or not.

TIM BAJARIN

# Talking net aid for drivers

Some 1.3 million Windows CE devices have been sold, said Microsoft senior vice president of consumer strategy, Craig Mundie.

New classes of CE device, such as the AutoPC and the Sega Dreamcast game console, are just reaching the market. Microsoft demonstrated the latter running WebTV software as a 'game'.

It also showed an AutoPC system using General Magic's Portico, which provides messaging and other services using voice recognition.

It used Portico to obtain a list of hotels near the car, whose position was obtained through AutoPC's GPS (Global Positioning System) system.



Pictured above is a prototype AutoPC system developed by the Silicon Valley firm Clarion ([www.autopc.com](http://www.autopc.com)).

DOMINIQUE DECKMYN

## DigiTV gives us a smart VCR

The hottest product category at this year's CES was the emerging standards for **digital television** and digital high definition television (HDTV).

Most observers see DTV as stopgap until HDTV gets cheap enough for mainstream buyers. But I see this interim period as being short lived. Last year at this time, HDTV was \$15,000; this year should see some half that price and prices might get as low as \$5,000 early next year. The cheaper models used rear projection rather than active-matrix or gas plasma screens (which are still \$12,000 and more).

The other hot topic was **digital video recording systems** coming from Replay Networks and Tivo — front-end systems that serve as receivers for digital cable and satellite broadcasts. Each deploys MPEG II compression and large hard disks that allow you to store up to 27 hours of content. They also allow you to pause a show and return to it as if there has been no interruption. Replay calls it 'Prime Time Anytime'. Cost for the entry-level 7-hour version is \$799.

**Also prominent at CES** was the all-in-one PC design popularised by the iMac.

Hitachi, NEC and Samsung already have similar systems that use flatpanel displays. In fact, many of the top PC vendors are all working on similar products that will be out this summer.

However, the new twist Apple has given to the iMac (see pages 34 and 74) is causing them to rethink their designs. Now the iMac comes in colours, the new all-in-one PC products coming out in beige pale in comparison.

So, I expect them to do some fast dancing and try to change the colours of at least some of their models by the time they debut later this year.

**CES used to highlight** the gaming market, but that has moved to a mid-year show that now takes place in Atlanta. But, if you want to see the latest and greatest TVs, stereos, and consumer electronic products, this is the show that defines what this industry will bring to market in 1999.

Tim Bajarin



letter from the CES

## short stories

► **HONEST JOHN BULL**  
Britain tops the European league for honesty in software use, according to a survey commissioned by the Business Software Alliance. Nearly seven in ten (68 percent) of UK software managers checked their licences at least twice a year compared with an average of 40 in ten across Europe. Also, the BSA claims, people believe the penalties for software piracy should be higher and they regard it as being as serious as tax fraud.  
**BSA 0800 510510**

► **FIT CANDIDATE**  
ArcSoft's £24.99 (inc VAT) PhotoPrinter version 2.0 is said to save money by allowing you to fit several photos quickly and efficiently onto a single sheet of paper. A sister product, PhotoFantasy, which costs £29.99 inc VAT, allows you to stick your photos onto a wide selection of fantasy backgrounds.  
**Gem 01279 822800**



► **20.4GB HARD DRIVE**  
Western Digital has launched a four-platter 20.4Gb hard drive using technology licensed six months ago from IBM. It features a high-speed Ultra ATA/66 interface and Data Lifeguard, which is said to isolate and repair damage before data is lost.  
**Western Digital 01372 360055**

► **DOS ON PSION 5**  
You can run any of thousands of DOS programs on a Psion Series 5 palmtop using NB Information's £24.99 (inc VAT) XTM utility, which emulates an early XT PC. It supports text and CGA graphics modes at 320x200 and 640x200 resolutions.  
**NBI www.nbi-info.co.uk**

## PROCESSORS

# Intel blocks overclocking

**F**ast Celerons launched last month will not allow overclocking, Intel says. First versions of the 366MHz and 400MHz chips will not be affected but a 'clock lock' will be built in to production versions.

**Some users** claim to have run the chips at 550MHz and 600MHz. Intel declined to say how the clock lock works.

AMD pre-empted the launch of the chips by cutting the price of its fast K6-2s by up to \$60 as part of a continuing price war. Late last year Intel slashed prices of its 300MHz and 333MHz Celerons in a bid to shift stocks.

Cyrix and some distributors then claimed Intel was dumping Slot One Celerons to push



▲ **THE 350MHz KD-2: PRICED TO RIVAL INTEL'S FAST CELERONS**

Socket 370 processors into the marketplace.

**Bulk prices** for the 366MHz and 400MHz Celerons are \$123 and \$158 respectively. The 350MHz K6-2 is around \$100, and the 400MHz is \$175 over the

counter:

bulk price will be about that of the 400MHz Celeron. Prices of Intel's 300A and 333MHz Celerons drop to \$71 and \$90 respectively. Intel also cut 350MHz and 400MHz PII prices by five and six percent respectively to \$202 and \$353.

Later this quarter AMD will release a 450MHz K6-2 and in February its new K6-3, also known as Sharptooth, will reach volume production.

Rana Mainee, European research director, says AMD will feel strong enough later this year to maintain its prices if Intel undercuts them.

**MIKE MAGEE**

## Enter three new Xeons

**I**ntel has introduced three 450MHz additions to its high-end Pentium II Xeon chip family. The processors come with 512Kb, 1Mb and 2Mb of Level 2 cache (costing respectively \$824, \$1980 and \$3692) and are designed for use in servers and workstations. The chipset and processors will support four-way symmetric multiprocessing (SMP) machines. Intel says systems using the 2Mb Xeon gave 10 percent better performance than a 400MHz Xeon with 1Mb of Level 2 cache.

# Ham it up with a radio scanner

**W**e would be the last to suggest that any PCW reader might need (or even wish) to eavesdrop police radio channels, which is illegal.

But they represent just a small slice of the 0.01 to 1300MHz frequency range covered by Icom's PC-based IC-PCR1000 radio scanner.

You can receive amateur radio, emergency services, air traffic control, marine band and normal radio services.

The £199.99 device, the size of a small modem and plugging into your serial port, is controlled by a choice of two user



interfaces, one designed for beginners and the other for advanced use.

**Icom 01227 741741; www.icomuk.co.uk**

## short stories

### WOMEN'S TROUBLES

Women are more prone to Ecstasy than men, according to research carried out by Release, using the statistical analysis package SPSS. More women than men in a survey of 550 users reported pleasant effects — but also, more reported problems such as nausea and mood swings.

SPSS 01483 71200



### PRINTS CHARMING

Sony has achieved unexpected success with its Mavica range of digital cameras, which use a floppy disk to store pictures. Its new FVP-1 digital printer will provide instant 114 x 85mm colour prints straight from disc at resolutions of up to 1.4 megapixels. The FVP-1 is available now for about £600.

Sony 0990 111999

### RECYCLING INITIATIVE

A laser toner recycling scheme in aid of the British Institute for Brain-Damaged Children has now been extended to cover inkjet cartridges.

Ring 01278 684060 for a free information pack.

### ADEPT AT ADAPTATION

ISDN terminal adapters are one area where USB should score quickly over standard serial ports, which can be overloaded by devices.

Electronic Frontier is selling the DrayTek Vigor128 for £149 (ex VAT), or £189 (ex VAT) for an iMac version.

Electronic Frontier  
0118 981 0600

## MACINTOSH

# New big Macs drop SCSI

Dominique Deckmyn reports from MacWorld.

Apple has rolled out a new family of **PowerMac G3 professional systems** featuring PowerPC G3 chips running at up to 400MHz with a 100MHz bus, up to 1Gb of RAM and a maximum 100Gb of disk storage.

The machines, unveiled at MacWorld in San Francisco, have four expansion slots and are equipped with standard 100Mbit Ethernet.

More controversially, they dispense with the Mac's traditional SCSI interface in favour of Universal Serial Bus (USB) and Firewire ports. Steve Jobs claimed 'history has passed by' SCSI although a SCSI add-on card is available for \$49.

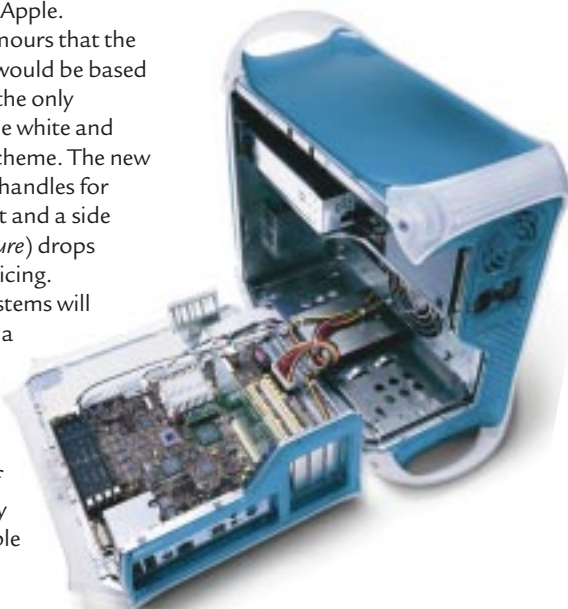
The Firewire bus allows peripherals such as video

cameras to be connected at speeds of up to 400Mbits/sec. Firewire, known more prosaically as 1394, was originally developed by Apple.

Despite rumours that the new systems would be based on the iMac, the only similarity is the white and blue colour scheme. The new systems have handles for easy transport and a side panel (see picture) drops down for servicing.

The new systems will all come with a built-in ATI Rage128 graphics accelerator with 16Mb of memory. They will be available immediately, priced from

\$1,599 to \$2,999. Jobs claimed they outperform the fastest Pentium II systems by a wide margin.



## Rhapsody unveiled

Steve Jobs also announced the Mac OS X Server operating system based on the technology acquired from NeXT. It was formerly named Rhapsody and is a precursor to Apple's next-generation desktop operating system, Mac OS X, which Jobs now said will ship 'in less than a year'.

**Mac OS X Server** is based on the Mach microkernel and will ship with an Apache web server and Apple's WebObjects development environment. Jobs demonstrated a rack of 50 iMacs, all running video streaming off a server running Mac OS X Server.

The operating system will ship in February, priced at \$955 per server, for an unlimited number of clients. A new G3 PowerMac equipped as a server, with Mac OS X Server, will cost \$4,999 [full review next month].

## Shades of success

Triumphant Steve Jobs claimed in his MacWorld keynote that **800,000 iMacs had been sold** since their 15th August launch — and he took dealers by surprise by announcing four new translucent shades of the all-in-one design: grape, tangerine, lime and strawberry [see Gadgets, p74]. Jobs also announced a new line of iMacs, priced at \$100 below the original iMac at \$1,199 and with a faster 266MHz G3 processor and a 6Gb hard drive. Missing, though, was the long-expected introduction of a consumer portable machine.





## Trial and error

Graham Lea reports on Microsoft's **current court battle** and its possible impact on users.

**A**t half time in the epic trial between the US Department of Justice (DoJ) and Microsoft, it looks as though Microsoft is losing. At issue is whether Microsoft has competed unfairly against competitors such as Netscape (by allegedly pressuring PC makers, software vendors and online service providers to use Internet Explorer rather than Navigator); Sun (by allegedly corrupting Java); and Apple (by the alleged techno-sabotage of QuickTime), to give just three examples.

**The first stage** of the present case, which started last May, is being decided in the US District Court in Washington DC by Judge Thomas Penfield Jackson, and a decision is likely to take a few more months. Whichever side wins, it is probable that the loser will take the case to the Court of Appeal and/or the Supreme Court, where decisions are made by politically appointed judges who mostly favour big business.

As usual, the victims are users, who pay an ever-higher price for the operating system at a time when all other hardware and software costs are decreasing dramatically. According to data that came to light during the trial, the cost of Microsoft operating systems increased 260 percent between 1990 and 1996 when other costs have gone down. Microsoft cannot argue that the increased capability of Windows justifies the increase, because all hardware and software has seen similar or greater increases in functionality, and lower prices, as a result of competition.

Microsoft's 49 percent profitability is the highest of any major US corporation, so the inevitable conclusion is that Microsoft is exploiting its monopoly, as well as using the monopoly to leverage its way into other markets like the internet. Microsoft's entrenched monopoly (which it denies) has resulted in package software developers like Intuit only developing for Windows, while others have scaled back their Mac

and Unix versions.

A brave few like Corel and Star Division have recognised the need to support new developments like Linux. Innovators like Norway-based Opera Software, the producer of a browser that in many ways beats both IE and Navigator, finds that the market for pre-loads is effectively blocked by Microsoft's business practices.

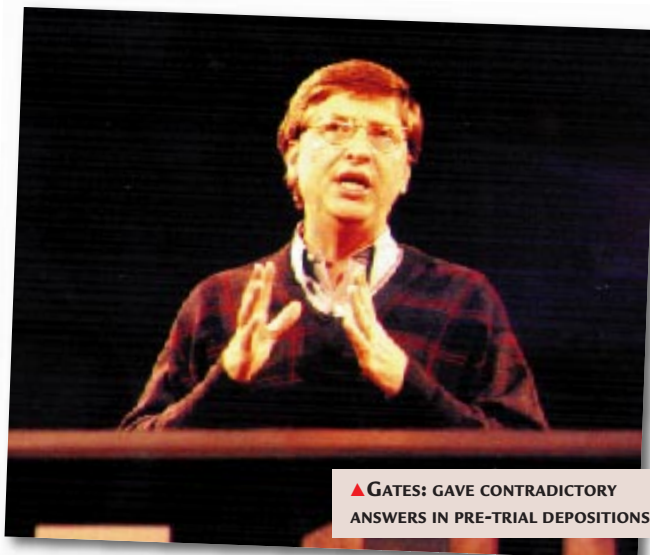
Microsoft maintains its monopoly by means of a choke hold on PC makers, making it very difficult for them to load Linux without Windows, for example, if they wish to install Windows on other models for a price that allows them to remain competitive.

**The procedure** in the court is for each witness to present written testimony in advance, to save court time, and then to be cross-examined on it. The DoJ has now presented the 12 witnesses it was allowed, and Microsoft's witnesses (nine of them senior employees) are now being

subjected to cross-examination. Bill Gates' appearances in seven video-taped excerpts from his three days of compulsory

deposition before the trial started has not helped Microsoft's case. He was most reluctant to answer questions, and many times his answers contradicted email evidence that the DoJ introduced.

**Microsoft's propaganda** has focused on a plea that it be left alone by the government and allowed to innovate, but the problem with this defence is that it is hard to think of any significant Microsoft innovation other than its anti-competitive marketing practices. Microsoft wants exemption



▲ GATES: GAVE CONTRADICTORY ANSWERS IN PRE-TRIAL DEPOSITIONS

### Microsoft wants exemption from competition laws

from the competition laws, saying in effect that because cars can go faster, there should be no speed limits.

In many ways, the real battleground is not Judge Jackson's courtroom, but the court of public opinion that Microsoft has been doing its best to influence. There is no evidence of impact on users so far, or even on Microsoft's share price, which has risen to record levels.

Even if the District Court does find against Microsoft, it will be hard to devise remedies that would be effective in bringing back choice for users and making possible fair competition between software vendors. The remedy most discussed has been the break-up of Microsoft into operating systems and applications companies, but this is unlikely to work for several reasons, not least the time it would take before it happened.

**Whatever happens** in the coming months, the result of the trial will affect all users and determine if there will be fair competition between software producers, and whether users will be offered truly innovative, competitive software at reasonable prices.

➡ [Graham\\_Lea@heterodox.com](mailto:Graham_Lea@heterodox.com) is an independent computer industry analyst specialising in Microsoft. He comments daily on the trial at [www.theregister.co.uk](http://www.theregister.co.uk)

## Just because you're paranoid...

...doesn't mean that **viruses, bugs and security hazards** are not out to get you. Does it?

**T**he announcement of a new super-smart virus which infects NT networks sent a shiver through the IT industry late last year. First reports of the Remote Explorer virus made it sound like the binary equivalent of getting anthrax in your air conditioning.

Panicking NT administrators flooded Microsoft and anti-virus companies with queries about the virus.

**But there were soon** accusations that Network Associates Inc. (NAI), which detected the virus in an MCI WorldCom network on December 17, had hyped the problem. NAI was also criticised for waiting four days before releasing the code, breaking an industry rule on sharing anti-virus information; the name of the victim also leaked out, contrary to standard practice.

Nick Fitzgerald, editor of the Anti-Virus Bulletin, said: 'If the virus was as dangerous as NAI said it was, then it was irresponsible not to share the code; if it was not that dangerous, then its initial press announcement was misleading.'

Nevertheless, he agreed that the new virus, written in C, leaves no room for complacency. NAI, which now owns the Dr Solomon anti-virus range, described it as one of the most sophisticated yet discovered. It infects program (.EXE) files, and renders text and HTML files unusable by encrypting them.

What makes it unique is that when an infected .EXE file is run by a user with administrative privileges, the virus

installs itself as an NT service — and proceeds to infect files in machines within that user's privileged domain or domains.

Fitzgerald says there

are three reassuring factors:

➤ The code is bug-ridden and the virus is easily spotted.

➤ At press time, the MCI WorldCom outbreak was the only one that had been reported. Affected parts of the network were quickly quarantined to stop it spreading.

➤ Someone with administrative privileges is needed to spread the virus. MCI WorldCom is undergoing a big shake-up, and there has been speculation that the virus was the work of a disgruntled employee.

**On the other hand**, first instances of viruses can be relatively crude and later versions may be more dangerous. Virus scares have the benefit of alerting people to the general problem — and there are several dangerous new strains floating about. Even as the Remote Explorer furore began to die down there was a warning about another alleged threat,

called the Russian New Year after its origin and time of announcement.

This uses HTML and the Excel function

CALL to steal or copy files, though no real-life instances have yet been detailed. Fitzgerald said: 'The main thing is to get people

regularly updating their virus checkers.

That way, when a new strain does break out, it won't get very far.'

*...the binary equivalent of anthrax in your air conditioning*

**M**icrosoft says Remote Explorer 'does not exploit any security vulnerabilities' in NT and that normal anti-virus precautions will reduce the threat. These include logging on as an NT administrator only when necessary.

To check if your system is infected, go to Control Panel/Services to see if one called Remote Explorer has been installed. It is run from a file that is stored in %systemroot%\system32\drivers\IE403R.SYS

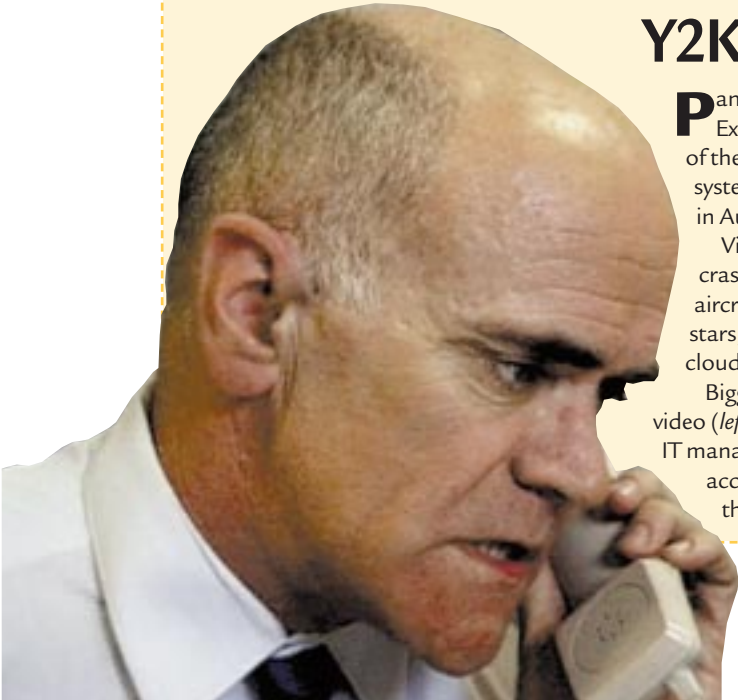
Leading anti-virus firms such as Symantec have fixes both for the virus and the encrypted files.

## Y2K panic goes sky high

**P**anic of the Month is the millennium bug rather than the Remote Explorer virus. Curiously, one of the first reported date problems of the year concerned not Y2K but certain Global Positioning Satellite systems which could only count up to 20 years — a time that expires in August.

Visions of planes wandering aimlessly around the skies until they crashed were dispelled by Those In The Know, who said all the world's aircraft had been checked. Anyway, all pilots know how to guide by the stars, don't they? Isn't that the Pole Star we glimpsed through those clouds? Doesn't that point south?

Biggest scare was in Australia where a Y2K consciousness-raising video (*left*) reportedly sent waves of terror through the ranks of antipodean IT managers. The video, called 'Neighbours meets the Year 2000', was later accused of being over the top. If you want to monger a Y2K scare, the UK distributor is Look Multimedia (0171 255 2670).





# Adobe fills its web gap

Graphics specialist Adobe has bought into the professional web authoring market with the purchase of the Cyberstudio web authoring tools as part of an acquisition of Golive Systems. Adobe's only, somewhat limited, success in this field has been with its low-end PageMill tool, featured in this month's web authoring group test (p190). Now it has become an instant front-runner for Mac-based web design, and wins itself a

package aimed at the more technical end of the market, keeping it distinctly separate from PageMill, which is aimed at the creation of smaller sites. Adobe says Cyberstudio outsells its nearest Mac competitor, Macromedia's Dreamweaver, by two to one. And Bruce Chizen, worldwide marketing vice president, said Adobe would port the software to Windows at 'internet speed'. He declined to give a ship date. Macromedia,

meanwhile, is not sitting on its laurels. Dreamweaver 2 came too late to earn a place in the group test, but it nonetheless threatens to out-Adobe Adobe for a combination of power and ease of use. See next month's PCW for a full review.

NIK RAWLINSON



▲ **DREAMWEAVER:** OUTSOLD, BUT THE NEW VERSION IS A WORTHY RIVAL TO CYBERSTUDIO

## Graduates on the fast track to success

Doing well for itself is a software company that took off in an undergraduate's bedroom at Churchill College just three years ago and has developed innovative web server software competing with the likes of Netscape and Microsoft, and open-sourced Apache.

Computer science graduates Adam Twiss, 22, and Damian Reeves, 24, claim their Zeus Web Server software is the fastest and most scalable commercially available. Zeus Technology has already racked up 300 customers across the globe, including big names such as Lycos, MCI and Cable & Wireless. The web server software has full FrontPage support, Apache compatibility, and is believed to be the only commercial server to offer 128-bit SSLv3 encryption worldwide.

The latest version 3.1 provides solutions for web hosting, intranets and secure e-commerce. Twiss said: 'In a nutshell, we simply have one process which handles thousands of connections, whereas the competition has a process per connection. Thus we utilise the hardware's resources more efficiently and achieve vastly superior performance and scalability figures.'

'We designed new software from scratch: most server software is produced to the original NCSA (National Centre for Supercomputing

Applications) web server software. We took a clean piece of paper and worked out what was needed to speed things up.' Today, 73 percent of the server software is exported with 60 percent going to the US. Customers are mostly ISPs and large web hosting companies. General manager Bryan Amesbury says: 'Competitors can only host around 4,000 sites on one server, whereas Zeus can handle 10,000.'

All aspects of the server software can be configured and managed via any HTML browser. A programming interface for interacting with external authentication services allows developers to produce efficient web applications quickly.

A round of funding has just closed with a group of City investors taking a minority equity stake. The company is talking about going public in 2000.

<[www.zeustech.net](http://www.zeustech.net)>

➤ **Connectivity specialist** Adder Technology has been named among the top 50 fastest growing technology companies in the Eastern Region [Deloitte & Touche Technology Fast 50 Awards 1998 <[www.fast50.co.uk](http://www.fast50.co.uk)>]. Its latest product, AdderView, allows up to four computers to be controlled and monitored from a single keyboard,

monitor and mouse. One application might be a networked desktop PC sitting alongside one providing web browsing or email services, where the two have to be kept separate for security reasons. Pricing starts at £149.

**Adder Technology** was formed by Cambridge engineering graduate Adrian Dickens in 1984 as a publishing company. From writing books for home computer users he moved on to printer sharing, then produced a range of intelligent keyboard, video and mouse switches for sharing peripherals among computers.

Products for larger installations include SmartViewPro which can connect hundreds of computers. Customers include Barclays and Lloyds Bank, UUNet, British Airways and BT.

<[www.addertec.com](http://www.addertec.com)>

➤ **Filmgoers** who have seen the Dreamworks release *The Prince of Egypt* will have had a taste of work produced by software from Cambridge Animation. Work is almost complete on a new Warner Bros feature, *Iron Giant*, based on the Ted Hughes story, which uses the Cambridge company's latest software, Animo 20. The filmmakers are hoping for a summer release. <[www.cam-ani.co.uk](http://www.cam-ani.co.uk)>

Caroline Swift



continues her reports from **Silicon Fen**

## The new year sales

Tim Bajarin predicts how the industry will fare as we enter a **more promising phase** in the PC world.

**T**his time last year, almost everyone thought 1998 would be a solid year for Silicon Valley companies, with a host of colour printers, low-cost PCs and powerful servers coming out. Many thought the work of Intel and HP on the new IA 64 processor would bear fruit.

But the Asian economic flu, mistakes by some PC vendors with key products, and changing distribution trends, have caused many to look for better times in 1999. And IA 64 will probably not see the light of day until 2001.

**PC sales worldwide** will still come in at about 12 percent growth, an amazing figure given the Asian troubles. PC sales in the US will show about an 18 percent growth for 1998, with Europe coming in just a bit behind. But because of shrinking margins, US revenues will show a two percent growth or less.

Demand for PCs went up, but hardly anybody made any serious profits in 1998 except Dell and Gateway, whose direct-selling model has given them an edge. They can also get to market first with products using the latest Intel chip — though other PC vendors continue to create products that compete with the best on offer.

**So, what's in store** for 1999? First, Compaq, IBM and HP will have to get better distribution models in place if they want to keep up with an ever-changing PC market. This is tricky as they have invested heavily in dealer relationships, but the wave of the future is build-to-order, direct selling to both business and home users. The three have a key advantage in either selling model: they excel in support and service. But to stay on top, all the top five will have to continue to innovate in the technology of PCs, portables, servers, printers and even imaging technology — a market that is really taking off.

Any company that does not create a strong web-based commerce presence will be hurt. Intel is selling \$1 billion worth of products from its site each month, and Cisco records sales of about \$500 million monthly. PC vendors already have a web presence in several areas, but they have not embraced the e-commerce model as aggressively as I



▲ **THE EASTERN MARKET SUFFERED AN ECONOMIC VERTIGO THAT LED TO A DISAPPOINTING 1998 FOR COMPUTING SALES AND PROFITS**

believe they should. Companies like Compaq and IBM are afraid of burning their traditional dealers.

One vendor, Hewlett-Packard, is doing a bang-up job in one area, though. It is leading the charge into smaller, lighter mobile computing and has jumped on the Windows CE bandwagon in a big way. Its New Jornada 850 is a solid example of providing a new form factor that takes portable computing to a new level.

**Two factors** should help keep sales of PCs strong in 1999. First, many companies are looking at buying new PCs that can handle Windows 98 as a way to deal with the Y2K problem fast. And Intel's Pentium III (formerly Katmai) chips, due to launch next month, could encourage many users who want high-speed processing both in the office and the home to upgrade in 1999. These chips will start at 450MHz and go to over 650MHz by the end of 1999.

Aggressive roll-outs of cable modems, providing megabit-plus access to most big cities in America, could also drive PC sales up.

**The Asian crisis** will still haunt us in 1999, but we are starting to see signs of improvement, especially in Korea and

Hong Kong. And if Japan can get its act together in banking, it too could see an upward turn in 1999. But, even if Asia remains flat, most analysts still see demand for PCs rising in the US and Europe this year — though squeezing profits out will remain tough.

Believe it or not, I think the best years for the IT industry are still ahead of us. We have spent the past 20 years bringing technology to business, but have only scratched the surface when it comes to bringing digital technology to the masses.

**PC-based technology** accounts for \$850 billion in yearly revenues worldwide today; by 2005, with the adoption of PC-based technology by mainstream consumers, yearly revenues of digital technology could account for close to \$2 trillion.

The only question for any PC vendor is how they capitalise on this eventual demand for technology by mainstream users, and how they navigate the e-commerce jungle as it rewrites the way we do business in the very near future.

# Spam frittered by new email law

[www.io.io](http://www.io.io)

VNU NEWSWIRE

**SUSAN PEDERSON**

[www.babyworld.co.uk](http://www.babyworld.co.uk)



## short stories

### BLUE MOUNTAIN DEFEATS MICROSOFT

A small online greeting card company may soon win a legal battle against Microsoft. The US-based Blue Mountain is suing Microsoft over its Internet Explorer email product Outlook Express, which it says filters its greeting cards into a junk mail folder. Blue Mountain says that Microsoft set out to destroy its business, which was a threat to MSN's own greeting card service. The judge ruled that Microsoft must help Blue Mountain adapt its code to prevent the cards from being discarded.

### GOING, GOING, GONE

An online auction house is offering internet users a way to clear out their hall cupboards and earn a little cash at the same time. QXL Exchange connects internet users from across Europe to buy and sell everything from appalling Christmas jumpers and Furbys to cars and computers. The main QXL site also offers goods and services from a wide range of companies.

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

### INTERACTIVE 3D MOVIES

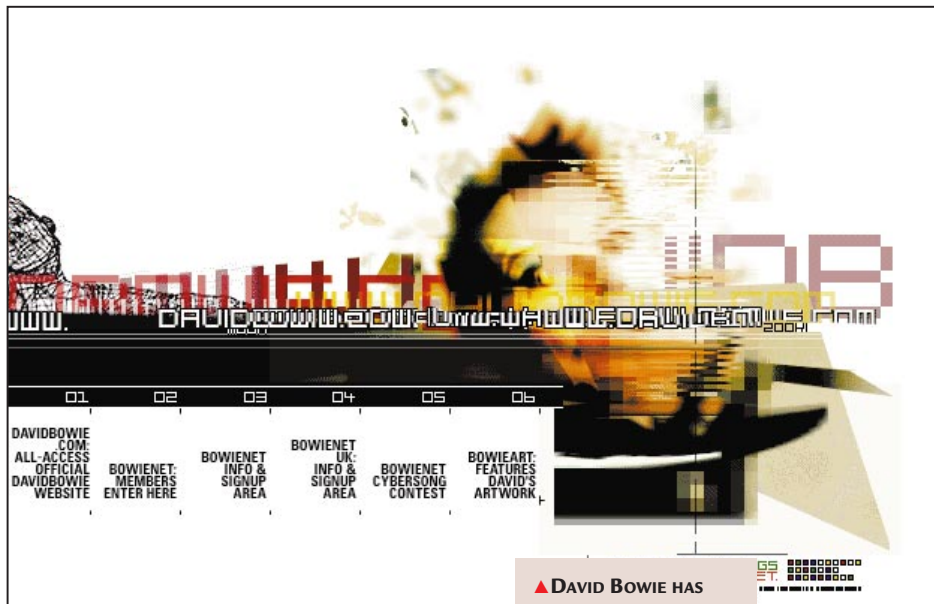
Internet users can now take a starring role in their own 3D interactive movies with TV characters such as Xena Warrior Princess, Ace Ventura and Superman. Brilliant Digital Entertainment (BDE) has launched a viewer that will let users make the plot decisions during its 'webisodes'. Short movie snippets are available for free on its web site, while full-length movies can be bought over the web or on CD-ROM.

<http://www.bde3d.com/>



## MUSIC ON THE NET

# Liquid music drowns net pirates



▲ DAVID BOWIE HAS SUBSTITUTED OUTER SPACE FOR CYBERSPACE WITH THE UK LAUNCH OF HIS VERY OWN ISP, BOWIENET. FOR £10.39 A MONTH, FANS WILL GET INTERNET ACCESS, ONE EMAIL ADDRESS, 20MB OF WEB SPACE AND EXCLUSIVE ACCESS TO BOWIE'S UNRELEASED SONGS AND VIDEOS AS WELL AS CHATROOMS, NEWSGROUPS AND ONLINE GAMING. SOME CRITICS HAVE CALLED IT A VANITY PROJECT, BUT BOWIE IS LAUGHING ALL THE WAY TO THE BANK: BOWIENET HAS BEEN VALUED ON THE STOCK EXCHANGE FOR US\$500 MILLION. [WWW.DAVIDBOWIE.COM](http://WWW.DAVIDBOWIE.COM)

Digital music software company Liquid Audio has teamed up with removable-storage maker Iomega to give consumers a secure way of downloading music from the internet directly onto Zip drives, creating what they claim to be a secure copyright-protected way of distributing music online.

As part of the Initiative, Iomega will bundle the Liquid Music player with select Zip drives. The software allows users to playback music downloaded from the internet, disallowing unauthorised second-generation copying of sound files.

Liquid Audio and Iomega have also partnered with online music retailing site SoundStone.com to create Tunus Collectus, a monthly music club that will allow site visitors to download selected tracks by popular artists. 'Our goal is to continually provide new portability options for consumers to help propel the legitimate sale of music on the internet,'

said Gerry Kearby, Liquid Audio chief executive. Liquid Audio recently signed agreements with Diamond Multimedia Systems and Adaptec to port secure Liquid Audio files to their players. The Recording Industry Association of America is said to be happy with the deal. Heavyweight record labels have been increasingly worried about the ease of music piracy on the internet and the lack, in their eyes, of a secure online distribution solution.

Previously, consumers wanting to purchase music in Liquid Audio format had to provide a credit card number that was bound to each file as part of a password.

Anyone creating an unauthorised copy of a music track was forced to include the credit card number with the copies, which anyone who had the media file could see. Zip disks, however, have their own serial numbers so don't require a credit card based password. Up to 100 minutes of

Liquid Audio format can fit on to a Zip disk, the companies claim. Supporters of rival digital music format MP3, however, claim the deal is unimportant as users do not want more security. Unlike Liquid Audio music, MP3 format music files can be reproduced freely.

VNU NEWSWIRE

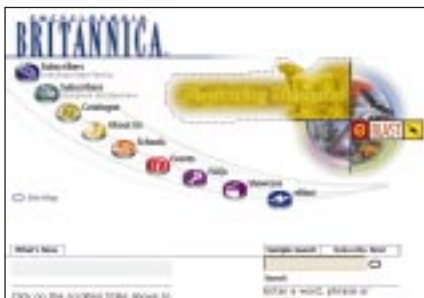
## short stories

**MUSIC TO YOUR EARS**  
Music fans will want to check out dotmusic, the self-proclaimed 'insider's guide to music'. The web site features 50 artist micro-sites which are creating fan communities, as well as a live countdown of each Saturday's singles chart. An online shop is also available.  
[www.dotmusic.com](http://www.dotmusic.com)



**LINEONE PRICING DEAL**  
LineOne has entered the cut-throat bidding war for internet users by cutting its membership charges. It reduced its monthly rate from £14.95 to £9.99 in December. Members get five email addresses and unlimited internet access as well as online newspapers and content.  
[www.linone.net](http://www.linone.net) 0800 111 210

**BRITANNICA OFFER**  
The online version of Encyclopaedia Britannica is positioning itself as an access point for schools information. The site now includes thousands of links which have passed the organisation's criteria for accuracy. Institutional subscriptions cost from £180 a year, or about £30 to individuals.  
[www.britannica.co.uk](http://www.britannica.co.uk)



## MOBILE LINKS

# Green light for Orange trial

Orange has announced plans to trial technology for **accessing internet services using mobile phones**, but analysts said the operator may be painting the future a little too Orange. Orange is the first UK mobile operator to announce a public trial using Unwired Planet's (UP) server and micro browser technology. Cellnet and Vodaphone are also known to be interested in the technology. Using UP's technology, Orange will be able to offer a range of internet-enabled information services.

Orange's chief executive, Hans Snook, said the trial brings the company one step closer to its vision of the wire-

free future. 'Orange believes that 90 percent of voice and data will be wirefree by 2010,' he added. But analysts said that the data capabilities of wireless networks are always likely to lag behind fixed networks.

'If you look at the progress with wireless technology using data traffic, yes, it can do the job, but it's nothing revolutionary compared to the progress of a fixed network,' said Dirk Bout, an analyst at Dataquest. An operator like Vodaphone is more realistic about the current capabilities of wireless, said Bout. They recognise its shortfalls and don't boast about the future. 'I believe Orange is painting it a bit too rosy,' he said.

The suitability of wireless data depends on the application, thinks Tim Hayson, principal engineer at Orange.

'If you look at the existing use of data, like extremely high bandwidth environments, some of those will have to remain fixed in the short term,' he said.

UP's software uses the WAP (wireless application protocol), a set of standards created by Ericsson, Nokia, Motorola and UP. It includes a programming language that lets web developers create sites suitable for viewing on mobile handsets. Orange says commercial services based on WAP will be launched sometime this year.

VNU NEWSWIRE



## Cooking up a treat with SimplyFood

Gastronomes can pick up some hints at SimplyFood, a new web site from Carlton TV dedicated to eating and drinking. The site highlights the latest trends in the world of food, recipes, and a guide to cooking terms and techniques.

Lovers of the grape will appreciate the wine section, which tells you how to tell your Cabernet from your Chablis and gives advice on picking out the perfect bottle for that special occasion.

[www.simplyfood.co.uk](http://www.simplyfood.co.uk)

Master horror writer Stephen King has launched his own web site to counter masses of bogus ones started. King himself is not a wired guy and has spent years trying to avoid the net. Site visitors can now read a mini-biography of him written in part by his wife, Tabitha; past, present and future book titles, as well as information such as why he became a writer and where he gets his ideas.  
[www.stephenking.com](http://www.stephenking.com)



## Graphic details

Ajith Ram on **the merger of 3Dfx and STB**. How convenient a marriage is it?

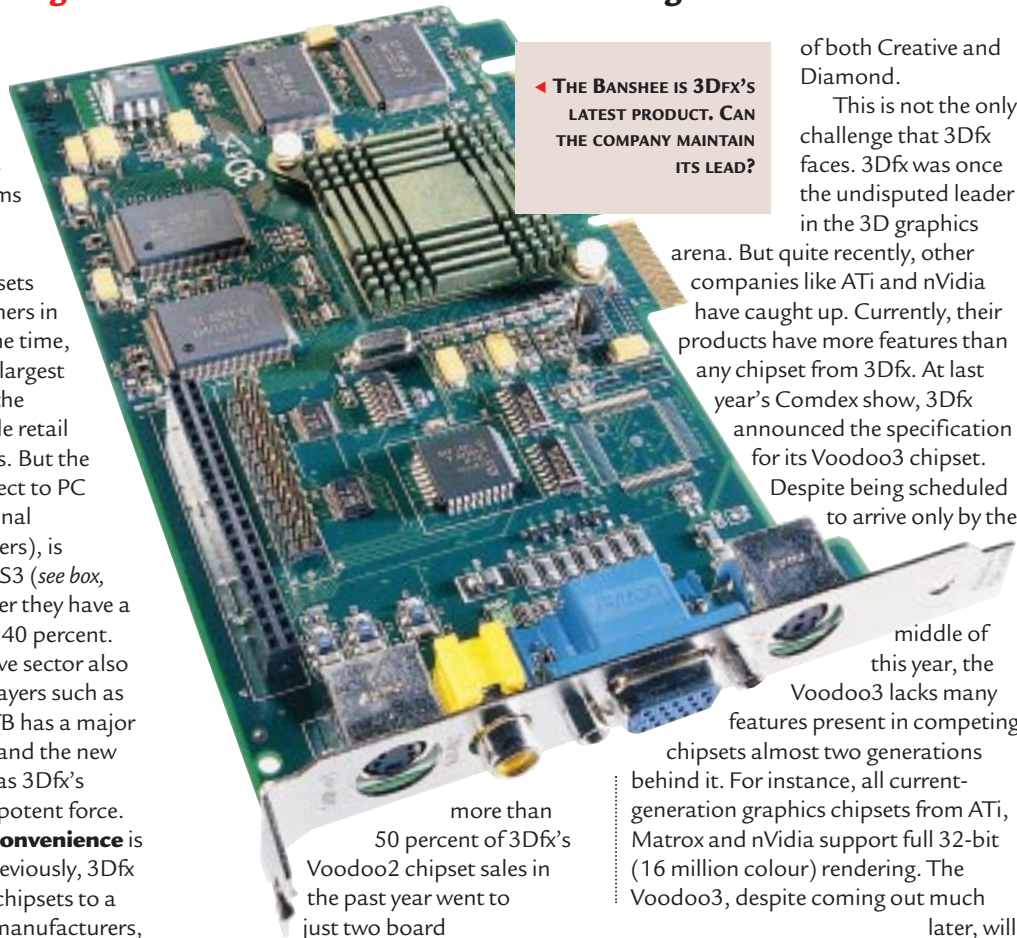
**T**he merger of graphics chipset developer 3Dfx Interactive and graphics board maker STB Systems has taken the market by surprise. 3Dfx's highly successful Voodoo chipsets have been good performers in 3D applications for some time, and the company is the largest supplier of chipsets for the lucrative and high-profile retail market in graphics cards. But the market in cards sold direct to PC makers, or OEMs (Original Equipment Manufacturers), is currently dominated by S3 (see box, below) and ATi — together they have a market share of around 40 percent. This intensely competitive sector also contains other major players such as Matrox and 3DLabs. STB has a major presence in this market and the new merger is seen by many as 3Dfx's attempt to emerge as a potent force.

**This marriage of convenience** is not without its perils. Previously, 3Dfx depended on selling its chipsets to a large number of board manufacturers, such as STB and Diamond, to survive in an intensely competitive market. The merger changes this scenario completely.

All board manufacturers which once used 3Dfx chipsets will have to look elsewhere. Also, 3Dfx will lose the marketing muscle of some of the industry's leading players. For example,

Creative Labs and Diamond Multimedia. 3Dfx is now left with the task of recapturing this market in its new incarnation as a board manufacturer. And that is not going to be easy given the strong brand value

◀ **THE BANSHEE IS 3Dfx's LATEST PRODUCT. CAN THE COMPANY MAINTAIN ITS LEAD?**



more than 50 percent of 3Dfx's Voodoo2 chipset sales in the past year went to just two board manufacturers,

***This marriage of convenience is not without its perils***

later, will support only 16-bit (16,000 colour) rendering.

Another, similar, problem is lack of a 32-bit Z-buffer. The Z-buffer is used by 3D applications like games to determine what image needs to be displayed after the current one. At high resolutions, a full 32-bit Z-buffer is needed to avoid ugly artefacts on-screen. Unlike its contemporaries, the Voodoo3 will support only a 16-bit Z-buffer.

**Chipsets from** ATi, Matrox and S3 already boast hardware support for DVD playback but the Voodoo3 will have no such capability. This means that OEM PC systems using Voodoo3 may have to depend on the CPU for DVD playback — and this method is both resource-hungry and unreliable. 3Dfx will be hoping that the merger will help it tide over its current technological inferiority.

of both Creative and Diamond.

This is not the only challenge that 3Dfx faces. 3Dfx was once the undisputed leader in the 3D graphics

arena. But quite recently, other companies like ATi and nVidia have caught up. Currently, their products have more features than any chipset from 3Dfx. At last year's Comdex show, 3Dfx announced the specification for its Voodoo3 chipset.

Despite being scheduled to arrive only by the

middle of this year, the Voodoo3 lacks many features present in competing chipsets almost two generations

behind it. For instance, all current-generation graphics chipsets from ATi, Matrox and nVidia support full 32-bit (16 million colour) rendering. The Voodoo3, despite coming out much

### S3 could benefit from Intel match

**A**nother company manoeuvring in the graphics field is S3, which recently announced a long-term agreement with Intel. It includes a 10-year cross-licence agreement for all S3 and Intel patents for the development of certain semiconductor products. S3 also announced that Intel is to purchase warrants to buy S3 shares. It had been rumoured that Intel was considering licensing S3 technology for the 64-bit Merced chip. S3 is the second largest supplier of graphics chipsets for ready-installed boards. This deal with Intel is a vital shot in the arm for S3 which has recently suffered financial problems. S3 was one of the first companies to introduce a graphics chipset, called Virge, with 3D capabilities. But this faced heavy criticism for poor performance. The mistake was rectified to a large extent last year with the introduction of the Savage 3D chipset, which has enjoyed better success. The deal with Intel is likely to pay rich dividends in S3's next-generation chipsets based on the Savage 3D architecture.



## GAMES NEWS

# Turok sequel throws down another gauntlet



▲ **TUROK 2: SEEDS OF EVIL: AND CAN YOU GET MORE EVIL-LOOKING THAN THIS, THE CHALLENGING SEQUEL TO TUROK: DINOSAUR HUNTER?**

The ancient mantle of Turok has been passed on once again, through the generations of the Saquin tribe, Fireseed, to Joshua the next firstborn son. And so the sequel to the game Turok: Dinosaur Hunter has been launched. **Turok 2: Seeds Of Evil** has more than 30 enemies, each with unique strengths and weaknesses. Enemies have fish-eye vision and sound sensitivity like real predators, and highly accurate collision detection allows players to target specific areas of an enemy's body. There are six Quest levels and five multi-player levels covering 30 virtual square miles. Turok 2 is out now, priced £39.99.

Eidos Interactive is releasing a new strategy game called **Warzone 2100**. The world has been destroyed by nuclear warheads following a technical error in a satellite defence system. Less than a million people survived the devastation and the player has to attempt to rebuild a new world from ashes, battling against other bands of survivors for the remnants of a lost

civilisation. Warzone 2100

combines fast arcade action with strategic planning and features realistic terrain effects, real-time combat and cinematic effects. The game will be priced at £39.99.

One of the biggest arcade games in gaming history is due to hit our screens again, in 3D. Activision is introducing the next generation of the most addictive space shoot-em-up arcade game ever. The all new **Asteroids** vows to meld the classic fire-shield-thrust style of gameplay and nostalgic sound effects with vast new hyperspace 3D worlds, explosive effects and loads more enemies and weapons. Watch out for a review in our *Screenplay* section next month.

ETELKA CLARK

*Reviews in Screenplay this month (p281): Tomb Raider 3, Tiger Woods 99, Buggy, Close Combat: The Russian Front, Carmageddon 2 and World League Soccer 99.*

## Top 10 products Last month

### Peripherals

1	Dynamode 56K PCI Modem	DYNA	-
2	SONY DSC-F1 Digital Camera	SONY	-
3	3COM 56Kv90 Voice/FX ext	3COM	5
4	SoundBlaster Live! Value PCI	Creative	-
5	SoundBlaster PC128 PCI	Creative	11
6	Sidewinder Freestyle Pro	Microsoft	18
7	SoundBlaster Live PCI	Creative	14
8	P75 to P200MMX	Evergreen	7
9	Umax Astra 1220S Flatbed	Umax	20
10	Sidewinder F/F PRO + UR/AS	Microsoft	-

### Windows software

1	Free Access Starter Kit	Software w/h	-
2	Encarta RefSuite 99	Microsoft	3
3	Norton AV Suite + 1yr U/G	Symantec	-
4	Windows 98 U/G CD	Microsoft	4
5	Partition Magic 4.0 U/G	POW	-
6	Office Pro 97+Books U/G	Microsoft	5
7	Office 97 Stand V/Comp	Microsoft	-
8	Norton Systemworks V1	Symantec	6
9	ViaVoice 98 Home Edition	IBM	19
10	Partition Magic 4.0	POW	12

### DOS software

1	Turbo Pascal v7 DOS	Inprise	1
2	PKZIP for DOS	Pioneer	4
3	Turbo Pascal v7.0	Inprise	5
4	IBM PC DOS v7.0	IBM	-
5	Novell 3.2.5 User	Novell	10
6	Novell NW 3.2.5 User	Novell	-
7	NetWare v5 server	Novell	-
8	NetWare 5 U/G server 5USR	Novell	-
9	DataEase v5.12	DataEase	-
10	[Information not available]		

### CD-ROMs

1	South Park Desktop Themes	Telstar	-
2	Simpsons Virtual Springfield	Fox Int.	-
3	Star Wars: Behind The Magic	Lucas Arts	1
4	Simpsons Cartoon Studio	Fox Int.	-
5	Dancing Baby Screensaver	Jellyfish	-
6	James Bond Ultimate Dossier	Eidos	-
7	Dancing Baby CD Player	Jellyfish	-
8	Lego Creator	Lego Media	-
9	Top Of The Pops Mix Factory	BBC	-
10	Dance elay	Fast Trak	7

### Games

1	FIFA '99	Elect. Arts	-
2	Tomb Raider 3	Eidos	1
3	South Park	Acclaim	3
4	Half Life	Sierra	2
5	Worms	[Sold out]	-
6	Simpsons Virtual Springfield	Fox Int.	6
7	Gangsters	Eidos	-
8	Sim City 2000: Classic	Electr. Arts	-
9	Blood 2: The Chosen	-	-
10	Simpsons: Cartoon Studio	Fox Inter.	-

*Games and CD-ROM figures supplied by HMV. Others from Software Warehouse.*