

PCPlus CAMPAIGN

→ Let our resident legal expert fight your fight

In this month's cracking issue, our resident legal expert continues his tireless campaign against consumer evils and shoddy service

WRITE IN

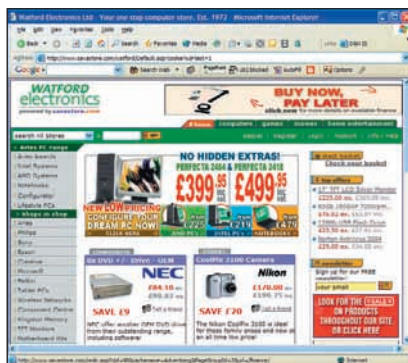
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Watford Electronics were incredibly illusive when one of our readers had a problem. Campaign had a little word, and they quickly pulled up their socks.

Watford Electronics

Reader John Heather, a retired technical civil servant, came unstuck when he called on Watford Electronics to honour its side of the bargain when providing tech support for his new PC. He recounts his tale of woe:

"Having seen the article in PCPlus 211 which recommended Watford Electronics for their warranty, I would like you to consider the following. Having used the Savastore configurator screen to 'build' my PC, I was delighted with the service and delivery. I was disappointed not to receive the Windows XP Home CD-ROM disk, but was assured that the built-in back-up system would enable me to resurrect the system in case of a crash. My first attempt at backing up failed, giving error message number '2003'. I tried to ring Watford Electronics tech support, but on three consecutive days I waited over 40 minutes without getting to the front of the queue. Throughout this rigmarole I was repeatedly urged to use email.

"Over the next two weeks I sent 15 emails without any reply. On the third week I received an email from the tech support manager advising me to telephone the number I had previously tried. I continued sending emails to all departments; those sent to 'Customer Services' were bounced. (I used the URL on the web site).

"I purchased a two-year on-site warranty, thinking it to be excellent value for money. As I'm confined to a wheelchair having lost both legs, it's essential for my peace of mind. I'm now questioning its value if I can't get through to them inside a month?"

Roger replies: I'm not surprised about the omission of a Windows XP

Home disc, as I've never come across a new PC that comes supplied with one, so this is more a (quite justifiable) complaint about Microsoft's OEM licensing restrictions than the PC manufacturer. Watford Electronics is rarely featured on these pages but this was a particularly egregious example of unacceptable customer service. I spoke to Ali at Watford Electronics who sorted out John's problems double-quick, phoning me back the following day to put me in the picture. This is extremely prompt by Campaign standards. Ali confirmed that John's PC problems had now been fixed, that the cost of the Windows XP recovery CD had been refunded, and that John now had direct access to Watford Electronics Tech Support manager. She added that John Heather was now happy with the service he had received and that Watford Electronics apologises unreservedly to him for the poor service he'd received. So hopefully, all's well that ends well!

Chalk and cheese?

The following story is a fairly weird one. I've always thought that Windows XP Home Edition and Professional are peas in a pod, differing only in relatively minor ways. Certainly, the codebase on which each version is based is pretty much identical. Put another way, if you could install XP Home on a PC, you would be able to perform an 'in place' upgrade to XP Professional without encountering any problems. Well, that's what I thought, but for reasons best known to itself, Sony doesn't. Incredibly, it won't offer tech support to anyone making the rash choice of upgrading from XP Home to XP Professional. Alan Parlone discovered this to his cost. He writes:

"On 30 October I purchased a Sony GRT 816S laptop from Scan International, Bolton. This was to replace an earlier Sony NV109M which was stolen. The NV109M was upgraded

from Windows XP Home to XP Pro successfully in September last year a few weeks after it was purchased. A colleague purchased a Sony 716S from Scan in September this year, and he too successfully upgraded it from Windows XP Home to Pro. By upgrading, I intended to retain all the software applications that are installed on the machine at the time of purchase whilst still upgrading the operating system.

"However, when I attempt to upgrade the Sony 816S from Windows XP Home to XP Pro, an error message occurred indicating that not enough virtual memory is available, and continually tries to reboot and produce the same error message. The same result occurs with another Sony GRT 816S when the same upgrade attempts are made.

"The response from Sony and Scan is that the installed software is only licensed with Windows XP Home. If I want to install XP Pro I need to do a complete installation, which then prevents me from installing the additional bundled applications."

Roger replies: Alan got less than helpful advice from Sony tech support when he raised his upgrade problem. The bottom line was that Sony wouldn't support third party software on their machines, which made Alan wonder if this made XP Pro 'third-party' software? If he wanted XP Pro then he needed to buy a much dearer Sony notebook instead. I contacted Sony's PR and she confirmed Sony's position:

Pippa Copeman-Hill of Sony replies: We sell our laptops as a complete unit and our European head office states that it can't support them if they run on a different operating system. However, there have been several conversations between our customer relations department and Mr Parlone, and as a gesture of good

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<http://forum.pcplus.co.uk>



Roger Gann
campaign@futurenet.co.uk

After first qualifying as a solicitor, Roger Gann got suckered in to the dark world of computer journalism, and is now combining both these skills for your delight

will, our technical advisor is going to look into carrying out this upgrade.

Roger continues: It looks as if Alan's problem will finally be sorted out. Even so, I'm surprised by Sony's policy towards those wanting to upgrade. You should be able to upgrade to Windows XP Pro if you want to, and it should work flawlessly. Sony kit isn't particularly cheap and I don't think it's unreasonable to expect to be able to upgrade in this way. I know that Microsoft has gone to great lengths to ensure Windows XP Home can be easily and smoothly upgraded to Windows XP Professional, so I can only conclude that his problem was down to some minor incompatibility with Sony's hardware and/or third-party software. There's no one else to pass the buck to, is there?

A small aside – one of the reasons Alan wanted XP Pro was for its improved networking capabilities. One of the deliberate shortcomings of XP Home Edition is that you can't log on to a domain with it – something you can do with XP Pro. However, if you use the XP TweakUI Power Toy you can log on to a domain with XP Home Edition. And that costs precisely nothing! Download it from www.microsoft.com/windowsxp/pro/downloads/powertoys.asp.

Too good to be true?

Some months ago I noticed that Toshiba had introduced a laptop, the Satellite Pro A10 which was being advertised for a remarkably low price. I was so struck by it that I pointed it out to friends and colleagues. When they made enquiries about it, it was no longer available at that price. Reader Dave Sones had a similar experience:

"The December issue of PC Plus features a test report on the new Toshiba Satellite Pro A10, priced at £499+VAT. The report asks the question, 'Is £499 too good to be true?' Well, the answer is yes. A friend of mine asked me to recommend a low cost laptop which he could use to access his email and do some basic word processing and spreadsheet work on whilst travelling. He phoned Toshiba to order

one, but was told that this was 'A limited production special offer' that was now no longer available. However, Toshiba could provide a higher spec version of the A10 at £549+VAT. The spec of the alternative machine wasn't substantially different from the original. It has a slightly faster Intel processor (2.2GHz rather than 2GHz), but a smaller hard drive (20GB rather than 30GB). Everything else looks pretty much the same. A cynic might look at this and conclude that the original A10 in the PC Plus review was little more than a piece of fiction, priced below the magic £500 barrier, and designed to drive customers to Toshiba's sales desk, where they could be sold a higher priced machine with a slightly tweaked spec. But a reputable firm like Toshiba wouldn't do that? Would they?"

Roger agrees: The cynic in me tends to agree with Dave. I suspect Toshiba made a serious miscalculation with respect to the units they expected to shift at this price-point. As Dave points out, the 10 per cent price hike buys you a slightly faster CPU, but at the cost of one-third less storage – a less than attractive proposition. I put this point to Toshiba.

Eleanor Gough, Toshiba's PR rep replies: Several versions of the Satellite Pro A10 were launched in July of 2003, one of which was priced at £499+VAT. This version of the product was extremely successful, with many thousands sold due to its competitive price point. Because of the huge success of this product, the stock was sold more quickly than anticipated. Due to the progressive nature of the notebook market, models are frequently upgraded to include newer and faster components. Because of the great success of the Satellite Pro A10, Toshiba introduced an upgraded version of this notebook earlier than planned to help meet the demand. The upgraded notebook is now available with a faster processor, from 2GHz to 2.2GHz, for a competitive price of £549+VAT.

Dave concludes: "Beware of geeks bearing gifts!" **PCP**

GOOD GUYS OF THE MONTH

Let's hear it for the Good Guys

Dabs and LaptopsGoingCheap get a pat on the back



LaptopsGoingCheap (pictured) and our old foe Dabs get a standing ovation from PC Plus this issue. Who says we can't change our tune!

Even Dabs has its day, I suppose. In previous columns I've been critical of Dab's hard-nosed attitude to customer service and the way it flaunts its obligations under consumer protection legislation, but hey, it does offer low prices, and when I've bought from it, the goods have turned up very promptly. PC Plus reader Benjamin Oakham felt the need to redress the balance and put virtual pen to paper to praise the excellent service he has had from Dabs: "In the Campaign section of PC Plus 210, you have a short entry about Dabs.com. I just thought it fair that in the face of such criticism I should email you to offer them some defence! I've always received amazing service from Dabs.com; speedy deliveries, value for money, and a brilliant returns department. In one instance I had purchased a USB 2.0 hard drive, and a Cardbus USB 2.0 card to control it. The card refused to work with my laptop, and Dabs.com offered me an immediate refund for both products, even though there was nothing wrong with the drive! They even paid for the return delivery. I would recommend Dabs.com to everybody."

Roger replies: Another fair-minded reader, Stewart McSporran (who hails from Glasgow, would you believe?) has stepped in to the Good Guy breach, helping to end the recent drought of suitable candidates. He chipped in with this recommendation:

"Your current magazine asks 'where have all the good guys gone?' Well I've found some in the dubious sounding guise of www.laptopsgoingcheap.com. I ordered a £300 IBM ThinkPad from them on the Monday evening and had a card waiting for me from the Post Office on Tuesday. I then spent Thursday trying to install Windows 2000 on it (Wednesday I rested) before proving there was a memory problem on Friday morning. LaptopsGoingCheap had a courier pick the machine up on Friday afternoon and I had a working machine in my hands on the Tuesday. Of course, you could argue that they should have spotted the memory problem before sending the machine, but to be fair, in my 20 years in the industry this is only the second time I've seen a genuine memory fault."

Roger replies: That's not at all bad, particularly when the kit involved is most likely 'second-user'. ■



**Davey Winder**

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Davey Winder is an award winning technology journalist and a founder member of the Internet Society of England

The Living Computer

Davey Winder investigates the cutting edge technologies that will eventually blur the boundaries between man and machine

What is a living computer? It's a question that's bandied about more and more as the debate about what qualifies as 'Artificial Intelligence' rages on. But perhaps everyone is missing the point. You can forget the cyborg Sci-Fi fantasy for now – leave that to the likes of Professor Kevin Warwick (p125) and the Aliens movies. To be alive is to be sentient, and so a living computer must possess the five senses of sight, hearing, touch, smell and taste. We're still a long way from creating a computer that can successfully duplicate and combine all the senses that define us as humans, however research labs at both the corporate and academic levels are busy laying the foundations upon which the living computer, a biomorphic engineering reality will be built.

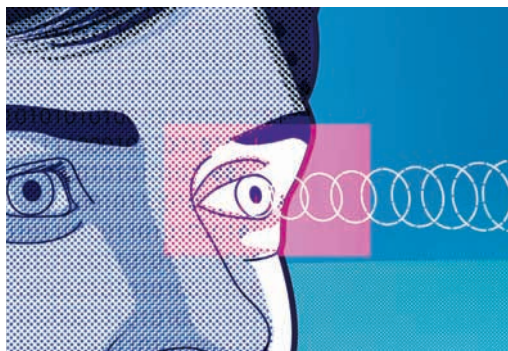
You may not be aware of the technological advancements being made behind closed doors, but separately, the five senses are being electronically reproduced to such an accurate degree, that they're being utilised in a range of fields. Who would have thought that the electronic recreation of the sense of smell could have applications in combating terrorism, and the recreation of remote touch through 'sympathetic haptics' could enable blind users to 'see' those they're talking to even when they're miles apart. These seemingly Sci-Fi conceptions are realities that are elaborated upon in this feature.

Both the evolution of ever more advanced sensors and the double back-end whammy of powerful processors and complex software coding have made the living computer not only attainable but a certainty



'The living computer' exemplified in the film *AI*, may be a long way off, but the senses are already being reproduced in labs.

– given time. The living computer may not be with us yet, but perhaps we're witnessing its conception, if not the birth itself. Over the next few pages we travel through the five human senses that could ultimately come together as one. ➔



Sight

Sight is one of the senses that bears the most resemblance to existing computer technology. The eye itself acts in a similar way to a digital camera, receiving incoming data in the form of light which is then compared against an existing database of stored images – or the brain in the biological model. The use of stereoscopic image recognition systems have already enabled computer vision to ‘see’ depth and distance, to determine size and to quickly identify an object.

One of the keys to the next generation of computer vision could be the selective attention modelling approach taken by various research labs around the globe. It’s believed, at least by some in the neurosciences field, that we evaluate what we see by picking out the things that stand out from the norm. The theory is that we make sense of what we see by concentrating on those things that are literally eye-catching, then use them as the focal points in that picture. By contrast, the way that computers or robotic devices like a space probe see, requires them to have been pre-programmed in order to react independently to an unexpected sight. By using neuroscience-based algorithms, it should be possible for the hypothetical robot to pick up a yellow ball among a box of black ones because it stands out as being different. ‘Dumb’ robots would only do this if specifically programmed to pick up a yellow ball when they see one. This selective attention method enables very quick scanning of a landscape, in exactly the same way. This works in the same way in which the human brain scans those ‘spot the difference’ pictures in kids’ comics, noticing the differences rather than the similarities.

Octopus eyes

The octopus has a visual system suited to the murky water it inhabits, or rather, it’s suited to spotting prey in these conditions. This attribute benefits the octopus when it has been attacked, has ‘inked’ the surrounding area in defence, and needs to escape. It was the octopus that proved the inspiration for the silicon retina being developed by those clever people at SUNY, New York (www.suny.edu). This uses a timing signal to act as data compression to transmit high-speed optical output, only producing ‘edge information’ rather than the bigger picture. This is enough to both detect and keep track of objects. While edge detection is commonplace, the synchronisation of pixels using a clock signal is unique. The 256-pixel prototype is just the beginning – the

researchers foresee bigger versions to be used as smart sensors in biometric and identification systems, as well as the possibility of use in autonomous undersea robots.

3D delight

We all remember those movies that promised much and delivered little. Jaws 3D is one such example which required you to wear sweet wrappers strapped to your face for good measure. Thankfully, the world of computer vision has moved on somewhat since then, and thanks to researchers at Seoul National University, Korea (www.snu.ac.kr:6060/engsnu/index.html), the days of deep 3D rendering without the need for glasses could be upon us. Traditionally there have been three basic types of 3D display: the ones with a very narrow field of vision that require the user to view from directly in front of the image, those with no great depth of vision (which rather defeats the 3D object) and those that need the silly glasses. This latest research takes integral imaging, which has a shallow depth of vision problem, and deepens it while retaining the glasses-free position. It works by carefully controlling the polarisation, as well as the direction of the generated light rays, so creating the three field depths. A polariser switches light between vertically and horizontally polarised and non-polarised for quicker than the human eye notices, while a calcite crystal changes the angle of the polarised light as it travels to the array of lenses. As a result, all three lights focus at different depths and the 3D effect is created.



Sound

Human hearing responds to vibrations travelling through the air as waveforms, with our ears tuned to frequencies covering an amazing range of 20 to 20,000 Hertz. The sound waves, or vibrations if you prefer, stimulate yet more nerve cell sensors in the inner ear, which in turn send the signals to the brain for analysis.

The obvious technological comparison is the microphone, which is responsive to the same sound waves and transmits them to a ‘brain’ by way of the computer-controlled hardware they’re connected to. Another comparison are the conversational computer systems of the kind found in automated customer service providers. These work by analysing your question at the phoneme level. A phoneme is any one of the many units of sound that distinguish one word from another. These computer systems use fairly standard statistical modelling techniques linked to a phoneme database to



It’s not much to look at, but this silicon retina could be the future of computer vision.

identify what you're saying. Your question can then be parsed against a database of questions and the most likely answer constructed from within the knowledge base. These systems only work effectively when the vocabulary involved is limited and the concepts that need to be understood are limited. As a result, they're very industry specific.

Although the usual suspects are busy in their research labs working towards it, a Natural User Interface (NUI) is still some way off. Speech recognition software has come on in leaps and bounds in the last decade, but a truly responsive Operating System (OS) based purely upon speech hasn't become a reality. Speech input devices exist, but a Speech OS doesn't. There's no greater understanding beyond the command structure. In other words, there's no natural language processing. Computers still can't cope with the Bananarama syndrome: "It ain't what you say, it's the way that you say it." As far as the PC is concerned, what you say is what you say, period. Ambiguity, nuance, emotion, emphasis, or what's correctly called prosody are meaningless to a computer... for now. Research labs have already cracked prosody from the perspective of speech synthesis, and computers can now sound pretty much like humans. But when it comes to recognition, that's a different matter. Things are looking up though. Using software algorithms to determine the timing, pitch changes and volume structure of speech, researchers are likely to see a breakthrough in identifying emotions such as anger. Given the pace of change in speech recognition technology – which has been likened to the Moore's Law effect with an exponential increase in power, year on year – don't be surprised if both prosody and the natural user interface arrive earlier than expected.

Shazam

A couple of years ago, Philips Labs, Eindhoven (www.research.philips.com), published research into what it called 'hashing', a cryptographic process used in secure computing to check that a message has been safely received. Hashing works by creating unique short codes or tags from the data within the message, and these are then sent along with it. If these codes can't be recreated when the message is received, it's deemed corrupt or compromised and requires resending. What has this got to do with computer sound, you ask? Simply that this basic data fingerprinting process is used by the Philips experimental music identification system, where each song is broken up into 33 narrow frequency bands and the loudness or softness of each frequency is measured to create the hash codes. The codes get stored in a database, along with the music

track and title information, which can then be retrieved by playing the computer a 10-second snippet of the song itself. This is enough for the computer to recognise the unique fingerprint and supply all the detail required. Shazam (www.shazam.com), however, beat Philips to the commercial market with this technology, using its own patent-pending fingerprint-matching system. They have more than 1.7 million music tracks in the database, which you query by mobile phone. If you want to know what that track playing in the pub is, or what that song on the radio is, just let their computer hear it for a few seconds and it will text the answer to your mobile.

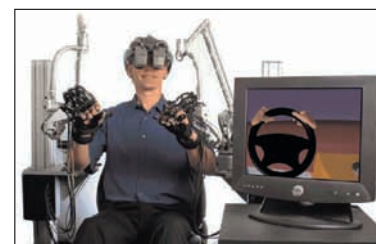


Touch

Gamers have long realised that their computers can go beyond sound and vision. Force feedback joysticks aren't a new invention, after all. Now haptics, the study of touch within computer generated worlds has moved on to the next level.

Research is generally divided into two strands: kinaesthetic and tactile. Kinaesthetic, or force feedback if you prefer, is focused on interaction with musculature to give the sensation of force. This can include pushing back against the user or pulling them in. The tactile strand is concerned with the neural receptors found in the skin, consisting of sensory cells that are sensitive to pain, pressure, temperature and vibration. The Immersion Corporation (www.immersion.com), which provided the technology behind both the Microsoft SideWinder joystick and the ill-fated Logitech iFeel mouse (it used a motor to vibrate over virtual bumps on web pages), is one of the few hardware examples that combine both haptic fields in a commercial environment. This is no pie in the sky stuff. This is for real and you can buy the kit today.

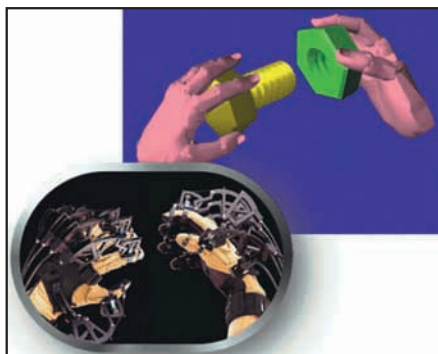
The CyberGlove contains 22 sensors on the fingers, palms and wrist and converts hand movements into data in real time. CyberTouch adds tactile feedback by way of small vibrotactile stimulators on each finger and the palm of the CyberGlove. Programming these individually varies the touch sensation to enable complex tactile patterns to be achieved. Then comes the CyberGrasp, a force-reflecting exoskeleton that fits over the glove to provide resistive force feedback to each finger, making it possible to literally reach into the PC and manipulate computer generated 3D objects with full tactile feedback. ➔



The CyberGlove is used in real world applications, including the virtual reality training of surgical procedures.



Shazam (www.shazam.com) has more than 1.7 million music tracks in its database. Use it to both wow your friends with your musical knowledge and to cheat in pub quizzes.



CyberForce adds a force feedback armature and added realism when picking up a heavy item.

Originally part of a United States Navy project, these work by using exoskeleton tendons to produce the grasp forces at each fingertip and enable a user to not only control a robot hand, for example, but to feel what that hand is 'feeling'. It's already used in real world applications as varied as the obvious remote handling of hazardous materials, to the less obvious but equally important virtual reality training of surgical procedures. As if that wasn't enough, there's also a CyberForce addition that

adds a force feedback armature to bring weight and inertia when picking up a heavy item, for example, or the resistance of a wall.

Immersion has shown just how far we've come when it comes to breaking the physical barrier between user and software. Haptics could provide a clue to the direction that data input/output might take, with the ability to literally reach inside the PC and take out the information that you need. It's certainly no longer true that the world of the personal computer is a 2D one in sensory terms.

Sympathetic haptics

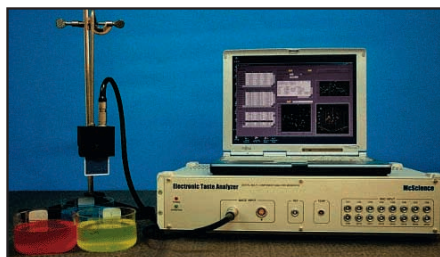
Within the last couple of months, researchers at the Virtual Reality Labs at the State University of New York, Buffalo (www.wings.buffalo.edu/academic/departments/eng/mae/vrlab), have announced the successful completion of an experiment to send the sense of touch across the Internet between distant users. Known as sympathetic haptics because it enables remote users to feel what the other does, this incredible-

"If used with the virtual reality avatars already available, sympathetic haptics could enable blind users to 'see' those they're talking to by reading their face."

sounding feat adds a completely unexpected new dimension to the act of telecommunications. It also has exciting possibilities beyond the fields of crafts education (teaching someone how to throw a pot, or create a

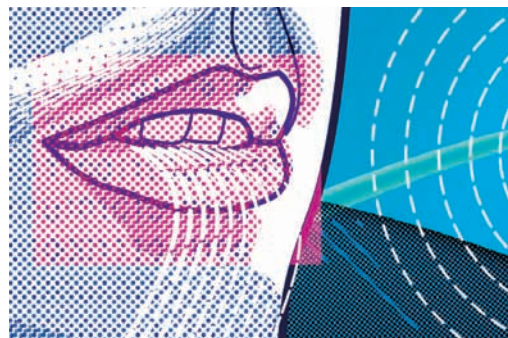
sculpture) and telemedicine (remote diagnosis, enabling a doctor to 'feel' the patient, or a surgeon to feel an organ). For example, if used with virtual reality avatars of the kind already available, it could enable blind users to 'see' those they're talking to by reading their face as if they were in front of them.

The experiments proved that sensations such as hardness or softness could be discerned, as well as the contours and texture of shapes. An added bonus is that the sensory data – being digital – can be saved, not only enabling the user to preserve the sensation forever, but allowing others to share in it. Using VR data gloves with force feedback, it's unlikely to make any commercial breakthrough for some time, and cost alone would make it impractical for the consumer market. However, it wasn't too long ago that only universities and government departments could afford the



www.mcscience.com is one of the companies already on the market with a commercial e-tongue, seen here in both lab and portable formats.

computers and connections required to use the Internet, so don't be surprised if you're patting mates on the back in chat rooms in the not too distant future.



Taste

Taste isn't simply a matter of what the taste buds on your tongue pick up and relay back to the brain. In fact, it involves a range of physiological responses including touch (on the lips and tongue), sight and even smell.

Taste is closely linked to smell, with plenty of tastes actually mediated by way of their smells in the nose and throat. As if that weren't shocking enough, contrary to popular thought, we don't just detect the four basic taste types of bitter, salt, sour and sweet either. The truth is that there's a fifth taste that has only recently been identified, and that's 'umami', or the taste of monosodium glutamate. The best example is that of protein-rich foods such as mature cheese.

Receptor molecules in the taste buds trigger nerve signals when they come into contact with flavour-dispersing molecules. It's thought that our taste sensations are most likely linked to 'fingerprints' created by the different configuration of the activation of these receptor molecules. An electronic tongue uses a similar approach by having a number of different chemical sensors, each comprised of three polymers and a molecule containing ruthenium ions within a film deposited onto gold electrodes. In a similar way to the electronic noses mentioned in this feature, the films absorb the dissolved substances when dipped into a solution and the change in resistance can be measured to form a taste fingerprint. This is then plotted on a graph.

Electronic tongues are generally considered to be lagging way behind their biological counterparts. This is primarily because they rely on a substance being soluble and can only identify a limited number of tastes already contained within their database brain. However, it's still very early days, and at the University of Texas an e-tongue that can taste more than just 'taste' has been created: cholesterol levels in the bloodstream, cocaine levels in urine or toxic chemicals in water. As long as we're talking about identifying chemicals within a solution, an electronic tongue can be programmed to taste it.

I, Cyborg

The renowned Professor of Cybernetics at Reading University, Kevin Warwick, has already achieved a place in history and a mention in the Guinness Book of Records – he can lay claim to being the world's first cyborg. That might be stretching the common understanding of the term a little, but Warwick's work

shouldn't be underplayed. If, as would seem inevitable, a blurring of the boundaries between man and machine through the application of biotechnology becomes reality, then Warwick will be remembered as the man who put the flesh on the fantasy. Actually, to be precise, he's been literally putting the fantasy into his flesh by way of implanting a 100-electrode array in his arm, directly attached to the median nerve. This 'neural interface' has been used to control a wheelchair and a robot hand, and while this might not sound like world-shaking stuff, it's a start.

The implant allows nerve signals transmitted down the arm to be measured, and creates artificial sensations when individual electrodes within the array are stimulated. By monitoring the effects of the implant before, during and after the process, important data is collected that could prove vital in future cyborg experimentation. Warwick is no stranger to implants – his first in the Project Cyborg series was way back in 1998, with a simple implant that enabled a computer to monitor him as he moved through the University, opening doors, turning on lights, adjusting heating levels and operating computers without him doing anything other than being there. His latest venture takes things even further, and rather eccentrically involves his wife, Irene, joining him in his quest. Using a less complex implant, the couple will be able to 'share' emotions – feeling pain or joy as it's experienced by the other. When asked about the ultimate impact of all this upon humanity, Warwick is clear that he thinks those who want to evolve into something more powerful will be able to, and those who are happy as they are will be able to stay merely human. He's just as clear as to his personal intentions too: "There is no way I want to stay a mere human," he says.



Smell

On average, the nose has 10 million receptors within the mucous membrane, accounting for your ability to distinguish between something like 10,000 different smells. Technology should therefore be well matched to the task of smelling. Just give it the necessary sensors and wire that into a back-end database of smell signatures and you're up and running. Well, up and smelling anyway.

The electronic nose is already a reality, mimicking the human nose by containing numerous individual chemical sensors that act as a group to produce a 'smellprint' of a substance.

Cyrano (www.cyranosciences.com) is one of the first companies to market an electronic nose, the Cyranose 320. This is trained by measuring vapours to create a database of digitised patterns. These are representative of the required application area, and all future measurements are compared to these patterns to identify the vapour or smell. It uses polymer composite sensors, licensed from the California Institute of Technology, in an array of 32 sensors. Each of these consist of a pair of electrical contacts bridged by a composite film made of a non-conducting polymer and conductive carbon black particles. It's the change in resistance between the electrical contacts caused by the film swelling and breaking the conductive pathways it contains, that's used as the output of the sensor. Each sensor has a unique polymer, so a reproducible combination of resistances form the smellprint for any given vapour mixture. Of course, these electronic noses can only detect smells that are in their database. In other words, they need training, whereas humans have the ability to learn new smells and add them instinctively to memory. As such, there's still a long way to go towards reproducing a real synthetic nose. However, existing devices can be used to create badge detectors for toxic leaks in the workplace or for automated quality control in the food industry.

As recent world events have highlighted, (the growing risk of chemical weapons as part of the terrorist arsenal), it should come as no surprise that resources are being focused on this particular sector at the moment. Cyrano has combined its chemical agent detection and smellprint interpretation technologies within a proprietary chip called the NoseChip. The chip, which can be embedded into a variety of systems, is at the heart of the research the company has undertaken with IBM to provide a method of deploying sensors in a high-profile area such as a government building or railway station, wirelessly connected to a central database. "Our objective was to enable our hazardous chemical notification system to serve as a complete, integrated, wireless solution for airports and other public locations," says Dr. Steven Sunshine, CEO of Cyrano. "These organisations would then have the advantage of early detection and notification of local or dispersed chemical releases in or around their facilities or installations."

The NoseChip powers the Cyranose 320 sensors. These then establish wireless connections to an IBM ThinkPad running remote monitoring and server processes, including an IBM DB2 database to manage the chemical agent data, with IBM WebSphere for routing of messages, dynamic reformatting of content and the runtime environment for the Intranet site.

iSmell

Finally, the ill-fated Digiscents company, prototyped an iSmell device but went out of business in 2001 after interest proved less than overwhelming. This peripheral combined chemicals from 40 cartridges and sprayed smells at the user in response to codes embedded in web pages or software. We can't imagine why it didn't take off. **PCP**

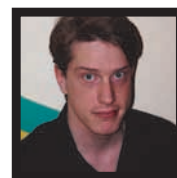


Kevin Warwick claims to be the world's first cyborg.

Cyrano (www.cyrano-sciences.com) is one of the first companies to market an electronic nose, the Cyranose 320.





**Paul Hudson**

paul.hudson@futurenet.co.uk

Paul Hudson is considered a bit of a Windows guru over at PC Plus HQ. He has never been to the foot of the Whistler Mountain, though!

Windows 2005: The road to Longhorn

The next release of Windows is set to be as big a change from XP as Windows 95 was from Windows 3.1. **Paul Hudson** investigates

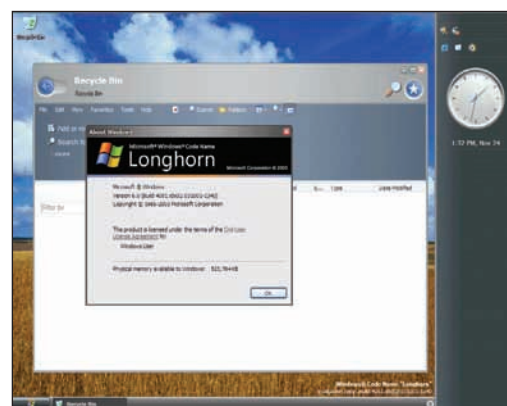
At the foot of the sleepy ski resort of Whistler Mountain in British Columbia, just off a small road called Blackcomb Way, lies the Longhorn Saloon and Grill – an enticing restaurant that serves up food and drink to provide, in their own words, “the perfect ending to a day on the mountain”. The Longhorn Saloon is where people go when they’re through with Whistler, which is curiously similar to the situation Windows users are in. Whistler was the codename for Windows XP, and Longhorn is the codename for the next generation release of Windows, supposedly due in 2005.

Windows, codenamed Longhorn, isn’t just a new GUI (Graphical User Interface), nor is it an evolutionary build of Windows XP. Instead, Longhorn is the culmination of several key Microsoft initiatives from the past few years, including .NET, DirectX, SQL Server, Trustworthy Computing, MSN Messenger, and Windows Installer.

Although Longhorn isn’t due out in the shops till 2005, Microsoft has taken great pains to ensure that Longhorn is on everyone’s lips. In order to keep people talking about it, Microsoft has put out a number of pre-alpha releases of Longhorn. These act as technology previews of what the final release might look like, and enable developers to work towards the new operating system. With over 18 months until release date, these releases have been more showcases than previews, and the majority of new features planned for Longhorn have yet to materialise.

Three pillars

Longhorn brings with it many fundamental changes to the Windows platform. Microsoft has encapsulated the changes under the banner of WinFX. This can be broken



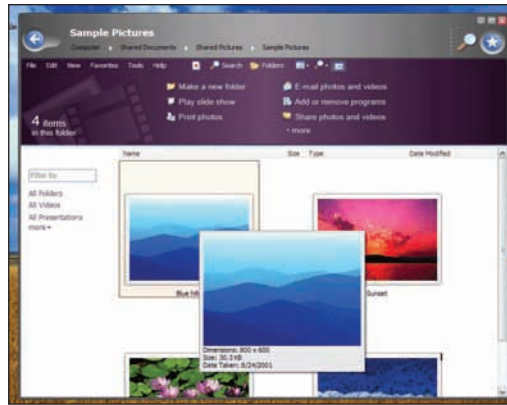
Windows 95 was v4, 98 was v4.1, 2000 was v5, and XP was 5.1. Longhorn Windows v6 makes it clear that it’s as different to XP as Windows 2000 was to 95/98. That’s the new ‘Bliss’ wallpaper in the background.

down into four key technology ‘pillars’: Fundamentals, Avalon, WinFS, and Indigo. Fundamentals is the operating system core we’re used to from Windows XP, but is re-engineered to properly follow Microsoft’s Trustworthy Computing mantra. It includes new ‘ClickOnce’ technology to make installation and maintenance of software much easier.

Avalon is a completely new graphics system that’s intended for use on all future Longhorn-based applications, replacing older systems like GDI and GDI+. Avalon powers Aero, which is the new graphics engine, and does away with the old, component-based system of Windows development. In its place we get an all-new, ➔

MOVING TO WINFX

Those who have been developing for Windows for a while are as equally likely to grin at the prospect of Longhorn as you are to groan. Along with many other new features, it also introduces new technologies to replace the existing programming paradigm. Over the last 10 years or so, a variety of technologies have been pushed by Microsoft – OLE 1 and 2 were big ideas in their day, and COM (later also DCOM and finally COM+) were supposed to revolutionise the way we interacted with application components and services. The .NET initiative introduced an all new idea, including the much-vaunted Windows Forms, and now, just as developers are really getting to grips with it, we find Avalon coming along with another new way to do things. Yes, you can migrate from Windows Forms to Avalon in the same way you could migrate from Win32 to Windows Forms, but people are already wondering whether it's really worth it. If you already have Windows Forms code, your best bet is to stay clear of Avalon for the time being. Let the APIs settle fully before going in, and even try going with the Windows Forms/Avalon integration to try to preserve your investment.



Various folders have been jazzed up, which along with the iTunes-like Slate interface, gives the system a fresher feel.

vector-based system that keeps user interface information stored in a dialect of XML, known as the XML Application Markup Language (XAML).

Much work is being done on the next release of DirectX (tentatively named DirectX Next) to offer better throughput of primitive shapes, and the Longhorn desktop will render all of its display through DirectX for maximum aesthetic effect. Demos have already been shown where windows have been transparent, rotated, scaled, and warped, while still retaining their functionality. This is made possible by the vector UI system and DirectX rendering. In order to keep the desktop clear of animated clutter and glitz for business users, the new Aero-style interface can be downgraded to a more traditional style by the administrator, although this will take place automatically if you don't have the required graphics hardware.

WinFS is a new file system that's integrated with some of the technology Microsoft developed for use with SQL Server, codename Yukon. This is a product that will eventually be SQL Server 2004 or SQL Server.NET. The plan is to use the existing NTFS filesystem that we're used to from Windows 2000 and XP, and to add proper support for metadata. Metadata is "data about data", and will be used to describe the contents of the files on your hard drive. Much of this was already in Windows XP. If you convert a music CD to Windows Media Audio format when online, Media Player will auto-connect to an online CD music database to get the name of the artist, the name of the tracks, the year it was recorded, and the genre for the CD, storing that information inside each file. What's new in Longhorn is the ability to look at your hard drive through a metadata-filtered view. For example, you could sort your music folder by artist, even though the artist's information isn't stored in the filename itself but in the metadata. It's possible that this functionality will only be available in the My Documents folder in the Longhorn release.

The final component in the three pillars is Indigo. This is the communications layer that's designed to both bring together all the advances Microsoft has made in its move to .NET, as well as bringing in a new set of technologies at the same time. Combining various disparate parts of .NET into one API means that developers will be able to access a selection of protocols and security measures all through one interface, which in turn should help to increase security, whilst adding a great deal of flexibility at the same time. End users can expect applications to work together much more smoothly if all of Microsoft's hopes for Indigo come true. It will finally bring the power of web services to the desktop in a way that everyone can use. Microsoft has committed to back-porting the Indigo subsystem to both Windows XP and Windows 2003, which should help its adoption.

New features and technologies are all well and good,

but to really understand what Longhorn offers, you need to look at it from the viewpoint of the three types of user who will buy it; enterprise users looking to deploy to hundreds or thousands of desktops; small office and home users looking to work smarter with their existing resources, and developers looking to take advantage of the latest technologies.

Big business

Despite Windows XP having been out for some time now, Windows 2000 continues to be the most popular enterprise desktop system in use. For the large part, this is because it's easy to manage and very stable. Responding to repeated requests from its customers to lengthen its Windows product cycle, Microsoft will make Windows XP last from late 2001, when it was released, to late 2005/2006 when Longhorn will finally arrive. As a result, Microsoft will have had over four years to develop Longhorn into a product that will be as popular in big business as Windows 2000. There are three key technologies that will drive this.

The first is Next Generation Secure Computing Base (NGSCB), an initiative most of us know by its original codename, Palladium. Many stories and rumours regarding Palladium have circled the web since it was first announced, with people saying it will remove all freedom from computing, that it will lock you into Microsoft and certain hardware manufacturers, and that it will stop you using unauthorised software (that is, software that 'they' don't want you to use). Some parts are true. Microsoft has said that "much of the NGSCB architecture design is covered by patents, and there will be intellectual property issues to be resolved. It's too early to speculate on how those issues might be addressed." If patents are involved, running NGSCB hardware almost certainly means lock-in, so be careful what you commit to. If this 1984-like event doesn't materialise, NGSCB has the potential to help companies form stronger and more secure networks. It has a finely grained trust system that's built from the hardware up, meaning that when someone sends you an email, you can verify that it came from that person and their system.

From a software management perspective, one of the new features being introduced in Longhorn is ClickOnce. This is anticipated to enable easy installation, maintenance, and uninstallation of software. This feature, which is being introduced in the next version of Microsoft's Visual Studio.NET development tools will also allow dynamic updating of applications in roughly the same manner as Windows Update currently works. The plan here is that by keeping applications patched, one set of security issues can be struck off the check list.

One area that's sure to please CTOs the world over is platform compatibility. Longhorn is available in three different flavours for three different architectures – one for x86 (Pentium-class hardware), one for AMD64 (Opteron and Athlon64), and one for ia64 (Itanium and Itanium 2). As a result you can standardise your OS irrespective of the hardware you choose. We believe that the ia64 build may not ever be released given the current success of the architecture, but it's possible that Intel may cut a deal with Microsoft to keep its ailing flagship alive.

Home users

With increasing competition from Apple OS X, a lot of work is going into Longhorn to bring it up to speed. The most obvious change will be the new user interface,



The new Help and Support Center is excellent, although it's very telling that the 'How to debug a program' is listed under the frequently asked questions!

brought about through Aero. Right now the Longhorn releases all sport a dark grey interface, christened 'Slate', but this will definitely be changing before Longhorn is released. The new sidebar is designed to build on the usability enhancements brought about by the taskbar in Windows 95, and is currently a great way to keep your taskbar clear. Despite the best efforts of Windows XP to group programs together into one button, the system tray and the quick launch icons on the taskbar clutter it up. This is all being moved to the sidebar, along with new things such as the Slideshow, a much-improved clock, a PDA synchronisation tool, and potentially dozens of other third-party plug-ins. Much of 'Slalom' (the version of Windows Media Center that will follow on from 'Symphony', which itself is the version to follow on from Windows Media Center 2004) will be based on Longhorn, which means that we may be seeing some innovative uses for the sidebar by the time Longhorn finally launches – scrolling RSS news feeds, anyone? Of course, it's questionable how much differentiation will be kept between Longhorn and Windows Media Center. Microsoft is indeed likely to import features from Media Center into the main Windows branch in order to add more "Why upgrade to Longhorn?" bulletpoints.

The addition of WinFS means that you can treat data from various programs on your systems as files you can search through. When searching for files and folders, you can also search for contacts, music by certain artists, and so on. This was one feature that was missing from the metadata functionality found in Windows XP, and is now possible thanks to the Yukon code in Longhorn. If Microsoft does get this feature nailed down and in operation for more than just My Documents, it opens up numerous possibilities. These include the ability to search for documents with very specific information, such as "Written to NatWest Bank, from me, in October".

On the usability front, a new version of Internet Explorer (IE) is now bundled with Longhorn, and sports a newer, simplified interface. The key toolbar buttons are currently so large that some might even consider it 'dumbed-down'. This is of course the first release of IE since Microsoft announced they would stop shipping it as a standalone package, so it's no surprise to see that IE is wholly Longhorn-ified. There are some new features around, of which the most interesting are the new pop-up blocking tool and a download manager. In our opinion, these are changes that are long overdue. Whether or not we'll also see tabbed browsing in the finished release is yet to be seen, but given that all other

The highlights

If you decide to make the upgrade, these top eight features provide a wealth of possibilities

The sidebar

An extension of the task-based workflow first showcased in XP. Third-party developers will be able to write custom apps to give the sidebar helpful add-ins for you to choose from. You can also make the taskbar merge with the sidebar so that everything is together, but it's a little cluttered right now.

WinFS

The new database extension to NTFS allows you to store custom information about each file on your hard drive. Explorer will be programmed to take full advantage of it. This will be particularly helpful in the Find dialog, where you can search for more specific information, such as Contacts.

Avalon

The new .NET-based graphics API for Longhorn that will take advantage of features found in new graphics cards. Avalon also powers Aero, and will automatically downscale effects if the hardware isn't up to scratch.

ClickOnce

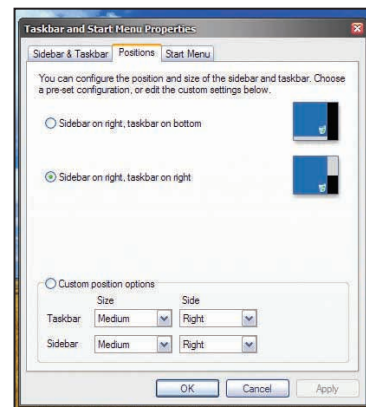
Install, update, fix, and remove software using this unique new technology available in .NET 2. It takes the best parts of web services (easy deployment, access over the web), and brings it to Windows development.

DirectX Next

Games will be taking full advantage of DirectX 9 by about Q1 2005, so Microsoft are pushing the barriers even further with the next release of their popular games API. Look for v4 of pixel and vertex shaders.

Visual Studio.NET Whidbey

Brings with it .NET v2, which takes the existing .NET system and adds to it many of Longhorn's new features. Great for



The sidebar is the bastard child of the taskbar and is basically useless. This will almost certainly change. Expect MS to encourage third parties to make use of it.

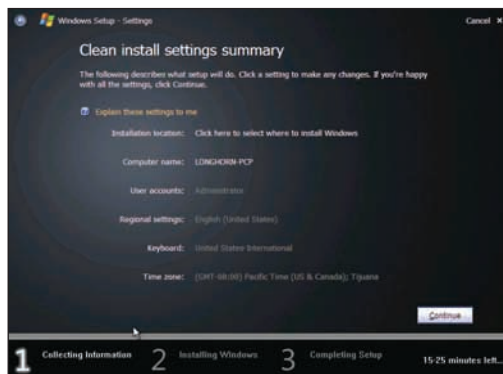
developers, and should be on sale in Q4 2004. This is the easiest way to migrate your apps to Longhorn.

NGSCB (Next Gen Secure Computing Base)

Previously known as Palladium, this Big Brother-esque technology could either be used to bring full Internet security to all users, or to take control away from the users. Only time will tell what Microsoft has planned here. However, it does require a lot of collaboration with other vendors, which may be its downfall.

Aero

The new user interface system for Longhorn that uses vectors to allow smooth scaling and warping, then renders the entire system through DirectX for maximum performance. Mac OS X continues to move quickly in the "lickably good" user interface arena, and this is Microsoft's first salvo in return. ■



Installation in just three steps? Don't you believe it. Longhorn has chronic driver support. It took us several hours to get it working. Things should improve into the beta releases, though.

major browsers now do it, there's little reason not to.

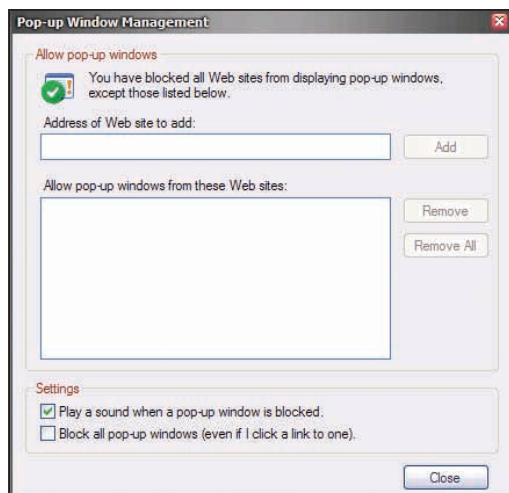
The chances of DirectX Next – the successor to DirectX 9 – introducing anything interesting from a gaming perspective are fairly low. None of the cards ➔

THE LONGHORN PREVIEW

All the screenshots you see here are from the Professional Developers Conference 2003 release of Longhorn, which was classified as pre-Alpha. Longhorn is expected to go into the first stages of beta in about five months, with the first release candidates due in the first half of 2005. Much of the new functionality isn't written yet, and even more is likely to change between now and Longhorn's release. We'll be keeping you up to date as things evolve, and we'll be interested to see how much we've shown you that actually makes it into the final build!



Bill Gates delivers his keynote speech at PDC. PC Plus are part of the audience – see page 12.



We'd like to think that allowing pop-up blocking in IE years after the competition is more than a cynical attempt from Microsoft that will be withdrawn by final release!

currently on the market are even near taking full advantage of DirectX 9, with games that take full advantage being even further away. With DirectX X – as it may end up being called – pushing the envelope further, don't expect to see many compliant games until 2007.

For developers

Longhorn heralds a new programming paradigm from Microsoft, codenamed WinFX, and encompasses a trio of core changes to the Windows programming model. Comprised primarily of Avalon; the display subsystem, Indigo; the communications layer, WinFS; and the Yukon/SQL Server 200x-based database file system, Longhorn also incorporates a variety of other codenamed projects that are currently in production: these include 'Whidbey' (the .NET codename), which comes as part of the new Visual Studio .NET release, and XAML, the new declarative way to design your GUIs. While this is all great from an innovation point of view, it does mean that developers can expect to have to rewrite their applications from the ground up.

Currently we have .NET Framework 1.1. This is to be superseded next year by .NET Framework 2, currently codenamed Whidbey, which is a stepping stone to WinFX on Longhorn. Although it will be possible to run Windows Forms on Longhorn, Microsoft recommends Avalon for use on Longhorn. Mark Boulter, a Microsoft developer, said at a presentation at the Professional Developers Conference 2003 (PDC2003), "if you're targeting Longhorn, only use Avalon. If you're targeting multiple versions of Windows, use Windows Forms. Use adaptive techniques to get the best of both worlds". Mr Boulter says to build applications that detect and use Longhorn features when available, "replacing Windows Forms GridView with Avalon ListView control when running on Longhorn". We have a feeling that this is easier said than done, and that Microsoft is playing down the changes required to migrate to Longhorn.

XAML will be especially difficult. The idea behind XAML is that it splits off GUI design from the code that drives it, which is all well and good – this technology has been around in GTK and Qt for some time, and has been proven to work. This certainly has its advantages, and the abstraction means that the UI can be ported easily to other environments such as mobile phones and PDAs. It also means that professional GUI designers can take care of the application layout using tools such as Visio while programmers plug in the actual business logic behind the scenes. On the downside, this is absolutely nothing like the way Windows currently works, and is likely to throw many developers off the track. We've been testing XAML

for about a month now, and it's damn impressive. There's no doubt that it will catch on, but the question is, how many developers will need to be dragged along kicking and screaming by Microsoft?

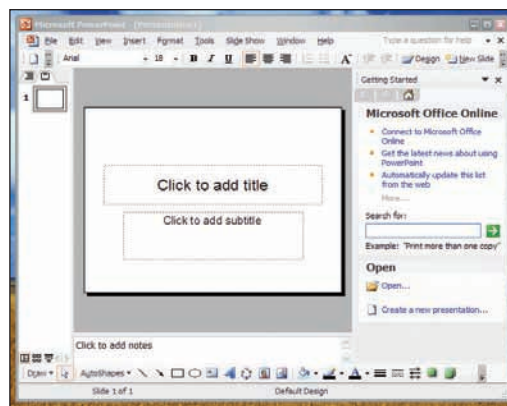
To make this as easy as they can, Microsoft has at least made the Avalon APIs somewhat interoperable with Windows Forms. To help you preserve your existing .NET 1.1 investment as you migrate your apps to Longhorn, you'll be able to embed your existing dialogs directly inside Avalon applications. Furthermore, to help you learn how to take advantage of the new Longhorn APIs, you'll also be able to embed Avalon inside Windows Forms applications, although this isn't likely to be a route chosen by many developers.

It's all coming soon

The official release date of Longhorn is 2005, but we wouldn't be surprised to see that slip to Q2 2006, if not later. This causes a problem for customers who have to live with the prospect of no operating system (OS) upgrades for about two years, despite having been on the same OS for two years already. On the upside, this does give the industry a long time to get up-to-date. Too many machines are still running Windows 98 and Me for Microsoft's liking, and a long break will help people at least get up to XP before Longhorn comes along.

When the announcements of Longhorn's release date were first aired, many thought it a foregone conclusion that there must be a Windows release between XP and Longhorn. This seems increasingly unlikely, as Microsoft has committed to so many changes and upgrades in Longhorn that any interim OS release would cause more problems than it would solve. Even a Windows XP Second Edition would add to the upgrade path chaos. Instead, Microsoft's plan seems to be to backport many Longhorn features to Windows XP in the form of service packs. XP SP2, for example, will be compiled using Visual Studio.NET Whidbey, and will incorporate new security restrictions along the same lines we'll see in Longhorn. This will help prepare end-users and developers for the switch in 2005.

Back in British Columbia, Blackcomb Way leads people away from the Longhorn Saloon, so it's not surprising that Microsoft has codenamed the post-Longhorn release of Windows as Blackcomb. It's not known if there's anything planned for this release beyond its approximate 2007/2008 release date, but Microsoft rarely has less than a five-year strategy plan. **PCP**



Office 2003 smoothly slips into its Longhorn skin, but as far as we're aware, Office doesn't use Windows Forms yet, never mind Avalon!



Illustration: Simon Parr



Gary Marshall
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Freelance journalist Gary Marshall covered the technology behind the 2002 Commonwealth Games in issue 193 of PC Plus

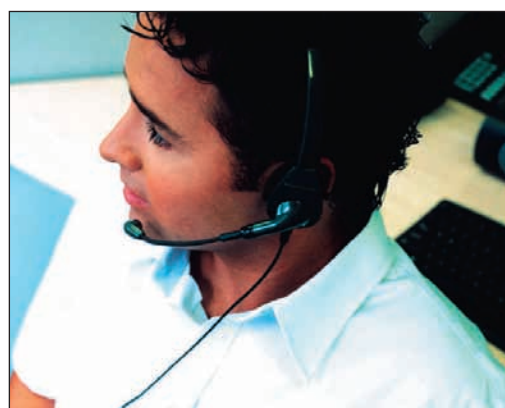
In the line of fire

UK contractors are being undercut by amateurs who'll work for pennies, and IT jobs are being outsourced to India. **Gary Marshall** investigates

In the 1990s, the government urged everyone to get into IT: manufacturing was dead, and technology was the future. But now it seems that the IT industry is suffering the same fate as steel, coal and textiles: workers in other countries can do the same jobs to the same standards, and they can do it for a fraction of the cost. The outsourcing trickle has become a flood, with firms moving their application development, technical support and even their research departments to Asia.

In December, Norwich Union's parent company Aviva became the latest high-profile firm to embrace outsourcing. The insurance firm will transfer 2,350 jobs from the UK to India in 2004, and many of those jobs are IT jobs. Trades union, Amicus, points out that the figures could be the tip of the iceberg: "Aviva has given no guarantees that further job cuts will be prevented in 2004, and won't guarantee that further offshoring will be halted in 2005."

Norwich Union isn't the first firm to embrace outsourcing, and it won't be the last. The list of firms moving their back office operations offshore include HSBC, British Airways, American Express, Citibank and many, many more. Technical support helplines are more likely to connect you with someone in Bangalore than in Birmingham, and even lawyers are outsourcing their secretarial work. As David Fleming of Amicus points out, it's a worldwide phenomenon: "France is currently offshoring to Northern Africa and South America, Germany offshores to West Africa and Eastern Europe, Spain offshores to Central America and the Scandinavian countries offshore to Eastern Europe," he says. "The USA has already offshored 200,000 finance sector jobs in the last 12 months and 8,500 have left the



Offshoring is a worldwide phenomenon. These days, technical support helplines are more likely to connect you to someone in Bangalore than in Birmingham.

UK since October. This is a global issue and we need global solutions." In Australia, where outsourcing is even more prevalent than in the UK, a recent survey of IT managers asked whether they would recommend IT as a good career option: 90 per cent said no.

Research firm, Gartner, predicts that the number of firms outsourcing key work will increase by 30 per cent between now and 2005, with one in 10 US IT jobs and one in 20 technical jobs in non-IT firms moving offshore. Gartner comments: "hundreds of thousands of workers in developed economies will be displaced, many of them currently holding high-paying, white-collar positions." Amicus suggests that in the UK alone, 200,000 jobs will





"The offshoring blight that's happening in the service sector doesn't only affect Call Centre jobs but thousands of IT, Back Office and Administrative jobs as well" – David Fleming, Amicus.



According to E-skills UK, IT staffing levels in London and the South East will drop by 2.5 per cent and 7 per cent respectively, with over 24,000 jobs being lost.

THE HIT LIST

Which jobs are most likely to be outsourced? According to tif, the Corporate IT Forum (www.tif.co.uk), some jobs are particularly well suited to outsourcing. The most obvious candidate is end user technical support lines, many of which have already been transferred to India by a huge range of firms. But other disciplines can also be transferred offshore relatively easily. If you work in any of these fields for a big PLC, you might want to plan your escape:

- Support, which includes existing systems and new applications that have been developed offshore.
- Development from logical level design, build, unit testing and integration testing.
- Package configuration.
- Helpdesk.
- Operations services.

be lost to outsourcing in the next five years, and in Western Europe, some 2 million jobs will be lost. Amicus claims that a "massive percentage" of these jobs will be "skilled business service jobs rather than low-skilled, labour-intensive call centre work."

Outsourcing isn't the only threat. Universities and colleges offer a wide range of IT courses and degrees, and as a result many skills – technical support, network administration, some programming languages – have become commonplace. Employers are offering lower wages for jobs that commanded handsome salaries just a few years ago, and job specifications are becoming increasingly demanding.

There's no doubt that IT experts are facing unprecedented competition, both at home and abroad. Whether it will affect you depends on what you do and who you do it for. If you handle technical support or application development for a large financial firm's call centre, or for a big-name firm with a huge administration department, then you should be worried. However, there are specific skills and types of work that are very much in demand, and which aren't likely to be outsourced to other countries any time soon – if at all.

Winners and losers

For IT professionals, the big danger is commoditisation. When a particular skill becomes so common that almost anyone can do it, competition increases and salaries plummet. A good example is a typical firm's IT helpdesk, where day-to-day problems can often be solved by following a simple flowchart or script. Such roles are easily and frequently outsourced, and even if the positions remain in-house, they can be filled by relatively unskilled and inexperienced people.

One network engineer who asked to remain anonymous told us that IT is portrayed by the media as "a huge market crying out to give loads of money to anyone with any skills. It's complete rubbish, but it means that the market is being saturated with people who are willing to work for toffee. The average level in Scotland for an IT support person is around £12,000. If you're an MCSE, wages start at around £15,000, so if you've paid to do an MCSE, you'll probably be several grand out of pocket."

So what skills have value? E-skills UK (www.e-skills.com) analyses trends in the IT industry, and its October 2003 bulletin suggests that the key areas of demand for 2004 will be for specific skill sets: C, C++ and .NET; as well as areas of enterprise resource planning, business intelligence, mobile working, and security and supply chain management. The bulletin also used an analysis of IT job ads (via JobStats.co.uk) to identify the most sought-after IT skills. C++ and Unix were each required by 14 per cent of advertisers,

Oracle by 13 per cent, and C, Windows NT and Java were each required by 11 per cent of advertisers. Microsoft Office was required by 10 per cent, Visual Basic by 10 per cent, and SQL Server by 9 per cent.

As you'd expect, some skills attract higher salaries than others. Salaries for C++ experts can exceed £40,000, while Java, Oracle and UNIX also attract decent wages. Bottom of the list is Microsoft Office. Rare skills are even more lucrative: LDAP or SSL experts can expect an average wage of £52 per hour.

Dan Winchester runs Freelancers.net (www.freelancers.net), which helps IT freelancers find work in the UK and abroad. "The core skill-sets that are in demand have remained unchanged for a few years now, with occasional fads coming and going," he says. "If you're tempted to learn anything new, try and go for something that has been used successfully in commercial sites for at least a year or two. If you have open source development skills, it can be useful to learn the Microsoft equivalents and vice versa. But the skills which will be in demand will always be the ones which help businesses make money out of their web sites."

He continues: "I'm not sure that any particular skills have become saturated – good people will always find work if their skills are in demand. However, people new into the market often skill up in the wrong areas because they don't understand where the demand is now. You'll always be more in demand with SEO (Search Engine Optimisation) skills than, say, Flash skills, because there is a direct correlation between how well a site does in search engines and how successful it is commercially. You used to be able to impress a client into writing a cheque by weaving some piece of fluff in Flash, but now they want to be convinced of the business benefits."

Location, location, location

Where you work and where you're willing to work can have an effect too. E-skills UK predicts that over the next 12 months, the ICT (Information and Computer Technology) sector will grow in some areas and shrink in others. During 2004, demand for IT professionals will increase by between 0.5 per cent and 4 per cent in Scotland, Northern Ireland, the North East, the North West, Yorkshire, Humberside and the East of England. Over the same period, IT staffing levels in London and the South East will drop by 2.5 per cent and 7 per cent respectively, with over 24,000 jobs being lost. However, it's important to contrast these figures with the size of the job markets. London and the South East remain the UK's biggest marketplaces for IT jobs, accounting for around one third of all IT job advertisements.

Neale Stidolph is sales and marketing director for ATM Technical Management (www.atm.ltd.uk), a specialist outsourcing firm. "Many services still need



Norwich Union isn't the first firm to embrace outsourcing. The list of firms moving their back office operations offshore include HSBC, British Airways, American Express and Citibank.

'feet on the street' and cannot be delivered remotely," he says. "Those who are mainly backroom boys with a heavy technical focus are more vulnerable to offshore outsourcing. The pure technical skills can be readily moved, but close personal contact with the customer, that's much harder. What the colleges and universities don't cover is maturity and experience in working with people. Those skills are gained over time and by evolving a balanced view of the world and its IT problems."

Stidolph recommends that you don't just keep your technical skills up-to-date, but that you also work on non-technical skills. "Freelance or contract staff would do well to build their soft skills and be seen as multi-skilled and people oriented," he suggests. "The skills most in demand are those with a focus on human communication. There are many technical staff out there who are qualified to do a job, yet they often lack the interpersonal skills to really succeed."

Dan Winchester agrees. "Being professional is the most important thing by far, even more important than the actual skills that you have. People will pay more for a less-qualified plumber if they know he'll always turn up on time, explain what he's going to do, and not rip them off. If people have to chase you up, or feel uncomfortable asking you to do things, then you're being unprofessional: sort that out and the rest will fall into place. There's a myth that UK freelance work is being lost to kids or teams of offshore workers who can undercut the professionals, but the reality is that most of the work is going to UK professionals who compete on quality rather than price."

Winchester agrees with Stidolph that multi-skilling is a good idea, but counsels: "it sounds obvious, but it's always worth getting a good grasp of the basics before attempting to learn anything new. Learn HTML inside out, for example, rather than relying on Dreamweaver and trying to learn XML."

The road ahead

Amicus, and other trades unions and industry organisations, believe that if politicians don't step in to reduce the tax burden on UK businesses and develop strategies to deal with competition from low-wage economies, outsourcing will devastate the UK labour market. "We're not asking for walls to be put up around Europe," says David Fleming. "We want to develop a strategy to deal with changing technology and to safeguard against offshore providers who are trying to put the fear of death into finance companies by telling them their share price will go into a tail spin unless they move offshore." The government believes that outsourcing means lower prices for UK consumers, and that those lower prices will benefit the economy. "When other countries in the world develop their skills and technology

Slashing salaries

Why outsource, when firms can slash IT salaries at home instead? Is this the future for programmers

An American entrepreneur has come up with an unusual and controversial solution to the outsourcing dilemma. As Business Week reports, Boston businessman Jon Carson needed to hire four highly qualified and highly experienced programmers; the average US wage for each job would be \$80,000, plus \$5,000 to \$10,000 in benefits. If he outsourced, he would only have to pay \$40,000 per programmer.

Faced with potential savings of \$200,000 per year, Carson knew that outsourcing was the most sensible option. However, he hesitated. As he told Business Week: "I'm in the entrepreneurial economy but I was personally very uncomfortable. This situation brought me face-to-face with the ease with which global disintermediation is being made for folks, to the point where it's almost inevitable." Carson decided that his conscience wouldn't be comfortable with hiring offshore workers, so he decided to employ American programmers instead. However, he still needed to cut costs to the bone. Carson's solution was simple: keep the jobs in America, but pay Indian wages. He picked a figure of \$45,000, advertised the jobs in the Boston Globe, and was inundated with responses from experienced programmers who were finding it hard to get work in the depressed IT industry.

For Carson, the result is "the best of both worlds". He gets the right people without the risks inherent in outsourcing, but he still benefits from massive cost savings. The thoughts of his cut-price coders aren't reported, although Carson admits that he has had to raise the salary of two programmers to market rates to make sure that they stay with his firm.

If other firms were to follow Carson's lead, then the result could be a massive re-evaluation of IT salaries. Although Carson is hardly offering slave wages –



UK programmers are on an average wage of £25,883 per year, which is far from shabby.



To illustrate the global inconsistency in programmers' wages, in Hungary, programmers get just £3,116.

£30,000 per year isn't bad – it's still a worrying development. If other firms follow his lead and offer salaries that are roughly equivalent to offshore workers' wages, salaries for all kinds of IT work could drop dramatically. The difference between countries is dramatic. According to figures from CIO Magazine and Computer Weekly, UK programmers average £25,883 per year; in Hungary, programmers get just £3,116. ■

and acquire expertise in any particular field, we always benefit from that," says Andrew Pinder, the government's e-envoy. "Outsourcing of jobs is a process of globalisation with which we're all engaged in. It's an irreversible process and it will benefit the British economy."

The DTI has announced a study into the economic impact of outsourcing, but its brief is to look solely at call centre jobs – something that has disappointed Amicus. "The offshoring blight that is happening in the service sector doesn't only affect Call Centre jobs but thousands of IT, Back Office and Administrative jobs as well," says David Fleming. "We hope this study will get to the crux of the problem without rubberstamping what the Prime Minister and other senior cabinet members have been saying – which is essentially, that the problem is a fact of life that we have got to get used to."

Bringing it all back home

Despite dire predictions of a consumer backlash, the consumers' main priority is price, and because



Who gets what?

A survey of programmer wages reveals that the global wage disparity is pretty hefty

India is the king of outsourcing, but it's not the only country offering high-quality work for very low wages. Eastern Europe is becoming a key source of programming talent, while even Canada can offer lower labour costs than the US or UK. Don't assume that the low wages in some countries mean sweatshops, though. Thanks to significantly lower costs of living, a wage of £4,000 can be very respectable indeed.



"Job outsourcing is a process of globalisation with which we're all engaged in." – Andrew Pinder, the government's e-envoy.

UK (South-East)	£25,883
Ireland	£14,935 – £22,077
Canada	£18,294
Philippines	£4,262
Russia	£3,246 – £4,870
Hungary	£3,116 – £5,194
China	£5,812
India	£3,818

These figures are derived from A Buyer's Guide to Offshore Outsourcing (www.cio.com). The UK figures are from the Computer Weekly Quarterly Survey of Appointments Data & Trends – 1st Qtr 2003.

outsourcing means cost savings of between 30 and 50 per cent for firms, the outsourcing trend will continue, especially in industries like the financial sector where competition is fierce. That doesn't mean that outsourcing is inevitable or even permanent. Some firms with outsourced operations are bringing jobs back home again. For example, in November, Dell announced that it would no longer use its Bangalore call centre to handle support calls from US corporate customers, but would use its American facilities instead. According to Dell spokesperson Jon Weisblatt, "our customers weren't satisfied with the level of support they were getting."

Sumir Karayi is the founder and CEO of 1E (www.1e.com), a UK software developer and consultancy. Although much of 1E's code writing is carried out in India, code testing and architectural design takes place in the UK. Karayi believes that outsourcing

isn't the miracle cure that its supporters claim it to be. "Due to the distance, lack of face-to-face interaction and lack of certain specialisms, each project requires an in-depth brief. The time and money it takes to develop such a brief can eliminate the benefits of outsourcing abroad," he says. "Without the time it takes to create detailed specifications, it's sometimes cheaper to keep the application development in-house. Even though the manpower is more expensive, it's more cost effective to keep development in London."

Dr Gill Hunt is an IT consultant and founder of Skillfair.co.uk, a site that both connects IT professionals with project work and provides advice on outsourcing. "The trick is to realise that outsourcing, whether to the UK or abroad has its limits," she says. "If the task can be sufficiently clearly defined so anyone with the right skills and experience can do it, then it's likely to be a candidate for outsourcing. But any task or role that involves talking to or liaising with many people in an organisation is going to be tricky to outsource – and the more complex and challenging, technically or otherwise the task, the more likely this is to be true."

Dr Hunt continues: "there was a great charge to outsource software development some years ago, but it wasn't all that successful. Just 'throwing a project over the wall' doesn't necessarily make it successful. Many companies have quietly brought key developments back in-house or have switched to systems based on packages so that they know what they're getting."

While some firms have realised that outsourcing isn't a cure-all, the trend of switching jobs to other countries is going to continue. However, if you have the right skills then you're unlikely to be affected. As Dr Hunt advises, "make sure your technical knowledge is up-to-date and as deep as you can get it, then make a real effort to acquire good communications and management skills, which are often a failing of IT people. This will ensure that you'll be better placed to explain why your job should stay, or enable you to find a new niche managing suppliers if your role peters out!" **PCP**

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PCPlus SOFTWARE LAB TEST

→ 10 number crunchers reviewed and rated

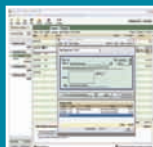


Illustration: Oliver Buxton

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**Editor's Choice**

Our top award for products that combine exceptional performance and quality with superb value for money

**Performance Award**

Awarded to products that excel in our performance and quality tests, where money is less important

**Value Award**

Awarded to products that represent outstanding value for money, giving you more bang per buck

**Tim Woodward**

crispysalad@hotmail.com

Tim Woodward is a consultant and freelance writer and has specialised in personal and business finance since the days of the Amstrad PCW!

No accounting for taste

Tim Woodward counts the proverbial beans with the 10 best accounting products on the market

Let's face it, 'doing the accounts' isn't one of the most exiting activities that you're forced to do.

But regardless of whether you're self-employed or run a more complex contracting firm, knowing how much money you're making (or losing) can make the difference between survival and failure in the fiercely competitive business environment.

To help you make sense of all those bills, invoices and cheque stubs, you need a good accounting package – but which one? Any commercially available bookkeeping or accounting suite can provide a quick summary of your financial in's and out's, but what if you need a little more help with the office workflow? Essentially, accounting is

accounting, and the debits and credits of double entry bookkeeping were put in place way back in the annals of time.

But today's software accounting packages have greater functionality, and can go a lot further; helping to reduce the office paper work; tracking the costing on specific jobs; or even creating quotes and orders before raising an invoice.

In this Lab Test we'll be looking at the complete accounting hemisphere, and casting our critical eyes over everything, from the very basic cashbook to a full set of ledgers with order processing, job costing and stock control. Whether you want to spend under £50, or several hundreds of pounds, there should be something here to suit your business accounting requirements.



Simply Books Ltd
Simply Books
117



TorSoft
CashBook Manager
117

INTUIT QuickBooks 2003

INFORMATION

PRICE From £150 (£128 ex VAT)
INFO www.quickbooks.co.uk
SUPPLIER Intuit 0845 606 2161

REQUIREMENTS

CPU Pentium
RAM 64MB
OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

CPU Athlon 1200+
RAM 512MB
OS Windows XP

PCPlus ratings

INTUIT QUICKBOOKS 2003

Value
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OVERALL 9

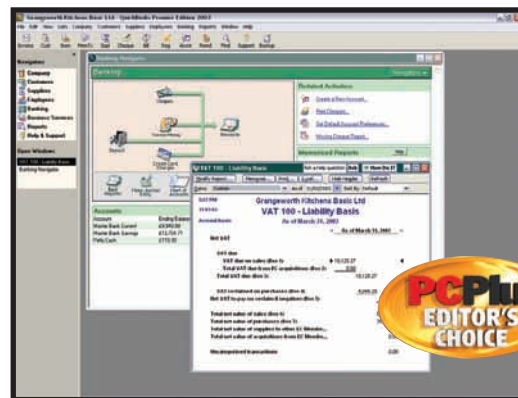
For the wannabe e-accountant, it's all too easy to get confused between Intuit's popular and inexpensive personal finance manager, Quicken, and the more professional and sober product we're looking at here – QuickBooks 2003.

Like Microsoft Money, Quicken is all about personal finance, whereas QuickBooks is strictly for business. You don't get personal money planners, stocks and share dealing information or portfolio management. But what you do get is a product that provides pretty much all the tools necessary to run the accounts of a small business.

In QuickBooks, you'll find a vast array of features, including: cash, bank and credit card account tracking, invoicing, customer and supplier tracking, and comprehensive VAT management. If you upgrade to QuickBooks Pro – £299 (£254 ex VAT) – this adds parts-assembly capable stock control, sales and purchase ordering, job and time tracking and multi-currency options.

Intuit knows a thing or two about aesthetically swish user interfaces, but this doesn't detract from the accessibility of QuickBooks' functionality. In an effort to simplify the bookkeeping tasks, QuickBooks groups together its accounting procedures into 'activity centres'. The Supplier's activity centre, for example, enables you to record purchase orders sent, bills received, make payments on account, and see a full account history on-screen all in one go. The software can take quotes and estimates and assign these to your jobs. You can then invoice jobs in stages, which is how a small business usually works.

There's also an EasyStep interview wizard that gathers together all the information needed for a whole new set of accounts in a fairly painless fashion. Even mind numbing



With the option to upgrade to QuickBooks Pro and Premier, QuickBooks can even rival the Sage Line 50 range.

data entry forms are made to look like their paper counterparts – so a bank payment form looks very similar to a cheque from your chequebook for instance.

Let's consider the other contenders in the accounting package race. The nearest competitor to QuickBooks would be MYOB, closely followed by the likes of Sage Instant Accounting. QuickBooks overtakes them in both the accounting features and reporting options offered – not forgetting the slickness of the interface. Now you have the option to upgrade to QuickBooks Pro and Premier, the Sage Line 50 range also comes under attack. There's a lot here, so you need to allow yourself time to get to know the program. When you do, you'll see that the effort you put in will be well rewarded.

INTUIT Quicken XG

INFORMATION

PRICE From £60 (£51 ex VAT)
INFO www.quicken.co.uk
SUPPLIER Intuit 0845 606 2161

REQUIREMENTS

CPU Pentium
RAM 64MB
OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

CPU Athlon 1200+
RAM 512MB
OS Windows XP

PCPlus ratings

INTUIT QUICKEN XG

Value
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Features
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OVERALL 8

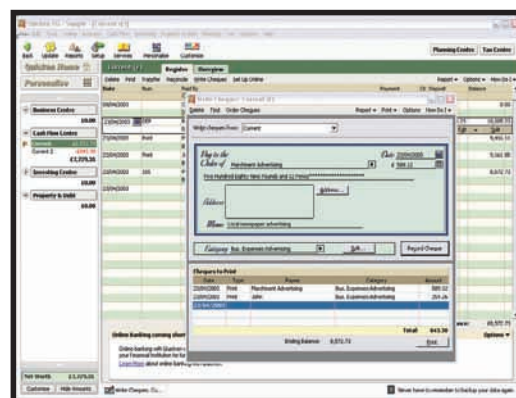
Alongside Microsoft Money, Intuit's Quicken series is one of the best known personal finance managers. Like Microsoft's product you get all the usual features for tracking personal bank and cash dealings, along with a healthy collection of investment tools. Quicken can also analyse your income and expenditure through cash, bank and credit card accounts, along with savings, deposits and building society dealings.

The job of looking after those investments is made easy with integrated portfolios for stocks and share tracking, plus data entry forms for purchasing and selling investments, adding dividends, making reinvestments and so on. Modern savings plans like ISAs can also be dealt with.

Like Microsoft Money, Quicken features new online integration. As well as downloading and posting transactions from your bank, you can also avail yourself of a feature dubbed 'Advantage' – albeit for a fee. Quicken Advantage is a bundle that includes a range of online banking features, along with stock and share prices and unit trust downloads. You can also use online chat rooms and forums to interact with other investment users and Intuit specialists, all in real time. It's a feature that enables you to have your financial fingers on the pulse!

In a change to the usual delivery method, Intuit is now charging for these extra services, so you're actually funding Advantage by taking out a subscription to the software (if you don't opt for annual subscription then the Advantage bit expires in a year). It seems that Quicken is gradually changing to annual fee-based software in the process.

For the self employed and business owner, you'll find that there are far more features on offer here than in



Quicken Advantage includes many online banking features, along with stock and share prices and unit trust downloads.

Microsoft Money. To pick just one example, Quicken XG can be used to prepare estimates and turn these into invoices later without the rigmarole of re-typing. Job and project tracking is also on the menu, as is the ability to email HTML invoices to your customers. In addition, a proper accounts payable register (purchase ledger) is now included, so you can effectively track supplier invoices and bill payments.

If you're a business user, then the price is very reasonable for a program that amounts to a full set of ledgers with VAT handling. For the home user however, there's probably more here than you will ever really need. Microsoft Money probably gets the vote and does the job more simply in the process.

MICROSOFT Money 2004 Financial Suite

INFORMATION

PRICE £41 (£35 ex VAT)
INFO www.microsoft.com/uk/homepc/money
SUPPLIER Microsoft 0870 601 0100

REQUIREMENTS

CPU Pentium
RAM 32MB
OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

CPU Athlon 1200+
RAM 512MB
OS Windows XP

It has to be said that Microsoft Money is primarily a personal finance manager, but that doesn't mean it can't tackle the accounts of a self-employed trader. If you opt for the full Financial Suite, costing an extra £15, you also get Digital TaxSaver Deluxe, which will help you keep the tax man off your back. This add-on assists you in the completion of your self-assessment tax return.

Microsoft Money can effectively look after your home and business cash, bank, credit card and loan accounts. You enter transactions by either typing them by hand into the on-screen register, or by utilising the built-in online banking facilities to enter postings automatically. In this case the software will download your bank statement and reconcile the entries found against your online details.

There are a number of new additions in this incarnation. Version 2004 offers a customisable pull-down task list right on the main home page, which enables you to jump quickly to specific activities. Also new on the home page is breaking news in the form of headlines from the major financial news agencies.

The Alert Centre has been enhanced and now delivers news and other financial information from MSN Money via email, SMS or straight onto your desktop. You can also create your own alerts and view these user-defined notifications in a single location.

When it comes to personal finance, Money 2004's real strength lies in its investment and personal planning areas. If you enter your financial goals, for example, the software will generate a lifetime plan and keep you informed about how well you're doing against your predictions. You can also calculate mortgage comparisons, loan interest payments,



Microsoft Money is a perfect package for 'personal' finance management. There's no excuse 'not' to be in the black.

compare pension options on-the-fly, and even create a budget plan to get out of debt.

As you can tell, this is mainly personal stuff and if you're just looking for a simple business package, Money probably isn't the one for you. This is reflected in the extensive savings and investment features, with built-in portfolio handling to efficiently track your best and worst investments, and calculating the risk and return involved.

Microsoft Money 2004 is loaded with useful online and offline financial services, and for the personal buyer there's plenty to make it a worthwhile purchase. You can use the software quite successfully in a SoHo environment, but you'll be wasting a lot of the goodies on offer.

PCPlus ratings

MICROSOFT MONEY 2004 FINANCIAL SUITE

Value: 1 2 3 4 5 6 7 8 9 10

Features: 1 2 3 4 5 6 7 8 9 10

Performance: 1 2 3 4 5 6 7 8 9 10

OVERALL: 8

MYBUSINESS EasyBooks

INFORMATION

PRICE £50 (£43 ex VAT)
INFO www.mybiz.co.uk
SUPPLIER My Business 0845 120 3040

REQUIREMENTS

CPU Pentium
RAM 64MB
OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

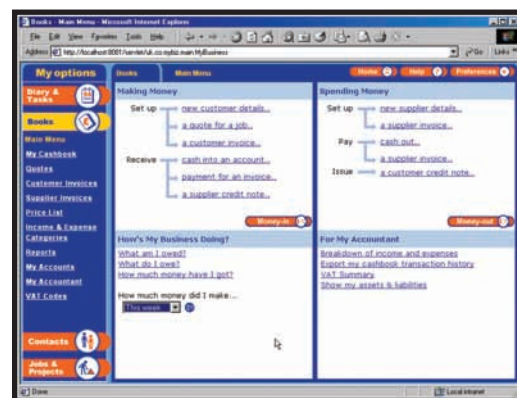
CPU Athlon 1200+
RAM 512MB
OS Windows XP

If you imagine that even the simplest 'proper' accounting package might be a little too much for you to handle, then MyBusiness EasyBooks will be right up your street. It's supremely easy to get to grips with and there are wizards to walk you through the basics. Essentially, what you get is a browser-based front end for a very simple set of bookkeeping features that look just like a web site. If you can find your way around the web, then you should be fine here.

EasyBooks offers a cashbook that comes complete with invoicing and VAT handling. In addition, you get customer and supplier contacts to store account histories, and the opportunity to use the software as a basic contacts manager. All of these features are well integrated, so when you add a customer or supplier record, it means that not only do you have a new contact, but you have the ability to both raise invoices and quotes for the contact, and then post out receipts and payments.

In the Books section of the software, you can set up bank account details, and record bank payments, petty cash and receipts. Jobs and Projects tracking also means that you can ensure specific transactions go against specific jobs, and invoices and payments go to the correct account for later analysis. For those businesses that need to record VAT, MyBusiness can track tax details and provide the figures later to help with the VAT Return.

MyBusiness likes to keep things free of accounting jargon, so the Books section of the software, for example, is divided into sections called 'Making Money', 'Spending Money' and 'How's my business doing?' This latter option leads to a set of easy-to-access reports entitled 'What am I owed?', 'What do I owe?' and 'How much money



EasyBooks is supremely easy to get to grips with, but those persistent little wizards may lose their magic after a while.

have I got?' It's all very simple to understand. Unfortunately, to post items into the accounts you have to navigate through a wizard-based question and answer session. This might seem like a useful handholding exercise the first time that you do it, but it soon gets annoying in everyday use.

EasyBooks is suitable for new businesses or simple businesses that don't need to charge for time, don't keep stock items or don't need to communicate regularly with many customers or suppliers. You might choose EasyBooks because it appears to be jargon-free and less cluttered than many of the mainstream packages here. But be warned, when you get to know your way around you could find yourself somewhat frustrated with the modus operandi.

PCPlus ratings

MYBUSINESS EASYBOOKS

Value: 1 2 3 4 5 6 7 8 9 10

Features: 1 2 3 4 5 6 7 8 9 10

Performance: 1 2 3 4 5 6 7 8 9 10

OVERALL: 6

MYOB Accounting 11

INFORMATION

PRICE £229 (£195 ex VAT)
INFO www.myob.co.uk
SUPPLIER MYOB UK 0845 130 3975

REQUIREMENTS

CPU Pentium
RAM 32MB
OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

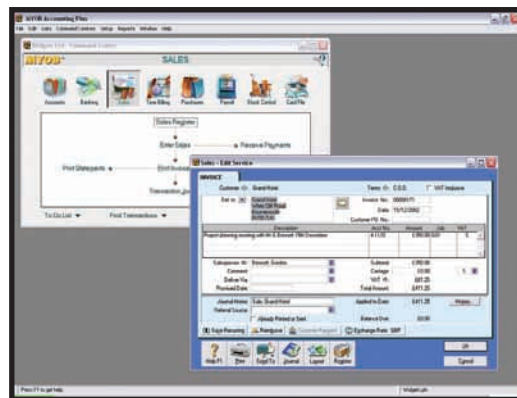
CPU Athlon 1200+
RAM 512MB
OS Windows XP

This extremely well presented accounting system manages to handle the entire office process, from the creation of sales and purchase orders, through to the preparation of quotations and invoicing. The same data runs down through to integrated customer and supplier ledgers, with a cashbook for cheques and credit card entries, eventually arriving at a proper double entry (no unallocated transactions are allowed) nominal ledger that any accountant would trust implicitly.

The software looks good and works well, with forms for data entry that are as plain and simple as is possible, very much like QuickBooks. There's also an integrated 'register' option, enabling you to track down your journals line-by-line. But for this price you expect these detailed levels of functionality.

You can undo anything you manage to enter wrongly, and finding something you've entered previously is a simple matter of drilling down from anywhere you happen to be until you arrive at the original journal. You get an email facility (in PDF format) for invoices, orders, quotes and any other reports you fancy, plus there's lots more information held on customer and supplier accounts. You can now place receipts in a deposit account instead of having to bank them immediately, and you can then make a payslip for banking later when you're ready – which is what happens in the real world.

There's also integrated contact management here, with cards for employees (yes, the software includes UK payroll calculations) and personal contacts, as well as the usual suppliers and customers. You also get multi-level job costing with excellent profit and loss reporting, plus bill of materials stock control, with stock items being made



MYOB manages to handle the entire office process, from the creation of purchase orders, through to quotations and invoicing.

up of a collection of other stock items, plus direct links to Word and Excel.

With the version 11 interface improvements, MYOB Accounting now compares favourably with QuickBooks when it comes to style. Ease-of-use is better than the Intuit offering and there's less to get to grips with in terms of menus and dialogs. However, QuickBooks does a lot more for a lot less and in a competitive market, accounting packages need to offer value for money in addition to a fully-rounded feature set.

And just in case MYOB's feature set isn't fully-rounded enough, you do have a limited upgrade path to Accounting Plus. So if you fancy adding multi-user time billing or multiple currency support it will cost you an extra £100.

PCPlus ratings

MYOB ACCOUNTING 11

Value: 10/10

Features: 10/10

Performance: 10/10

OVERALL: 8

OMNI Accounts Essential

INFORMATION

PRICE From £20 (£17 VAT)
INFO www.omniaccounts.com
SUPPLIER Omni 020 8481 1020

REQUIREMENTS

CPU Pentium
RAM 32MB
OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

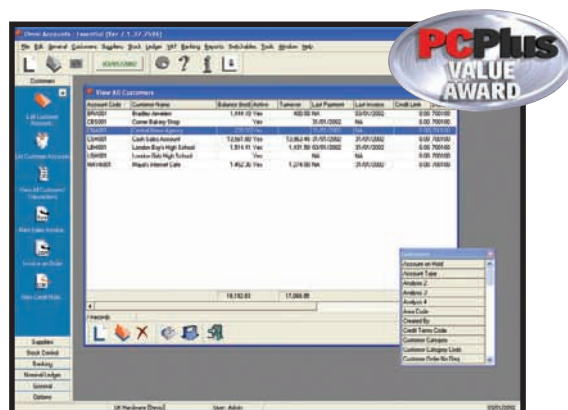
CPU Athlon 1200+
RAM 512MB
OS Windows XP

Let's set up a scenario. You'd like to buy an accounting product that offers plenty of features for the small business, that's similar in power and functionality to Sage Instant Accounting, but at a price of around £129. You also want a little extra, like the capability to enable up to 4 users to access the system at once. Conventionally this means that you can forget £129 and say hello to £2k for a LAN version of Sage Line 50 Financial Controller, paying through the nose for modules and add-ons that you don't want, in order to get the bits you do.

Omni Essential is designed to meet the needs of any young business and includes the most popular range of functionality that's suitable for most small business users. Omni thinks you should be able to buy just the bits that you need, and then add any components you might find useful as your business grows. This doesn't just include modules and ledgers, but the smaller elements like customer discounts, supplier categories or even representative analysis.

Some of these components can be bought for as little as £2.50 – a one off cost with no upgrade charges and no annual fees. More than 100 features can be added or ignored as you wish. The basic £20 bundle provides a nominal ledger, and customer and suppliers ledgers with invoicing and banking included. If you want VAT handling, stock control and credit control features from the outset, you can start off with the Trader bundle for £70 or the Business package at £129.

In everyday use the Omni software is simple to operate, and is based around a basic transaction entry form that's pretty much the same for most routines. Very useful drilldown capabilities can take you right back to the original



Omni Accounts Essential isn't just ridiculously cheap, the ability to add components as your business grows is inspired.

transaction data entry form from top-level account overview. The software feels like Microsoft Outlook, with a shortcut side bar and user definable screen views. Just like Outlook, you can also drag columns to the header of a screen to make a grouped display, then choose which columns you want to see. You can also sort any column by clicking the header button.

Omni Accounts really deserves to gain a foothold in this difficult and competitive market. VAT handling might need some tweaking to better suit UK customers, but in the final analysis this modular concept is a great idea and with prices like this, hopefully this is an idea that will catch on. With Business and Enterprise versions, even larger corporations can benefit from its flexible design.

PCPlus ratings

OMNI ACCOUNTS ESSENTIAL

Value: 10/10

Features: 10/10

Performance: 10/10

OVERALL: 9

SAGE Instant Accounts

INFORMATION

PRICE £130 (£111 ex VAT)

INFO www.sage.co.uk

SUPPLIER Sage 0845 300 0900

REQUIREMENTS

CPU Pentium

RAM 64MB

OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

CPU Athlon 1200+

RAM 512MB

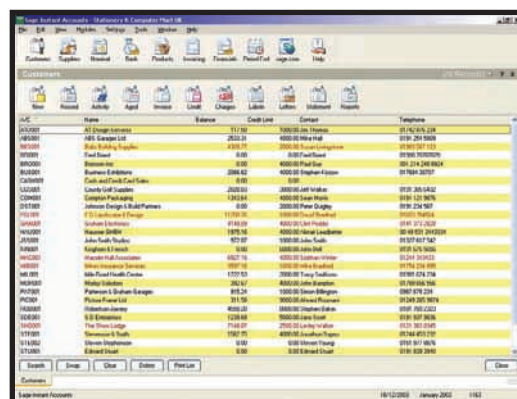
OS Windows XP

When it comes to small business accounting, we can safely say that the mighty Sage has cornered the market. In fact, the name Sage has become synonymous with SoHo and SME accounting, and the company is now extremely well known and established worldwide. The Sage range starts off with Instant Accounts, and for under £130 (£111 ex VAT) you can buy a reasonable set of accounting tools that are well suited to the start-up small business.

Simply laid out, the main screen offers you a menu of choices for customers and suppliers, bank and cash dealings, stock control and invoicing. Each one of these activity areas then loads in its own window, with a list of the records involved, and a selection of buttons for jobs to affect those records. This is all nice and simple, and consistent throughout the range.

Invoice layouts and reports can be tailored to suit your individual business needs by using the full report generator brought down from the Line 50 range, and the report navigator makes finding your customised designs easier. Like MYOB, everything ends-up in a proper double entry nominal ledger, where you can look at profit and loss and balance sheet reports to see how well you're doing.

All the bank transactions go through one screen, which means that you can transfer cash, enter direct payments to and from accounts, and file customer receipts and supplier payments all in one place. Recurring transactions can be used to set up direct debits and nominal journals, and the task manager will even make sure you don't forget to post them. This is the same Sage task manager that's available in the Line 50 range, so you



Admire the facelift. Gone are the multiple, overlapping windows, replaced by a single full screen display with tabs.

can set up to-do lists and see outstanding invoices from the accounting system itself.

Those of you who have experienced Sage before will notice that Sage products have recently had a facelift. Gone are the multiple overlapping windows some users found so confusing. What you get instead is a single full screen display, with tabs at the bottom that enable you to switch between the various forms you might have open at any one time.

Although it's not as feature rich as QuickBooks, Sage Instant Accounting is still considered the benchmark for small business accounting software. It makes an ideal starter system, with an upgrade path to the costly Line 50 should it be required.

PCPlus ratings

SAGE INSTANT ACCOUNTS

Value: 1 2 3 4 5 6 7 8 9 10

Features: 1 2 3 4 5 6 7 8 9 10

Performance: 1 2 3 4 5 6 7 8 9 10

OVERALL: 8

SAGE Line 50 Financial Controller

INFORMATION

PRICE £1,410 (£1,200 ex VAT)

INFO www.sage.co.uk

SUPPLIER Sage 0845 300 0900

REQUIREMENTS

CPU Pentium

RAM 64MB

OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

CPU Athlon 1200+

RAM 512MB

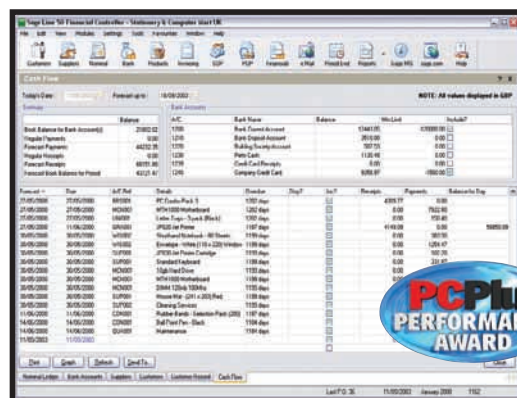
OS Windows XP

Products like Sage Instant Accounts, QuickBooks or MYOB are all decent systems for the self-employed trader or small business. But Sage has the medium sized business market well and truly sewn-up with its mammoth Line 50 series. Top of this range is Financial Controller, which offers sales, purchase and nominal ledgers along with a cashbook for banking facilities.

Fixed asset management is also included here and you can raise quotes or proformas and turn these into invoices later. Order processing enables sales and purchase orders to be placed on the system and printed, plus you get sophisticated stock control with a multi-level bill of materials handling.

Line 50 Financial Controller is an extensive package, so for the first-time user a new My Business set up wizard takes you through a very simple process to tailor the content and layout of screens, creating your own defaults. When you want to alter these settings later on, they're now much easier to find in the catch all Configuration Editor.

The Accounts Analyser view for the nominal ledger screen displays your accounts in Profit and Loss Summary and Balance Sheet formats, plus you can use this tree display to navigate around and view your data. The Smart Link feature provides improved navigation, saving you time by linking together different types of information that you may need – such as a supplier's contact details with their invoice history. A new Audit Assistant uses business logic to check for duplicate transactions and out of balance situations. Plus the software now checks for problems with the VAT reconciliation. You get a list of suspect entries to verify on-screen, and there's a suite of VAT audit reports to help reconcile the tax account – all approved by H.M.



Financial Controller has the SME sector more than well covered, but it's accounting overkill for most SoHo situations.

Customs & Excise. Repeat orders and invoices are a cinch and you can repeat invoices at regular intervals without having to retype the details – ideal if you process the same amounts each month.

A lot of work must have gone into the new cash flow planner, which sits on the bank menu and shows your estimated cash flow as at a glance. You can see exactly what's expected to go out and come in, helping you plan how best to manage your money.

We can't really cover all the components of such an extensive product in this Lab Test, but suffice it to say, Financial Controller has the SME sector well covered. A top performer, it can be a bit unwieldy at times and is certainly accounting overkill for most SoHo situations.

PCPlus ratings

SAGE LINE 50 FINANCIAL CONTROLLER

Value: 1 2 3 4 5 6 7 8 9 10

Features: 1 2 3 4 5 6 7 8 9 10

Performance: 1 2 3 4 5 6 7 8 9 10

OVERALL: 7

SIMPLY BOOKS LTD **Simply Books**

INFORMATION

PRICE £99 (£84 ex VAT)
INFO www.simplybooks.net
SUPPLIER Simply Books Ltd.
 020 7272 9700

REQUIREMENTS

CPU Pentium
RAM 32MB
OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

CPU Athlon 1200+
RAM 512MB
OS Windows XP

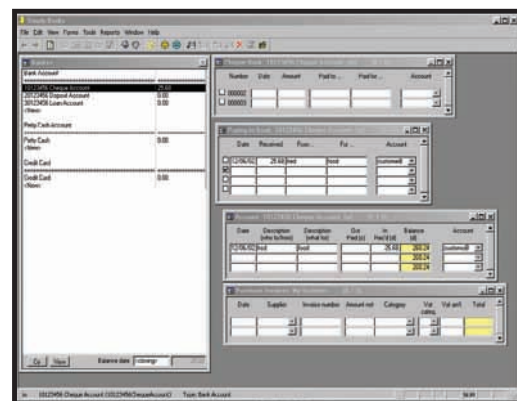
The catalyst behind Simply Books seems to be the fact that accounting software is far too complicated and littered with unnecessary jargon. With this in mind, its makers decided to provide a quick, easy and simple small business bookkeeping package.

In essence, what you get is what looks like a jazzed-up spreadsheet, very much like writing in a column-drawn book-keeping cashbook. The main screen offers list-based views of either your bank accounts, income and expense categories, customer and suppliers, or assets depending on what section you're in. This way, once you've made one entry, you've always got the last one as a guide. You then click on the item in one of the lists that you wish to see the account detail for, or choose one of the data entry forms from the menu to enter transactions.

Although these forms are called meaningful names like 'cheque book' and 'paying-in book', once selected, all you seem to get is the same data entry register view. Regardless of what transaction you need to enter, this method of data entry stays the same – so the learning curve is reduced considerably.

Simply Books can handle cashbook type entries including cheques and receipts and has a useful standing order system. You enter a list of standing orders and Simply Books then posts them all at once from a 'generate' button each month. The same sort of procedure applies to accruals, prepayments and fixed asset depreciation.

Sales and purchase invoice entries, plus customer and supplier accounts are also catered for, but judging from the printed sales invoice output, this isn't designed to create a form to send to your customer. You can, however,



With Simply Books you get what looks like a jazzy spreadsheet. Using it is very much like writing in a column-drawn cashbook.

send the invoice to Excel or Word and tweak it from there.

Simply Books is certainly simple and, in comparison with Sage Instant Accounts or Intuit QuickBooks, it's most definitely quicker to get used to. That's probably because there's a major difference in feature sets. It is this very fact that will attract some buyers, though.

In truth, if Simply Books was a good deal less costly, there might be some reason to accept the reduced feature set. But with Quicken now offering far more for far less, it might be hard to justify choosing Simply Books.

If you're interested in having a closer look before you part with your cash, visit www.simplybooks.net and you can access a free three month download. You can also access this offer on this month's packed SuperDisc.

PCPlus ratings

SIMPLY BOOKS

Value: 1 2 3 4 5 6 7 8 9 10

Features: 1 2 3 4 5 6 7 8 9 10

Performance: 1 2 3 4 5 6 7 8 9 10

OVERALL: 6

TORSOFT **CashBook Manager**

INFORMATION

PRICE £30 (£25 ex VAT)
INFO www.torsoft.co.uk
SUPPLIER Guildsoft 0175 289 5100

REQUIREMENTS

CPU Pentium
RAM 32MB
OS Windows 95, 98, Me, NT4, 2000, XP

TESTED ON

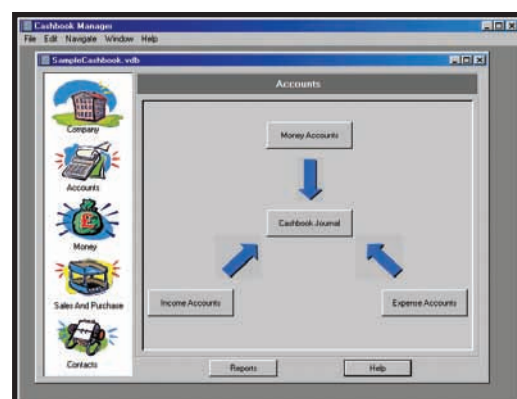
CPU Athlon 1200+
RAM 512MB
OS Windows XP

Aiming for simplicity isn't a bad thing, particularly when it comes to cashbook accounting. TorSoft has decided that its CashBook software is going to be exactly that, and achieves this by using single-entry book-keeping, and the use of real-world terms for managing money – not the terms accountants use and understand. The emphasis is on a computerised version of the manual cashbook of days gone by. To illustrate the simplicity, most accounting software instructions fill hundreds of pages in a daunting tome. 35 pages is all Simply Books needs to get its point across.

CashBook basically consists of three modules – Company, Accounts and Money. The Company module stores all the static details of your business, such as its name and address, VAT registration number and financial year-end dates. This is where you also get to set a few preferences as well, such as the date format, the currency symbol to use (just in case you're somewhere other than the UK), and the password needed to get into the software. Various VAT codes can also be created, each offering a percentage and description so you can calculate tax as you enter transactions.

In the Money module you can set up several bank and petty cash type accounts, along with income and expense headings to analyse what went where. That's about all the setting-up required, as the next job is to start making entries through the Money module. Here you'll find very simple routines for posting transactions, choosing from wonderfully self-explanatory options such as Spend Money, Receive Money and Transfer Money.

Surprisingly, the data entry forms are a bit long-winded in operation, with multiple forms and register-like displays for



The emphasis with TorSoft CashBook is on a computerised version of the manual cashbook of days gone by.

basic receipts and payments. You can cater for VAT here though, and the software either calculates the Net from the Gross or vice versa. Transfers are much simpler, you just get asked for both outgoing and incoming banks and the amount to transfer across.

You can look at a screen of all the journals you have posted, which is basically a list of what you've done so far, or print reports based on individual bank, cash, income or expense accounts. Finally, you can reconcile your cashbook with the paper bank statement, ticking items that appear on both to arrive at a synchronised balance.

TorSoft CashBook takes accounting back to its clearest form, that of the single-entry cashbook, and as such it works just fine – don't expect any frills or extras.

PCPlus ratings

TORSOFT CASHBOOK MANAGER

Value: 1 2 3 4 5 6 7 8 9 10

Features: 1 2 3 4 5 6 7 8 9 10

Performance: 1 2 3 4 5 6 7 8 9 10

OVERALL: 6

PCPlus Verdict

PC Plus does the sums to bring you the best bean counting software available



EDITOR'S CHOICE

Intuit QuickBooks 2003

PRICE From £150 (£128 ex VAT)

INFO www.quickbooks.co.uk

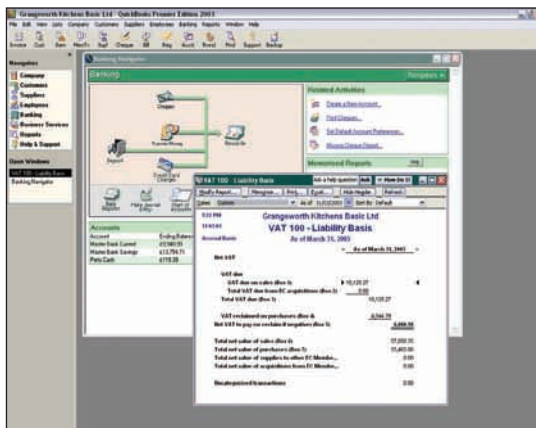
SUPPLIER Intuit 0845 606 2161

You might not need all the bits that QuickBooks has to offer. In fact, compared to something like Sage Instant Accounts it can appear overly sophisticated. But take some time to find your way around and you'll be rewarded with a slick and innovative interface, masses of bookkeeping features and value for money.

QuickBooks has risen to become the default choice for many self-employed and small businesses and

quite rightly so. You get all the time saving office procedures, such as order processing and job tracking, plus a full set of VAT compatible accounting ledgers, all hidden behind a look and feel that has set the standard for the genre. Spend some time setting up the package to suit your needs and QuickBooks definitely won't disappoint.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



ANALYSIS

Horses for courses and the future of e-business

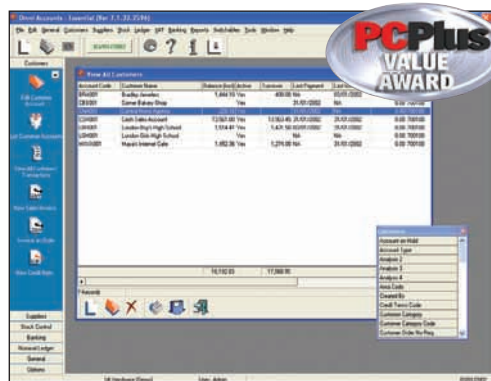
One pointer you might take from this round up of accounting software is that although accounts are accounts, no two businesses are alike. From a self employed carpenter to a small business enterprise selling bottled water, each has its own specific needs outside of the traditional core sales, purchase and nominal accounting ledgers.

So even if a product doesn't seem to have scored particularly well in the features department, that doesn't mean it can't have just the right bits for your business – it's a case of 'horses for courses'. You may not have a need for order processing or e-banking, or even printing invoices, in which case a simple cashbook will be right up your street.

As for the future of accounting software, the emerging trend seems to be e-business, and in reality this will probably be the most important game in town. Eventually all businesses have to grow, and sooner or later your company could get too busy for you to sit down and enter every individual bit of paper that comes through the door.

E-business operates on many levels, even if it's only a case of e-mailing a PDF version of an invoice to your customers. That alone will save hours of envelope stuffing and franking machine ink, not to mention the cost of postage. Now take this one step further and imagine that invoices you receive via email could be entered directly into your accounts software with no intervention on your part. Obviously you'll need to set up some form of authorisation procedure, but even so this will save hours of typing and ensure error free data entry.

Sage Line 50 has gone a good way towards making this a reality with its transactional email facility. All it needs now is better standardisation across computing platforms (always the main problem with any new technology) and true intercompany e-business for the small business will be with us. Watch this space!



BEST VALUE

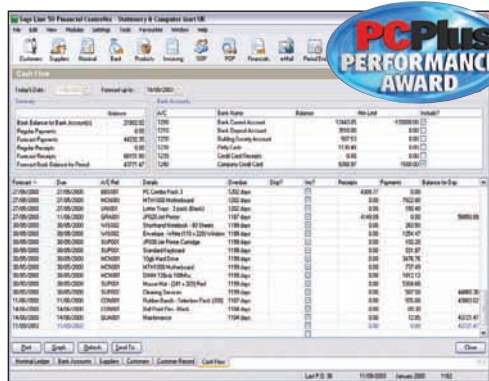
Omni Accounts

PRICE From £20 (£17 ex VAT)

INFO www.omniaccounts.com

SUPPLIER Omni 020 8481 1020

When we first saw Omni it was the modular method of delivery that caught our eye. It's a novel idea to sell the product as bundles with add-on chunks for just about every accounting feature you could ever want. Then we noticed that the actual product itself was an accomplished accounting performer. Ultimately this is a new and exceptionally good value way of buying just what you need.



BEST PERFORMER

Sage Line 50

PRICE £1,410 (£1,200 ex VAT)

INFO www.sage.co.uk

SUPPLIER Sage 0845 300 0900

You may balk at the price of Financial Controller, but many thousands of users in the small but busy business market have made Sage Line 50 their standard accounting choice. With its improved look and feel, improved drill down facilities, future-proofed transactional email and a new cash flow planner, Sage Line 50 has to be the main contender for the growing small business.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

PCPlus HARDWARE LAB TEST

→ 19 PDAs and 6 smartphones probed and scrutinised



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**Editor's Choice**

Our top award for products that combine exceptional performance and quality with superb value for money

**Performance Award**

Awarded to products that excel in our performance and quality tests, where money is less important

**Value Award**

Awarded to products that represent outstanding value for money, giving you more bang per buck

**Dean Evans**
dean.evans@futurenet.co.uk

Dean Evans is still fascinated by the ability to watch episodes of The Simpsons on his Palm PDA.

All singing all dancing!

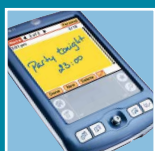
Dean Evans gets to grips with 25 handheld devices to give you the 'only' exhaustive guide to PDAs

Back in 1992, one-time Apple CEO, John Sculley, coined the acronym PDA (Personal Digital Assistant) to describe the company's ambitious Newton device. It was a product that was ahead of its time – a mobile mini-computer with pen-based input and a variety of organiser functions.

The appearance of Newton's handwriting recognition software kickstarted a new product category. But it wasn't until Palm launched its first PDAs in 1996 that such digital diaries hit the mainstream. In the eight years since their launch, we've advanced from the Palm Pilot 1000, which boasted 128K

RAM and a mono display; to Sony's Clie PEG-UX50, a handheld that packs 104MB RAM, a 65K colour LCD, digital camera, Bluetooth and 802.11b wireless connectivity. Today's PDAs can still organise your appointments, but they can also play back videos and digital music.

In this Lab Test, we've split the latest PDAs into price bands, enabling us to show you everything from the entry-level handhelds costing between £100 and £200; to the tech-crammed models that will set you back £500 or more. Whatever your budget and whatever your e-organising needs, this is the definitive guide to finding the perfect PDA.



**Palm
Zire 71
96**



**Sony
Clie PEG-TJ25
99**



**Sony
Clie PEG-TJ35
99**



**Handspring
Treo 600
100**



**O2
XDA II
100**



**Motorola
MPx200
100**



**RIM
BlackBerry 7230
101**



**Sony Ericsson
P900
101**



**Palm
Tungsten W
101**

FUJITSU-SIEMENS LOOX 610

INFORMATION

PRICE £436 (£371 ex VAT)

INFO www.asus.com

SUPPLIER Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

The newest incarnation of the LOOX range is a device that the cliché 'all-singing, all-dancing' was intended for – at least in the technical sense. Not only does it pack 128MB of RAM, but it features dual Bluetooth/802.11b wireless, and incorporates both SD and CF expansion slots. If we consider that the h5550 PDA is the handheld to beat, then this new Fujitsu-Siemens model certainly manages to make it through 12 bruising rounds with HP's flagship e-organisier. It does, however, lose this bout on a points decision from the judges. But this isn't exactly a controversial result.

In most respects the LOOX 610 matches the H5550 tech-for-tech. It has the same amount of memory,

the same ageing PXA255 Intel chip, dual expansion and wireless options, and it sells for a similar price. However, Intel's new PXA26x processor family has since surpassed the PXA255 for power and multimedia performance. So the LOOX isn't the fastest PDA around. Nor is it as flexible as the h5550. Admittedly, it has a bigger flash disk of up to 28MB (dubbed the LOOXStore), but the SD slot lacks the all-rounder SDIO capability that allows input/output add-ons to be used, such as Bluetooth and Wi-Fi cards. It's an odd omission from such a big name vendor, but show us a perfect PDA and we'll show you a pot of gold at the end of a rainbow with a leprechaun dancing on the top.



Yes, the LOOX 610 may have its faults – it's a chunky and weighty device (205g), and the battery life is less than the e800 and the h5550. But considering that it has been designed to contest the PDA top-spot, it still proves to be a good all-rounder. It's just that in a straight race against the e800 and the h5550, the LOOX 610 comes in third.

HP iPAQ h5550

INFORMATION

PRICE £423 (£360 ex VAT)

INFO www.hp.com/uk

SUPPLIER Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

The h5550 iPAQ was arguably the ultimate handheld of 2003. You couldn't get a PDA that was more powerful and it certainly reigned supreme in terms of functionality. It boasted the biggest display (3.8in) and the most RAM (128MB with up to 20MB of flash ROM storage). It also had the greatest connectivity (IR, Bluetooth and 802.11b WLAN) plus the highest level of security (a biometric fingerprint scanner, no less). Could this super PDA have been more luxurious? Yes, but only if HP had gold-plated the chassis and bunged in a free GPS add-on.

But you can't live on past glories and the h5550 faces some stiff competition in 2004. Compared to the LOOX 610 from Fujitsu-Siemens

and Toshiba's imposing e800, HP's flagship PDA is starting to show its age. More than just the old h5450 model with a fresh Windows Mobile 2003 stripe, the h5550 also improved upon the h5450's PXA250 chip with the more efficient PXA255. But with Intel cranking out its PXA26x series of processors, the h5550 is no longer the fastest handheld in town. The integrated Bluetooth and Wi-Fi is still a draw, leaving the lone SD slot free for memory expansion. There's no CF slot here though, and considering the h5550's size, this is disappointing.

The fingerprint reader remains the neatest of PDA gimmicks, and HP continues to emphasise the business angle with an excellent software



bundle that includes a VPN application and F-Secure's FileCrypto program for enhanced data encryption. It's easy to criticise the h5550's size, the lack of a CF slot, and the fact that its battery life is poor compared to some of the cheaper PDAs in this test. But considering its all-rounder power, the h5550 is still one of the PDAs to beat, even if we do prefer the e800 for power and performance.

SONY Clie PEG-NZ90

INFORMATION

PRICE £535 (£455 ex VAT)

INFO www.sonymstyle.co.uk

SUPPLIER Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

If money is no object, then the top-of-the-range PEG-NZ90 certainly seems a PDA to lust after. In terms of technological and multimedia prowess, it seems like a must-have e-organiser with a wealth of features. But there is a downside. The NZ90 is one of the biggest and heaviest handhelds in this test. When the majority of manufacturers are working to the mantra of 'minimise, minimise', this fat-cased Clie has obviously been eating all the plastic pies.

Dark-shelled, with a clamshell design, the NZ90 needs to be big. Any smaller and it wouldn't be able to accommodate its wealth of high-end features. There's the excellent 320x480 LCD, which can be swivelled through 180 degrees; a full (but tiny) keyboard;

a 2MP digital camera (plus flash and 2x digital zoom); the ability to both capture photos in resolutions up to 1,600x1,200 pixels and record MPEG-4 video clips; and finally the capability to act as an MP3 player, mini games console and Internet terminal. While it lacks integrated Wi-Fi as standard, there's a CF expansion slot alongside the Memory Stick interface, and the presence of Bluetooth means you can get net-connected via a compatible GPRS phone.

Despite all this multimedia might, the NZ90 is starting to show its age. The 200MHz PXA250 processor is sluggish in comparison to the competition, while the 16MB of RAM seems stingy considering the price point. A better bet, perhaps, is the



NX73 model. At around £300, it trades off its tech for the faster PXA263 processor, but drops the camera resolution to a bog-standard 310,000-pixels. If you have the cash to blow on a top-end PDA, then blow it on O2's incredible Xda II or Sony's compact UX50, both of which offer a great deal more power and all-round functionality. The NZ90 has had its day.

PCPlus ratings

SONY CLIE PEG-NZ90

Value **1** 2 3 4 **5** 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

[illegible]

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL 6

SONY PEG-UX50

INFORMATION

PRICE £555 (£472 ex VAT)

INFO www.sonymstyle.co.uk

SUPPLIER Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

PCPlus ratings

SONY PEG-UX50

Value
●
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Features
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Performance
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OVERALL 7

Sony's newest PDA, the compact UX50, is a marvel of miniaturisation. It has evolved the swivel-screen Clie design used for the NZ90 and NX73 models, shrinking the form factor and enlarging (albeit slightly) the keypad. As such, you can use it as a micro-laptop or fold the screen back onto the keyboard to use it as a traditional PDA. But the UX50 isn't a PDA. OK, 'technically' it's a PDA, but with marketing spin and enhanced multimedia muscle, it's been freshly dubbed a PEO – a Personal Entertainment Organiser.

If you can afford it, the UX50 is a handheld that has everything. It comes with both Bluetooth and 802.11b wireless networking as standard, and like the flabbier NZ90 and NX73 Clies, it

goes beyond the e-organising basics to act as video player, MP3 jukebox and photo viewer. It can't match the quality of the NZ90's 2MP digital camera, but the 310K-pixel CCD can take shots in resolutions of up to 640x480 pixels, and record MPEG-4 video. Running v5.2.1 of the Palm OS, it's easily one of the most advanced PDAs currently available.

Advanced: yes. Perfect? Not quite. Of the 104MB RAM quoted on the spec-sheet, only half of that is user-accessible. The 480x320 pixel LCD is also tinier than you expect, with wide plastic borders and no portrait mode. Expansion is limited to a Memory Stick Pro slot, and while the keys on the QWERTY keyboard are bigger than the keys on any previous Clie,



you'll find it a nightmare to type on.

With the Sony Handheld Engine CPU integrating camera, 2D graphics and memory interface onto a single chip, the UX50 is undeniably powerful and extraordinarily flexible. If we cut to the chase, though, you'll find it easy to ignore the design niggles, it's the price tag that you'll find more difficult to ignore.

TOSHIBA Pocket PC e800

INFORMATION

PRICE £464 (£395 ex VAT)

INFO www.toshiba.co.uk

SUPPLIER Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

PCPlus ratings

TOSHIBA POCKET PC E800

Value
●
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Features
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Performance
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OVERALL 8

If big is beautiful, then Toshiba's e800 certainly lives the cliché. In fact, the e800's generous size is its most striking feature, especially when you consider that the fat plastic chassis hosts a 4in transreflective LCD. Put it next to a typical Pocket PC with a 3.5in display, and you can easily see the difference. While the default resolution remains at 240x320 pixels, it can be quickly flipped to a cool 480x640 pixel QVGA view for enhanced photo and document browsing. OK, you can't fully operate the e800 in this high-res mode, but it's a handy extra.

The generous screen is the obvious highlight, but judging by the numbering system, the rest of the e800's features should be twice as good as the budget-focused e400.

Look at the spec sheet and this 'double tech' theory proves to be sound. Where the e400 had 64MB of RAM, the e800 boasts 128MB and a 32MB NAND flash disk which will enable you to save your most precious data if the battery cell dies. Built around the 400MHz PXA263 processor, the e800 also boasts a 2MB ATi graphics accelerator, the Imageon 3220, for improved video performance. Fire up a copy of PocketMVP and you can view .AVI files in glorious widescreen streamed from either the type II CF slot or the SD interface.

Like the cheaper e400, the e800's blue-black shell sets it apart from the gaggle of silver e-organisers choking Dixons' display cabinets. Strangely,



the e800 is only available in either Wi-Fi or Bluetooth incarnations, but not both. Nevertheless, both of the models come well supported with software, including interesting text-to-speech and VoIP packages. Despite its price and bulk, the e800 stands tall as an extraordinarily flexible handheld that gives HP's buff h5550 iPAQ a serious run for its money.

Old but not forgotten

Are there bargains to be had if you make your new PDA an old PDA? Dean Evans questions if newest is best

Question: is it necessary to have the latest PDA, running the latest operating system? If all you really want to do is carry your contact details and connect to the Internet on the move, will an older device do the job? As the owner of an old Palm Tungsten T, it's tempting to upgrade to the new widescreen T3, or make the switch to the Windows Mobile 2003 OS with the gorgeous and mighty Toshiba e800. But the T is still surprisingly capable. It has only 16MB of RAM, but this is more than adequate for its core organising tasks. With built-in Bluetooth, you can quickly connect to the net via a Bluetooth-equipped mobile, while the SD slot enables you to add extra memory – so you can store and play MP3s on it, and even encoded video clips.

With prices cut, sometimes slashed, you can pick up an elderly e-organiser from online web stores or auction sites. For example: since O2 released its Xda II (£350 plus contract), you can now buy the original Xda at Expansys (www.expansys.com) for half the price of the newest model (£160 plus contract). True, the old Xda is slower, possesses half the

memory, has no camera and has its smooth silver lines ruined by a stubby antenna. But with its integrated GSM/GPRS capability plus PPC 2002 software, it's no less capable. Similarly, compare the Tungsten E to the old T model, and while the T has half the RAM, a poorer LCD and a slower processor, it does include the Bluetooth option that the E lacks. Amazon (www.amazon.co.uk) were selling used PDAs for £140-£175.

Each new PDA release drives the price of the older models down. So the old h1910 iPAQ (now replaced by the H1940) is on sale at Expansys for £176 and selling for anywhere between £80 and £180 on eBay (www.ebay.co.uk). At the other end of the scale, HP's old h5450 with WLAN, Bluetooth and biometric security can be bought for £350 at Expansys, compared to £420 for the h5550.

Older PDAs are often quickly discontinued, however, and prices can remain high to clear old stock. Toshiba has recently launched the e400 and e800, but the silver predecessors of these two – the e350 and e750 – have yet to see a dramatic price drop.

AJP Mio Digiwalker 558

INFORMATION

PRICE £399 (£339 ex VAT)
INFO www.ajp.co.uk
SUPPLIER AJP 0208 208 9700
 www.ajp.co.uk
WARRANTY One year

PCPlus ratings

AJP MIO DIGIWALKER 558

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL 8

Despite the cheap feel of this off-the-Taiwanese-peg Pocket PC, a closer look reveals that the new 558 Mio DigiWalker is a surprisingly powerful PDA. Slotting into a small price band just below the big boys, you'd think that it would naturally have to make some technical compromises to drive down the cost. But we can only find one. Where the iPAQ h5550, Toshiba e800 and LOOX 610 all have 128MB of RAM, the DigiWalker makes do with 64MB. The rest of the specification is excellent, though.

If anything lets the DigiWalker down it's the plain Jane styling: neatly silvered it may be, but this 157g PPC is far from sleek and desirable. You might even overlook it because it fails to make an instant impression. But look

closer and get some hands-on experience and you'll begin to spot the features that will make you change your mind. Like the glamour PPCs in the £400-£500+ bracket, the DigiWalker boasts both CF and SD slots, located on the top- and left-hand edges respectively. And like the top-flight devices too, it embraces both Bluetooth and 802.11b wireless connectivity for true anytime, anywhere info-access.

The device itself is built around the latest 400MHz Intel PXA263 processor, the same chip that gives the Toshiba e800 its muscle. Of the 64MB of ROM, half of this space can be used as a flash disk. But with the two expansion slots there's plenty of potential to boost the storage space without ever using it.



The spec sheet quotes 12 hours of life per overnight charge (via the removable battery cell), but with sporadic use, this is closer to eight hours. Nevertheless, this unassuming PDA exceeds expectations. Despite a limited software bundle (but this does include VoIP software), the DigiWalker has enough power and flexibility to last you deep into 2005.

ASUS MyPal A620BT

INFORMATION

PRICE £360 (£306 ex VAT)
INFO www.asus.com
SUPPLIER Asus uk.asus.com
WARRANTY One year

PCPlus ratings

ASUS MYPAL A620BT

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL 7

The popularity of entry-level PDAs has enabled companies such as AJP, ViewSonic and Asus to get in on the e-organising act. Asus made its PDA debut with the MyPal A600 and subsequent models have tweaked and refined the design. All have attempted to hit the sweet spot between raw performance and Dixons-friendly pricing. With the A620, Asus upped the spec without upping the cost. The A620BT updates the Asus PDA again, adding the Windows Mobile 2003 OS and integrated Bluetooth.

Like many PDA manufacturers, Asus obviously believes that the way to a consumer's wallet is to make its device gorgeously chromed and desirously lightweight. Not only is the A620BT stylish, it's also fast, relying on

Intel's PXA255 XScale chip for its processing muscle. Like the A620, this model boasts a standard, but undeniably impressive 240x320 transreflective LCD and features a CompactFlash slot on its top-edge. Despite the popularity of the SD format, the CF interface remains the most versatile of expansion options, enabling you to add a massive Microdrive, LAN or WLAN capabilities, not to mention VGA monitor, digital camera or GPS cards.

One of the criticisms we fired at the older A620 was that its 64MB of RAM wasn't enough to make the most of a Pocket PC's multimedia talents. Asus has responded by upping the memory to 64MB of ROM (31MB flash disk) and 64MB of SDRAM (55MB free). This gives



you around 86MB in total. No bigger, but certainly better, the A620BT is decently portable, expandable and definitely capable. Asus claims up to 18-hours of battery life, as long as your use is sporadic. While impressions are good, the new features have fattened the price, now making the A620BT a mid-range handheld rather than a budget buy.

PALM Tungsten C

INFORMATION

PRICE £329 (£280 ex VAT)
INFO www.palm.com/uk
SUPPLIER Expansys 0161 868 0868
 www.expansys.com
WARRANTY One year

PCPlus ratings

PALM TUNGSTEN C

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL 7

Despite lagging a little way behind the Pocket PC in the popularity and compatibility stakes, PDAs based on the Palm OS have arguably shown the most innovation. In many ways, they've 'had' to improve, and 'had' to evolve. It's been a case of innovate or die. And surprisingly, for a long time Sony led the way – it introduced a clamshell design with a swivel screen, added a small keyboard, and even built in a digital camera. Palm took its own sweet time to catch up, but its flagship Tungsten series now has several different takes on its popular PDA.

It's aging now, but the Tungsten C was the first Palm machine to truly rival a Pocket PC in terms of raw grunt. Blessed with a 400MHz Intel

PXA255 chip, it comes with 64MB of RAM, of which around 51MB is free for user storage. It's a good core specification, but it's not what really makes the C stand out. The C's key feature is its integrated 802.11b, supporting 128-bit WEP encryption and a VPN client. As it stands, it's the only Tungsten to come with Wi-Fi as standard, and the mini QWERTY keyboard gives Graffiti-haters the option to type (slowly and awkwardly) rather than scribble.

With its PPC-rivalling power, the Tungsten C is an ideal PDA for the business traveller. A single SD/MMC interface on the top-edge provides some potential for expansion, while the typical bundled apps – including VersaMail and DataViz Documents



To Go – run at a noticeably faster pace. The keyboard below the 320x320 transreflective LCD imbues the C with an ugliness that it probably doesn't deserve. There's nothing sleek or chic about it, especially compared to the recent Tungsten E and T3 models, but note its generous memory allocation and the integrated 802.11b Wi-Fi.

ACER n10

INFORMATION

PRICE £217 (£185 ex VAT)
INFO www.acer.co.uk
SUPPLIER www.dabs.com
WARRANTY Two years

PCPlus ratings

ACER N10

Value ●●●●●●●●●●●●●●●●

Features ●●●●●●●●●●●●●●●●

Performance ●●●●●●●●●●●●●●●●

OVERALL 7

In many ways, the n10 conforms to Pocket PC type – a silvered rectangle with subtle curves, blandly chic, and shirt-pocket-friendly. At first glance there doesn't appear to be anything special about it. It's chunky but surprisingly lightweight and boasts a typical 240x320 touch sensitive LCD. With few frills, the n10 is Acer's entry-level e-organiser, positioned alongside the thinner and faster n20w and the Palm-powered s60. A second, even a third glance still reveals nothing special, bar the fact that the n10 handily boasts dual expansion interfaces – CompactFlash and SD/MMC. This is as basic as a Pocket PC gets.

Like Dell, Asus and the other small PDA manufacturers, it's difficult to make an impact in a market dominated by

HP's versatile iPAQs. Ideally, you need to offer something different – a slimmer design or a lighter construction, perhaps a built-in digital camera or wireless networking. But the n10 is simply a barebones PDA at a rock-bottom price. And by barebones, we mean 64MB of RAM, IR port, voice recorder, familiar quick launcher and four-way nav buttons. There's a jog dial on the left-hand side, while the PXA255 processor is fast enough to handle the key Pocket Office applications (Word, IE, Media Player, MSN Messenger and so on) embedded into the 32MB flash ROM.

The n10's appeal is obviously its price. You can buy it online for just over £200, which pitches it against the iPAQ h1940. Anyone tempted by the iPAQ



h2210, which also boasts dual expansion slots, should consider the n10 as an alternative. HP's model is lighter and sleeker, and includes Bluetooth as standard. But it's almost £100 more expensive. True, the n10 doesn't offer an instant attraction, but with additional wireless and memory cards, it can be transformed into a surprisingly decent PDA.

DELL Axim X3i

INFORMATION

PRICE £279 (£237 ex VAT)
INFO www.dell.co.uk
SUPPLIER Dell 0870 152 4699
 www.dell.co.uk
WARRANTY One year

PCPlus ratings

DELL AXIM X3i

Value ●●●●●●●●●●●●●●●●

Features ●●●●●●●●●●●●●●●●

Performance ●●●●●●●●●●●●●●●●

OVERALL 8

When a big company like Dell gatecrashes the PDA market, you've got to sit up and take notice. Its first effort, the Axim X5, made a brave attempt to dethrone the reigning budget iPAQs. Ultimately, though, it was chased away and overpowered by HP's updated h1940 and h2210, both of which carried the big Bluetooth sticks that the X5 lacked. The X3 series represents Dell's second attempt to produce a jaw-dropping e-organiser. The X3i is the flagship model. Not only is it slimmer and lighter than the chunky X5, but the X3i also includes integrated 802.11b. Note the small, black wireless antenna on the top of the casing.

There are some compromises, of course. The X3i only features 64MB of

RAM and the CF slot that appeared in the X5 has been dumped, leaving only an SDIO slot for expansion. Despite this, Dell's mid-ranger is based around the latest 400MHz PXA263 XScale processor, giving it the raw grunt to act as a mobile office by day, and a portable audio/video player by night. And like most new PDAs, the X3i also features a 64MB flash ROM. The Windows Mobile 2003 OS leaves 38MB of this 'StrataFlash' space free so it can be used to back up any sensitive data.

With its removable battery, the X3i won't suddenly become an inanimate and useless lump of plastic when its 10-hour charge is exhausted. And helpfully, Dell also offers two cut-down X3 models to suit tighter



wallets. The Axim X3 Performance (£232 inc VAT) omits the integrated Wi-Fi option and throttles down the PXA263 to an older 400MHz PXA255. The Axim X3 Standard (£173 inc VAT) features a 300MHz PXA255 chip and only 32MB RAM/32MB ROM. As for the X3i, it's the only PDA in this price band to offer Wi-Fi as standard. It's a big draw.

HP iPAQ h1940

INFORMATION

PRICE £234 (£199 ex VAT)
INFO www.hp.com/uk
SUPPLIER Expansys 0161 868 0868
 www.expansys.com
WARRANTY One year

PCPlus ratings

HP IPAQ H1940

Value ●●●●●●●●●●●●●●●●

Features ●●●●●●●●●●●●●●●●

Performance ●●●●●●●●●●●●●●●●

OVERALL 7

If HP's h5550 is the Mercedes S-class of the iPAQ range, then its h1940 is a Volkswagen Golf. Not that this is necessarily a bad thing. The Golf has an enduring reputation for affordability and reliability, something this bottom-of-the-range e-organiser can match. The Golf is small and remarkably nippy, and thanks to its compact design and Samsung 266MHz S3C2410 processor, this description can also apply to the h1940. Obviously the h1940 doesn't seat five people. But if we're being picky, the Golf hasn't got Bluetooth and you can't fit one in your pocket.

We hesitate to use the phrase 'cheap and cheerful', but the h1940 is exactly that. This isn't a criticism, though. Despite a budget approach,

this iPAQ offers few frills rather than no frills. The 266MHz S3C2410 processor is built around the ARM920T core, which supports a 133MHz system bus, 65K transreflective colour LCD and an SDIO/MMC flash media slot. It's not as fast as Intel's leading XScale chips, but it makes up for its performance disadvantage with enhanced power-saving functionality. Like all modern Pocket PCs, the h1940 runs the Windows Mobile 2003 OS, and while it lacks integrated Wi-Fi, it does boast Bluetooth.

Beyond its short-range wireless functionality, the h1940 is much the same as the old h1910: note the attractive silver styling and slim construction, four-way nav-pad and the familiar application short cut buttons.



It's also worth mentioning that this is one of the few PDAs to feature a removable Li-ion cell, enabling you to buy a spare one to extend the brief eight-hour battery life. Obviously the low price makes the h1940 instantly appealing. But we still prefer the slightly more expensive h2210 with its dual media slots and 400MHz CPU.

HP iPAQ h2210

INFORMATION

PRICE £299 (£254 ex VAT)
INFO www.hp.com/uk
SUPPLIER Amazon UK
 www.amazon.co.uk
WARRANTY One year

PCPlus ratings

HP IPAQ H2210

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 8

HP's iPAQ h2210 seems to strike the perfect balance between size/weight and power/performance. When we first reviewed it back in PC Plus 208, it grabbed an Editor's Choice award for its classy looks and dual expansion slots. But while the iPAQ brand arguably dominates the Pocket PC arena, the PDAs are pricey. Even with an evident 'mid-range' marketing pitch, the h2210 now costs around £300, and by current standards its specification looks a little weak. It only has 64MB of RAM and omits 802.11b. But the h2210 is one of the most flexible PDAs in the iPAQ line-up.

Look at it this way. If you're upgrading your PDA and want to continue using your existing Secure

Digital or CompactFlash media, then the h2210 is a perfect choice. With both SD and CF expansion slots, you can add both the extra storage capacity you'll need and the Wi-Fi capability that this model lacks. And as technology advances, you can keep up with some of the upgrades. The cost of 256MB CF cards has plunged to £40, while the price of 512MB and 1GB versions are also falling. Similarly, while integrated 802.11b is handy, the h2210 will make it an easy process to switch to 11g when a suitable card appears.

Out of the box, the h2210 doesn't make the instant impact that many of the other iPAQs do. But don't discount it. It's easily fast enough – the 400MHz XScale processor delivers speedy



application performance. It also comes with built-in Bluetooth, giving you a GSM/GPRS net capability with a suitable phone. Like the h1940, the h2210 also has a removable rechargeable battery so you can carry a spare. Sleek and stylish, the h2210 remains one of the best PDAs you can buy. Unlike many e-organisers, it's built to last.

PALM Tungsten T3

INFORMATION

PRICE £294 (£250 ex VAT)
INFO www.palm.com
SUPPLIER Expansys 0161 868 0868
 www.expansys.com
WARRANTY One year

PCPlus ratings

PALM TUNGSTEN T3

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 7

No sooner had Palm refreshed its excellent Tungsten T with the T2 (faster, better, silver), it was quickly eclipsed by the T3 (faster, better, silver, bigger). Faster: the presence of a 400MHz Intel XScale chip and 64MB of RAM brings the T3 bang up to speed with Pocket PCs. Better: Palm has added several new applications to the ROM – Documents To Go 6 (featuring native MS Word and Excel support), VersaMail and PhoneLink, plus the RealOne and Kinoma video player apps. Silver: that speaks for itself.

Bigger? The T3's big improvement is its eye-catching 320x480 widescreen colour LCD – 160 pixels wider than a typical Palm display. The T3 retains the same sliding-case design that characterises the Tungsten Ts, but the

old Graffiti area has been replaced with a virtual version to accommodate the larger display. You don't even have to use it, though. Minimise the 'abc' and '123' windows and you can write anywhere on the screen. A Windows-style task bar at the bottom gives you quick access to the main applications, drop-down menus, integrated Bluetooth and more. It's much easier to use.

With its larger LCD, the T3 can be used in either a familiar portrait or a widescreen landscape mode, flicking between the two at the touch of an on-screen button. Admittedly, few applications currently support the T3's widescreen display mode, but the integrated PIM software certainly benefits from it. Beautifully designed,



this newest Palm excels in all areas, reminding you that a Palm OS environment can be just as flexible as a Windows Mobile one, albeit with a little fiddling. An SD expansion slot gives you the ability to add Wi-Fi, or boost the storage capacity, and while it may be pricey, this is a magnificent and powerful Palm PDA. It's only eclipsed by Sony's UX50.

TOSHIBA Pocket PC e400

INFORMATION

PRICE £239 (£203 ex VAT)
INFO www.toshiba.co.uk
SUPPLIER Expansys 0161 868 0868
 www.expansys.com
WARRANTY One year

PCPlus ratings

TOSHIBA POCKET PC E400

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 7

As operating systems duel, aluminium casings clash, and features go head-to-head, it's getting increasingly difficult to pick the best PDA. It's not difficult to pick a good one, but the best is certainly a taxing task. Consider the variables – price, power, flexibility, connectivity and style. It's nigh on impossible to satisfy all of these 'wants'. If you seek the best power, you can't hope for a low price – Sony's UX50 costs over £500, for example. And if you demand a low price, you can't expect full functionality – the h1940 iPAQ lacks Wi-Fi and has only 64MB of RAM.

Launched alongside the e800, Toshiba is landing its lightly equipped e400 onto the budget beach. The e400 marks a design change, both

outside and in. The classic silver finish of the old e350 has been dumped for a bolder blue/black livery, while the chassis is superbly slim. Get the ruler out – it's barely 12mm thick. And while the e400 has the familiar PPC controls, the layout has changed. Below the standard 240x320 colour LCD, the four familiar quick launch buttons are now clustered around a four-way nav-pad.

Compared to the old e350, the e400 pushes the budget spec as high as profit margins will allow. It's faster: Intel's new 300MHz PXA261 XScale chip trumps the e350's PXA255. It's a better performer: the e400 matches the e350's 64MB of RAM, but adds 32MB of NAND memory, and a vital flash disk that can protect sensitive data, even if the



battery dies. Of course, for just over £200, there are few frills. And to be honest, we didn't expect any. There's no Bluetooth or Wi-Fi, and only a single SD interface on which you can add one of the two. The pricing pitches it against the iPAQ h1940, which boasts Bluetooth and a removable battery. Toshiba may have struck gold with the e800, but the e400 needs a little work.

PALM Tungsten E

INFORMATION

PRICE £135 (£115 ex VAT)**INFO** www.palm.com**SUPPLIER** Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

PCPlus ratings

PALM TUNGSTEN E

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 7

As good as the Tungsten T3 and Sony PEG-UX50 are, not everyone wants to spend £400 to £600 on a PDA – or even £200 to £300, for that matter. So the newest battle for market share is being fought at the bargain-end of the handheld hierarchy. Down here, gangs of h1910 and h1940 iPAQs skulk about on the Dixon's shelving, taunting and fronting up to cheap Asus and Acer devices. Playing the Capulets to these Windows Mobile Montagues, are a pack of Palm-based PDAs which are led by Sony's TJ25 and Palm's own Tungsten E. They may be underpowered in comparison, but they're cheap, do the basic job required, and there are lots and lots of them.

If you don't expect much from the Tungsten E, you won't be disappointed. For a sub-£150 PDA, there are few frills – no Bluetooth or Wi-Fi as standard, and a total of 32MB of RAM instead of a more flexible 64MB. To keep the unit cost down, a TI OMAP processor powers the E, rather than an Intel XScale chip. But this revamped PDA, reminiscent of the old Palm V design, is perfectly capable. To its credit, the 320x320 pixel LCD is gorgeously clear and there's an SD slot enabling you to add Bluetooth, Wi-Fi, or extra memory, but just one expansion option at a time.

It's a shame that 32MB of memory isn't enough to do justice to the E's multimedia capabilities. Running v5.2.1 of the Palm OS, it comes supplied with



all the handy apps that are included with the T3 – Kinoma Video and RealOne Players, Palm Photos, VersaMail and Documents To Go 6. The appeal here is a simple one: you can own a full-colour e-organiser for £70 to £80 less than the cheapest Pocket PC. You may have to endure a little file conversion now and then, but the E is an attractive basic buy.

PALM Zire 21

INFORMATION

PRICE £73 (£62 ex VAT)**INFO** www.palm.com**SUPPLIER** Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

PCPlus ratings

PALM ZIRE 21

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 6

If you only need your PDA to store your contacts and act as an electronic notepad, then you can still buy a Palm handheld for around £50. The Zire is reminiscent of Palm's most popular e-organiser, the classic Palm V, but not in terms of its design – the Zire favours an Apple-esque white plastic casing rather than a metallic grey retro-shell. It's reminiscent because it matches the V's limited feature-set – note the 160x160 pixel monochrome display and the measly 2MB of internal memory. There's certainly no jaw-dropping, double-takes here.

You wouldn't think that you can do much with 2MB of RAM, but the Palm OS has never been as memory-hungry as its bloated Microsoft rival,

and you can still use it to store thousands of names and addresses, and even add third-party applications ranging from arcade games to email clients and graphics viewers. Space is obviously tight, and there's no expansion slot to boost the storage capacity. As a result, there's also no way to add Wi-Fi or Bluetooth to the Zire, not that version 4.1 of the Palm OS used on the basic model would be able to handle them. Infra-red is the only wireless format supported. There are only two quick launch buttons and no backlight. This is as basic as a PDA gets.

New for 2004, Palm has recently updated the Zire model to the Zire 21. Upping the price, this refreshed Zire boasts 8MB of RAM and a faster TI



OMAP 311 ARM processor. It also runs the latest version of the Palm OS with Graffiti 2. Everything else remains the same, so there's no expansion slot and no backlight for the 160x160 greyscale display. But the 21 model is noticeably quicker, and the one saving grace is that you can measure the Zire's battery life in weeks rather than days.

PALM Zire 71

INFORMATION

PRICE £199 (£170 ex VAT)**INFO** www.palm.com**SUPPLIER** Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

PCPlus ratings

PALM ZIRE 71

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 7

Pocket PCs dare not walk within the £100-£200 price band. This is a bleak no-man's-land fought over by just two sides – Palm and Sony. Here PDAs don't stray too far from the original 'digital Filofax' concept. There are few frills. Yes, the TJ35 might come with a digital audio player built-in, and the Zire 71 reviewed now boasts an integrated digital camera. But these bargain-bucket PDAs are primarily electronic vaults for names and addresses. If you want wireless Internet access or fast video playback, you've got to pay more.

The Zire 71 is another Palm oddity. Where the Tungsten C features Wi-Fi and a keyboard, and the Tungsten W unifies phone and PDA functionality, this colour handheld is the only Palm-

built device to feature a digital camera. The metallic blue casing slides downwards to reveal the lens on the back of the device, which is capable of taking still images in resolutions up to 640x480 pixels. Despite some basic hardware specifications – 16MB of RAM, a sluggish 144MHz OMAP 310 processor – the Zire 71 boasts a decent software line-up. Palm Photos is included on the ROM, while RealOne and Kinoma Video software, VersaMail and Acrobat Reader come supplied as CD extras.

Of course, the appeal of the integrated camera needs to be balanced against its maximum resolution of 640x480 pixels, which is no better than a mainstream camera phone. If you have no desire to push



the Zire 71 beyond its basics, it's a fun organiser with no real business skew. Thanks to the SD slot on the top edge, desperately needed extra storage space or Wi-Fi/Bluetooth wireless connectivity can be added. The Zire 71 is still a little underpowered for the audio/video functions that Palm says it can stretch to, and at this price, the Tungsten E is still a better budget buy.

SONY Clie PEG-TJ25

INFORMATION

PRICE £140 (£119 ex VAT)
INFO www.sonymstyle.co.uk
SUPPLIER Expansys 0161 868 0868
www.expansys.com
WARRANTY One year

PCPlus ratings

SONY CLIE PEG-TJ25

Value **★★★★★**
 Features **★★★★★**
 Performance **★★★★★**
OVERALL **6**

Despite the fact that we spied a bloke watching an episode of The Simpsons on a P900 smartphone the other day, not everyone wants their PDA to be a mini-PC. Where the P900 costs over £350 with a contract, PDAs like Sony's TJ25 and Palm's Tungsten E are attracting the eyes of the high street shopper. They're stripped-down models, just the job for storing your appointments and birthday reminders, picking up email and playing the odd game. Like a 64MB MP3 player, a £150 PDA makes a good present.

Sony has a reputation for pushing the boundaries of PDA design and giving you more than your money's worth. But the TJ25 is unapologetically bland. True, this PDA is lightweight and stylish, but the screen is far less

vibrant than Palm's competing Tungsten E. Obviously, the price point means that there's no Bluetooth, meaning that Sony sticks to the Memory Stick Pro format while everybody else opts for SD. The MS Pro cards currently support storage capacities up to 1GB, while Bluetooth and Wi-Fi memory sticks are also available. This ensures that there's a degree of versatility here if you're prepared to pay for it.

It might be tempting to say that 'less is more'. But let's face it, less is quite simply less. On the inside, the TJ25 boasts only 16MB of RAM (11MB free), although the LMXL Motorola processor gives it a decent turn of speed. There's no docking cradle, the charger and the USB



HotSync cables slot into the bottom. There's no headphone jack either, so this PDA's multimedia capabilities are limited. There's a small speaker, located on the back. But even if you don't want to play MP3s or video clips on your PDA now, it's handy to have the option. Pitched against Palm's Tungsten E, the TJ25 puts in a poor performance.

SONY Clie PEG-TJ35

INFORMATION

PRICE £165 (£141 ex VAT)
INFO www.sonymstyle.co.uk
SUPPLIER Expansys 0161 868 0868
www.expansys.com
WARRANTY One year

PCPlus ratings

SONY CLIE PEG-TJ35

Value **★★★★★**
 Features **★★★★★**
 Performance **★★★★★**
OVERALL **6**

At first glance there's little difference between Sony's TJ25 and TJ35 handhelds, bar a numbering gap of 10 and a price gap of £25. But this mid-range e-organiser improves upon the no-frills spec of the TJ25 and charges you a little more for the privilege. Specifically, the TJ35 boasts 32MB of RAM (23MB of which is free) compared to the TJ25's 16MB – more than enough if you want to manage names and addresses, but a little tight-fisted if you want to double it up as the MP3 player Sony says it can become.

One of the criticisms we levelled at the TJ25 was its lack of a headphone jack, and the TJ35 remedies this. The AeroPlayer digital audio player is embedded into the 8MB ROM,

alongside the standard suite of Palm applications, Date Book, Address, Memo Pad and so on. Disappointingly, Sony doesn't supply either a Memory Stick Pro or a set of headphones to transform the TJ35 into a capable MP3 jukebox. These will cost you extra, but bonus Clie Viewer and Picxel Viewer programs enable picture and document browsing respectively (no Documents To Go for editing), while the Decuma handwriting recognition system provides a less fiddly alternative to Graffiti.

As we've mentioned elsewhere in this Lab Test, the competition at the budget-end of the PDA marketplace is fiercely fought. With its Tungsten E-like spec-sheet and brushed silver Tungsten E-style looks, you can't



avoid comparing the TJ35 to Palm's low-level handheld. There's no Wi-Fi or Bluetooth in either competitor, but the Memory Stick slot has the flexibility to add both extra RAM and missing wireless. Ultimately, though, the Tungsten E's brighter 320x320-pixel display and its better overall performance keep Palm ahead on technical plus points.

Coming Soon

If none of the PDAs or phones this month peak your interest, keep an eye out for these three newbies



1 HP iPAQ h4150 – £350

Combining the sleek design of HP's h1940, the h4150 attempts to bring Bluetooth and 802.11b WLAN options to the mid-range PDA market. As you can see in this Lab Test, there are few devices in the £300 to £400 price band, but the h4150 looks set to slide in alongside the AJP DigiWalker, which also boasts dual wireless connectivity. 64MB of RAM, an SD slot and a generous software bundle complete the package. www.hp.com/uk



2 Sendo X – £TBC

Running Nokia's Series 60 OS, the Sendo X seems set to blow the competition away when it makes its debut later this year. Slim and silvered, it's one of the few phones to include an extra graphics processor and while it lacks a touch-sensitive display, it has all the power (64MB RAM, SD/MMC slot, integrated camera) and potential to knock the O2 Xda II off of the smartphone top-slot. www.sendo.com



3 Nokia 7700 – £TBC

Nokia has always pushed the design envelope with its handsets, and the forthcoming 7700 is much more than just a mobile phone. Built with a 640x320 pixel widescreen LCD, it supports tri-band GSM/GPRS and features a full Opera web browser. Add to this an integrated VGA camera, FM radio and Nokia's IP datacast technology for streaming video, and it's shaping up to be one of the most advanced devices around. www.nokia.com

HANDSPRING Treo 600

INFORMATION

PRICE Handset only £439
(£373 ex VAT), O² contract £204
(£173 ex VAT), Orange contract £119
(£99 ex VAT)

INFO www.handspring.co.uk

SUPPLIER Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

PCPlus ratings

HANDSPRING TREO 600

Value 

Features 

Performance 

OVERALL 

Handspring has previously tried and failed to blend a PDA with a GSM/GPRS phone. But while previous Treo models stubbornly retained a PDA form factor (and simply added telephony functions), the new Treo 600 looks and feels more like a modern mobile. If you can ignore the quirky design, the Treo 600 is a remarkably versatile device. As a phone, it can operate on any one of four radio frequencies, including the 850MHz band used in the US and South America. And like any other high-end mobile, it's capable of sending SMS and MMS messages, and features an integrated POP3 email client.

As a 'smartphone', however, you expect it to do a lot more. You expect it to have a digital camera,

and it does – a VGA (640x480 resolution) CCD set into the back. You demand it to have extended PIM functionality, and it doesn't disappoint. Running v5.2.1 of the Palm OS, the Treo 600 has all the business and leisure potential of a fully blown PDA. Admittedly, the Treo's 160x160 pixel LCD can seem a little on the small side compared to the 320x320 pixel displays on a typical Palm handheld. There are no voice-dialling options, nor is there a voice recorder. And as past Palms have proved, 32MB of RAM is more than enough. Besides, the Treo 600 also has an SD slot, enabling you to add extra storage space.

Available on Orange and O², the Treo 600 is an odd-looking, but



successful blend of PDA and phone. It's a shame the awkward antenna ruins the clean lines, but this is counterbalanced by the Palm software compatibility. With a built-in web browser (Blazer), it's arguably the most capable smartphone based on the Palm OS. Only the O² Xda II really comes close to rivaling its all-round functionality.

O² Xda II

INFORMATION

PRICE Handset only £587
(£499 ex VAT), O² contract £352
(£299 ex VAT)

INFO www.o2.co.uk

SUPPLIER Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

PCPlus ratings

O² XDA II

Value 

Features 

Performance 

OVERALL 

The original Xda was arguably one of the most successful blends of a PDA and mobile phone, albeit 90 per cent Pocket PC, ten per cent GSM/GPRS handset. The only prohibitive factor was its price, but those that did invest had few bad words to say about it.

The Xda II refines the concept and stands as one of the most striking devices here. Not only has the operating system been updated, O² has added its own extra menu features. While Microsoft gives you the ability to direct-dial via the Contacts application, O² expands the main menu screen with its Active User Interface. This provides a shorter route to direct dialling, as well as SMS/MMS messaging, a shortcut to the

integrated camera, and a selection of handy web links.

In technical terms, the Xda II supports tri-band GSM/GPRS with SMS and MMS messaging, alongside the email client that comes as part of the Windows Mobile software. As a PDA, it's based around Intel's PXA263 XScale processor and boasts 128MB of RAM. Like many new PDAs, a slice of this main memory acts as a flash disk, so you can store your most sensitive and vital data without fear of accidental erasure. With the inclusion of an SD slot, Wi-Fi capabilities can be added, while Bluetooth is already integrated. There's also a VGA (640x480 pixel) camera set into the back of the casing.

By definition, the Xda II is a smartphone, but in reality it's more



of a connected PDA. Holding a PDA to your cheek takes some getting used to, you may prefer the hands free approach. But if you desire a high-end device with integrated telephony, this is an excellent buy. Inevitably, battery life suffers at the hands of functionality. Don't expect to get more than eight hours use from it, and expect even less if you actually talk.

MOTOROLA MPx200

INFORMATION

PRICE Handset only £395
(£336 ex VAT), O² contract £160
(£136 ex VAT)

INFO www.motorola.com/uk

SUPPLIER Expansys 0161 868 0868

www.expansys.com

WARRANTY One year

PCPlus ratings

MOTOROLA MPX200

Value 

Features 

Performance 

OVERALL 

Like a man trying to dig through solid rock with a spoon, Microsoft's Smartphone 2002 software has found it hard to make a dent in the mobile phone market. Orange's original SPV was criticised for being slow and overcomplicated in comparison to the user-friendly menus used by Nokia, Ericsson and Motorola. But improvements have been made, and Motorola's new MPx200 smartphone squeezes the Microsoft OS into a compact clamshell form factor. It should be perfect if you desire Outlook synchronisation without PDA bulk.

There's much to like. The MPx200 is certainly stylish, with a shiny black shell and metallic blue faceplate. Like most new handsets it offers tri-band

GSM/GPRS operation. A small LCD on the front of the handset shows network coverage, battery life, the current time and caller ID info. Open up the MPx200 and the Smartphone software is displayed on a full-colour 176x220 pixel screen. Unlike the PDA phones here, the LCD isn't touch-sensitive and so menu navigation is controlled via a four-way nav-pad with a central 'select' button. Packing a 32MB ROM, 10MB is user-accessible, so the MPx200 also comes supplied with a 16MB SD card, which fits into a slot on the right.

Unfortunately, first impressions don't last. The MS OS is still disappointingly slow and prone to the occasional lock-up. And while you can forgive the omission of a camera, the absence



of Bluetooth is quite unbelievable – it's rumoured to be an add-on in the future. As such, this phone is 'smart' in software title only, and doesn't make the best of its talents. You can play WMA and MP3 files, and download extra apps and games, but it's fiddly to use and lacks the multimedia extras you expect in a phone at this price.

RIM BlackBerry 7230

INFORMATION

PRICE £199 (£169 ex VAT)
INFO www.blackberry.com
SUPPLIER www.t-mobile.co.uk
 0845 412 5000
WARRANTY One year

PCPlus ratings

RIM BLACKBERRY 7230

Value
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Features
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OVERALL 7

In the ongoing battle between Pocket PC and Palm, RIM's compact PDA is the fighting equivalent of Switzerland – a neutral and disinterested bystander. Running its own OS, the BlackBerry 7230 isn't capable of mounting a serious challenge to either PDA superpower. Boasting only a meagre 16MB of memory, it lacks any sort of expansion port and only features a small 240x160 colour LCD. But as Pocket PCs and Palms clash on a new multimedia front, the BlackBerry ignores gimmickry in favour of a capability other PDAs lack: real-time wireless email access.

Available in either Enterprise or Prosumer versions, the BlackBerry is essentially a castrated mobile phone that uses GPRS to maintain a

connection to a corporate or web-based mailbox. With the corporate solution and a BlackBerry Exchange server installed in your office, you're able to delete/create messages as if you were working from your PC desktop. For Prosumers, the message-handling functionality is limited to mail forwarding, but it fast becomes an indispensable device. The always-on GPRS connection is fast enough to download Office attachments, while net browsing is a convenient combination of web and WAP.

In many ways, you could replace a Pocket PC or Palm with a BlackBerry and not miss the extra features that Windows Mobile 2003 and the Palm OS give you. Rather than a jack-of-all-PDA-trades, the BlackBerry 7230 sticks to the



data organising basics, with very little PIM functionality beyond Calendar, MemoPad, Address Book and Task applications. Without a touchscreen, the mini QWERTY keyboard is fiddly but fast, and without the pressure of running multimedia applications, the battery life can be measured in days rather than hours. As a PDA, it's basic: as a mobile email terminal it's a joy.

SONY ERICSSON P900

INFORMATION

PRICE Handset only £519 (£442 ex VAT), 0² contract £284 (£242 ex VAT)
INFO www.sonyericsson.com
SUPPLIER Expansys 0161 868 0868
 www.expansys.com
WARRANTY One year

PCPlus ratings

SONY ERICSSON P900

Value
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Features
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OVERALL 8

Sony Ericsson's previous model, the P800, set the smartphone standard. Unsurprisingly, the P900 improves the spec, ironing out glitches and adding the few things that were missing from the original: predictive text input, polyphonic ringtones, and full-blown HTML support. Compare the old electric blue phone to the new urban grey device and you'll see that the P900 is slightly smaller. It boasts the same 208x320 pixel LCD, but the P900 is capable of displaying 65K colours, compared to the P800's 4,096, and where the P800 had 12MB of internal RAM, the P900 boasts 16MB and comes with a 32MB Memory Stick Duo card. And considering its all-round communicator ambitions, you need as much storage space as you can get.

With its built-in VGA camera, still images and video clips can be captured and stored. The images can be attached to MMS messages and emails, and the MPEG-4 video can be played back via the integrated media player software. The P900's digital audio capabilities also enable it to moonlight as an MP3 player, although intensive multimedia enjoyment will severely cripple the six-hour talktime. The entertainment aspects of the P900 tend to steal the show, but business users are also well served. There's a flexible email client, web/WAP browser, and decent PC sync options.

Java-compatible, the P900 can download and install third-party software, extending its capabilities well beyond the factory config. With its



powerful Symbian OS and touch-sensitive colour LCD, plus all-rounder tri-band GSM, GPRS, HSCSD and Bluetooth connectivity, you can easily work on the move. This factor is true of most of the smartphones reviewed here. What will make you think twice, however, is that Sony's MS Duo media format limits expansion options, and the price is higher than sky-high.

PALM Tungsten W

INFORMATION

PRICE Handset only £292 (£248 ex VAT), 0² contract £57 (£49 ex VAT)
INFO www.palm.com
SUPPLIER Expansys 0161 868 0868
 www.expansys.com
WARRANTY One year

PCPlus ratings

PALM TUNGSTEN W

Value
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Features
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OVERALL 7

Palm's style-unconscious Tungsten W is a PDA first, and a mobile phone second, and cuts various technical corners in both departments. As a phone, it can be fiddly to use – there's no built-in speaker/microphone, so calls can only be answered using the hands-free set supplied. Similarly, like Palm's T-series Tungstens, the W can only be charged up via its docking cradle, which makes it inconvenient for anybody who wants to travel light. There's no Bluetooth functionality, either, but because the W's SD/MMC slot accepts SDIO cards, this can be easily added.

The appeal of a smartphone, or here a PDA-phone, is that by integrating GSM/GPRS functionality into a PDA, you get an instant, connect-almost-

anywhere wireless capability that other handhelds lack – no extra modem or Wi-Fi link required. The QuickConnect function enables you to dial directly from numbers in the Address Book, while SMS and WAP browsing are both catered for. The Tungsten W ships with VersaMail, as there's still no integrated client in the Palm OS. Extra applications include Jot, SIM manager and the Web Pro browser, and come preloaded for auto-install on a 32MB SD card.

It's true that the addition of the phone technology does compromise the power of the PDA. Its 320x320 LCD is right up there with the best displays, but powered by a 33MHz Dragonball chip, the W runs OS 4.1 and has a meagre 16MB of RAM. Of course, you need to weigh these weaknesses



against the benefit of having a phone connection in a PDA – Wi-Fi may be faster, but it doesn't have the countrywide reach that GPRS does. As an all-in-one device, the W blends PDA and phone into a reliable, versatile, but ugly device. Consider this: with a Bluetooth phone and a compatible PDA, you can get exactly the same experience.

Accessories – Pocket PC

PDA owner **Henry Tucker** casts his eyes over the best add-ons for the Pocket PC

With PDAs more powerful than ever, they really do offer all manner of possibilities. Gone are the days when they were only good for storing your contacts and calendar. With the majority of them now coming with colour screens and CPUs faster than five-year-old PCs, you can use them to play video, watch television and surf the Internet, with the addition of simple software or hardware opening up even greater possibilities.

Axim Foldable Keyboard

www.dell.co.uk

Probably the most popular use for all PDAs is the storage of data such as memos and short pieces of text. However, unlike PCs, getting the text on to them involves using the stylus to tap in each letter. This is okay if all you want to input is the date and venue of your next meeting, but not so good if you're taking notes, for example. Fortunately, there are ways around this problem. This comes in the form of keyboards that you connect your PDA to. Compact and portable, one of the best accessories for Dell's Axim X5 PDA range is its foldable keyboard (£53 ex VAT). No larger than the PDA itself, it unfolds into a highly useable keyboard, effectively turning your PDA into a small notebook computer.

Virtual Laser Keyboard

www.ibizcorp.com

A foldable keyboard may sound ideal, but there are even newer products out there, such as the Virtual Laser Keyboard from iBiz. Whereas the Dell keyboard is a physical keyboard, the Virtual Laser Keyboard (US\$9999) is just that – virtual. Instead of having keys, a laser projects a keyboard onto whatever surface your PDA is resting on, such as a tabletop. This could change the way you use your PDA.

Linksys Wireless Compact Flash Card

www.linksys.com

With AvantGo, the pages are only as up-to-date as the last time you synchronised your PDA. The other way to browse the web on the move is to install a wireless card such as the Linksys Wireless Compact Flash card (£54 ex VAT). Not all PDAs come with Wi-Fi or Bluetooth as standard, so an 802.11b card allows you to connect your PDA to any available wireless networks at speeds of up to 11Mb/s. Depending on the network, this can be used for more than just surfing the Internet.

PocketExplorer

www.citadeldevelopment.com

Once you have your files on your PDA, you'll obviously want to find them and then make changes to them. Although both Windows Pocket

PC devices and some Palm-based units have file viewers built in, there are many others available that offer added functionality. Whereas on desktop Windows-based PCs you can browse and manage files with Windows Explorer, you can't really do this with Pocket PC PDAs – unless you use PocketExplorer by Citadel Development, that is. Free to download and use, this handy application allows you to drag-and-drop files wherever you want them, search for files and if you have an infra-red port you can use it to transfer files between two devices.

ClearVue PDF

www.westtek.com

One problem with most PDAs is that they don't have the capability to view PDF files. Now commonly used for all manner of documents, the ability to read them on the go is extremely useful. Although most PDAs don't do it by default, there are downloadable applications that add this functionality. One such example is ClearVue PDF (\$8.95 by WestTek). With it you can open, view and even print PDF files stored on your PDA. The files stay in their original form and you don't need to convert the files or install any additional ActiveSync filters. If it doesn't come supplied with your PDA, it's well worth picking up.

AvantGo

www.avantgo.com

The easiest way to view web pages on a PDA is to use AvantGo. If you're not familiar with it, AvantGo is a very simple application that, once installed on the PC and PDA, allows you to download web pages on to your PDA so that you can read them away from your desk. To do this you choose which web sites you'll want to read – they are mainly text-based such as the Guardian newspaper's site – and when you sync your PDA the pages are downloaded. To read them you simply start the AvantGo application. The best thing about AvantGo is that it's free. You get 2MB of storage space – which is plenty – but should you want to view more pages, you could pay for extra.

Pocket TV

www.pockettv.com

As almost all PDAs now have hi-res colour screens, they can also double as Portable Media Players. Pocket PC devices ship with Windows Media Player as part of the OS, but can't playback AVI or MPEG video. For MPEG, you'll need Pocket TV (www.pockettv.com). Free for single users, it only plays MPEG-1 files, but is optimised for Pocket PC devices and is easy to use. For AVI playback, you'll need another application, PocketMVP or Pocket DivX (www.wincsoft.de), which now supports the current Windows Mobile 2003 OS.



The virtual laser keyboard from ibiz could change the way you use your PDA.



An 802.11b card allows you to connect to any available wireless networks.

All the stats, all the facts...

DETAILS	£400-£500	£400-£500	£400-£500	£400-£500	£400-£500
Model	LOOK 610	iPAQ h5550	Clie PEG-NZ90	Clie PEG-UX50	e800
Manufacturer	Fujitsu-Siemens	HP	Sony	Sony	Toshiba
Supplier	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com
Price	£436 (£371 ex VAT)	£423 (£360 ex VAT)	£535 (£455 ex VAT)	£555 (£472 ex VAT)	£464 (£395 ex VAT)
Warranty	1 year	1 year	1 year	1 year	1 year
SPECS					
CPU	400MHz Intel PXA255	400MHz Intel PXA255	200MHz Intel PXA250	ARM926 CXD2230GA	400MHz Intel PXA263
RAM/ROM	128MB/64MB	128MB/48MB	16MB/16MB	16MB/64MB	128MB/64MB
Flash disk	28MB	20MB	No	26MB	32MB
LCD size	3.5in	3.8in	3.8in	3.2in	4in
LCD resolution	240x320, 65K colour	240x320, 65K colour	320x480, 65K colour	480x320, 65K colour	240x320, 65K colour + QVGA
Expansion	SD, CF Type II	SD(IO)	Memory Stick, CF Type II	Memory Stick Pro	SD(IO), CF Type II
OS	Windows Mobile 2003	Windows Mobile 2003	Palm OS 5	Palm OS 5.2.1	Windows Mobile 2003
Wireless	Bluetooth, 802.11b, IR	Bluetooth, 802.11b, IR	Bluetooth, IR	Bluetooth, 802.11b, IR	802.11b, IR
Multimedia	Windows Media Player	Windows Media Player	Sony Audio Player, Movie Player, Clie Album	Sony Audio Player, Movie Player, Clie Album	Windows Media Player
Speaker/Headphone	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Keyboard	No	No	Yes	Yes	No
Voice rec	Yes	Yes	No	Yes	Yes
Docking cradle	Yes	Yes	Yes	Yes	Yes
Size/Weight	148x78x18mm / 205g	138x84x16mm / 207g	142x76x23mm / 292g	103x87x18mm / 175g	135x77x17mm / 198g
Removable battery	Yes	Yes	Yes	No	Yes
Quoted/Tested battery	Up to 10h/Up to 4h	Up to 12h/Up to 4h	Up to 7h/Up to 3h	Up to 16h/Up to 4h	Up to 10h/Up to 4h
Extra hardware	No	Fingerprint reader	Swivel screen	Swivel screen	ATI ImageOn 3220 graphics
Extra software	F-Secure File Crypto, Derrack Mobile Client, Nyditot Virtual Display, Space2Go, Westtek ClearVue, bSQUARE Java VM, Easy2Connect, Certicom VPN	Jeode Java Virtual Machine, Westtek ClearVue, F-Secure FileCrypto Data Encryption; Colligo; Adobe PDF Viewer; RealOne Player and more	BalanceLog, Contacts Pro, MobiPocket Ebook Reader, PowerOne Finance, PowerOne Personal, Presenter-to-Go, StreetFinder Exp. and more	Agendus, BalanceLog, Contacts Pro, Flash Player5, NetFront, Palm Reader, Picsel Viewer, PowerOne Finance, & Personal, StreetFinder Exp.	Toshiba Text to Speech, Voice Command, Toshiba ConfigFree, VoIP Software, World Clock, Westtek ClearVue PDF
PC Plus verdict 8 PC Plus verdict 8 PC Plus verdict 6 PC Plus verdict 7 PC Plus verdict 8					

DETAILS	£300-£400	£300-£400	£300-£400	£200-£300	£200-£300
Model	Mio DigiWalker 558	MyPal A620BT	Tungsten C	n10	Axim X3i
Manufacturer	AIP	Asus	Palm	Acer	Dell
Supplier	AIP, 0208 208 9700, www.aip.co.uk	Asus, uk.asus.com	Expansys, 0161 868 0868, www.expansys.com	Dabs, www.dabs.com	Dell, 0870 152 4699, www.dell.co.uk
Price	£399 (£339 ex VAT)	£360 (£306 ex VAT)	£329 (£280 ex VAT)	£217 (£185 ex VAT)	£279 (£237 ex VAT)
Warranty	1 year	1 year	1 year	2 years	1 year
SPECS					
CPU	400MHz Intel PXA263	400MHz Intel PXA255	400MHz Intel PXA255	300MHz Intel PXA255	400MHz Intel PXA263
RAM/ROM	64MB/64MB	64MB/64MB	64MB/16MB	64MB/32MB	64MB/64MB
Flash disk	32MB	31MB	No	No	38MB
LCD size	3.5in	3.5in	3in	3.5in	3.5in
LCD resolution	240x320, 65K colour	240x320, 65K colour	320x320, 65K colour	240x320, 65K colour	240x320, 65K colour
Expansion	SD(IO), CF Type II	CF Type II	SD(IO)	SD, CF Type II	SD(IO)
OS	Windows Mobile 2003	Windows Mobile 2003	Palm OS 5.2.1	Windows Mobile 2003	Windows Mobile 2003
Wireless	Bluetooth, 802.11b, IR	Bluetooth, IR	802.11b, IR	IR	802.11b, IR
Multimedia	Windows Media Player	Windows Media Player	Kinoma Video Player	Windows Media Player	Windows Media Player
Speaker/Headphone	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Keyboard	No	No	Yes	No	No
Voice rec	Yes	Yes	Yes	Yes	Yes
Docking cradle	Yes	Yes	No	No	Yes
Size/Weight	125x72x16mm / 150g	125x77x13mm / 141g	122x78x17mm / 178g	130x78x17mm / 161g	122x77x15mm / 140g
Removable battery	Yes	No	No	No	Yes
Quoted/Tested battery	Up to 10h/Up to 4h	Up to 12h/Up to 4h	Up to 10h/Up to 3h	Up to 12h/Up to 4h	Up to 10h/Up to 3h
Extra hardware	No	No	No	No	No
Extra software	None	None	VersaMail (ROM), DataViz Documents To Go (ROM), Kinoma Player & Producer, WorldMate, AOL Instant Messenger, Cooligo Meeting, PrintBoy, PocketMirror	IA Album LE, Acrobat Reader for Pocket PC, PocketTV Enterprise Edition	Wi-Fi utilis
PC Plus verdict 8 PC Plus verdict 7 PC Plus verdict 7 PC Plus verdict 7 PC Plus verdict 8					

DETAILS	£200-£300	£200-£300	£200-£300	£200-£300	£100-£200
Model	iPAQ h1940	iPAQ h2210	Tungsten T3	e400	Tungsten E
Manufacturer	HP	HP	Palm	Toshiba	Palm
Supplier	Expansys, 0161 868 0868, www.expansys.com	Amazon UK, www.amazon.co.uk	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com
Price	£234 (£199 ex VAT)	£299 (£254 ex VAT)	£294 (£250 ex VAT)	£239 (£203 ex VAT)	£135 (£115 ex VAT)
Warranty	1 year	1 year	1 year	1 year	1 year
SPECS					
CPU	266MHz Samsung S3C2410	400MHz Intel PXA255	400MHz Intel PXA255	300MHz Intel PXA261	126MHz TI OMAP 311
RAM/ROM	64MB/32MB	64MB/32MB	64MB/16MB	64MB/16MB	32MB/16MB
Flash disk	12MB	12MB	No	32MB	No
LCD size	3.5in	3.5in	3.5in	3.5in	3in
LCD resolution	240x320, 65K colour	240x320, 65K colour	320x480, 65K colour	320x480, 65K colour	320x320, 65K colour
Expansion	SD(IO)	SD(IO), CF Type II	SD(IO)	SD(IO)	SD(IO)
OS	Windows Mobile 2003	Windows Mobile 2003	Palm OS 5.2.1	Windows Mobile 2003	Palm OS 5.2.1
Wireless	Bluetooth, IR	Bluetooth, IR	Bluetooth, IR	IR	IR
Multimedia	Windows Media Player	Windows Media Player	Kinoma Video Player, RealOne player	Windows Media Player	Kinoma Video Player, RealOne Player
Speaker/Headphone	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Keyboard	No	No	No	No	No
Voice rec	Yes	Yes	Yes	Yes	No
Docking cradle	No	Yes	Yes	No	No
Size/Weight	113x70x13mm / 124g	115x76x15mm / 144g	108x76x16mm / 153g	125x77x12mm / 137g	114x79x12mm / 131g
Removable battery	Yes	Yes	No	No	No
Quoted/Tested battery	Up to 8h/Up to 3h	Up to 12h/Up to 4h	Up to 8h/Up to 3h	Up to 8h/Up to 3h	Up to 16h/Up to 4h
Extra hardware	No	No	No	No	No
Extra software	iPAQ Image Viewer, iPAQ audio, iPAQ backup	Margi Presenter-to-Go, Adobe Acrobat Reader, eWallet, ListPro, RealOne Player, iPAQ Image Viewer, Macromedia Flash Player, Align Screen	PIM Outlook Conduits, Phone Link Updater, Palm Quick Install, Adobe Reader, Palm Reader, BlueBoard, BlueChat, Java, Palm Web Pro	Jawbreaker, World clock, Toshiba text-to-speech, voice command software	Acrobat Reader, Handmark Mobile DB, VersaMail, Phone Link, Palm Dialer, RealOne Mobile Player, Kinoma Player & Producer, Palm Reader
PCPlus verdict 7		PCPlus verdict 8	PCPlus verdict 7	PCPlus verdict 7	PCPlus verdict 7

DETAILS	£100-£200	£100-£200	£100-£200	£100-£200	SMARTPHONES
Model	Zire 21	Zire 71	Clie PEG-TJ25	Clie PEG-TJ35	Treo 600
Manufacturer	Palm	Palm	Sony	Sony	Handspring
Supplier	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com
Price	£73 (£62 ex VAT)	£199 (£170 ex VAT)	£140 (£119 ex VAT)	£165 (£141 ex VAT)	Handset £439 (£373 ex VAT)
Warranty	1 year	1 year	1 year	1 year	1 year
SPECS					
CPU	126MHz TI OMAP 311	144MHz TI OMAP310	200MHz Motorola LMXL	200MHz Motorola LMXL	144MHz TI OMAP310
RAM/ROM	8MB/2MB	16MB/8MB	16MB/8MB	32MB/8MB	32MB/8MB
Flash disk	No	No	No	No	No
LCD size	3in	3in	3in	3in	2.5in
LCD resolution	160x160, 4-bit greyscale	320x320, 65K colour	320x320, 65K colour	320x320, 65K colour	160x160, 4K colour
Expansion	No	SD(IO)	Memory Stick Pro	Memory Stick Pro	SD(IO)
OS	Palm OS 5.2.1	Palm OS 5.2.1	Palm OS 5.2.1	Palm OS 5.2.1	Palm OS 5.2.1H
Wireless	IR	IR	IR	IR	Quad-band GSM/GPRS
Multimedia	No	Kinoma Video Player, RealOne Player	Clie Viewer	AeroPlayer	No
Speaker/Headphone	No/No	Yes/Yes	Yes/No	Yes/Yes	Yes
Keyboard	No	No	No	No	Yes/Yes
Voice rec	No	No	No	No	No
Docking cradle	No	Yes	No	No	No
Size/Weight	111x73x15mm / 107g	114x74x17mm / 150g	110x75x12mm / 147g	110x75x12mm / 147g	112x60x22mm / 168g
Removable battery	No	No	No	No	No
Quoted/Tested battery	Up to 2 weeks/Up to 8h	Up to 1 week/Up to 6h	Up to 1 week/Up to 6h	Up to 1 week/Up to 6h	240h standby/6h talk
Extra hardware	No	No	No	No	No
Extra software	Handmark PDA Money, MobileDB and Magic Dogs, powerOne Calculator, Palm Reader	Acrobat Reader, Handmark Mobile DB, VersaMail, Palm Dialer, RealOne Mobile Player, Kinoma Player & Producer, Palm Reader	Agendus, BalanceLog, ContactsPro, Palm Reader, PowerOne Finance, PowerOne Personal, Presenter-to-Go, StreetFinder Express	Agendus, BalanceLog, ContactsPro, Palm Reader, PowerOne Finance, PowerOne Personal, Presenter-to-Go, StreetFinder Express	PC sync
PCPlus verdict 6		PCPlus verdict 7	PCPlus verdict 6	PCPlus verdict 6	PCPlus verdict 7

All the stats, all the facts... (continued)

DETAILS	SMARTPHONES	SMARTPHONES	SMARTPHONES	SMARTPHONES	SMARTPHONES
Model	MPx200	Xda II	Blackberry 7320	P900	Tungsten W
Manufacturer	Motorola	O ²	RIM	Sony Ericsson	Palm
Supplier	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com	T-Mobile/ISIS Telecom, 0845 412 5000, www.t-mobile.co.uk	Expansys, 0161 868 0868, www.expansys.com	Expansys, 0161 868 0868, www.expansys.com
Price	Handset £395 (£336 ex VAT), o2 contract £160 (£136 ex VAT)	Handset only £587 (£499 ex VAT), o2 contract £352 (£299 ex VAT)	£199 (£169 ex VAT)	Handset only £519 (£442 ex VAT), o2 contract £284 (£242 ex VAT)	Handset only £292 (£248 ex VAT), o2 contract £57 (£49 ex VAT)
Warranty	1 year	1 year	1 year	1 year	1 year
SPECS					
CPU	132MHz TI OMAP710	400MHz Intel PXA263	ARM (unspecified)	153MHz ARM9	33MHz Dragonball
RAM/ROM	10MB/32MB	128MB/64MB	16MB/Unspecified	16MB/Unspecified	16MB/8MB
Flash disk	No	14MB	No	32MB Memory Stick Duo	No
LCD size	2.2in	3.5in	3in	3in (landscape)	3in
LCD resolution	176x220, 4K colour	240x320, 65K colour	240x160, 65K colour	208x320, 65K colour	320x320, 65K colour
Expansion	SD	SD(IO)	No	Memory Stick Duo	SD(IO)
OS	Smartphone 2002	Windows Mobile 2003	RIM	Symbian OS 7.0	Palm OS 4.1
Wireless	Tri-band GSM/GPRS	Tri-band GSM/GPRS, Bluetooth	Tri-band GSM/GPRS	Tri-band GSM/GPRS, Bluetooth	Tri-band GSM/GPRS
Multimedia	Windows Media	Windows Media Player	No	Symbian Video Player	No
Speaker/Headphone	Yes/Yes	Yes/Yes	No/No	Yes/Yes	No/Yes
Keyboard	Yes	No	Yes	Yes	Yes
Voice rec	No	Yes	No	Yes	No
Docking cradle	No	Yes	Yes	Yes	No
Size/Weight	89x48x27mm / 118g	130x70x19mm / 190g	113x74x20mm / 136g	115x57x24mm / 157g	138x78x17mm / 184g
Removable battery	Yes	Yes	No	Yes	No
Quoted/Tested battery	110h standby/5h talk	180h standby/5h talk	240h standby/4h talk	480h standby/16h talk	200h standby/10h talk
Extra software	PC sync	PC sync	PC sync	PC sync	Various Palm apps
PCPlus verdict 5 PCPlus verdict 8 PCPlus verdict 7 PCPlus verdict 8 PCPlus verdict 7					

Accessories – Palm

Staunch Palm fan **Dean Evans** highlights some of the more useful PDA add-ons

If we take AvantGo and DataViz's Documents To Go as Palm OS must-haves, what other software and hardware will extend the talents of the humble Palm handheld? Not so long ago, Pocket PCs laughed derisively at the size of Palm's multimedia muscle. And yes, perhaps it was embarrassingly tiny. But modern Palms have been working out and handhelds such as the Tungsten T3 now have the power and the applications to rival a PPC in almost every way.



Kinoma Player 2

www.kinoma.com

Worshippers of the Palm OS embrace file conversion as a necessary inconvenience. So it should come as no surprise that Palm PDAs don't play Windows-compatible video files.

The best alternative is surely Kinoma's self-titled (and free) video player, which plays back Kinoma files in surprisingly good quality. To encode video into the Kinoma format, however, you require Kinoma Producer 2 (\$29.99). With half-an-hour of DivX video compressing to under 100MB, you can store two Little Britain episodes on a 256MB SD card.



BugMe!

www.bugme.net

At first glance, BugMe! seems little more than a new version of the existing Palm application Note Pad. But although it gives you the ability to scribble down notes, unlike Palm's own jotter it enables you to import pictures (there's a screen capture utility built-in) and annotate them, alarm them, even attach them to emails. You can even beam them, using whatever wireless doo-dah your PDA possesses. As an extension to the current version of the Palm OS, it's a great little app. The trial version is available as a free download. Registration costs \$19.95, and allows for unlimited notes.



AeroPlayer 2.1

www.aerodrome.us/aeroplayer

By default, Palm PDAs aren't blessed with a decent MP3 player. But AeroPlayer 2.1 is a good stand-in, compatible with MP3 and Ogg Vorbis files and capable of playlist generation and background playback – so you can access Date Book while listening to the White Stripes. Like the Kinoma products, you'll require an SD card for song storage. Registration to unlock the MP3 plug-in after the 14-day trial period costs \$14.95.



SD Card

www.sandisk.com

Considering that the maximum amount of internal memory in a Palm is currently 64MB, you'll need extra storage to make the most of a Palm's multimedia talents. The majority of Palm devices use the SD format and alongside straightforward memory cards, you can buy SD Bluetooth cards, an SD-based digital camera add-on, even a radio.



Palm Portable keyboard

www.palmone.com

Bar the Tungsten C and the Tungsten W, not to mention some of Sony's heftier Clies, Palm PDAs tend to rely on Graffiti, Decuma or their tiny on-screen keyboards for data entry. But regular Palm users appreciate that these just aren't convenient enough, especially when writing large documents. What you need is a Palm-compatible collapsible keyboard. Available from Palm, such plastic keyboards are small enough to fit in your pocket, but when unfolded and docked to your Palm they are big enough to type on comfortably. Looks awkward, works surprisingly well.

PCPlus Verdict

There's something for everyone in this month's Labs, but here's the pick of the bunch

£400-£500

EDITOR'S CHOICE

Toshiba e800

PRICE £464 (£395 ex VAT)

INFO www.toshiba.co.uk

SUPPLIER Expansys 0161 868 0868 www.expansys.com

Competition was fierce in all of the price bands, but perhaps none more so than at the top-end of the PDA market. The march of technology is neverending. Where HP's biometric-enhanced h5550 used to be the only choice for the power user, now both the LOOX 610 from Fujitsu-Siemens and Toshiba's new e800 provide good alternatives.

Thanks to the combination of a fast PXA263 processor, 128MB of RAM, a graphics co-

processor and a sharp 4in LCD, the e800 represents a new generation of PDA, part mobile office and part portable media player. It's the closest we've seen to PDA perfection, lacking only dual wireless options to make it a great mobile device. But it did give the best playback of our test episode of The Simpsons – the one where the family go into the witness protection programme to escape from Sideshow Bob.

Sony's compact UX50 should also get a special mention here too, as it's by far the most powerful Palm-powered handheld available. It's not without its flaws (we'll hold out for the next version), but the clamshell design, the dual wireless options and its mini laptop form factor certainly show promise.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



£300-£400

EDITOR'S CHOICE

AJP Mio DigiWalker 558

PRICE £399 (£339 ex VAT)

INFO www.ajp.co.uk

SUPPLIER AJP 0208 208 9700

Few companies look to contend this mid-range price band, concentrating their R&D efforts instead on the luxury and budget ends of the market. AJP's Mio 558 is an off-the-peg Mitac PPC, but it stands out here thanks to its dual wireless options (Bluetooth and 802.11b) and its dual expansion interfaces (SDIO and CF Type II). Best of all, it makes use of the new PXA263 XScale processor, which gives the Mio 558 a kick that sets it apart from the crowd. It's still pricey, but it's the best of the three here.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



£200-£300

EDITOR'S CHOICE

HP iPAQ h2210

PRICE £299 (£254 ex VAT)

INFO www.hp.com/uk

SUPPLIER Amazon UK www.amazon.co.uk

Spending £200 to £300 on a PDA, instead of £300 to £400 means that you have to make certain compromises. You can buy a PDA with Bluetooth or 802.11b as standard, but you can't get both. Similarly, 64MB of RAM is the norm instead of 128MB. Competition is tough here too: the Tungsten T3 has a silvered allure; while the iPAQ h1940 offers a great slice of power for just over £200. In the final battle, Dell's Axim X3i takes on HP's h2210. For us, the h2210's dual expansion slots just swing it.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



£100-£200

EDITOR'S CHOICE

Palm Tungsten E

PRICE £135 (£115 ex VAT)

INFO www.palm.com/uk

SUPPLIER Expansys 0161 868 0868 www.expansys.com

At the budget end of the PDA market, Pocket PCs are almost non-existent, although you could probably pick up a second-hand Dell Axim X5 for around £150. This is almost exclusively a Palm-powered domain, where the Palm versus Sony battle continues to rage. This price band is one of few frills, little memory and hardly any multimedia to speak of. While the Zire 21 stands out (it's only £73), Palm's Tungsten E stands as the victor over Sony's bland budget models. Decently powered and with a good battery life, it's the best of the bargain bunch.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



SMARTPHONES

EDITOR'S CHOICE

O² Xda II

PRICE Handset only £587 (£499 ex VAT)

O² contract £352 (£299 ex VAT)

INFO www.o2.co.uk

SUPPLIER Expansys 0161 868 0868 www.expansys.com

From the moment you see the Xda II you want one. You want one even though you can buy Sony Ericsson's multi-talented P900 for less and despite the fact that the Treo 600 is smaller and the BlackBerry has peerless GPRS email connectivity. The Xda II is more of a connected PDA than a smartphone, but this is arguably the way forward for mobile devices – one gadget for mobile comms, web browsing, video and digital audio playback, even games. It's a stunning example of convergence in action. If only it was cheaper.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



PCPlus PC SYSTEM LAB TEST

→ Nine video editing systems go head-to-head



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Editor's Choice

Our top award for products that combine exceptional performance and quality with superb value for money

Performance Award

Awarded to products that excel in our performance and quality tests, where money is less important

Value Award

Awarded to products that represent outstanding value for money, giving you more bang per buck



Simon Williams

simon.williams@futurenet.co.uk

Simon Williams has been an IT journalist for 20 years and has spent half that time dissecting computers, peripherals and the software they run

Movie makers

Even desktop PCs under £1,300 can produce high-quality videos. Simon Williams eyes up nine of them

Whether you want to edit your holiday videos, capture weddings as a lucrative sideline, or cut together art-house shorts, as long as you've got the right combination of hardware and software you can achieve it all on a desktop PC. Contrary to popular belief, this needn't be a £3,000 system stuffed with exotic hardware. A PC costing half this amount can do the job.

There are four main requirements for a video editing system; plenty of processor muscle, lots of memory and hard drive space, and ideally a pair of monitors. While processor throughput has largely outstripped the needs of mainstream applications, digital video editing is one of the few tasks that really taxes the main chip in your PC.

When a system is manipulating 25 or 30 frames of video per second, a large memory is vital for buffering and overlays. You should be looking at 512MB to be comfortable.

DVD-quality digital video takes around 40MB per minute to store, so a lot of hard drive capacity is required. Its arrangement is also important: you want to keep the drive holding Windows, and your DV application running on a separate controller from the one that stores your video data, so that each controller and drive can run at full throttle.

It's useful to have two monitors too, one for viewing the editing screen of your chosen DV editing program, and the other for previewing the resulting video at full screen resolution. Here are nine of the best DV editing PCs we could find for £1,299 ex VAT.

Your guarantee

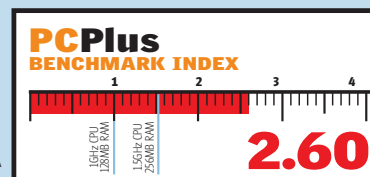
The manufacturers have guaranteed that these PCs will be available with their featured specifications while this issue of PC Plus is on sale – from 18/02/04 to 15/03/04. Any component changes will be due to unforeseen shortages. Note: replacement parts may increase the system price.



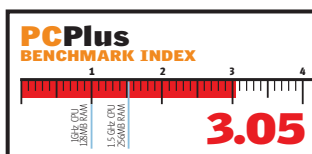
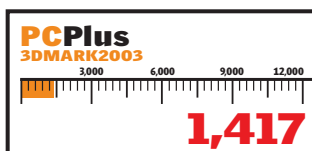
**Special Reserve
MAXX4D 3000DV
39**

**THE PC PLUS BENCHMARK FOR PCs
PROVIDES INFORMATION YOU CAN TRUST**

The benchmark score for PCs is derived from a comprehensive set of real computing tests which evaluate every aspect of a PC system, not just the speed of the processor. The score provides an objective, scientific speed rating and is based on a score of 1.0 for PC with a 1GHz Athlon processor, 256MB PC100 SDRAM, 10GB UDMA 100 7200 Maxtor hard drive, NVIDIA Quadro 64MB.



BEST PRICE Poweroid 7209



PRICE £1,526 (£1,299 ex VAT)

INFO www.poweroid.com

SUPPLIER Best Price Computers 0870 220 0444

The core of Best Price's Poweroid 7209 system is the Matrox RTX10 suite. This is a high value combination of real-time video processor with a comprehensive semi-pro suite of editing software that's based around Adobe Premiere Pro. This hardware and software combination provides real-time effects, so you can preview scene transitions and other effects you apply to your video without having to render it first.

Best Price builds this into a system powered by a 2.8GHz Pentium 4 processor, with 512MB of 400MHz memory. This provides plenty of kick and is quick enough to handle full-screen playback. A single ATI Radeon 9600 Pro card runs twin Iiyama Vision Master Pro 454 monitors through its dual ports. So, you can set Windows up to display a contiguous desktop across both screens, displaying Premiere's monitor window at full-screen on one monitor, and its timeline and import controls on the other.

A single 120GB hard drive provides fixed storage on the system. This is perhaps the weakest element of the design. Best Price would ideally fit two or even three hard drives, but were constrained on this system by the price point. Although it's not absolutely necessary to have twin drives on a DV machine, it does improve editing performance.

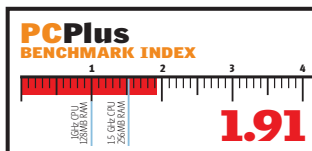
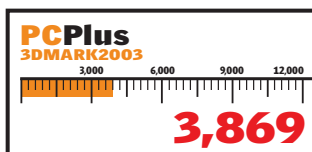
120GB should be enough for most video editing tasks, particularly if you archive finished videos onto recordable or rewritable DVD. A multi-format DVD±RW drive is fitted, there's a 16-speed DVD reader, a FireWire port at the front of the system box, as well as two further sockets at the rear.

Sound comes from a 5.1-channel ADI sound chip on the Asus system board, and drives a set of Creative Inspire P580 speakers. This is very much a mainstream six-channel workhorse, but in our view it lacks any mid-range presence.

In use

The Poweroid 7209 completed the test rendering in nine minutes 44 seconds, which is pretty much the same length of time the clip would take to play back. The SYSmark benchmark resulted in a PC Plus

CARRERA Focus Extreme



PRICE £1,526 (£1,299 ex VAT)

INFO www.carrera.co.uk

SUPPLIER Carrera 0871 222 3456

Carrera's Focus Extreme uses the company's standard black and acrylic case, which looks functional and stylish. Inside, the system is built around an Athlon XP 3000+ processor with 512MB of 400MHz memory.

It comes with two Maxtor serial ATA hard drives, both 114GB, and includes a DVD rewriter and a 16-speed reader, both made by Sony. To complete the removable media drives, there's a

floppy and a USB 2.0, six-way memory card reader.

Sound comes from a Creative Audigy 2ZS sound card, which provides three sound channels at the front, two at the sides, two behind you, as well as a sub-bass channel. If you can sort out all wires, this system produces an effective sound platform.

The graphics output is provided by an MSI GeForce FX5700 Ultra card and runs two 17in monitors. The LCD monitor is from Neovo and is glass fronted, making it a very clean, living-room-style unit with a clear, high-contrast picture. The CRT monitor is an Iiyama VisionMaster 1403, which is an adequate display for editing your video on, but you'd want to display the result on the Neovo.

The keyboard and mouse on this system are both wired, and it's the only PC in the group not to use wireless components for at least the mouse, if not the keyboard, too. Wireless devices enable a freedom of movement on the desktop.

In use

Carrera is the first of seven suppliers to provide Pinnacle Studio 8 as the digital video editing software. As this is a program that doesn't support dual monitors, it could have meant seven out of nine suppliers had shot themselves in their feet. As luck would have it, though, Pinnacle is about to release Studio 9, which supports two monitors. Carrera confirms that it will be supplying the new software as soon as it's available.

Studio 8 renders the 10-minute test video in 9min 16sec, on a par with most of the other systems. 3DMark results of 13,483 and 10,858 also show the 3D performance of the system to be good, and the 3Dmark2003 result of 3,869 indicates

Index of 3.05. This is a very good result showing plenty of processor muscle. 3DMark didn't score as well, producing indexes of 5,247 and 4,796 at the two 3DMark2001SE test resolutions. While this will have little effect on the ability of the machine to playback video, if the system is to be used as a general-purpose leisure PC, you may notice some drop-off on the latest 3D games. The 3DMark2003 index of 1,417 strengthens this opinion.

Service and support

Best Price provides a two year on-site warranty, with a typical call-out of two days. There's lifetime back-to-base cover, but for labour only. This is generous, and comparatively good in this group.

Conclusion

This is one of the most well conceived digital video editing PCs in the group. With its impressive software bundle, comprised of Premiere Pro, Audition and Encore DVD, as well as a copy of Ability Office, it's one of the most serious, semi-professional systems supplied here. Although you lose a little with the single hard drive, and need room for the twin 19in CRT monitors, it's still a very tempting combination of quality components.

PCPlus ratings

BEST PRICE POWEROID 7209

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

8

that it doesn't drop off with the latest 3D tasks. SYSmark results are disappointing, though.

The Internet Content Creation module produces a score of 312, which is very similar to the CCL and Demonite results. However, the Office Productivity score is just 107, around half of what the other systems score. This leads to an overall PC Plus Index of 1.91, which isn't going to break any records for an Athlon XP 3000+.

Service and support

Carrera, like its sister company Demonite, offers a five-year warranty with its system. The first three years are on-site, while the following two are back-to-base and cover labour costs only. Call-out and turnaround times vary with your location, but average two to five days.

Conclusion

This is a strong system, with an interesting mix of components, including a copy of Works Suite 2004. The poor SYSmark performance suggests that there are problems with its configuration. While these don't have much effect on DV editing, if you intend to use the PC for Office applications too, you can get better performance elsewhere.

PCPlus ratings

CARRERA FOCUS EXTREME

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

7



PRICE £1,526 (£1,299 ex VAT)

INFO www.cclcomputers.co.uk SUPPLIER CCL 01274 47 1257

CCL carefully considered the specification we gave out to suppliers and provided a system with nearly everything we would expect in a PC intended for digital video editing. Its tall midi tower case has both a DVD rewriter and DVD reader on the front panel, together with a seven-way memory card reader.

The system is based around an Athlon XP 3000+ with a hefty 1GB of main memory, giving plenty of room for substantial video clips to be handled in RAM. Twin 153GB Hitachi hard drives provide fixed storage via a parallel ATA connection. We'd prefer to see drives on separate controllers, but CCL's configuration is better than tying either drive to the same cable as a slow CD/DVD drive.

Twin Ethernet sockets provide access to two separate networks, and the plug-in Pinnacle breakout box with composite and S-Video inputs and outputs makes it very easy to connect video sources. Sound comes from the 5.1-channel C-Media chipset on the Epox system board, and drives a set of Creative's Inspire P580 speakers.

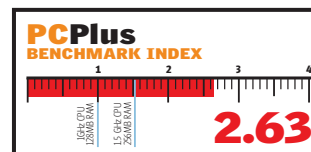
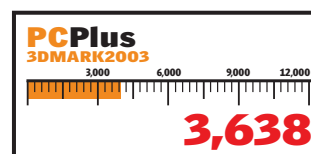
The video side of the system runs from an ATI Radeon 9600 XT dual-head graphics card, partnered by a Pinnacle PC TV Rave card for analog TV reception. The card drives a 17in Vision Master Pro 413 CRT monitor for viewing the video editing software, and a second 17in Iiyama ProLite E430 LCD monitor to display the resulting video.

In use

The software installed on the system is Pinnacle's Studio 8 application, which is intended as an entry-level digital video program. The software has no support for dual monitors, but the brand new Version 9 does, and CCL is evaluating that product with a view to upgrading.

We tested all these systems using the software supplied, and wouldn't expect there to be a dramatic difference in performance with the introduction of the new DV software. If CCL doesn't choose to upgrade, there's little point in going for a dual monitor system with Studio 8.

Our benchmark tests produced a PC Plus Index of 2.63, a little low for this processor, but showing a system more than capable of dealing



with mainstream applications. 3DMark results were good, with indexes of 12,288 and 10,525. Even the 3DMark2003 test produced an index of 3,638 – easily enough for modern games. The system rendered our test video in 9min 4sec, which is slightly better than the heavyweight Premiere solution on the Poweroid system.

Service and support

CCL provides a three-year warranty with its X-Pro EP30 ViD2 system, the first-year of which is on-site with a one working-day callout. Second and third years are back-to-base, labour only with a five-day turnaround. It would be good to see parts cover on years two and three, but otherwise this is a fair warranty.

Conclusion

This CCL system includes a full copy of Works Suite 2004, as well as video editing software and utilities such as MyDVD and Nero. It will be an ideal configuration with the more supportive Studio 9 software, which can make use of the twin monitors. You certainly get a lot for your money in this system, though.

PCPlus ratings

CCL X-PRO EP30 ViD2

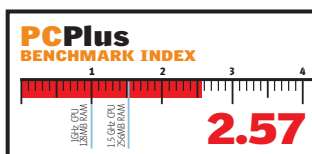
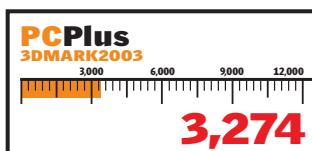
Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

9



PRICE £1,526 (£1,299 ex VAT)
INFO www.demonite.com
SUPPLIER Demonite 0871 222 7222

Easily the most striking looking of any of the systems in the group, Demonite's Promovie RTX10 comes in a green metallic midi tower case with a hinged door covering its removable media drives. Behind the door is an NEC DVD±RW a DVD ROM, and a floppy drive.

Inside, the system is based around an Athlon 2800+ processor, the lowest clock rate in the group. However, some economies enable Demonite to go

to town in other, more important areas. 512MB of main memory is what's available in most of the other systems in this group, and is enough for DVD editing. With the two serial ATA hard drives, at 76.6GB and 152GB for applications and video data respectively, there's plenty of storage capacity.

It's when you start to look at the video subsystem that you see how Demonite has chosen to spend its budget. There's an MSI version of a GeForce FX5700 Ultra twin head graphics card running a 17in Sharp LCD monitor and a 17in Iiyama CRT. You can configure them either way round, but the picture from the Sharp lives up to its name and we'd want to use this for video playback.

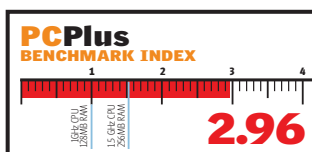
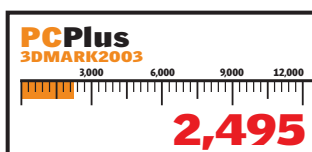
As well as the GeForce card, there's an RTX10 card from Matrox, which delivers accelerated video rendering and comes complete with a range of Adobe software. Rather than having a separate processor for rendering, it integrates with the PC's main processor, so will produce better results.

Sound comes from a high-end Creative Audigy 2ZS sound card. It delivers 7.1-channel sound into a set of Creative Inspire T7700 speakers, which offers the joint best audio environment in the group.

In use

The Adobe software included with the Matrox RTX10 card comprises Premiere Pro, Audition and Encore. This gives a much more comprehensive DV editing system than the Pinnacle Studio solution, and includes extras like real-time effects for scene changes.

Rendering our 10-minute test video from drive C to drive D took just 3min 13sec, over twice as fast as any of the Studio-based systems, and a lot



PRICE £1,526 (£1,299 ex VAT)
INFO www.evesham.com
SUPPLIER Evesham 0870 160 9500

Evesham has stuck to the core elements of a digital video editing system here. This 2.6GHz Pentium 4-based PC, with 512MB of memory has just a single DVD drive. However, this is the Sony DVD rewriter, and enables you to produce your own DVDs or CDs from your edited video.

There are twin Western Digital hard drives, each at 111GB for fixed storage and, as with the CCL system, they both run from the same controller.

Sound comes from a 5.1-channel C-Media chip on the Microstar system board, and feeds to a trio of Altec Lansing 2100 speakers, which produce 2.1-channel sound. While you may not be able to get the full environmental effects that 5.1 sound would give you, the speakers are of high quality and suitable for music playback, as well as soundtracks.

The video side of the system starts with an ATI Radeon 9600 twin-head graphics card, which runs a pair of ViewSonic Ultra Bright E70f+ conventional CRT monitors. These monitors produce clean pictures at their working resolution of 1,280x1,024.

The Pinnacle package features the Liquid Edition software and also comes with the same alloy-cased MovieBox USB 2.0-based breakout box for video input and output as provided by CCL, with its cheaper Pinnacle offering. This device provides connections for Composite and S-Video analog connections, but not digital. These are provided elsewhere with front and back panel FireWire ports.

In use

Although very sophisticated for a desktop-based DV editing application, Pinnacle Liquid Edition isn't the most intuitive program to use. It uses its own virtual desktop, and works in a similar way to Windows. The idiosyncratic terminology that's used isn't the easiest to understand. You import all video clips to a virtual 'rack', and 'log' new video into a 'project'. But the facility to stretch the desktop across both monitors and place the various viewers, timelines and browsers wherever you like around the two, gives you plenty of room for manoeuvre.

Benchmark results set the Evesham PC in the middle of the group, with a PC Plus Index of 2.96,

faster than the single drive Best Price solution.

Other benchmark results were reasonable without being flashy. SYSmark produced a PC Plus Index of 2.57 and the two 3DMark results of 12,650 and 10,417 show that the 3D performance of the system isn't to be sniffed at. Even with the latest game techniques, as tested in 3DMark2003, an index of 3,274 shows the system in a good light.

Service and support

Demonite provides a five-year warranty with the Promovie RTX10, the first three years of which are on-site, with the final two back-to-base and labour only. With a callout and turnaround of two to five days, this is still very good cover for anybody using a system on a day-to-day basis.

Conclusion

This is an excellent, semi-professional system, well capable of being used for paid work as well as for the keen amateur with a DV camera. It includes a copy of Ability Office, so you can bill your clients and draw up storyboards, and offers the best of both LCD and CRT displays. In your off time you also benefit from the excellent DVD movie playback facilities, including the top rank sound system.

PCPlus ratings

DEMONITE PROMOVIE RTX10

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

9

and 3DMark results of 9093 and 7461 at the two test resolutions. The rendering test, which takes a 10-minute MPEG-1 video and converts it into an AVI, completed in nine minutes and 15 seconds.

Service and support

Evesham provides a three-year warranty with its system and this breaks down to two years on-site with a third year back-to-base, but still including labour costs. Both on-site and back-to-base cover enjoys a one-day callout or turnaround. This is good cover, especially on a PC that's likely to be in use on a day-to-day basis.

Conclusion

The Pinnacle package includes Instant CD/DVD as well as Liquid Edition, giving you a quick way to produce all kinds of silver-disc media. There's also a copy of Microsoft Works 7, so the system has basic business applications pre-installed. Overall, assuming you can get to grips with the Pinnacle Liquid Edition software, this is a well-balanced system, which can produce a high-quality digital video. Evesham has concentrated the money where it's needed; on the processor, hard drives and video editing software.

PCPlus ratings

EVESHAM EVOLUTION 2.6P

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

8



PRICE £1,526 (£1,299 ex VAT)

INFO www.jal.co.uk SUPPLIER JAL 01782 84 8100

The black and silver case of the JAL Monarch 3000 DVI conceals a well-configured video PC with several interesting design features. For a start, it uses a pair of LCD monitors, both from Iiyama. The 17in Prolite E430 is intended for viewing your finished video, while a 15in Prolite E330 handles the editing screens.

The 15in LCD monitor is a bit disappointing, as it's a bit on the small side for some tasks involved in digital video editing. We'd rather see a 17in CRT monitor than the 15in LCD, as it would provide a bigger desktop space for around the same price.

Both of the screens are run by an ATI Radeon 9600 XP graphics card, not the fastest adaptor in the group, but still capable of a fair throughput. The graphics sub-system works with the PC's main Athlon XP 3000+ processor and its full 1GB of main memory.

JAL provides two serial ATA hard drives, both from Seagate, one with a capacity of 74.5GB for program and operating system, and the other at 111GB for storing completed video. Using non-identical hard drives is a reasonable approach, and saves enough from the budget to include a six-way memory card reader. A DVD rewriter and reader are also fitted to the front panel, providing versatile recording facilities on DVD discs.

The usual array of serial, USB 2.0, FireWire and parallel ports are available at the rear of the system, and under a flap at the front. But like other systems using the Asus A7N8X system board, you also have two separate Ethernet network connections.

Sound comes from the six-channel nForce2 chip on the system board and feeds a set of Altec Lansing AL251 speakers. These are only 4.1-channel devices, but for most purposes, two front speakers are adequate to give good environmental sound. The sound quality is clear and precise with a well-developed mid-range and thumpy bass.

In use

JAL, like six of the other suppliers in this group, chose to use Pinnacle Studio 8 as the digital video editing software on its machine. The company was more on the ball than the others,

though, as it knew the new version would be available and told us before delivery that it would be supplying Version 9 to customers.

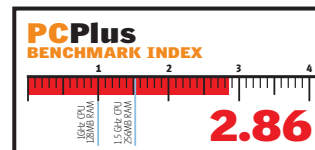
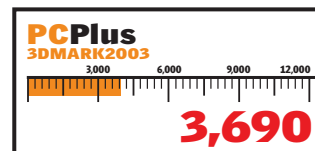
Pinnacle Studio 8 on this hardware platform completed the 10-minute video render in 9min, 27sec one of the longer times in the group. SYSmark produced a PC Plus Index of 2.86, again in the middle of the field. The 3DMark results of 10,899 and 3,690 were again, about average.

Service and support

JAL provides its standard warranty terms with the Monarch 3000 DVI, which are two years on-site with a one to two day callout. This kind of service is impressive, though we'd still like to see it extended to a third year. The warranty covers parts and labour costs for its entire term.

Conclusion

As well as Pinnacle Studio 8, JAL provides MyDVD, PowerDVD and Nero, but no straight application software. There's little to complain about in this PC, apart from the small diagonal of the 15in LCD monitor. It's a good system, but doesn't offer quite the value of the winning systems in this group.



PCPlus ratings

JAL MONARCH 3000 DVI

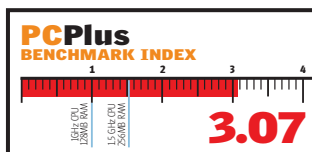
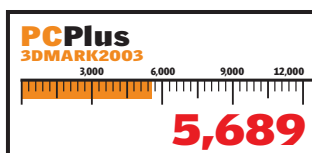
Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

8



PRICE £1,526 (£1,299 ex VAT)
INFO www.meshcomputers.com
SUPPLIER Mesh 0870 046 4747

Mesh has done well with its Matrix 3200+ DVX Pro PC, by using several components not widely incorporated elsewhere. Its jet black case includes a DVD rewriter and a reader, but it's when you get inside that its configuration gets interesting.

The processor is an Athlon XP 3200+, currently the fastest 32-bit chip in AMD's range, and this is matched by 512MB of 400MHz memory. Although only a single hard drive is fitted, this is a serial ATA

device with a formatted capacity of 189GB. It doesn't hinder the video capabilities of the system.

Sound output comes from a Creative Audigy 2 ZS card, providing 7.1-channel sound to feed into the Creative Inspire 7100 speakers – the joint best combination for movie viewing in this group.

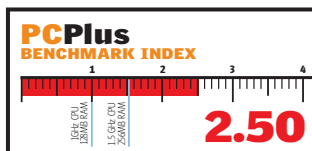
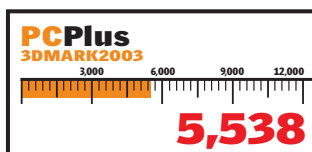
The biggest boost to the machine's performance is its video sub-system. The ATI Radeon 9800 Pro card is close to the top specification available from the company, and drives a pair of 19in Mitsubishi Diamond Pro 930 CRT monitors, to give excellent picture quality on their nearly flat faces.

There's a TV tuner card built into the system, which not only offers the standard terrestrial analog channels, but a full set of digital programming from what's effectively a Freeview set-top box built into a PCI card from Black Gold. This represents a saving of around £80 to £100 if you're thinking of using the machine as a second TV, as well as a DV editing suite.

In use

Although Mesh, like several other suppliers, installed Pinnacle Studio 8 on its system, it confirmed to us that it will be using Studio 9 as soon as this product is available, and more importantly by the time you read this review. This means that both screens can be run at the same time to give you more room for editing.

Performance results from the system are as good as the specification suggests. The PC Plus Index of 3.07 is a fine figure for mainstream business and graphics programs. This is also reflected in the 3DMark results of 17,027 and 15,014 at our two test resolutions. The 3DMark2003 figure of



PRICE £1,526 (£1,299 ex VAT)
INFO www.microlanduk.com
SUPPLIER Microland 0870 443 0399

Microland's silver and black cased TECH Plus 213.01 fulfils most of the requirements of a digital video editing system. It uses an Athlon XP 3000+ as its processor, and couples this to a generous 1GB of 400MHz main memory. This is a great start.

Although the PC has twin Maxtor hard drives, each at 114GB, these are configured as a striped RAID array. This would be okay on a simple

standalone PC, but it's a bad choice on a video editing system. See the Analysis column on page 45 for the reasons why.

An NEC DVD rewriter is partnered by a Sony DVD reader on the front panel, and the six-channel sound chip on the system board is well used in driving a set of Creative Inspire P580 speakers.

When you get to the video subsystem, the TECH Plus 213.01 continues to impress with its high-end ATI Radeon 9800 Pro video card, running a matched pair of 17in Sharp LCD monitors. These give great pictures, and the pair of them working together with the Pinnacle TV tuner card make an excellent solution for an all-round multimedia platform.

In use

To run our video rendering benchmark we took the installed software and loaded two video files. We rendered each of these to an Avi file, storing the resultant video if possible on a different drive from the source. On the machines that use a single drive or a RAID array, this is impossible, so we render from a folder to the root folder on the same drive.

On this system, the cumulative time to rendered both files is 18mins, 18sec, around twice that taken by any of the other systems. Whether this is due to the RAID array or some other factor is unclear, but in its current configuration, it makes a very poor DV editing platform.

Microland uses Pinnacle Studio 8 as its video editing software, and like most of the other suppliers, has undertaken to upgrade this to Studio 9 as soon as that software is available.

The other benchmark results put this system above average in the group; a PC Plus Index of 2.50,

5,689 is higher than any other system in the group.

All this extra processing muscle has a direct effect on the video rendering speed of the system and our sample 10-minute video rendered in just 8min 52sec. Given that there's no specific hardware acceleration (as there is in systems with the Matrox RTX10), this is an impressive result.

Service and support

Mesh provides a three-year warranty with the Matrix system, with the first two years on-site and the third year back-to-base. The company maintains that call-out and turnaround times depend on where in the country the customer lives. While this is understandable, other companies manage to fix a nationwide period.

Conclusion

Although there's no application software other than that for video editing, this is still a high-value, high-performance PC at a very reasonable price. Assuming you have the room for the two substantial 19in monitors, you get a very capable system in terms of both video and audio output and the added bonus of digital terrestrial TV into the bargain.

PCPlus ratings

MESH MATRIX 3200+ DVX PRO

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

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and 3Dmark indexes of 16,099 and 14,199. The 3Dmark2003 figure at 5,538 is the second-highest overall and you can expect this system to have excellent 3D games performance.

Service and support

Microland offers a three year collect and return warranty with this system, covering both parts and labour. This is a good compromise between the convenience of on-site cover and the extra costs of a back-to-base warranty. The company claims a turnaround of two days, so you shouldn't be left without your PC for long.

Conclusion

If this TECH Plus 213.01 system had been configured with two separate serial ATA hard drives, rather than a RAID array, we suspect its video performance would have been considerably better. If that were the case, the other parts of the system, particularly its twin LCD monitors and TV tuner card would have put it among the awards. It comes with Ability Office and Norton Internet Security 2003, as well as the video editing software, and represents excellent value in virtually every other respect.

PCPlus ratings

MICROLAND TECH PLUS 213.01

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

8



PRICE £1,526 (£1,299 ex VAT)

INFO www.MAXXPC.com SUPPLIER Special Reserve 0870 725 9999

Special Reserve is best known for its games PCs, so it's perhaps unsurprising that this system is well geared towards 3D. It's just as capable as a 2D system working with digital video, though, and starts with the fastest processor in the bunch. A 3GHz Pentium 4 packs quite a punch, more so than AMD's 32-bit 3000+ designation.

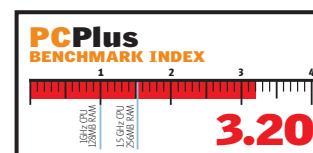
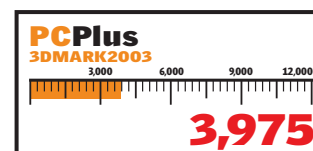
This Pentium 4 is supplied with a full 1GB of 400MHz main memory, which is very useful in handling large data files and an integral part of editing video. There are twin Seagate 111GB hard drives inside the case, too, to give you plenty of storage space, and an NEC DVD rewriter for removable recordings. This is the only system not to include a DVD reader as well as the rewriter. This is a mistake: DVD is a good source of video material and clips for merging with other content to write out to a rewritable disc.

Sound output is another weak area of the MAXX4D 3000DV. Although the Creative SoundBlaster Live! 5.1 graphics card is capable of six-channel sound, the Trust 1600 P2.1 speaker set isn't. With stereo satellites and a sub-bass unit, it does its best, but a multimedia-centred PC should have better surround sound than this.

The graphics adaptor is a GeForce FX 5700 Ultra from XFX, which gives a great 3D performance and runs into a 17in LG Flatron LCD monitor, as well as a bumper 19in Hyundai ImageQuest flat-faced CRT display. Both monitors give sharp, distinct displays, but in most cases you'd want to use the larger CRT monitor for video playback.

In use

Results of our benchmarks from this system are well up the field. A PC Plus Index of 3.20 is the best in the group by quite a considerable margin, and the processor performance also brings up the 3Dmark result, with the low resolution figure coming in at 14,508. As supplied, the Nvidia card was set up in dual head nView mode for a display and a TV, so the maximum resolution supported was 1,024x768. Even when we reconfigured the system for a single monitor we couldn't get 3Dmark to offer a resolution higher than 1024x768. We did get



a 3Dmark2003 index of 3,975, though. The video render test completed in 8min, 22sec. It's again under Pinnacle Studio 8, but Studio 9 will be supplied when the software is released. The time is better than most machines, though, as around nine and a half minutes is the norm.

Service and support

Special Reserve provides a two year, on-site warranty with the MAXX4D 3000DV system, which is fair cover, though only about two thirds of the term we'd like to see on an expensive system like this. The company doesn't quote a call-out time for this cover.

Conclusion

The MAXX4D 3000DV is a well-configured PC, but still feels more like a games machine than one devoted to DV editing. As if to strengthen this feeling, it comes with six games and game demos, along with a copy of Works 7.

The idea of providing 17in and 19in monitors shows the company does know what's needed, so perhaps they ran out of budget when it came to specifying a DVD reader and the sound system.

PCPlus ratings

SPECIAL RESERVE MAXX4D 3000DV

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL

8

Our nine video editing PCs laid bare



DETAILS

Supplier	Best Price	Carrera	CCL	Demonite	Evesham
Model	Poweroid 7209	Focus Extreme	X-Pro EP30 VID2	Promovie RTX10	Evolution 2.6P
Telephone	0870 220 0444	0871 222 3456	01274 47 1257	0871 222 7222	0870 160 9500
Info	www.poweroid.com	www.carrera.co.uk	www.cclcomputers.co.uk	www.demonite.com	www.evesham.com
Price	£1,526 (£1,299 ex VAT)	£1,526 (£1,299 ex VAT)	£1,526 (£1,299 ex VAT)	£1,526 (£1,299 ex VAT)	£1,526 (£1,299 ex VAT)
Warranty	2 years on-site plus lifetime back-to-base	3 years on-site plus 2 years back-to-base, labour only	1 year on-site plus 2 years back-to-base, labour only	3 years on-site plus 2 years back-to-base, labour only	1 year on-site plus 2 years back-to-base
Call-out/turnaround	2 days/2 days	2-5 days/2-5 days	1 day/5 days	2-5 days/2-5 days	1 day/1 day
Delivery charge	£34	£39	Included	£43	£40

SPECIFICATIONS

CPU type/Clock (GHz)	Pentium 4/2.8	Athlon XP 3000+/2.16	Athlon XP 3000+/2.16	Athlon XP 2800+/2.08	Pentium 4/2.6
Level 2 cache (KB)	512	512	512	512	512
System board	Asus P4C800 Deluxe	Asus A7N8X Deluxe	Epox EP-8RDA3	Leadtek WinFast K7N CR18D Pro 2	Microstar MSI865PE Neo 2LS
Chipset	Intel 865PE	Nvidia nForce2	Nvidia nForce2	Nvidia nForce2	Intel 865PE
Memory/bus clock (MHz)	400/400	400/400	400/333	400/400	400/400
Supplied memory (MB)	512	512	1GB	512	512
Maximum memory (GB)	2	3	3	3	4
Hard drive make	Maxtor	2x Maxtor	2x Hitachi	Hitachi/Maxtor	2x Western Digital
Hard drive capacity (GB)	114	2x 114	2x 153	76.6/152	2x 111
CD/DVD make/speed	Sony DVD±RW/4x2.4x12	Sony DVD±RW/4x2.4x12	Optorite DVD±RW/4x2.4x12	NEC DVD±RW/4x2.4x12	Sony DVD±RW/4x2.4x12
Other drives and devices	Sony DVD x16, floppy, V90 modem, Ethernet, Matrox video break-out box	Sony DVD x16, floppy, 6-card reader, V90 modem, 2x Ethernet, video break-out box	Optorite DVD x16, floppy, V90 modem, 2x Ethernet, TV tuner, Pinnacle MovieBox	Sony DVD x16, floppy, V90 modem, Ethernet, video breakout box	Floppy, V90 modem, Ethernet, Pinnacle MovieBox

EXPANDABILITY

PCI slots: total/free, AGP	5/3, 1	5/2, 1	5/1, 1	5/1, 1	5/3, 1
Drive bays external/internal	4x 2.5, 2x 3.5, 4x 3.5	4x 2.5, 2x 3.5, 5x 3.5	4x 2.5, 2x 3.5, 4x 3.5	4x 2.5, 2x 3.5, 2x 3.5	4x 2.5, 1x 3.5, 4x 3.5
Ports	1x 9-pin, 6x USB 2.0, 3x FireWire, 1x parallel	1x 9-pin, 6x USB 2.0, 4x FireWire, 1x parallel	1x 9-pin, 7x USB 2.0, 3x FireWire, 1x parallel	2x 9-pin, 6x USB 2.0, 4x FireWire, 1x parallel	1x 9-pin, 8x USB 2.0, 3x FireWire, 1x parallel

GRAPHIC SYSTEMS

Monitor model	2x Iiyama Vision Master Pro 454	Neovo S-17A Iiyama VM 1413	Iiyama Prolite E430 Iiyama VM Pro 413	Sharp LL-T17A4-B Iiyama VM 1403	2x Viewsonic UltraBrite E70f+
Monitor type	2x CRT	LCD/CRT	LCD/CRT	LCD/CRT	CRT
Quoted/viewable inches	19/18	17/17 17/16	17/17 17/16	17/17 17/16	17/16
Dot pitch/max res (mm/pix)	0.25	0.24/1,280x1,024	0.25/1,280x1,024	0.24/1,280x1,024	0.25
Video adaptor	ATI Radeon 9600 Pro and Matrox RTX10	MSI GeForce FX5700 Ultra and Pinnacle Studio card	ATI Radeon 9600 XT and Pinnacle Studio card	MSI GeForce FX5700 Ultra and Matrox RTX10	ATI Radeon 9600 and Pinnacle Studio card
AGP level: system/card	8x/8x	8x/8x	8x/8x	8x/8x	8x/8x
Video memory (MB)	128	128	128	128	256

EXTRAS

Sound card	ADI AD1985	Creative Audigy 2ZS	C-Media CM19739A	Creative Audigy 2ZS	C-Media CM19739A
Speakers	Creative Inspire P580	Creative Inspire T7700	Creative Inspire P580	Creative Inspire T7700	Altec Lansing 2100
BIOS make	Award	Award	Award	Award	AMI
Power: run/suspend (VA)	298/266	231/156	266/166	301/210	226/41
Noise level (dBA)	Low (<40)	Low (<40)	Low (<40)	41.3	Low (<40)

SOFTWARE

Operating system	Windows XP Home	Windows XP Home	Windows XP Home	Windows XP Home	Windows XP Home
Filing system	NTFS	NTFS	NTFS	NTFS	NTFS
Bundled software	Adobe Premiere Pro, Audition, Encore DVD, WinDVD, utils	Works Suite 2004, Pinnacle Studio 8, MSI SuperPack, utils	Works Suite 2004, Pinnacle Studio 8 and PCTV 5SE, MyDVD, Nero, utils	Adobe Premiere Pro, Audition, Encore DVD, Ability Office, MyDVD, PowerDVD, utils	Works 7.0, Pinnacle Liquid Edition and Instant CD/DVD, WinDVD, utils

PC Plus verdict 8

PC Plus verdict 7

PC Plus verdict 9

PC Plus verdict 9

PC Plus verdict 8



DETAILS

Supplier	JAL	Mesh	Microland	Special Reserve
Model	Monarch 3000 DVI	Matrix 3200+ DVX Pro	TECH Plus 213.01	MAXX4D 3000DV
Telephone number	01782 84 8100	0870 046 4747	0870 443 0399	0870 725 9999
Info	www.jal.co.uk	www.meshcomputers.com	www.microlanduk.com	www.MAXXPC.com
Price	£1,526 (£1,299 ex VAT)	£1,526 (£1,299 ex VAT)	£1,526 (£1,299 ex VAT)	£1,526 (£1,299 ex VAT)
Warranty	2 years on-site	2 years on-site plus 1 year back-to-base	3 years collect and return	2 years on-site
Call-out/turnaround	1-2 days/1-2 days	Varies/Varies	not quoted/2 days	Not quoted
Delivery charge	£20	£39	£34	£25

SPECIFICATIONS

CPU type/Clock (GHz)	Athlon XP 3000+/2.16	Athlon XP 3200+/2.20	Athlon XP 3000+/2.16	Pentium 4/3.00
Level 2 cache (KB)	512	512	512	512
System board	Asus A7N8X v2 Deluxe	Asus A7N8X v2 Deluxe	Gigabyte VT600 1394	Intel D875PBZ
Chipset	Nvidia nForce2	Nvidia nForce2	VIA KT600	Intel D875P
Memory/bus clock (MHz)	333/400	400/400	400/400	400/400
Supplied memory (MB)	1GB	512	1GB	1GB
Maximum memory (GB)	3	3	3	4
Hard drive make	2x Seagate	Maxtor	2x Maxtor	2x Seagate
Hard drive capacity (GB)	74.5 and 111	189	2x 114	2x 111
CD/DVD make/speed	Lite On DVD±RW/4x4x12	Sony DVD±RW/4x2.4x12	NEC DVD±RW/4x2.4x12	NEC DVD±RW/4x2.4x12
Other drives and devices	Sony DVD x16, floppy, V90 modem, 2x Ethernet, 6-way card reader, video break-out box	Sony DVD x16, floppy, V90 modem, 2x Ethernet, Black Gold digital TV tuner, video break-out box	Sony DVD x16, floppy, V90 modem, Ethernet, Pinnacle PCTV Pro TV tuner, video break-out box	Floppy, V93 modem, Ethernet, video break-out box

EXPANDABILITY

PCI slots: total/free, AGP	5/3, 1	5/1, 1	5/3, 1	5/2, 1
Drive bays external/internal	4x 5.25, 2x 3.5, 4x 3.5	3x 5.25, 1x 3.5, 3x 3.5	4x 5.25, 2x 3.5, 5x 3.5	4x 5.25, 2x 3.5, 3x 3.5
Ports	1x 9-pin, 6x USB 2.0, 4x FireWire, 1x parallel	1x 9-pin, 6x USB 2.0, 3x FireWire, 1x parallel	2x 9-pin, 8x USB 2.0, 2x FireWire, 1x parallel	1x 9-pin, 8x USB 2.0, 3x FireWire, 1x parallel

GRAPHIC SYSTEMS

Monitor model	Iiyama ProLite E430 Iiyama ProLite E330	2x Mitsubishi Diamond Pro 930	2x Sharp LL-T17A4-B	LG Flatron L1710B Hyundai Q995
Monitor type	LCD/LCD	2x CRT	2x LCD	LCD/CRT
Quoted/viewable (inches)	17/17 15/15	19/18	17/17	17/17 19/18
Dot pitch/max res (mm/pix)	1,280x1,024/1,024x768	0.24	1,280x1,024	0.20/1,280x1,024
Video adaptor	ATI Radeon 9600 XT and Pinnacle Studio card	ATI Radeon 9800 Pro and Pinnacle Studio card	ATI Radeon 9800 Pro and Pinnacle Studio card	XFX GeForce FX5700 Ultra and Pinnacle Studio card
AGP level: system/card	8x/8x	8x/8x	8x/8x	8x/8x
Video memory (MB)	128	128	128	128

EXTRAS

Sound card	nForce2 6-channel	Creative Audigy 2 ZS	Realtek ALC655 six-channel	Creative SoundBlaster Live!
Speakers	Altec Lansing 251	Creative Inspire 7100	Creative Inspire P580	Trust 1600P 2.1
BIOS make	Award	Award	Award	Intel
Power: run/suspend (VA)	199/164	285/48	283/149	235/140
Noise level (dBA)	Low (<40)	Low (<40)	Low (<40)	41.3

SOFTWARE

Operating system	Windows XP Home	Windows XP Home	Windows XP Home	Windows XP Home
Filing system	FAT32	NTFS	NTFS	NTFS
Bundled software	Pinnacle Studio 8, Instant CD/DVD, MyDVD, Power DVD, Nero, utils	Pinnacle Studio 8, Instant CD/DVD, utils	Pinnacle Studio 8, Instant CD/DVD, Ability Office, Norton IS 2003, utils	Pinnacle Studio 8, Instant CD/DVD, Works 7, 6 games/demos, utils

PCPlus verdict 8

PCPlus verdict 9

PCPlus verdict 8

PCPlus verdict 8

Technology Focus

For all your digital video editing solutions, take a look at the latest software from Pinnacle and Matrox

Digital video editing is a growth application, with more and more home users owning digital video cameras and getting interested in cutting together holiday and event videos. The leading player at the lower end is Pinnacle's Studio combination, which provides all the software basics and digital video capture in an easy-to-understand format.

The software can capture MPEG input directly from your digital video camera, and combine it with MPEG 1 and MPEG 2 clips and titles held on file. Once composed, it can render the result to a variety of different formats; including AVI, MPEG formats, and the streaming formats RealVideo and WMF. It can then burn the resulting video to a DVD, Video CD or S-Video CD. It has facilities for adding pre-designed titles and transitions, can split your video into separate scenes, and enables editing of video and soundtrack.

The basic Studio DV Plus product doesn't handle analog video capture, so if you want to work with video you've taken on analog tape, you'll need to look at the Studio DC10 Plus or Deluxe versions, or products with Pinnacle's Moviebox add-ons, such as those provided by CCL.

At the other end of the market is Matrox's RTX10, which is widely used by those in the training video and short art-film markets, as well as by those at the top end of semi-professional home use. This is a complex product, and is capable of capturing both digital and analog video in real time to DV source that you can edit. Digital formats supported include MPEG and AVI, and it also captures VHS, S-VHS, Hi-8 and Video8.



The main editing screen of Pinnacle Studio 8 looks simple and easy-to-use, but still provides considerable scope for straightforward editing tasks.

Matrox enables you to create all your transitions and overlays without having to render them before viewing. It uses its own hardware in collaboration with your PC's processor to provide hardware-assisted rendering when you finish your project and need to produce the finished video. Although more expensive, it includes full versions of Adobe Premiere, Audition and Encore in the box.

You can think of Pinnacle Studio and Matrox RTX10 like Microsoft Publisher and QuarkXpress in desktop publishing, or PhotoPlus and Photoshop in photo retouching. In each case, one is designed to achieve simple results with the minimum of hassle, while the other is for the professional who needs to work more flexibly and in more detail.

PCPlus Results

Each PC is put through a series of benchmarks to give an accurate picture of its overall performance

Our benchmarks are designed to rigorously test every aspect of the PC in order to make an exact judgement on its overall performance. Each chart enables you to tell, at a glance, how each PC has performed in the individual areas, plus its overall score (shown opposite).

The PC Plus index gives a relative score against a baseline system that achieves a benchmark score of 1. The Baseline system consists of the following specification: 1GHz AMD Athlon CPU, 256MB PC100 SDRAM, 10GB UDMA 100 7200 RPM Maxtor hard drive and 64MB NVIDIA Quadro graphics card.

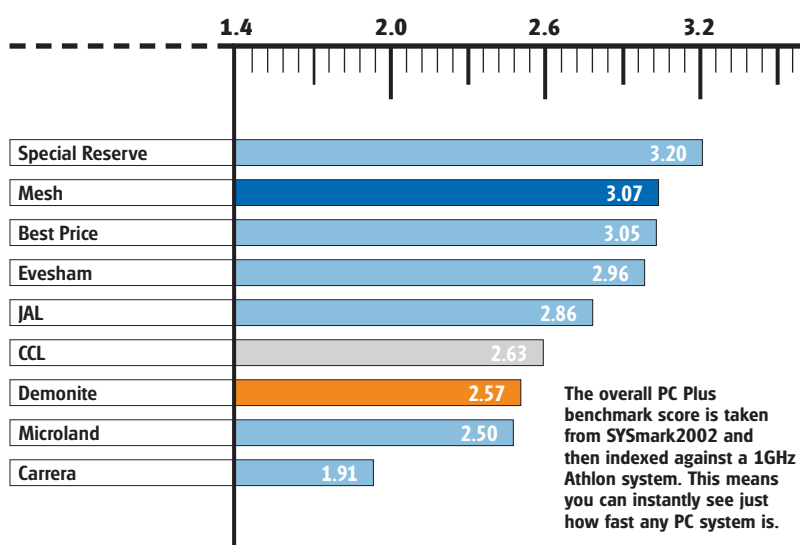
While every effort is made to test each PC to the same standard, unfortunately we sometimes receive PCs that refuse to cooperate with the benchmarking tools we use. In these instances we take the scores that we have been able to obtain and make an assessment of the PC's performance based on these results. However, the PC won't receive a PCPlus index if both parts of the SYSmark test do not complete.

AWARD WINNERS

■ Editor's Choice
■ Value
■ Performance

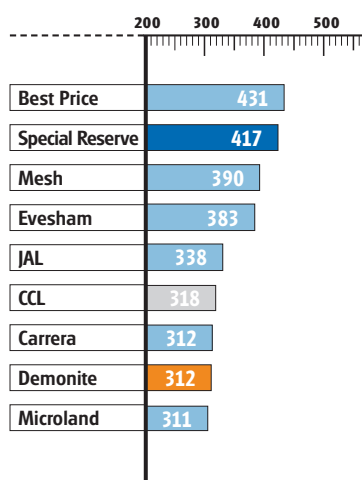
PCPlus

Combined benchmark scores



SYSmark2002 results

Internet Content

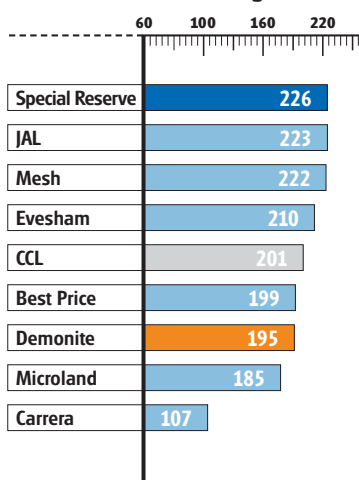


SYSmark2002's Internet Content benchmark tests a PC's ability to cope with content creation. A series of scripts runs a number of demanding applications including Adobe Photoshop 6.01, Adobe Premiere 6, Microsoft Media Encoder 7.1, Macromedia Dreamweaver 4 and Flash 5.

Bigger is better

SYSmark2002 results

Office Productivity

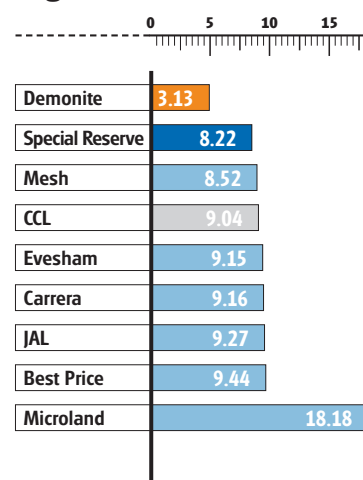


SYSmark2002's Office Productivity benchmark tests a PC's ability to cope with everyday office applications. A series of scripts runs a number of demanding applications including Microsoft Office XP versions of Word, Excel, PowerPoint, Outlook and Access.

Bigger is better

Video Render

Digital Content Creation



Two sample files, one at 30fps (720x480) and the other at 25fps (720x576) were pasted into the same folder twice before rendering them to increase the size of the clips. The results quoted here are aggregate times for rendering both these 'double' files.

Smaller is better

PCPlus Verdict

A few configuration mistakes separate the winners from the also-rans this month



EDITOR'S CHOICE

Demonite Promovie RTX10

PRICE £1,526 (£1,299 ex VAT)
INFO www.demonite.com
SUPPLIER Demonite 0871 222 7222

Demonite is one of only two systems to use the semi-professional Matrox RTX10 hardware and software combination, and it manages to do so without limiting the rest of its specification. The Matrox and Adobe solution outperforms Pinnacle Studio 8 or 9, which is primarily intended for the DV-editing beginner at home.

This system has the world's most popular video editing software, Premiere Pro, and the facility to render



even quite complex effects in real-time. The Demonite's twin hard drives don't hold this process back, and the superb 7.1 channel sound system is as good for DVD movie playback as it is for showing your own DV editing efforts. It proves once and for all that the core processor speed needn't be a governing factor in the overall performance of a specialist PC.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

ANALYSIS

Setting up your drives correctly can make a big difference to DV editing performance

Judging by some of the PCs supplied for this Lab Test, there seems to be only a hazy awareness of how to set up drives for best DV editing performance. Almost any DV editing involves moving large amounts of data – the video file – from one place to another. In this kind of task, you want one hard drive controller to access application overlays and possibly video clips, while the other handles the destination file. That way both can work independently, and you get the maximum throughput. An initial 'best guess' configuration would be to put two hard drives in a PC, one on each drive controller. It used to be the case that this basic principle was complicated. DVD and CD drives run much more slowly than any hard drive. If you had two hard drives and two DVD drives, you would put the hard drives together on one controller to avoid the slow DVD/CD reining in the speed of the hard drives.

These days, Direct Memory Access (DMA) support means a hard drive isn't normally held back by having a slower drive sharing its cable. Even so, the ideal configuration for a DV editing PC with two hard drives and two DVD drives would be to have a dedicated serial ATA connection for each hard drive, and a dedicated parallel ATA connection for each DVD device. You could do this on a system board like the Asus A7N8X Deluxe.

You certainly don't want your only two hard drives set up as a RAID array. Under this arrangement you have to read from both drives, and access through both hard drive controllers for every bit of source data, and access them again through the same controllers to store the destination data.



BEST VALUE

CCL X-Pro EP30 ViD2

PRICE £1,526 (£1,299 ex VAT)
INFO www.cclcomputers.co.uk
SUPPLIER CCL 01274 47 1257

Few people will buy a DV editing PC for just this one task. This CCL machine is more than capable of handling entry-level video editing, but it's equipped for much more. The Pinnacle Studio 8 software comes complete with Pinnacle's Porsche-designed breakout box, a seven-way memory card reader, and a TV tuner card. This opens up lots of opportunities, from digital photo editing to use as a second TV. As an all-round multimedia PC system, it takes a lot of beating on value.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



BEST PERFORMER

Mesh Matrix 3200+ DVX Pro

PRICE £1,526 (£1,299 ex VAT)
INFO www.meshcomputers.com
SUPPLIER Mesh 0870 046 4747

When you're considering a PC for a heavyweight specialist task such as video editing, its performance will be a key consideration. This system from Mesh excelled at 3D, with the highest 3DMark indexes in the group, produced a high PC Plus Index and a relatively fast render. All this processing muscle didn't detract from the value of the system, either, with its two 19in monitors and digital TV tuner card, capable of receiving the full set of Freeview channels.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

PCPlus HELPDESK

→ We solve your PC problems

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Wilf Hey and Paul Grosse wade into the murky marsh of Windows and Linux to search for answers to your PC nightmares

Paul Grosse and Wilf Hey deal with all matters great and small, looking at little-known features and programs that will enhance your PC-using experience. They earn their bread and butter, and thrive on answering questions on a wide range of your most troublesome subjects. This month, there are plenty of productivity tips and

recommendations for shortcuts that you should find particularly useful. They locate an unwieldy recycle bin, inkjet printers go under the microscope, and they even tell us how to create a Turing test. You'll be pleased to hear that they don't just limit their scope to Windows, and concentrate their attentions on offering Linux tips and tweaks as well.

MICROSOFT WORD

Deviating from the Norm

Q Every time I close Word 2000 it tells me that there are changes to the global template and asks if I want to modify it. I always say no, because I know that there's no change being made. This is new. Why has it started happening?
L Olsen

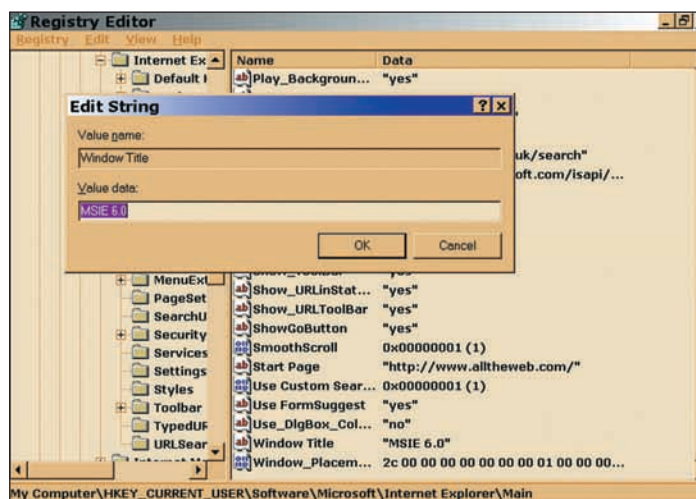
A In all probability your Normal.DOT (the so-called global template) has become corrupted or deleted (or renamed somehow). If you answer 'Yes' to the question, next time it arises, Word will create a new good Normal.DOT and all will proceed – er – normally thereafter. Note that you may well have lost certain system options that would have been stored in the old (missing or corrupt) Normal.DOT, and you may even have to reset them as you discover them.

INTERNET EXPLORER

Who dares to take the credit?

It's a simple matter to change the Windows title of Internet Explorer, whether for the sake of brevity or truth.

A request that we often see repeated is for a way to re-modify the Windows title of the Microsoft Internet Explorer. Various ISPs go straight in and change its title: AOL, for example, make it say 'Microsoft Internet Explorer provided by AOL'. C Petty sends an email complaining that this isn't even true: he had just installed version 6, and then added the latest



You can change the Windows title, but it involves editing the Registry. Be warned; a change to the Registry that goes wrong can seriously disable your Windows system.

AOL version (which commandeered credit for it). It seems that on the AOL CD there was an earlier version of Explorer. 'If AOL were truthful about providing it, they would have installed the old version' he insists. There's little sense in AOL or anybody else putting their name in the title. Even if you use an alternate ISP, the deceiving title still reminds you of AOL. Maybe it's more a form of advertising.

You can change the title easily, but it involves editing the Registry, so be warned: a change to the Registry that goes wrong can seriously disable your Windows system. It's best to have a back-up. Each version of Windows has a different way of backing up the Registry, so consult your system's documentation on the matter.

Firstly, make sure that Internet Explorer isn't resident. Then navigate through the hierarchy in the left pane through HKEY_CURRENT_USER, then Software, then Microsoft, then Internet Explorer, then Main. Now move over to the right pane and scroll down to Window Title. Select it, then pull down the Edit menu and click Modify. This will bring up an Edit String box, and you can enter the name you want. As a suggestion, why not simply go with MSIE along with the version number? Finally, click OK, pull down the Registry menu and Exit.

WINDOWS UTILITY

Stop and start

TrayKiller has a busy work screen, but it's comprehensive and easy to

Contact us

pcplushelpdesk@futurenet.co.uk

Fax - 01225 732 295

Write to: Helpdesk, PC Plus, Future Publishing,
30 Monmouth Street, Bath, BA1 2BW

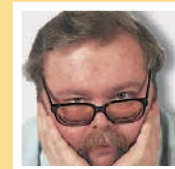
HelpDesk welcomes questions, tips and follow-ups to published items, but please note that we can only respond via the pages of the magazine.



Paul Grosse

paul.grosse@futurenet.co.uk

Paul started helping people with their problems on the PC back in the 1980s and programs for fun



Wilf Hey

wilf.hey@futurenet.co.uk

Wilf has been hanging around computers for decades now: you'd think that something clever would rub off on him



<http://forum.pcplus.co.uk>

understand. And more importantly, the price is right.

You don't have to be an expert to need some expert tools to solve Windows problems. Recently we came across an expert tool that's most effective when you're trying to analyse a problem – especially with compatibility of those scores of System Tray gadgets. The great thing about it is that it's surprisingly easy to use and pretty well documented, too. It works for Windows 9x, NT and 2000 (all these operating systems being in the same family), it's amazingly small, and best of all, it's freeware.

Ominously called TrayKiller, it's a little gem that enables you to suspend multiple programs at your will – temporarily. It's great for other practical tasks, as well, such as running programs that are time-intensive, CD burning or Internet streaming. It effectively clears the way for the road hog.

You can download this freeware program from: www.students.uiuc.edu/~reichler/TrayKiller/index.html

WINDOWS

Precision selection of files and folders

Q Is there a foolproof way of working with files and folders? I find it most confusing

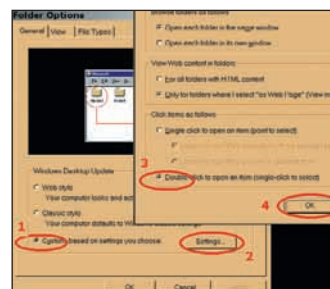
when I want to select three out of several files in a list for moving, copying or deletion. Sometimes, as soon as I try to select the second, the first is de-selected. Even worse, sometimes all the intervening files are also selected. When I try to rename a file, I do a single click to select it, but find that this unaccountably launches the file.

Do you know of a better file manager that's available?
Chas Johnson

A Better the devil you know. These standards are widely used throughout Windows, so it will be unwise to introduce a new one.

True enough, there are several different standards, and it's not very helpful that they all seem to overlap in some areas. We always advise that the best bet is to find a way that's comfortable for you and works predictably, then stick with it. In most places within Windows (such as Windows Explorer), multiple selection is permitted for some operations. This isn't just for move, copy and deletion either: PaintShop Pro, AOL and Outlook, for example, permit multiple selection for 'Open'.

You may find things a little smoother if you abandon the web-based one-click launch and settle for double-clicking. Go to Folder/Options



You may find it easier and more reliable to change Windows so that file and folder launches require a double-click. A single-click will always perform the select function without confusion.

(one way is to right-click on a bare spot on your desktop, click on Display Properties), select the web tab, then press the Folder/Options button.

Under the General tab in Folder Options, set the radio button for 'Custom Based on Settings You Choose', then click on the Settings button. This brings up a new box covering most of the screen, but all you want to do is set the double-click radio button and then OK.

When you're presented with a list of files and folders, you can single-click to select an item. Press [CTRL] and click to cherry-pick second and subsequent items. If you want to rename an item, you single-click on it (to select it) and press [F2]. This is the fastest method at least.

WRITE IN

Email your questions to: pcplushelpdesk@futurenet.co.uk

Or write to:

HelpDesk, PC Plus
30 Monmouth Street
Bath BA1 2BW
Or fax: 01225 732 295

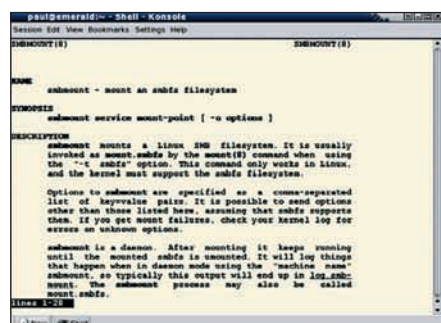
HelpDesk welcomes questions, tips and follow-ups to published items but please note that we can only respond via the pages of the magazine.

HELP US HELP YOU!

We get thousands of emails each month, so please send your messages to the correct address.

Email SuperDisc problems to pcplus.support@futurenet.co.uk

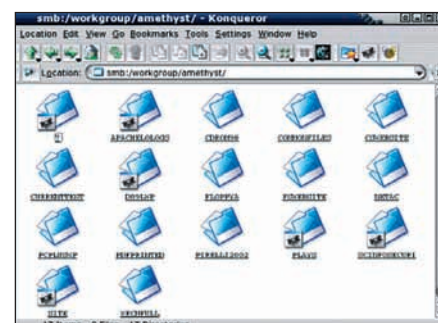
LINUX Let the slaves do the work



1 Linux has a myriad of commands along with a lot of help. Whilst it used to take up a lot of trees, it's now in the form of electronic manual pages. If you need to find out about smbmount for example, then at the shell command line, you type 'man smbmount' and you get the screen above.



2 Instead of typing this in at the command line in a shell, use the 'man' protocol in a browser address bar. In our example, type 'man:/workgroup/amethyst/' and press [Enter]. The main page will appear in html format. As you type, other commands that fit the letters you have typed so far will appear so that you can click on one.



3 You already know http and https, but there are other IOSlaves: info:/ help:/ lan:/ fish:/ and many others. Using smb:/ workgroup/host/ you can navigate network shares in a way that's not just limited to browsing. You can drag-and-drop files from another browser into an smb display effecting the equivalent of ftp.

WINDOWS Back up

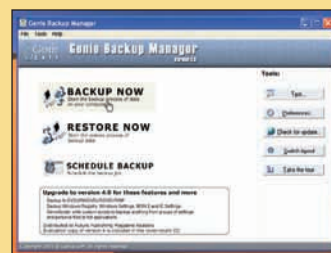
If you have trouble finding the back-up tool on your system, we can show you how

Q: I attempted to use some backup solutions that I've read about, but was unable to find the back-up program on my machine as listed! I have recently purchased a Compaq Presario, which comes with a pre-loaded system, therefore no discs at all. It only has a recovery system on a small portion of the D drive.

which I can't access! Can you please advise as to how I can obtain the back-up facility?
Rex Tester

A: The XP Back-Up tool is only included with XP Professional by default. It's not fully functional in XP Home. For example, the Automated

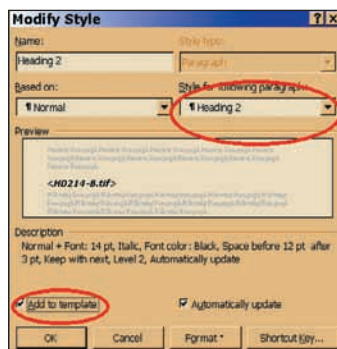
System Recovery portion of the program doesn't work properly. If it's not on your system, don't worry: there are plenty of alternatives out there, including many that we've given away on recent PC Plus cover discs. One tool that you could try is called Genie Backup Manager, as shown opposite. ■



If the XP Back-Up tool doesn't satisfy, Genie's Backup Manager is a great replacement

FORGOTTEN MEMORY

Some heritage PCs (we hate the term 'legacy') have a 64MB RAM limit. However, this doesn't mean that you're limited to 64MB of RAM, as Windows 95+ will handle 2GB. My 200MHz Pentium MMX Windows 95 machine is one of these, and as a 64MB memory stick is less than £20 in Derby I've bought one. Having added it to the existing 32MB stick in the other slot, I now have a useable and half-decent 96MB of RAM to run Windows 98SE on. The 64MB limit is the amount of cacheable RAM, because the chipset doesn't handle anything higher than that as quickly, although it's still very much quicker than virtual memory.



You can force the style of a follow-on paragraph in Word, but the method you can use isn't immediately obvious.

MICROSOFT WORD

Looping levels

Q In Word you used to be able to specify the style to use for any follow-on paragraph. For example, you could create a template in which you could force the user to go into **HEADER2** style immediately after finishing **HEADER1**. It was long ago that I had to learn formatting templates, and it now looks completely different in Word 2000. It seems that when you create **HEADER1** it goes into Normal as soon as you press [Enter]. Why was this feature withdrawn – and is it likely to be back soon?

C Larken

A The feature is still there, but not as obvious to implement as it could be. In the Format menu, select Style to get into the dialog. If you want to change the follow-on to a particular style, select it and click on Modify. In the new dialog box that appears over the right side of the sample pane, there's a field labelled 'Style for following paragraph'. You can pull down the choices available menu and select an existing style type. Click on the OK button to activate this linkage, but don't forget to firstly check the Add to Template box if you want it to become a permanent change, rather than just for this working session. You won't be able to get into style modification without having a document open, even if it's a new blank one. When you close this document, you'll also get a box asking whether you want to update the template. If you don't want the document, you can always go back and delete it if necessary, but you must close it (as if it were normal) in order to ensure that the template is rewritten with its changes.

WINDOWS 98 AND ME

Where is that rubbish bin when you need it?

Q I used the method you recommended many issues

ago to clear my desktop of the virtual graveyard of icons, and shortcuts that were left solely because I wasn't entirely sure which I should delete. This involved going to Display Properties and checking the two boxes 'Hide icons when the desktop is viewed as a web page' (under the Effects tab) and 'View my active desktop as a web page' (under the web tab). This makes them all invisible, though they're still available if I navigate to C:\WINDOWS\Desktop.

On the whole this is excellent, but I do miss the easy access to the Recycle Bin. I know that right-click and Delete moves a file (or folder) to the bin, but there are occasions when I want to see what's in the bin. In an ideal world I would like the Rubbish Bin visible on my Desktop while all the other icons stay invisible. How can I achieve this?

Ron Noble

A They say you can't have your cake and eat it. We can give you back a nice big visible Rubbish Bin, but you won't be able to drag-and-drop scrap files into it, nor will it 'look full' when it's in use. However, it will be instantly available, even if you're in the middle of a program using much of the screen.



LINUX Reiserfs in Windows

In Linux, you can read FAT32, but in Windows, you can now read Reiserfs



rfsgui lets you browse around a file system that normally only the native operating system would let you see.

One of the frustrating things about having a dual boot system with Windows and Linux is that; although the FAT32 file system is supported fully from within Linux, the reciprocal arrangement doesn't exist from within Windows. Indeed, as has been said before in HelpDesk, Reiserfs is far more efficient than FAT32, as it stores files contiguously, only allowing small bubbles of space to enable file growth, thus giving it an efficiency in the order of 94 per cent for small files.

However, it's possible to copy Reiserfs files and even whole directories recursively into Windows XP's file systems using Gerson Kurz's command

line program 'rfstool'. For the faint-hearted, or those who want something a little more like Windows, there's a GUI written for this program by Michael Adams called `rfsgui`. It runs under Windows and enables you to open Reiserfs volumes, browse your way around the file system and copy files or whole directory structures onto your FAT32 drives, RAMDISK or anything else.

To copy a file, you just need to locate the source file you want inside the Reiser file system – selecting the drive number and partition if necessary – give it a location (including the file name that you want to give it once it's in FAT32) and then copy it across.

To copy a directory structure recursively with all of its files, you need to specify where you want it to go. Select 'Recursive Directory Copy' and hit the 'Copy' button.

Be aware that it doesn't respect the permissions boundaries that are set in Linux and other Unix operating systems. Indeed, there's no way that it could know whether or not you're the same person that owns the home directory that you're snooping around or even that you're root. You can look anywhere with this program, which is handy if you've forgotten a password and want to recover files, or even if you need to look at what another user's doing. ■

INTERNET Estimating best connection speed

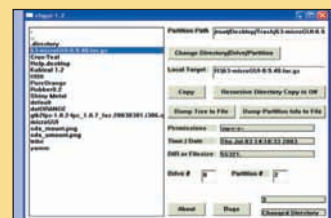
Work out how fast your connection is – the easy way

Whether you have a souped-up broadband connection or POTS, you've probably looked at the download time and tried to work out just how fast your connection is from the values it gives you. You'll notice that it varies all of the time, and that if you take your time to select where you want to save the file you're downloading, the figure

will change constantly. There's a better way, though.

In Windows XP, pressing [Ctrl]+[Alt]+[Del] will bring up the Windows Task Manager. Clicking on the 'Networking' tab will show you the network connections for your machine. The Internet connection in the screenshot is via a 100MB/s LAN.

You can see that the highest transfer rate corresponds to 0.6 per cent of 100MB/s, which gives roughly the 600KB/s of the broadband connection in use. The average is somewhat lower at around 450KB/s due to bottlenecks, and although more useful for larger downloads, the average is certainly not the maximum. ■



Look at the plateau to get the speed of your connection. Any spikes above this will be internal LAN activity.

Right-click on Start and select Explore. When Explorer opens up its window it will of course be focused on the Start menu. Now click on File, New and Folder. Focus on that new folder, and rename it exactly like this: Recycle Bin.{645FF040-5081-101B-9F08-00AA002F954E}

Note that this string has a single space after the word Recycle, and no other. Note also that the braces are those made with [Shift] and the key is immediately to the right of [P] on the standard UK QWERTY keyboard.

This will create a visible bin on the Start menu. You can click on it to see contents, or right-click on it to choose 'Empty Recycle Bin', which will be greyed out if the bin is empty.



If you don't want to put your Rubbish Bin on the Desktop, you can always display it on the Start menu.

A The manufacturers of inkjet inks and papers claim to produce inks that last as long as 90 years. However, there are certain problems with this: inkjet printer technology and the inks used in them have not existed for such a time. In addition, these tests are usually carried out under controlled conditions such as careful drying for a specified time, and are then exposed to high levels of light that are supposed to age the inks and papers many times faster than in real life. The fading times are then calculated for 'average' or 'standard' viewing conditions. Whilst

these give you a certain appreciation of the permanence of any particular ink and paper combination, most people recommend that the very large figures of several decades or more should be taken with a pinch of salt, especially as any reciprocity effect – the ability to calculate times and exposures as linear products – only works at low light levels.

The main problem is that with the exception of black, printers use organic dyes and pigments which are nothing like as stable as the inorganic pigment equivalents that are used in traditional painting. Inkjet dyes have to have at least some transparency about them otherwise mixing would have to take place on the surface of the paper – with transparent dyes, just placing them one on top of another is sufficient.

Proper gouache and water colours use the same opaque pigments as oils – Nickel Titanate (yellow), Chromium Oxide (green), Manganese Phosphate (mauve) and so on – which, from the abundance of works that are several hundreds of years old in galleries all over the world, show what is really meant by 'stable'. If Da Vinci, Turner and Constable had used inkjet dyes, their works would no longer exist.

Regardless of whether your friend decides to charge a high price or not

INTERNET EXPLORER



Don't believe everything Internet Explorer tells you: the Refresh button may mean 'Refresh', but [Shift] plus the Refresh button actually means Refresh. I mean it!

You would think that the Refresh button on Internet Explorer's toolbar does just that – sending out a command to read the selected page as it really is right now. Actually, we've found that at times it merely fetches the image again from your own Internet cache (if that page is in it). You can force Explorer to fetch a bang up-to-the-minute image of the page by holding down the [Shift] key when you press Refresh.

PRINTER INKS

Permanence

Q A friend of mine says that he can print out copies of gouache and water colour works of art he has done using his inkjet printer, and sell them as signed, numbered prints. I'm concerned that the inks used aren't permanent enough to warrant the high price he's thinking of charging. Just how permanent are inkjet printer inks in comparison to real painter's colours? Simon Adams

EXCEL Calculating on the side

We have the answers to all your calculation concerns

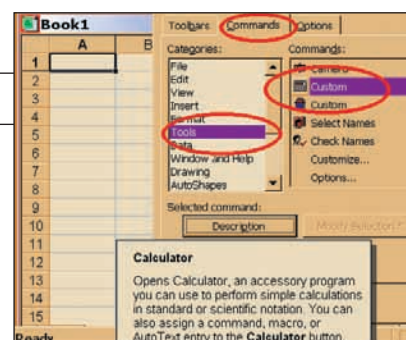
Q: You have shown how to incorporate (virtually) the Find File applet into large applications. Any chance that something like this can be done with Calculator within Excel? Frankly I don't know why a direct link to Calculator isn't automatically included into Excel, since it's indispensable (or at least the way I like to work, it is).

M Clegg

A: You can add an icon to the standard toolbar with a minimum of effort, so that you can call up the calculator. In Excel, Open the View menu and

choose Toolbars. From there, click on Customise at the bottom of the Toolbars checklist. Choose the Commands tab in the new dialog box, and in the Categories pane (on the left), select Tools, and then in the Commands pane. Scroll down to the last few items near the bottom. At least one of these should be named Custom, with an icon looking like a calculator. Select it, and click on the Description button to confirm that this is the calculator. When you have confirmed this, left-click and drag the icon up to the toolbar. Drop it when a plus-sign appears near the

icon. Now dismiss the whole dialog by clicking on the Close button back in the Customise box. You should see the calculator icon on the toolbar, but the display of the toolbar is likely to be very different from the way it is when you have the Customise dialog open, so look carefully. If you glide over the icons with the cursor you'll find it (still) named 'Custom'; sorry we couldn't find a way to change this, but it works like a charm, anyway. ■



It's a doddle to call up the calculator in Excel, once you know how!

WEB GRAPHICS New distortion

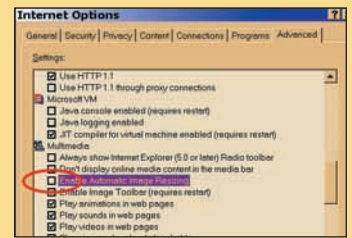
You can cure any distortion you may encounter in Internet Explorer

Q: I've only recently upgraded Internet Explorer to version 6 and I'm not at all pleased with it. Some of the graphics on my favourite web sites are very slightly distorted, but this doesn't make sense as they were perfectly good before. As I say, it's slight, but it is noticeable and annoying, because it's jarring. Do you know if there's

anything I can do to fix this, or make it less obvious?
K Scarisbrick

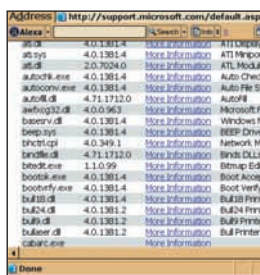
A: We've seen this ourselves, and although we know of no fix at the moment, we do know what causes this problem, and can certainly tell you how to avoid it. In Internet Explorer 6

pull down the Tools menu, and then choose Internet Options. After this you need to select the Advanced tab. Move down to the Multimedia area and turn off the button labelled 'Enable Automatic Image Resizing'. This certainly 'cured' the problem for us, and as yet we haven't noticed any undesirable effect. ■



Turn off the button labelled 'Enable Automatic Image Resizing' to get rid of any irritating distortion.

MICROSOFT INVENTORY



Bill Cumming asks if there's any resource that tells what DLL came with what product, and what version is correct or up-to-date. We have known several useful programs that attempt to identify the DLLs on your system, but the authentic Microsoft-maintained online database must surely be the most authoritative resource. They call it the 'DLL Help Database' but it's much more. You can consult it any time at: <http://support.microsoft.com/servicedesks/fileversion/dllinfo.asp>

LINUX

Samba on DHCP

Q: I followed your instructions for setting up SAMBA on Linux in PC Plus 209 using /etc/fstab and it worked fine. Now, though, I have gone over to using DHCP. The boot log tells me that the Samba File System (smbfs) fails to mount. Is there any way around this?
Jon Repton

A: The answer is deceptively simple, as the fstab file lines used in PC Plus 209 are quite specific. All you need to do is remove the part of the line that has the ip address in it. For example, if the IP address of the machine with the shares on it is 192.168.1.203, all you have to do is edit out 'ip=192.168.1.203'. As long as the target machine is online, it should admit to its name when queried by the Linux machine during boot.

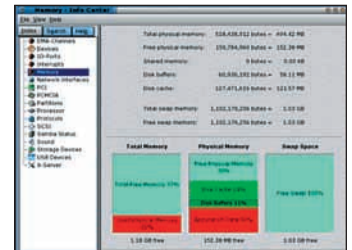
LINUX

Thanks for the memory

Though it's clear that Linux has many system utilities that let you know just

what's going on with the system, they're usually difficult to find, or have cryptic names. Rachel Stirling writes in, reminding us of Info Center, which can be found in the SuSE menu under System|Info|Info Center. If you use the KDE menu under SuSE, and haven't got the SuSE menu activated, you can add it from Control Center under the Index tab – Appearance & Themes|Menu settings, add extra menus to panel and click on the modestly-sized SuSE menu button.

This little utility is a gold mine of information, letting you know about utilisation of IO ports, interrupts, memory resources, storage devices including shared network file resources, your X-Server, CPU and so on. One arguably useful value you can glean is the number of bogomips (bogus millions of instructions per second), which uses a piece of floating point maths to calculate the effective speed of the system – a value that's used, or at least has the potential of being used by programs that need to communicate at a fixed speed such as comms programs and games. For my 1.8GHz Pentium 4 processor, the value is around 3,500. I can imagine the conversations that will be going on now.



Forget your graphics card benchmark or amount of RAM, the question is: 'how many BOGOMIPS?' Click on 'Processor'.

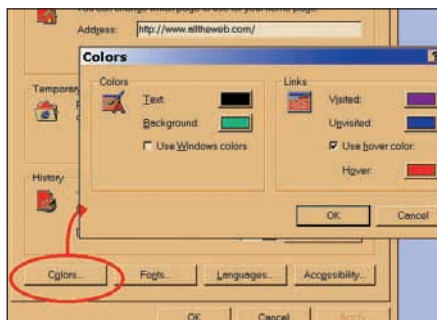
TURING MACHINE

Make your own

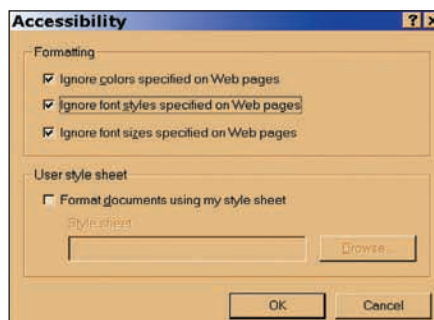
Alan Turing's test for artificial intelligence poses the question: 'can you tell if you're playing against a machine?' (This question is also touched upon in our feature, The Living Computer on page 120.) On Windows XP, there are a number of games that you can play online, and when you run them, they log into a server that finds another player who happens to be online and has a similar ability to yours. With thousands of users online at any one time, this works quite well and it rarely takes long to find somebody else who has just finished a game or has just logged on themselves.

One thing you'll notice, however, is that the people at the other end are usually quite good at whatever game

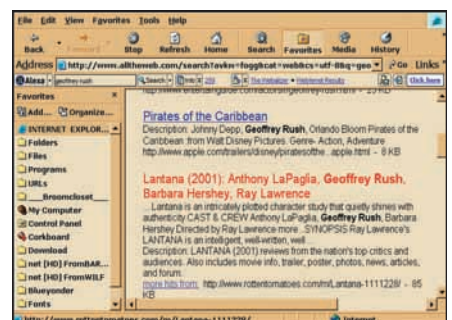
INTERNET EXPLORER Easier on the eye



1 Not all users are comfortable with the usual fonts, sizes and colours used with Explorer. You can change these independently by selecting Internet Options in the Tools menu, and then clicking on one of the buttons along the bottom, Colours, Fonts and Accessibility.



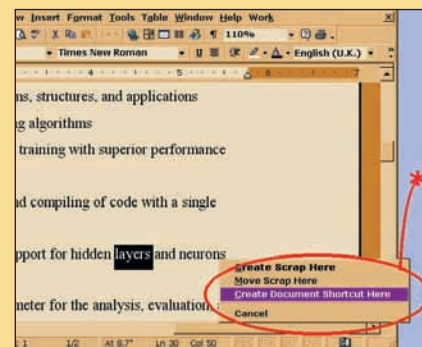
2 If you have changed Colours or Fonts, you can go to Accessibility to make your options override even the formatting of hard-to-read web pages. Of course resizing fonts may cause alignment problems, but changing colours and type of font can make a difficult page easier to read.



3 Many find that using a distinctive 'hover' colour can help when going through a long list of links, such as the ones you may see on an index site or as output from a search engine. Beware if you've elected to treat your desktop as a web page: if so you may like to treat the Accessibility overrides as temporary.

TOP TIP

A handy way to mark your location within a Word document is to highlight a passage (a word or more), then right-click and drag the selection onto a bare part of the desktop. When you release the right button on the mouse, a little menu pops up allowing you to create a shortcut to the passage.



you have chosen and you are (or at least I am) quite often beaten by them. To combat this, it's possible to start a human versus computer game on your machine. Any move that your Internet opponent makes, simply copy across to the game on your machine. When it has made its move, simply do the same move on the online game. It is important to choose the right level of ability on both games, otherwise it would be (more) dishonest.

With this set up, you'll be able to beat your online opponent regardless of your ability. This is assuming that they aren't doing the same. Then again, who's to say there's actually a human at the other end.



With Microsoft's Internet games, you can make your opponent play your machine – Turing-style. But then again, are you really playing against a human?

WORD

Fast close and save

Sometimes you'll find yourself dealing with several files open in Word – and at that moment, a colleague will come up behind you with another task so urgent that it transcends everything you're working on. You'll want to close everything, or at least save every file. It's possible for you to make the job instant, with no fear of losing recent data simply by holding the [Shift] key when you pull down the File menu. Notice that it gives you 'Close all' and 'Save all' as new options. Choosing either of these will work on all the documents open at the same time.

WORD

AutoCorrect as timesaver

Let Word do some of the work for you. If you're writing a document that uses a phrase over and over, abbreviate it, call it a 'spelling error' and add it to AutoCorrect – even if you only do this temporarily. This means that every time you key the abbreviation, preceded and followed by a space, AutoCorrect will instantly change it to the full form without bothering you. It's important to make sure your abbreviation isn't also a valid word, though, otherwise you'll spend most of your time looking at the screen and keying [CTRL]+[Z] to undo the deed. **PCP**

WORD

Backing up AutoCorrect

AutoCorrect is a useful feature within Word. Without it, you might have to be more careful about spelling, and you would be slowed down considerably if you had to fetch the copyright symbol from CHARMAP each time it was needed. On more than one occasion, corruption has caused us grief, so, once bitten, we're twice shy. As a result, we have back-ups of our AutoCorrect dictionaries. You can find yours and copy them, too: their extensions are .ACL. You'll have one for each language supported in your Word configuration.

Further Help

If you need an updated driver or help direct from a manufacturer, first check its web site. A search engine should locate it – try www.google.com.

A list of Internet addresses of many leading hardware and software manufacturers is published on the SuperDisc every month. See the HelpDesk page on the SuperDisc for details.

Newsgroups are also a great source of help and advice. Your question may already have been answered so before posting a message search previous postings at http://groups.google.com/advanced_group_search. And don't forget PC Plus' own forums at www.pcplus.co.uk



Related files on SuperDisc
See section: HelpDesk

GRAPHICS Putting a quart into a pint bottle

Reduce graphical images without compromising the quality

Q: I often send graphical images over the Internet to a friend in Africa, but she has an old machine that doesn't perform well when downloading my attached images, as they're very large. What's the best way to reduce their size without sacrificing detail and quality?
Barb Potter

A: There are several different graphical formats, and the amount of detail they preserve varies a great deal. However, the image you sent is a good example since it's a common bitmap (.BMP) file with simple RLE compression. We took an equivalent

picture in the public domain: the famous Frans Hals painting, The Laughing Cavalier. Its size, in pixels, is 944x1000, and it's rendered with 16-million potential colours. As a .BMP file it occupies over 3MB. We resized the image by 50 per cent in both dimensions, and re-saved it as a .BMP with 16-million potential colours. This weighed in at less than one megabyte, and we can't detect any loss in detail. We may also like to try by reducing the number of colours used, but quality goes down much faster, and in large chunks. You get little advantage by changing the type of file (such as .TIF), but by

all means try for yourself. The JASC program PaintShop Pro, distributed on a SuperDisc last year, readily changes size by clicking Resize in the Image menu. You can then change the number of pixels, the size by percentage, or the actual print size. Of the two numbers in each case, you'll usually want to specify one and let the other seek its own relative value, maintaining the aspect ratio. You may want to reduce the colour level. Choose Decrease Color Depth in the Colors menu. Finally, you can vary the format (type) of display by choosing it when you save or close the image. **■**



The image on the right is one-quarter the size, but doesn't seem to have suffered in the process.

PCPlus HELPDESK **HARDWARE**

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Or fax: 01225 732 295

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Email SuperDisc problems to
pcplus.support@futurenet.co.uk

Simon Pickstock uses his extensive knowledge of everything to solve a vast array of your most pressing hardware problems

Simon Pickstock, former PC Plus Deputy Editor, continues his quest to answer a number of your most troublesome hardware queries. Currently Editor of both PC Answers and PC Upgrade, Simon is always tinkering with gadgetry, and is constantly up to his elbows in motherboards. There's no-one more qualified for the job. This month he

tackles the sticky problem of saturated keyboards, crystal clear speech recognition, digital camera power drain and even achieves home entertainment heaven.

Sticking to this format, next month he'll continue to respond to a variety of hardware headaches. If you have any problems or topics that you'd like us to cover, write in to the usual address.

Coffee break

Q I've just treated myself to a new wireless keyboard and mouse set by Microsoft, which set me back a pretty penny. It was all working fine and I was feeling very happy, until my daughter decided to pour a cup of coffee all over it. It still works to an extent, but many of the keys no longer respond and others get stuck. Is it recoverable and if so what's the best way to clean a keyboard? I don't want to spend out for a new one if a bit of care can salvage it.

Arthur Harrison

A The best process for cleaning a keyboard, irrespective of the substance abuse, is as follows. With the PC switched off and the keyboard disconnected, remove each of the keys making a note of where they go. In this case you may only need to remove those around the affected area. With some keyboards the keys just pop off holding posts, while with others you'll need to unscrew the screws on the bottom of the keyboard to remove the top fascia.

The following products are all available from most good hardware stores, or failing that try your local PC World or www.lindy.co.uk. Use compressed air to remove any dust and dirt. Then use cotton wool and alcohol to clean the keys and posts. If necessary, get some electrical contact cleaner to free up any sticky contacts. If the metal contacts are all inaccessible, or enclosed within a rubber strip, then they're not designed to be cleaned.

If you're attempts at cleaning the



A wireless keyboard is just one of the wonders of modern technology. Not if you sling a cup of coffee all over it, though!

keys and posts hasn't resolved the problem, then unfortunately the chances are that you'll need to replace the keyboard.

Give me feedback

Q I'm trying to get to grips with speech recognition. I've got a copy of Dragon Naturally Speaking and I am using a Labtec headset, with both earphone and microphone combined. Whenever I try to record any audio, or communicate with Dragon, I get a load of feedback between the two, and end up with echoes and interference that neither I nor Dragon can understand. I don't want to buy another headset without knowing what the cause of the problem is.

Jane Hudson

A The problem almost certainly lies with both the audio settings on your PC, and the volumes for the headphones and microphone being too high, thus causing feedback. This

can be resolved by adjusting the settings, which you'll find in the 'Sounds and Audio Devices' Control Panel in XP. Switch to the Voice tab and click the Test Hardware button under Voice Recording. Follow the wizard to its end, repeating the sentences as requested until you find the settings that work.

Black and white

Q I'm trying to build a home-entertainment system around my PC. I've got a broadband connection hooked up to a Philips Streamium, which meets my audio needs. For movies I've got a DVD-ROM drive and playback software from Creative, which has been hacked to make it multi-region. I'm using a dedicated MPEG hardware decoder card. This has an S-Video connection on it and I'm using an IXOS S-Video-to-SCART converter to hook up to my widescreen TV. I also have a Hauppauge PVR card that enables me to record programs to my



Simon Pickstock

simon.pickstock@futurenet.co.uk

Simon's meteoric rise in publishing continues as he assumes the helm of PC Answers and PC Upgrade. In his spare time... oh no, he doesn't have any spare time!


<http://forum.pcplus.co.uk>

hard drive. So far so good, but when I watch DVDs on my TV, the playback comes out in black and white. What's going on and how can I complete my home-entertainment paradise?

Mike Statham

A There are a couple of possible causes. If this is only happening on Region 1 DVDs, then the most likely cause is that your TV doesn't support NTSC playback and your hardware can't convert it into a PAL signal. While modern TVs support NTSC playback, older TVs can't, so it's still quite a common complaint with multi-region DVD players in general. If this is the problem, the only solutions are to switch TV or switch the hardware decoder to one that supports NTSC playback via a forced PAL output.

However, if you're experiencing this problem when playing Region 2 discs or when using the Hauppauge TV card, then the likely problem lies in the connection. If you have multiple AV connections on your TV, try using a different one, and also try switching through the AV channels on your TV. Often, a signal can be viewed in black and white on one AV channel when it's connected to a different AV socket. Changing the AV channel on your TV usually gets you the correct signal, which will be in full colour.

The other thing to check is your SCART cable. The row of 21 pins should all be aligned at the same height.



A set of NiMH rechargeables will keep you snap-happy for far longer.

Sometimes – especially on cheaper cables – when connecting it to a socket, one or more of the pins get pushed in. This can cause the symptom of black and white playback. If this is the case, it can usually be rectified with a pair of tweezers or similar instrument by pulling the pin back to the correct height. Alternatively, replace the SCART cable.

Power drain

Q I'm not going to play the poor deprived student card, but I don't have unlimited funds at my disposal, so when I started looking for my first digital camera a tight budget was a primary concern. I only had £100 and thought I had found the perfect solution with the Premier DC2302. It's a two-megapixel model with 3x optical zoom and only cost £99. I hadn't heard of Premier, but other customer reviews seemed positive, so I thought I'd give it a go. Generally, it works a treat. However,

there's one problem that's turning this purchase into a false economy. It takes normal AA batteries and this thing chews through a set in a matter of minutes. It makes the camera less than useful and is costing me a fortune. Have I just bought a duffer, or is there something I can do?

Helen Grimshaw

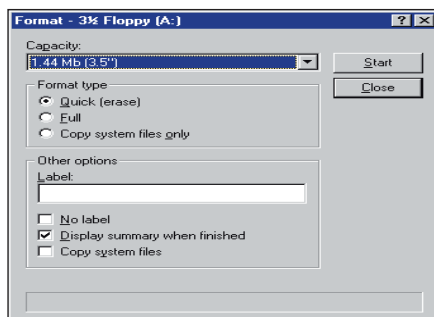
A Digital cameras are power-hungry beasts by nature, and any model that runs off AA alkaline batteries will give you similar problems, especially if you try to use cheap batteries. Even the basic Duracell ones will behave as you describe. For this reason there have been several special batteries produced, including ones from Duracell that are designed specifically to run heavy-drain devices such as digital cameras. However, as you may already have guessed, these don't come cheap and are best reserved for emergency situations.

The best solution is to buy a charger and a set of rechargeable batteries. Avoid the cheapest set you can find as this merely repeats the problem. Instead, look for a set of NiMH rechargeables with at least 2000mAh, and while you're at it choose a fast charger, too. You can pick these up for around £15. It will save you a fortune in batteries, and keep your camera working for longer off a single charge. **PCP**

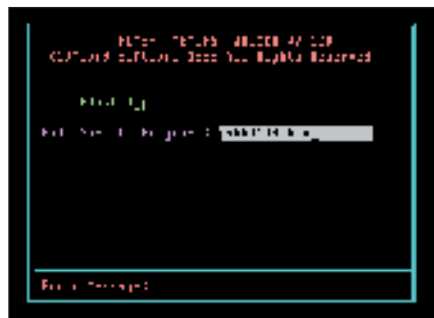
WEB RESOURCE

www.everythingusb.com
Launched in 2001, Everything USB is a special-interest media web site that focuses on the latest development of Universal Serial Bus technology. Not only will you find all the latest news and technological developments posted here, you can also gain access to an enormous range of USB products. There's also a forum where you can discuss anything to do with USB, including getting help with any problems that you might be experiencing.

Hard drive not recognised You may require a BIOS upgrade



1 In Windows 98 and Me, tick 'Copy system files'. XP users should tick 'Create an MS-DOS startup disk'. Copy your BIOS flash utility and BIN file on to a fresh floppy disk.



2 Insert floppy disk, set it as the first boot device in the BIOS and reboot. At the A: prompt type awdflash.exe (if that is the name of your flash utility) and press [Return]. Enter the name of your BIN file.



3 You'll be asked if you wish to back up your old BIOS: always press [Y]. Once complete, the update will begin – don't switch off your PC until it's complete.

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FILES ON SUPERDISC



All the files you need to execute this HelpDesk are on this month's packed SuperDisc, including copies of
Ethereal and PacketMon

Paul Grosse gets in 'promiscuous' mode to help you check if you're running anything on your network you're not aware of

There are legitimate programs that are implemented to make networks more efficient by cutting down on the number of long connections. They initiate a connection from your machine and connect to a server, which then alerts everybody else online at the time. Under certain circumstances, the programs 'supply' you with data,

or even use your machine as a small file server.

It's evident that some of these have also been tampered with and will act as spyware – tampered versions can be installed automatically when scripts are run from a browser. Clearly, if there's one of these on your network and you find such behaviour unacceptable, all you have to do is find it.

WINDOWS NETWORKING

Clean up your network

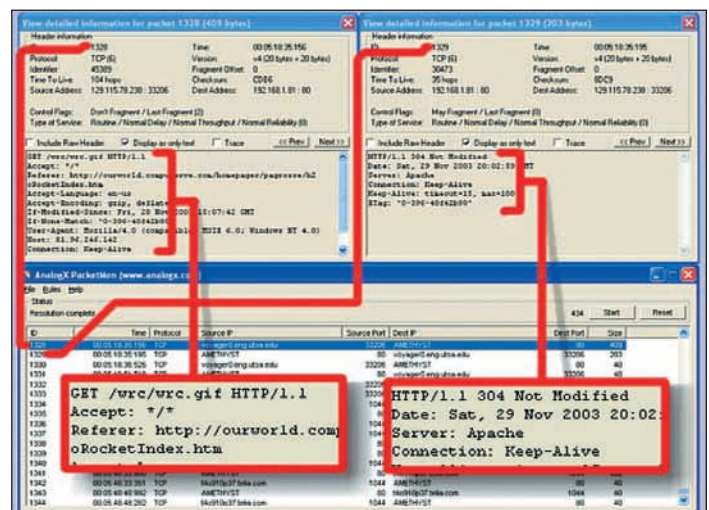
Q I run a small network of about two dozen computers, which has a permanently-on, firewall-protected Internet connection. I notice from the LAN light on the firewall that there are occasions when there appears to be sustained activity when nobody is using any of the computers. I've discounted all of the usual suspects such as Windows updates (blocked), Seti@home, (duration is too long to be this) and so on, and suspect that somebody has downloaded something that they shouldn't have, which is now running. Is there any way I can find out which computer is the culprit (assuming that it's just one) without having to go to each one?

Peter Hampshire

A Firewalls are very good at stopping unsolicited connections that originate on the Internet, but unfortunately, unless a specific service is denied, they're usually configured to permit all connections that originate on the internal network – your LAN. If somebody has downloaded a piece of software that then initiates a connection from the LAN, the firewall will be powerless to do anything about it unless you can generate a rule that blocks that service. The problem lies in finding it. Here's one way of doing it.

Promiscuous activity

You will need to have a network-connected computer that's capable of



This is what a normal connection looks like. Packet 1328 asks the web server for an image and packet 1329 tells the client's browser that it's unchanged.

running its Network Interface Card (NIC) in 'promiscuous' mode. The NIC reads all packets on that network segment. Unfortunately, Windows 98 doesn't usually support this so you'll have to use one of the NT-based OSes such as Windows XP or a Unix-variant box. For Windows, AnalogX's PacketMon is free and works beautifully; for Linux users, Ethereal does the job as well, if not better.

One of the problems with packet monitoring software is that without a set of rules, they do just that – they collect every packet that their NIC can see. If you run one during a busy period of network usage, it will quickly fill up your computer's memory with a copy of everything that has travelled over the network during the monitoring period, so large downloads will chew

up resources very quickly. The best time to run it is when the network is at its quietest, but when all of the machines you suspect are up and running. If the culprit is down, you will never find it.

With your packet sniffer running, you're on the lookout for anything that's unusual. In both Ethereal and PacketMon with the default settings, you'll see the source and destination IP addresses of any packet that's sent over the network, whether it was sent to the machine you're using or not. In PacketMon, you'll see the port numbers – the port of the destination of the initial packet in a connection giving away the protocol. In Ethereal, the packet is analysed for you – a typical line being: 'Local Master Announcement WOLFRAM,


<http://forum.pcplus.co.uk>

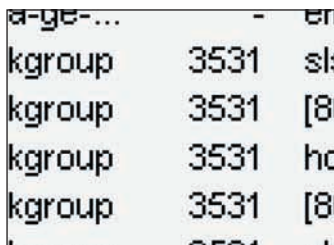
Paul Grosse

paul.grosse@futurenet.co.uk

Paul started computing back in the dark days of coding sheets and punched cards, and believes that there's more to computing than rocket science

Workstation'. You can add extra columns to include unresolved destination ports as well if you like.

If you ask either program to resolve an IP address, this will generate an additional series of exchanges between your machine and your DNS. This is something that's performed at the end of each run for any unresolved IP addresses, but it's useful to see what's going on during a run. With your computers asking who is at a particular address, polling various hosts, and HTTP traffic and so on, and zooming around your network at a third of the speed of light (two thirds if you're using fibre optics – 100 Base FX), you'll soon get a feel for what's normal activity. PacketMon allows you to save a session for analysis with another program, whereas Ethereal will analyse saved sessions itself.

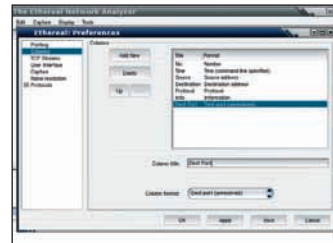


This unwanted traffic is on port 3531. Look at the IANA port list and locate the likely program on your system.

Suspicious activity

Occasionally you'll see something that's unusual, so make a note of the IP address the packet came from, along with the destination port number and then look up the port allocation. Whilst port numbers can be changed and new programs might not conform, the port numbers list at www.iana.org/assignment/port-numbers should let you know which program uses the port you're interested in. In the small screenshot above, the port number ties up to a name which, when typed into www.google.com takes you to a web site from which it's possible to download a 100 per cent spyware-free version. So, which version have you found? This program sits on your machine, is started at boot-up, and when you go online, initiates a connection, precluding any general firewall configuration. The firewall solution blocks this specific port, in both directions just to make sure.

With the program identified, go to the offending computer, press [Ctrl]+[Alt]+[Del], then choose the program from the menu and kill it. Start your packet sniffer and then restart your program. If you have done the job properly, you'll see it trying to connect using the correct port. Kill it again and make sure that it can't start at boot-up. If necessary, delete the file or at least rename it just in case. HijackThis does



With the program identified, go to the offending computer, press [Ctrl]+[Alt]+[Del], choose the program and kill it.

the job. Look at date/time stamp of the installation directory, find out who was logged onto that machine at the time and then educate them – nicely. If you suspect the program of stealing passwords and other data, you can test this out by feeding it some Barium Meal (see Spyware, below) and seeing if it shows up in the captured packets. Remember that it might be encrypted or even collected for later retrieval. If it does, you need to contact the appropriate authorities so that evidence can be collected, the remote IP address traced and the final recipient identified. Read Clifford Stoll's classic 'The Cuckoo's Egg' if you haven't already.

It could be that merely announcing you're online is a breach of IT security policy. Regardless, the implementation of a program that will automatically download and run software from computers run by people you have never met, certainly should be. **PCP**

PORT NUMBERS

Port numbers can be used to identify services. In the log, look at the first line of a connection, or the first non-ICMP line. The number you want is usually the destination port of the outbound connection.

Armed with the service contact port number that your unwanted guest is using, you can look it up on IANA's list. Ports are divided into three ranges: 'Well Known Ports' (0 to 1023); 'Registered Ports' (1024 to 49151); and, 'Dynamic' or 'Private Ports' (49152 to 65535). Type the name you find into Google and start researching.

Spyware – friend or foe

The appropriate use of spyware can reveal illicit activity on your network

Spyware falls roughly into two camps – harmful, and potentially useful. Whether you think that the potentially useful ones are good or bad depends on who put it on the system, who owns the system and what the user of the system is getting up to.

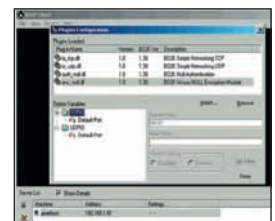
If a script from an Internet site you visited installed a program that runs when your computer boots and it steals your personal data, it's clearly not a good thing to forward it. But if you're responsible for a network and you suspect one of your employees of virus distribution, industrial espionage, child pornography and so on, you might take a different view on the matter.

Information gathering systems such as Back Orifice usually have a server application running on the observed user's machine, and the client application running on the observer's machine. You should have any ports used by these programs blocked off at the firewall so that nothing goes astray. With it running, you'll be able to monitor keystrokes and other activity on the user's machine without them suspecting that their unauthorised activities are being monitored.

No matter how good any of these programs are, they won't be able to distinguish between genuine information and Barium Meal (unique,

plausible but false information that's fed into a system – if it comes out anywhere, the user knows that there's an internal link). For instance, the user communicating through a system where there will be a large, violent demonstration in a particular Essex town on a certain date, subsequently finding those streets filled with hundreds of police, will surely give the game away.

If you're going to monitor other people like this, you should check the legality of such an intrusion: in the context of human rights; and the importance of the suspected activity. Also, you should not break any chain of evidence. ■



The Cult of the Dead Cow's Back Orifice information gathering program collects data from a number of users' machines.

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HELP US HELP YOU!

We get thousands of emails each month, so please send your messages to the correct address. Email SuperDisc problems to pcplus.support@futurenet.co.uk

This month there's tough talk for Toshiba, we ask if technology is a help or a hindrance for teachers, and a feeling of apathy sets in

Once bitten, twice shy

I read with interest the letter from Chris Lesslie (Campaign, PC Plus 212) regarding his duff Toshiba e570 battery. I bought an e570 as soon as they were advertised and was instantly unimpressed with its performance, mainly due to its dreadful battery life. I'd charge it fully on day one and use it a couple of times to take notes. Then I wouldn't use it on day two, but on day three I'd switch it on to check appointments and it would be begging me to charge it up again. Okay, I did have a flash memory card installed as well, but two days between charges when it isn't being used is awful. I contacted Toshiba who simply told me that the product had been discontinued and that they would no longer support it – a brand new design, and already it was obsolete.

This is the second time that this has happened to me; first with a Casio palm PC. Toshiba should have offered me either a refund or a working replacement, or, if it was brave enough to admit failure in its initial design, a newer model. I did a lot of research into PDAs before choosing the e570,

which seemed to be the best available at that time, but because it was such a new design, there were no user groups or web sites either condemning

or praising it. My advice to others thinking of buying a new device would be to wait at least six months after the launch of a new model to see if it's weathering the storm, or has sunk like a lead balloon. In addition, check other users' experiences with the designs; in fact, get as much information as you possibly can before parting with your money, because once companies like Toshiba get your dosh, they just don't want to know.

**John Scott Paterson (Jasper),
Videotape Editor BBC Television,
Newcastle**

"Wait at least six months after the launch of a new model to see if it's weathering the storm, or has sunk like a lead balloon."



If you choose the early adopter route, the risks are high but the rewards can be plentiful.

Editor, Ian Robson replies: Buying new unproven technology is a risky business. But as early adopters of the ubiquitous Compaq iPaq will testify, the rewards for being the first to own what some people call 'a piece of history' can be astounding. It's understandable, however, that with your run of bad luck you may now be shy of such risks.

Non-artificial sweetness

I saw the coverage of AI sites on the web in my subscriber copy of issue 212 (Wavey's Web). It was nice to see that you covered some of our work at AIAI. You may be interested to know that there was a BBC Radio 4 Shop Talk programme on AI on 23 December 2003, which I was involved in. Generation 5 were included too, which was one of the other sites you included in your piece. The programme can be heard again on the BBC web site www.bbc.co.uk/radio4/news/shoptalk/shoptalk_20031223.shtml.
Prof. Austin Tate, Artificial Intelligence Applications Institute, University of Edinburgh

Editor, Ian Robson, replies:

It's warming to note that such prestigious folk read PC Plus and indeed subscribe to our humble magazine. Let's see if I get a letter from the Queen next issue, even if I am 65 years off the birthday that at least guarantees such correspondence.

Easy does it

In your office suite round up in PC Plus 210, I note that EasyOffice (www.e-press.com) wasn't reviewed. It's a very robust suite, and available as a free download. If you purchase it, the additional features you get are mind-boggling! What other office suite, Microsoft Office included, offers voice recognition, bar coding and accounting packages? None that I've seen!

Bryan Monks, California

Features Editor, Richard Cobbett, replies: Sadly, a lack of space meant that we couldn't review EasyOffice in the main Office feature; although there's no reason that it couldn't be covered in a future issue. As ever,

Your opinions count

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Ian Robson

ian.robson@futurenet.co.uk

Ian Robson is the editor of PC Plus. When computing first got onto his school curriculum back in the early 1980s, he was hooked



<http://forum.pcplus.co.uk>



EasyOffice is another full office suite that boasts some unusual features that the other free offerings don't.

should you think that an excellent piece of kit may have slipped our notice, please drop us a line. We're always on the lookout for the latest and best computing equipment, whether it's from one of the big corporations or a couple of devoted coders working out of a garden shed. You never know where the 'Next Big Thing' might be found...

Scary SCART

I read with interest the letter from C Kirby in PC Plus 212, as I too would be keen to convert my Dell desktop PC into a media center. I have already had a look at ShowShifter, which seems to have everything I'd need to do such a task (as I already have a TV card with

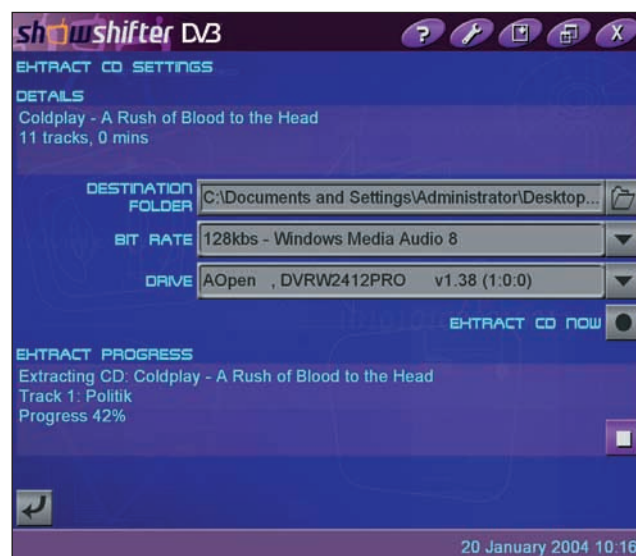
TV out). However, I'm a bit confused as to how I would plug my PC into the SCART socket in my TV. Is this possible? And if it is how would it be done? Presumably it's possible via some sort of coaxial to SCART converter. Obviously my PC would have to be next to my TV, but would the same thing be possible using a wireless solution so that I could have my PC in a different room?

I've seen 'video senders' advertised in most techno stores; however, these all require SCART connections. So again I have the same problem – how to convert from coaxial to RF.

Paul S, Cumbria

Deputy Editor, Dean Evans replies:

I've road tested a Media Center PC connected to a TV, running an S-Video cable direct from the PC to the TV, with the sound transferred via composite audio cables. It's a decent solution and with Media Center's large-fonted display, the PC moonlights magnificently as a set-top box. Any non-MC PC that runs similar home theatre software, such as ShowShifter (the latest version of which is reviewed on page 76), should easily be able to match this operation – no SCART connections required. A wireless solution is



ShowShifter goes from strength to strength with version 3 (shown here), which is able to receive Freeview channels without the need for a separate receiver.

trickier, as wireless video transmission is prone to degradation and interference. But if you can't be dissuaded, take a look at Trust's 1620W Wireless Televiewer (www.trust.com) for such a solution. It offers a variety of connections including VGA, composite and S-Video links in addition to SCART. An extra IR sender will be vital if you want to use your chosen device with a remote control.

PRIZE WINNING STAR LETTER

Apathy killed the video star

Desktop video conferencing is always destined to be a marketing dream. Your report in the Network News section of PC Plus 212 could have been penned 10 years ago when the marketing departments of Intel, BT and others were predicting the imminent take-up of desktop video conferencing. ISDN was the data communications medium, Intel's offering was Proshare, and BT's product was their VC8000 PC Desktop Videoconferencing System. The photo shown in your article obviously comes from the archives as it shows the VC8000 running on an IBM 386 PC.

Prices have fallen, data rates have risen, video compression has improved, but desktop video conferencing is still a niche market.

The use of video conferencing at the desktop has always been hard to justify. The ability to speak to, to exchange documents with, and to simultaneously view and work on a common project with colleges, or to give

presentations to customers in remote locations are satisfied by the use of phones, email and data sharing apps. Video conferencing is seen as just a 'nice to have' extra.

I also think the use of desktop video conferencing as a mainstream product has probably now been made redundant by the proliferation of video mobile phones.

Having been part of the development team that worked on the last incarnation of the VC8000 when it was re-launched as BT's DVS100 PC desktop video conferencing system, I await for the next faltering step in the life of Desktop Video Conferencing with interest.

Richard Hutt

Editor, Ian Robson, replies: I attended the BETT show (The Educational Technology Show, 7 to 10 January 2004, Olympia) and was thoroughly impressed with the quality of video and truly effective real-time interaction that can now be brought to bare when all the component parts of the technology are in place. This includes the requisite high-bandwidth link, and specialist video and audio compression software that together adhere to the isochronous requirements of a real-time link. Integrate this with document sharing and remote access software and you're halfway there. Then you need the display screens and cameras. Until the requirements for experiencing this level of quality is reduced to features integrated in existing apps, using standard broadband connections with only the addition of a camera and microphone, it's unlikely this technology will ever get out of the more privileged of boardrooms and classrooms.

FROM THE FORUMS

Could technology improve education?

Dan90251

I remember the BBC computer in school being an amazing bit of kit – the problem was having to wait weeks to get an hour on the thing. Obviously that changed by the time I got to secondary school. I was very enthusiastic about setting up departmental microsites with forums and so on, discussing homeworks, but alas, never got round to doing it. I've seen one of those electronic whiteboards too. I wasn't too impressed, but then they didn't make use of movies or animations or anything apart from using it as a normal white board.

Seppo

Technology does offer at least two advantages to the student. First, a subject can be offered where there are a limited number of teachers in the specialty or where there is a limited need for the course. This is more of a self-taught or self-help approach. Teaching staff would be available on a limited basis, and then possible only remotely. This would offer the student a class that would not otherwise be available. Secondly, technology provides the opportunity to augment the classroom instruction. The distance learning concept – PC in the home connected with the school – allows the student to expand on the lesson offered in class, or, allows the student to catch up on the concepts not adequately digested in class. This would be a help to the super student as well as the slow learner.

Dan90251

At my university they experimented on us using a product called WebCT with basically an IRC style lecture. The lecturer never used the whiteboard program and the whole thing was conducted using an IRC style chatroom. Basically it was hopeless. But the fact all the notes were available online both in web and PDF format made it quite accessible. There was nothing quite like attending a lecture whilst still in bed sipping tea.

Danx

I worry about this stuff. If my lecturers are anything to go by, things like projected lectures are doomed. Most of them don't even know how to plug a serial connection into the laptop. It's quite amusing watching the lecturer spend 5 to 10 minutes trying to work out which of the two ports it goes in, only to call upon the services of the buildings janitorial staff to help them locate the button on the remote control with the universal power symbol everyday of the week – until it dawns that this is a computing science lecture and they are marking our assessed coursework.

Rem2000

I don't know if anyone else saw it on the news but school/college lecturers are getting a bit cheesed off with the Internet as more students are downloading material and handing it in as their own work, and because of the volume of information it's getting harder to tell if the work is the students or if it's from the Internet.

Wazz

This reminded me of the deviousness of one guy at the uni that my girlfriend works at. He posted his Prolog coursework on a public newsgroup asking for help with it. He also rather cunningly used his Computing Department email address to do so. Unsurprisingly, someone noticed this!

Tom_c

Most of our assignments were partly marked by demonstrations and talking through the code with a lecturer. This way people got caught out because they couldn't explain why they had done something a particular way. Sometimes you would have to compile the source code you handed in (you would hand it in on a floppy or CD-R) for the demonstration. This stopped people making changes to the code after the source code had to be handed in. It also stopped people from running somebody else's executable, forcing them to talk through their own dodgy source code.



www.futureforums.co.uk/pcplus



Prices have fallen, data rates have gone up, video compression has improved, but still desktop video conferencing is a niche market. Despite this, it's been touted as the next big thing since the days of the 386 PC.



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£140

Win a fantastic set of Creative peripherals!

We've teamed up with Creative Labs to offer this month's star letter writer a set of peripherals, worth £140. The winner will receive a Sound Blaster Audigy 2 NX USB 2.0 sound card. This brand new device features 24-bit/96KHz playback, and support for 7.1 surround sound. The generosity doesn't stop there, however. Pen our most interesting letter, and you'll also receive a Creative Webcam NX, boasting resolutions of up to 640x480, automatic exposure, and white balance control.

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TURN TO PAGE 28 FOR FURTHER DETAILS



Advanced style sheets

PROJECT TIME


2 HRS 00 MINS

SKILL LEVEL


5 INTERMEDIATE
Careful planning required for best results

YOU'LL NEED THIS



Any text editor will suffice

This month, **Richard Cobbett** breaks open a copy of Notepad for some old-school, cutting-edge web site design with CSS

Last month, we looked at the way in which CSS can be used to control the formatting of a standard HTML page. It's quick, easy, and efficient, but it's not the entire story. Following the old maxim that showing is invariably better than telling, visit www.csszengarden.com. This is a web design site dedicated to cascading style sheets, and the most important part is found under the heading 'Designs'. Click through this to see the different styles on offer.

Here's the catch. None of them are based on HTML. Not really. The whole point of the CSS Zen Garden is to stretch CSS' layout and design abilities instead of falling back on traditional frames, tables and other old-school paraphernalia. Admittedly, there's one old-school page. It contains all of the text that you see on the site and breaks it up into sections. Everything else is taken care of by one style sheet. Touching the original page source is forbidden, and impossible. If the results aren't enough to convince you how powerful CSS can be in the right hands, it's hard to imagine what will.

1 Early starting points Unfortunately, sitting down to design a masterpiece like these isn't something you can just do overnight. You could be in for a rude awakening if your only web design experience has been with WYSIWYG editors rather than Notepad and other plain text editors. Creating an entire site via CSS quickly turns into a balancing act, and one which suffers from all the traditional pitfalls of web design. If you've been waiting for a time when IE, Mozilla, Opera and the others could be relied upon to automatically display your site as you intended it to be, suffice to say, it's not today.

2 The Zen of CSS Zen We'll move onto individual elements later, but it's a good idea to see exactly what we're

dealing with by downloading the sample HTML and CSS file from the site. Each element of the HTML file is broken up into sections using the <div> tag, shown like this:

```
<div id="preamble">
Contents go here
</div>
```

Move across to the CSS file, and start hunting for the preamble 'selector':

```
#preamble {
How this should be shown
}
```

There are two types of selectors to deal with. This is an 'id selector' – the id of course being 'preamble'. Each document can only have one of each id. The other kind of selector is the one that we looked at last month – the class selector. These apply to all examples of the type, such as headers, image files or hyperlinks, and are written in much the same way. The following will handle any paragraph in the document set to be right-aligned:

```
p.right {text-align: right}
```

in the CSS and:

```
<p class="right">
This is on the right
</p>
```

in the HTML file.

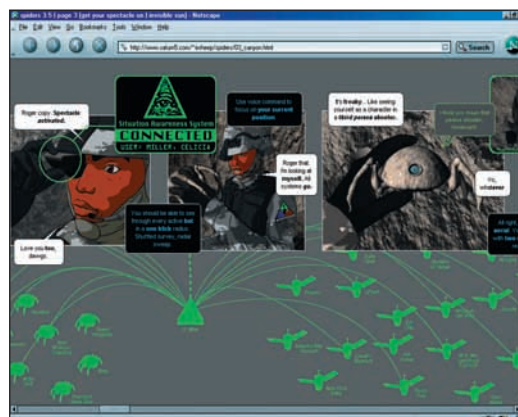
3 Putting everything into action Let's begin with a very simple CSS trick – adding a background to the page. In normal HTML, this is done with:

```
<body background="drkrainbow.gif">
```

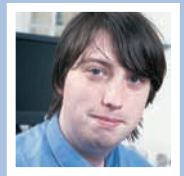
Happily, it's not much different in CSS form – simply:

```
body {
background-image: url("background.jpg")
}
```

While both of these commands put and tile the image across the webpage, CSS offers far more control over how it happens. By adding extra lines of code, it's possible to fix the image in place – allowing it to scroll off the screen as if part of the main text. You can position it exactly, tying it to your webpage instead of having to use one huge file. You can even order it to only scroll



The Spiders (www.e-sheep.com – warning: not for kids) is an online webcomic by Patrick Farley. All of the elements in Part 3, including text and speech bubbles, were placed via CSS.



Richard Cobbett

richard.cobbett@futurenet.co.uk

Richard has been playing around with a new, all CSS site design. It had more floats than a procession, but he managed to get some z-order from the chaos

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one way. None of these things are hard. The following will prevent it repeating and fix it to the dead-center of the screen:

```
body{
background-image: url("background.jpg");
background-repeat: no-repeat;
background-attachment: fixed;
background-position: center center;
}
```

In programming terms, this really is as hard as it gets. Want a dashed border around a paragraph? It's as simple as typing:

```
p.dashed {border-style: dashed}
```

Looking to jazz it up further? Enter multiple borders and the CSS code will work through them as it runs around the element:

```
p.mixed {border-style: double solid dashed groove}
```

4 Floats and advanced layout techniques One of the most powerful features of CSS is the 'float'. Using these, it's possible to place elements on the screen, the text on the page automatically flowing around them. An obvious use of this is to place pictures (screenshots and otherwise) into a site without having to rely on tables, but there are subtler tricks too, from hovering menus to automatically inserting stylish drop-caps at the start of every paragraph. This quick demonstration will place a 75x75 sized image on the right of the text. First comes the CSS code:

```
.floatest
{
```



One HTML page, four completely different designs, and over a hundred other variants at www.csszengarden.com. Stealing them is a no-no, but you can learn from the techniques.

```
margin: 0 0 15px 15px;
float: right;
}
```

And this is the HTML. Add more text to see the effect:

```
<p>

Text goes here</p>
```

The multiple floats in a section are easy to manage. Set one to be right aligned and it will go to either the border of its containing object, or to the left-most edge of any other float. Combined with CSS' control over padding, borders, margins and so on, this can be used for anything from inserting pull-outs to automatically building entire thumbnail galleries. **PCP**

PASSING SHOT

Many web sites now use CSS. Here are a few excellent tutorial sites full of hints and tips.

www.glish.com/
Several layout guides for squeezing your site into table form.

www.alistapart.com/topics/css/
Several advanced, real-world examples, broken down, analysed and coded.

www.meyerweb.com/eric/css/edge/
Eric Meyer's css/edge site. Don't expect everything to be cross-browser friendly.

www.w3schools.com/css/default.asp
Plenty of tutorials on every major facet of CSS editing.

www.htmlcenter.com/tutorials/tutorials.cfm/53/CSS/
You can even use CSS to handle audio. But please, try to avoid it if possible...

NEXT MONTH

Next month we'll be embarking on a brand new Masterclass tutorial.

So what's the catch?

Ensure your code is CSS compliant and prevent your pages from being ruined

CSS is only a set of tools – it's not a way to automatically create a perfect site. Without at least roughly knowing what you want to create, it's extremely hard to juggle specific image placing, or alter styles that affect your whole web site.

This complexity quickly ramps up when the many technical issues come into play. Many online tutorials that attempt to create tables in fact end up with skewed layouts, each column a totally different height. Other pages can be ruined when the viewer resizes the text on your page and promptly throws your perfectly positioned page elements out of alignment. There are ways to mitigate all of these, of course,

but the best way is to ensure that your code is fully CSS compliant. At least then, it's not your fault. You can check using the free validator at <http://validator.w3.org>.

Sadly, even the most perfect code may still have problems, and the easiest way to find out is to run your finished design through BrowserCam – www.browsercam.com. This will load it up on every major browser, from Internet Explorer to Safari, instantly showing you if anything has gone wrong. It's an expensive service, but very, very effective – and if you find yourself using it a lot, it's well worth picking up a full subscription

instead of paying for an hour of its expertise at a time. Examples are available on the site, and often linked at www.websitesthatsuck.com.

Several excellent examples of what can happen are available at Eric Meyer's css/edge web site at www.meyerweb.com/eric/css/edge/. While Mozilla renders everything perfectly, Internet Explorer is incapable of displaying the pure-CSS image pop-ups, advanced translucency effects, or nested menus. It's well worth taking the time to test out any new code snippets before sitting down to design the whole site in intricate detail, or you could get a nasty surprise when you finally go live. ■



As well as a series of tutorials, www.w3schools.com offers an online way of entering and testing out basic CSS designs via a webpage.

This Series

Unix power on Windows

Part One

Introduction to Cygwin

Part Two

Converting Word docs to PDF, and synchronising files

Part Three

Batch processing of images for the web

Introducing Cygwin

PROJECT TIME



1 HR 00 MINS

SKILL LEVEL



8 ADVANCED
Advanced experimentation

YOU'LL NEED THIS



Any reasonably modern PC. This Masterclass was written on a 400MHz Pentium II with 256MB of RAM. You'll also need Cygwin

FILES ON SUPERDISC



All the files you need to complete this Masterclass are on this month's SuperDisc

Rob Fenwick introduces Cygwin, the free library that sits between UNIX applications and the Windows OS, to allow them to talk

Despite the massive success of Linux as a server Operating System, there are still some organisations that refuse to take the plunge into the world of free software. People who are used to working with both Windows and Linux know the strengths and weaknesses of both, but Windows users may still be interested to know that a number of handy Linux/UNIX tools have been ported to the 32-bit Windows platform via the Cygwin project.

Cygwin is a library that sits between UNIX applications on the one hand, and the Windows OS on the other. It enables UNIX applications to talk to Windows, and vice-versa.

Cygwin is free software – the installer downloads the core Cygwin libraries, and offers you a number of free programs to run on top. Download and run the set-up utility from www.cygwin.com. Once you have got past the basics, and have reached the package selection list, clicking the word 'default' next to 'all' will force all of the available software to be downloaded. That is about 1.2GB of hard drive space in total, though the download is about 430MB thanks to the high compression of the individual packages. If you don't want to download and install the whole whack, we'll tell you in each issue which packages you need. For this issue, be sure to grab Figlet, Tail, and XFree86.

The easiest way to get started with Cygwin is to launch the bash shell (command prompt) using the batch file provided – cygwin.bat. This is the equivalent of logging into a UNIX text shell, and allows you to launch any of the console applications available. Cygwin emulates a Linux-like file system, where the root of the file system – '/' – is the root directory you specified during installation. You can navigate around your Cygwin directories by using commands such as `cd /usr/bin`, which will take you to the binaries

direction in your Cygwin installation. One useful thing to note is that if you wish to move outside the Cygwin directory structure, then the command is `cd c:` to go to the root of C:\, `cd c:\data` to go to a directory called 'data' and so on. Because UNIX treats volumes on a drive as a directory in the file system, you have to use the change directory command to switch drives.

Before getting too interested in the shell itself, it's worth noting that the batch file is important because you can control a number of useful variables here. Cygwin's exhaustive documentation covers this in detail, but if you want your Cygwin home directory to be the same as your 'My Documents' or equivalent folder, a quick and easy change to make is to add `set HOME=c:\Documents and Settings\username\My Documents\` to the top of the batch file. To check that everything is working, let's run a trivial application from the bash shell – type in:

```
figlet hello world
```

Hit [Enter]. Figlet is the name of the application, and 'hello world' is the parameter you're passing in. If figlet is working correctly, some pretty ASCII text should have been dumped to the screen. The figlet command...

```
hello world > output.txt
```

...won't dump the output to screen, but will instead write it to a file. Typing...

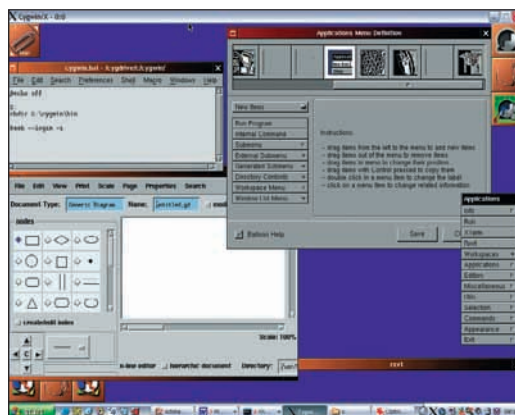
```
tail output.txt
```

...will then dump the contents of the file to screen. Tail is a useful little program which, by default, displays the last 10 lines of a text file to screen. This is particularly handy when working with large log files when you only wish to see the latest data. On low volume servers, you may want to know every access to the box, so running a command such as:

```
tail -F/cygdrive/c/Program\Files/Apache\Group/Apache2/logs/access.log
```

...will follow the Apache web server log file on a Windows box, dumping all of the hits to the server to screen.

In order to effectively merge the UNIX applications provided by Cygwin and Windows, you'll want to run some of these applications from outside the Cygwin folder structure, and outside of the bash shell – particularly if you're going to use a ported application as part of a Windows batch file. If you attempt to run a Cygwin application from the DOS command prompt from outside of the Cygwin binaries folder, you're going to run into a problem. Again, using figlet as an example, copy figlet.exe out of `c:\cygwin\bin` (or



Get your favourite Linux software up and running on your Windows-based computers.



Rob Fenwick

rob.fenwick@futurenet.co.uk

Rob Fenwick is head of web services for the National Trust, and former sysadmin for www.pcplus.co.uk and its sister web sites

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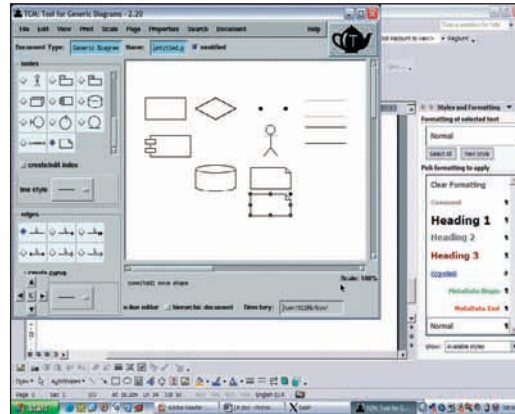
<http://forum.pcplus.co.uk>

wherever you installed it), to the root of C:\, and then attempt to run it from the DOS prompt. You'll run up against a complaint that cygwin1.dll can't be found. If you don't fix this problem now, you'll run into trouble in later Masterclasses.. You need to make cygwin1.dll available to all applications, either by changing your windows PATH environment variable to include the Cygwin binaries folder, or by copying cygwin1.dll to your Windows system folder.

From the bash prompt, you can only run command line (text) applications. If you want to run graphical applications, you need to get the X server up and running. X is launched by a separate batch file. Look for your equivalent of c:\cygwin\usr\X11R6\bin\startxwin.bat and launch it. This time you get a bash window running within X. Look for the 'X' icon in the taskbar to denote when X is running. A useful thing to do when you've started the bash prompt in X is to type xwinclip&, which will allow you to paste straight into the bash shell from Windows by clicking the middle button on your mouse if you have one, or clicking both buttons together if you haven't.

Once more, we're going to run a trivial application to make sure you have the system running happily. Type xeyes& and a pair of rather dopey eyes should appear, following your cursor movements. If you're finding that the cursor following isn't so hot when your cursor isn't over an X application window, then you may want to look at the walkthrough for an alternative way of launching X that isn't so tightly integrated with Windows. You now have Cygwin up and running, and can do some digging around the programs you have installed – type cd /usr/bin/ followed by ls for a list of text applications, or cd /usr/X11R6/bin/ for a list of X applications. We'll get started with some of these applications in the next issue.

Cygwin is packed full of applications – everything from FTP and Proxy servers to technical graphics applications. If you run tgd from the bash shell, you'll find a competent



Linux-based packages offer much more power than their Windows competitors – especially when free!

technical drawing application. If you change directory to /usr/bin/, and have done the full install, you'll find masses of applications available to you. Some of the simplest applications can be the most useful – rm is the file remove tool, but unlike DOS' ERASE, it's a command line utility that can recursively delete whole folders and their contents – very useful in some batch processing. You can also go on a trip way back down memory lane – try running mc, the Midnight Commander. This ancient file manager is still a useful semi-WYSIWYG file manipulation tool for remote server file management. Some of the little applications are useful for keeping an eye on a Windows box that you're running 'headless' (without a monitor) as a server – uptime does exactly what it suggests, and the single-line output of this program can be fed into an email without any trouble. Finally, nc launches NEdit, a Notepad-esque text editor, nice and simple. **PCP**

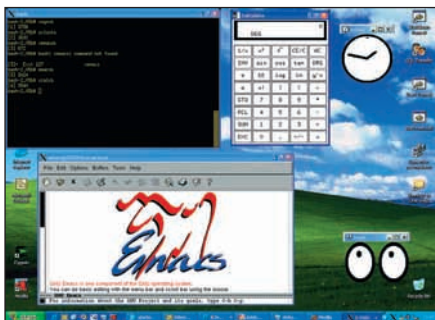
GOING FURTHER

RTFM! A familiar cry that you may know already – Read The (Flipping – Ed) Manual. And it's never been more true than in the case of Cygwin. The documentation is excellent. Go to www.cygwin.com and download the PDF file or version of your choice. It does get incredibly techie in places, but it's not all inodes and abstraction layers – take a look.

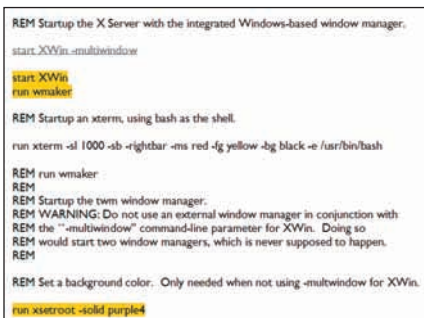
NEXT MONTH

Next issue we concentrate on converting Word documents to PDF, and synchronising files

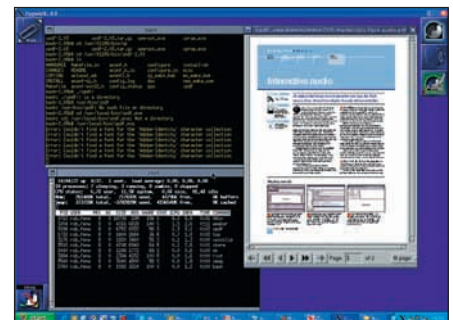
More than one way to experience X



1 When you first launch X, it's launched in 'multi-window' mode, which integrates tightly with the Windows look and feel. If you want to confine your X applications to their own workspace, you can launch the X server in its own window, and all the applications within that window. You can also choose to run a different window manager.



2 Edit startxwin.bat, and add the 'set home' line referred to above. Locate the section that begins 'Startup the X Server...', and add the word 'rem' before the line beginning start XWin. Add two new lines, one reading start XWin, the second reading run wmaker. You'll need to install the Window Maker package for this to work.



3 When you execute startxwin.bat, the Window Maker window manager is launched. If it crashes immediately, abort the attempts to restart it, and in the bash shell run /usr/X11R6/bin/wmaker.inst to set up the preferences for Window Maker. Other window managers are bundled with Cygwin. Take a look at the list available in the installer.

This Series

Learn to program your Gameboy Advance through your home PC

Part One

Writing your first program, and running your code on an emulator

Part Two

Converting and displaying graphics, bitmap modes and map modes

Part Three

Converting and playing sound and music

Part Four

Describing a game

Let the games commence!

PROJECT TIME



2 HRS 30 MINS

SKILL LEVEL



7 INTERMEDIATE
Need intermediate knowledge of C or C++

YOU'LL NEED THIS



HamDevKit home page
www.ngine.de/site/index.php

VisualBoy
<http://vboy.emuhq.com>

Jonathan Brown describes a game, and even incorporates sound. Follow his lead and you'll be churning out gaming hits in no time

The Gameboy Advance is designed to play games, so this month we're going to describe a game. At this point I must apologise for a slight change of plan: I said in the contents that I would be doing a puzzle game; however, I recently received a Breakout game from Matthew Humphries, author of the excellent www.gbajunkie.co.uk site. He produced an excellent Breakout clone that is so adaptable to most other types of game that I decided to use it here.

1 The main function The main function is right at the end of the main.c file. If you have already taken a look at it you may notice something strange. It initialises the Ham system, sets up the screen mode, loads the palettes for the splash screen and objects, loads the background, and finally sets up the vertical blank interrupt handling routine.

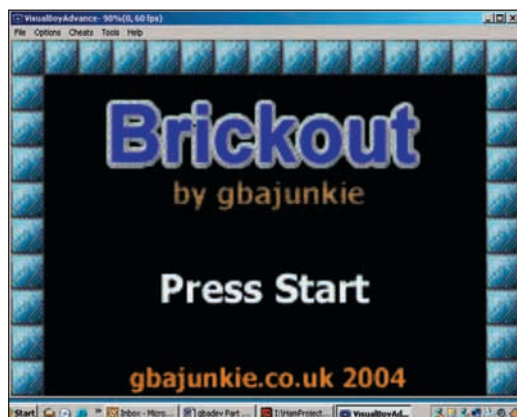
So where are the calls to the routines that handle the movement of the bat, ball and blocks? The routines are there but they're not called in the main function. This is because they're called from the vbl_func routine.

2 The vbl_func function Let's take a look at the vbl_func routine, because this is the key to the way in which this game works:

```
++vbl_count;
ham_CopyObjToOAM();
```

The ham_CopyObjToOAM function updates any changes to the sprites if any. If you don't call this function then the sprites won't be updated, and you wouldn't get any movement on-screen:

```
Update_GameState();
```



The Brickout game's intro screen. Consult the included source file to see the pieces fitting together.

```
return;
}
```

The vbl_func is then rounded off by using the standard C return to end the function properly:

The Update_Gamestate function

We're now going to look at the second most important function of the game, the Update_GameState function:

```
void Update_GameState()
{
    if(gamestate == 0)        // state 0: game
                              // is on splash screen
    {
        key_input();          // check for key presses
    }
```

This is based around the variable 'gamestate', which holds the current position in the game. If gamestate equals 0 we're on the splash screen and need to wait for a key press:

```
else if(gamestate == 1)
{
    key_input();
    check_ball_wall_collision();
    check_ball_sprite_collision();
    update_ball_position();
    update_bat_position();
    Update_Blocks();
    if(No_Blocks_Left())
    {
        gamestate = 3;
    }
}
```

3 Shall we play a game? If the gamestate equals 1, which means that the game is actually playing, it initially calls the routine to check if the ball has made contact with the wall. Then it calls the routine to check if the ball has made contact with a sprite, which is one of the blocks. Then this routine calls three more routines to update the bat and balls position and removes any block that's been hit. Finally, for this routine, it checks to see if there are any blocks left and loads a new level if not. If the gamestate equals 2, then the game is in between levels and it sets the gamestate back to one. If the current game level is 0, which means that it's the start of the game, it initialises for a new game:

```
else if(gamestate == 2)
{
    gamestate = 1;
```



Jonathan Brown
gbawriter@tiscali.co.uk

Jonathan Brown is currently writing The Beginner's Gameboy Advance Programming for Sams

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```
if(current_level == 0)
{
    Load_Background(1);
    Create_Slots();
    Initialise_Ball();
    Initialise_Bat();
    Populate_Block_Sprites();
    Update_Blocks();
    gamestate = 3;
}
```

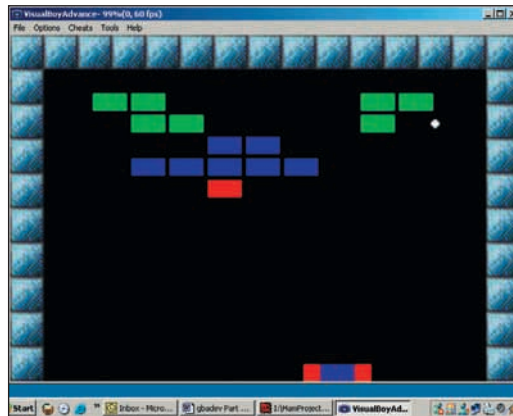
This 'else if' statement checks to see if you're in gamestate 2. If it is, and thus between levels, it then checks to see if the game has just started and calls a number of routines to set the game up:

```
else if(current_level == 1)
    Initialise_Level(level_1);
else if(current_level == 2)
    Initialise_Level(level_2);
...
current_level++;
} (240)
```

If that isn't the case, it will simply call a function to initialise the next level.

Gamestate 3 is the in-between levels phase of the game, which shows a set of blocks spelling out "Hit A", so that the player knows what to do. If the player has completed all 10 levels, the game is over and it waits for a key to be pressed:

```
else if(gamestate == 3)
{
    if(current_level<=10)
        Initialise_Level(level_99);
}
```



The Game Brickout running in VisualBoy Advance. It's all a matter of tracking where you are and reacting appropriately.

```
else
{
    Initialise_Level(level_100);
    gamestate = 4;
}
key_input();
}
```

Finally, Gamestate 4 checks for collisions and updates the positions of the bat and ball:

```
key_input();
check_ball_wall_collision();
check_ball_sprite_collision();
update_ball_position();
update_bat_position();
}
```

GOING FURTHER

GBA Junkie

www.gbajunkie.co.uk
Lots of advice and examples for any GBA coder.

Krawall Advance

<http://mind.riot.org/krawall/>
The Krawall site for the sound system is useful for updates and it's worth upgrading to the full version, either commercial or non-commercial licences. Check out the site for the advantages.

Apex Designs

www.apex-designs.net/
The makers of the Apex Audio System's web site. If you like the system, then it's worth checking this out for updates.

The Gameboy Advance Development Ring

<http://c.webring.com/hub?ring=thegameboyadvance>
Like any web ring, this site contains loads of interesting links for you to find information and tutorials.

NEXT MONTH

Next month we'll be embarking on a brand new masterclass series.

Sounding out

If you want music in your game, here's how to do it

Open the Brickout program in VisualHAM, and after line 7 insert:

```
#include "modules.h"
```

The modules.h file is created at compile time by the Krawall converter program. Next we add the kramWorker() function, in vbl_func. Place it between the ham_CopyObjToOAM() function and Update_GameState() functions. The kramWorker() function is the function that does all of the real work. This function is called once every vertical blank line.

Next we start playing the first song. This is in the Update_GameState

function, in Gamestate 2, which plays the in game music. Enter the following command after line 143:

```
krapPlay(&mod_ingame,
        KRAP_MODE_LOOP, 2);
```

This command actually plays the song. The first parameter is the address of the song, and these names are stored in the modules.h. The second tells Krawall how you want to play this song. In this case we want it to loop indefinitely. The final parameter is the song number.

Take a look at the main function and you'll see that we need to add another three functions. The first, which comes

after the ham_Init() function, kragInit(), is the initialisation of the system. The parameter specifies whether you want stereo or mono; in this case we're using KRAP_INIT_STEREO. On the next line we need another interrupt handler. This one will set up timer1 and calls kradInterrupt. Finally, after the ham_SetMode function, you can add a second play function to play the intro music.

We haven't included sound effects here because you need the registered version to do this. As you can see, it's simple to write games with good sound, and with a little effort, you too can be churning out hits. ■



The Krawall program can help you achieve professional sound effects for your games.

LEGO mindstorm robots

PROJECT TIME



1 HR 00 MINS

SKILL LEVEL



3 BEGINNER

Some basic understanding of programming will help

YOU'LL NEED THIS



LEGO Mindstorm Robot kit (approx £160) and Bricks Command Centre (free download)

FILES ON SUPERDISC



The Bricks Command Centre IDE is included on this month's SuperDisc

Build intelligent LEGO robots and learn how to program them. With a little help from Mindstorm, **Aladdin Ayesb** shows you how

LEGO Mindstorm robot kits consist of LEGO blocks, RCX, and an infra-red tower. The LEGO blocks are used to build the robot body. RCX is the interesting part. It forms the control component that drives the robot. The infra-red tower is a communication tool that enables us to download the programs we write on the computer to the RCX.

1 The set-up Before we start programming our Lego robot we need to make sure that we have all the required hardware and software set up in place. The first thing we need to do is to construct the robot. The kit comes with a fully illustrated book showing a variety of models.

The tracks-based model will often be more stable than the wheel-based models. However, the choice of which model to use is yours, and it shouldn't affect the programming. You can see a few of the models that we can develop on the next page.

In terms of software, the kit comes with a CD with SDK (Software Development Kit), Firmware and some examples. Also, you can download the latest SDK from the Mindstorm LEGO web site (<http://mindstorms.lego.com/>). In addition, you may like to download the Bricks Command Centre, (<http://members.aol.com/johnbinder/brickcc.htm>) which is available free. It provides a good and easy-to-use integrated development environment (IDE), and so we'll use it to write the programs presented in this series. The installation is very easy and self-explanatory. Once you have installed the program you can run it from the start menu.

2 Connecting the robot The next step is to connect the infra-red tower to the computer using the serial port, or the USB port. We put the robot with its RCX infra-red port facing the infra-red tower. You will notice that the lights on the infra-red tower light up to indicate that a connection has been

found. Now we can start the Bricks Command Centre program. It will ask you how it should search for a connection. Choose 'automatic' (the default option). The next screen will show a variety of LEGO Firmware and robot types. Unless you're sure of your option, choose standard. You should see an editing screen with a big toolbox open. The toolbox contains the NQC (Not Quite C) main statements (see boxout). Now we're ready to write our first program.

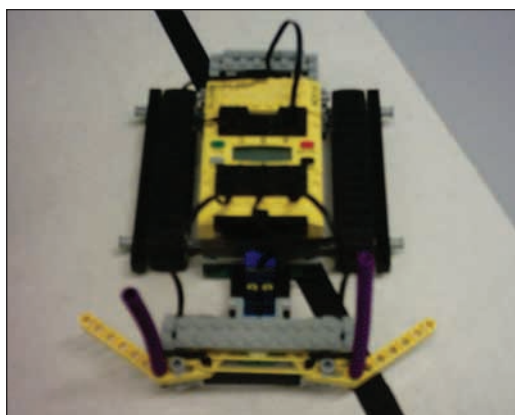
3 NQC and Firmware There are few technical issues we need to clarify before proceeding. The first relates to the programming language we're using. Not Quite C (NQC), can be seen as a scripting language for robot control that's based on C language. It uses the same syntax of C, but it's much smaller and less powerful than the normal C language, and has some built-in functions that only apply to robot control.

The second issue is Firmware. We look at this as the operating system of the microcontroller on the LEGO RCX. Even though it's not a full operating system, it acts as a middle interpreter between the RCX hardware and the program we intend to run. The first step once we've started the Command Centre is to download the Firmware before downloading any programs to the RCX. Under the Tools menu, there's a Firmware download option near the bottom. Choose that, and the Firmware download will start. Once it finishes your robot is ready to receive and run programs.

4 Making a sound This program may not do much in terms of moving the robot, but I find it useful. It's fun and harmless, making it a good starting point to program LEGO robots. It's also a good way of debugging our programs, especially when they grow in size and functionality. Even though Bricks Command Centre captures most syntax errors, there's no debugging screen on the robot to see where the errors happen. The use of sound is our alternative run-time debugging technique. In a new file, type the following code:

```
task main()
{
  PlaySound(0); Wait(100);
  PlaySound(1); Wait(100);
}
```

Save the file as makesound-v1.nqc. Now download the file to your robot. Press the Run button on the RCX. Change the sound values and the duration for waiting. Save the new program under different versions, download them, and listen to the different sounds. As we progress, we'll use sounds to indicate different steps of our program. This will help us to know which part of the program the robot is executing. The other statement we can use to produce sound is PlayTone. This follows a similar pattern, playing with the command.



A tracker model of a LEGO Mindstorm Robot.



Aladdin Ayesh
aladdin@ntlworld.com

Aladdin Ayesh, PhD, is a senior lecturer and deputy program leader of MSc computational intelligence and robotics at De Montfort University

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```
PlayTone(262,40);
```

Note that we've used the Wait statement with PlaySound. This statement gives the duration for which the RCX will keep running the previous statement (i.e. PlaySound). Similarly, we would need a Wait statement after PlayTone to make the tone played long enough to be audible. Using a combination of PlayTone and Wait statements, we can write a musical tone the robot can play.

5 Many programs option RCX can hold up to five different programs. Before we download our program, we should choose which one of these five slots we would like the new program to go into. We select our choice using the drop-down menu or from the compile menu in the Bricks Command Centre.

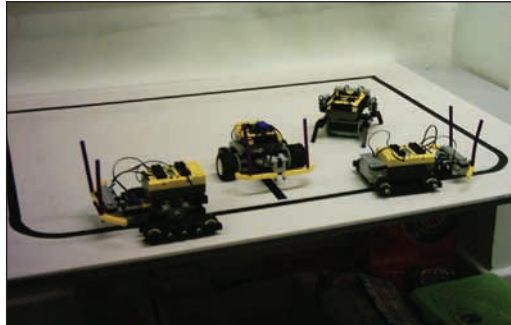
Once we've downloaded the program, we can use the Select button on the RCX to select which program we would like to run and then press Run. We have to remember that downloading to the same slot overwrites previous programs on that slot that we may have saved there.

6 Moving the robot Now we can start commanding the robot to move around. We'll look at how we can make the robot move forward and backward. Make sure to run the program on a flat surface, preferably on the floor to avoid unpleasant tumbles.

To move the robot forward we use the 'OnFwd' function. We can control how long the robot goes forward using the 'Wait' statement:

```
task main()
{
  OnFwd(OUT_A+OUT_C);
  Wait(200);
  PlaySound(0); Wait(100);
}
```

To move the robot backward we use the 'OnRev' function in the same way in which we used 'OnFwd' function:



These are just examples of wheel and tracker-based models of Mindstorm robots that you can create.

```
task main()
{
  OnRev(OUT_A+OUT_C);
  Wait(50);
  PlaySound(1); Wait(100);
}
```

The next step is to get the robot to turn right and left. We can achieve this using a mixture of forward and backward statements combined. You may like to attempt writing the turn left and right programs. Here's a starting point:

```
task main()
{
  OnRev(OUT_A); OnFwd(OUT_C);
  Wait(50);
  PlaySound(2); Wait(100);
}
```

The robot will turn either right or left depending on how you connected your servos to the ports A and C on the RCX. In my case, the robot turns left using the above program. By using alternative reverse and forward statements, we can get the robot to turn the other way. By using different Wait values, we can control the degree of rotation, and keep pointing in the right direction. **PCP**

USEFUL WEB SITES

LEGO Mindstorm
<http://mindstorms.lego.com>

Bricks Command Centre
<http://hometown.aol.com/johnbinder/brickcc.htm>

NEXT MONTH

Next month we'll make the robot continuously wander around in a random movement by developing a controller or motor arbiter. We'll also look at sensors, to control and direct robot movements through a motor arbiter.

Not quite C – a quick reference

The use of the Bricks Command Centre toolbox makes the coding much faster

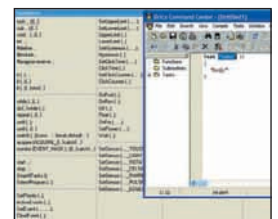
NQC is a cut down version of the C language. It's similar to C in syntax. In other words, we have 'main' as the starting point of the program. We have curly brackets for starts and ends of statements, and we have the usual C statements, such as while loop, conditional statement and so on.

One of the main differences is that we have tasks rather than functions. Tasks in NQC are run simultaneously, using the built-in threading mechanism,

giving the feeling of parallelism. This is important to develop serious robot programs, as we'll see later on in this series. We still have functions and subroutines in NQC and these are run sequentially (as is the case with other programming languages).

We don't need to declare header files as we do in C. There are limited things we can do in terms of data structure in NQC. However, all the functions for sensors and robot

control are there, making programming LEGO robot using NQC as easy as programming can be. To make it easier, we don't have to remember all the statements and new functions. They all appear in the toolbox of Bricks Command Centre. To speed up programming, we can just click on the statement or function we want and it will appear in full in our file. Then we have to fill in the information that we want to customise. ■



NQC's cut down approach means that you don't need to be a rocket scientist to make robots.

This Series

Work with digital audio and video in many formats

Part One

Basic MP3 digital audio workshop

Part Two

Lossless compression and CD burning

Part Three

Connecting your portable MP3 player

Part Four

Digital video workshop

Linux-based multimedia

PROJECT TIME



1 HR 30 MINS

SKILL LEVEL



3 BEGINNER
Nothing too taxing here

YOU'LL NEED THIS



Audio CDs, software supplied on this month's SuperDisc and a recent Linux distribution

Find out what Linux has to offer when converting CD music into the revolutionary MP3 format. **Frank Charlton** investigates

Just a few years ago, the only way to listen to music on a PC was either with an audio CD or by using annoying proprietary software. When the MP3 format arrived, everything changed. Today, highly compressed digital audio – which sounds almost as good as the uncompressed original – is well established and here to stay. Over the next few issues, we'll be looking into what Linux can do with digital audio. This month, we begin with the basics.

When the MP3 format was initially invented, the idea of storing digital music in a tightly compressed format was a radical new one. To begin with, it seemed as if the only possible use was for music piracy. MP3 produces files which were far smaller than the original CD audio files, and so transmission via modem was a more practical option. The whole scene was something of an underground one, with both the software and hardware required hard to obtain, and even harder to use.

Back in the present day, you'll find that people who have never touched a PC still know what an MP3 file is and how to listen to one. The format has exploded into the mainstream in a massive way, and your home PC is probably the least convenient way to listen to MP3 audio. We have DVD players, portable devices, CD players, in-car audio equipment and even mobile phones that play back MP3 files in excellent digital quality.

Not surprisingly, Linux was one of the first operating systems to adopt the MP3 format. Long before Windows users had access to the simple 'insert CD, rip, encode' software commonplace today, hardened Linux fanatics

were tangling with arcane command-line applications to rip CD tracks to disc and convert to MP3 files. Linux has kept pace with Windows in most respects, and there's a large variety of audio-related software to play with now.

1 System requirements To convert CD music to MP3 format with Linux, you only need two basic things – a PC with a CD-ROM capable of digital audio extraction, and some software. If you want to actually listen to the resulting files, you'll need a working soundcard too, but even the most primitive Linux system can handle the actual ripping and encoding.

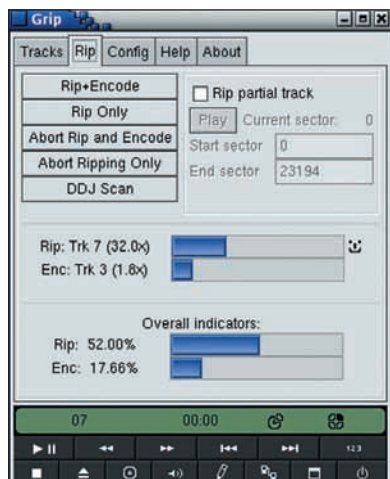
All modern CD-ROM mechanisms support digital audio extraction, which is the ability to take a digital audio track from a music CD and store it as a file on your hard disk without any intervening steps. Older drive models won't necessarily work, but since even the most up-to-date modern equivalent drives (practically) come free in cornflake packets these days, there's no excuse not to upgrade.

Converting CD audio to MP3 format is a two-stage process. Firstly, the raw CDA audio files need to be extracted to disk. Secondly, these huge files need to be passed through an MP3 encoder which analyses and compresses the sound file. While many audio purists will doubtless tell you that it's better to use separate programs for these two stages, there are integrated applications that handle both parts of the process. If you're ripping music to listen to on a portable player, the slight drop in quality from the use of a one-stop package isn't likely to be noticeable. If you're ripping to archive your music collection you'd be better off using a lossless format anyway. MP3 throws sound information away as part of the compression process, and

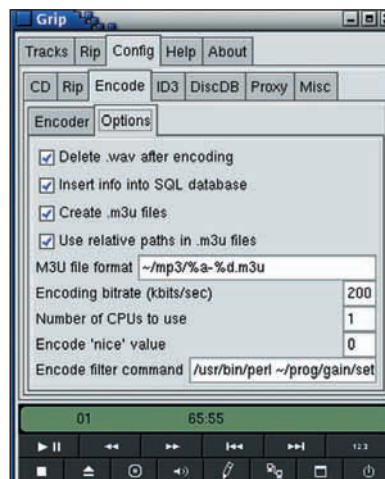
this can never be recovered. We'll be looking at lossless compression as part of this Masterclass series, so do hang on.

2 Get the software

Firstly, you'll need some software. While it's possible to perform the whole rip and encode cycle directly from the command-line, we're not Luddites here at PC Plus, and prefer to use something which runs under the X graphical environment. To that end, we're using Grip, a superb application written by Mike Oliphant. You'll find



Grip provides a clean and simple interface for ripping and encoding audio CDs to MP3 format.



Make sure you set up Grip's MP3 encoding options to suit your preferences.



Frank Charlton
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Frank has been working with PCs since the early 1980s, and has been using and writing about Linux since he discovered the first versions on Atari and Amiga machines

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the latest build of Grip on this month's CD and DVD, and can download both source and binary versions from www.nostatic.org/grip/.

Grip is essentially a CD player, but has some rather excellent tools built in to handle the audio extraction. It can't directly encode music to MP3 format, and instead calls on a separate encoder application. While Grip supports quite a few different encoders, anyone who has spent any time listening to the harsh, grainy results produced by some encoders will tell you one thing – use Lame.

Lame is an open source MP3 encoder which runs from the command prompt, and produces very high quality results, surpassing almost every encoder available – and it's free. Before you groan about needing to learn command switches, stop worrying – Lame interfaces directly with Grip and many other graphical front-end programs, and you need never use it directly. You'll find Lame on the discs this month, and the latest build can be picked up from lame.sourceforge.net.

Once you've installed the RPM packages for both Grip and Lame, and you're ready to go. Insert an audio CD, and wait for Grip to collect the artist and track information from the assorted Internet databases – all much easier than typing titles in yourself.

3 Rip and encode Stop the CD playback, and open Grip's options panel. Firstly, switch to the Tracks tab and select which songs you want to rip to MP3 by clicking each track in the Rip column. Next, switch to the Encode tab in Options. Make sure that the Encoder option is set to use Lame, and don't tinker with any of the other settings. Click the Options tab on the Encoder pane, and ensure you select Delete .wav after encoding. Grip extracts CD audio to WAV format sound files, which take up as much space as the original CD tracks. If this isn't selected, you'll lose as much as 700MB of disk space every time you rip a CD. The only



MP3 is a licensed format, and many small freeware encoders have been shut down by Fraunhofer over the years.

other option you need to specify here is the encoding bitrate. This is a thorny issue, guaranteed to spark an argument with any MP3 enthusiast you care to name. A bit-rate of 128Kb/s produces what is called near CD-quality – that is, close enough to the original to satisfy most of us. We wouldn't go lower than this, unless you're pressed for storage space on a portable device and don't mind losing quality, in which case consider dropping to 96Kb/s.

Go back to the main Rip tab, and simply click Rip+ Encode to begin the process. Grip will initially extract the songs to disk, then passing each one through Lame to convert to MP3 format. If you have problems such as tracks being skipped or ripping taking an age to complete, move back to the Config dialog and click the Rip tab. To deal with annoying skipping tracks, enable the Delay Before Ripping switch and set it to 5. Some drives – DVD-ROMs being the worst – take time to spin up, causing Grip to skip tracks. For slow ripping, you can disable the paranoia features which detect and repair errors, but be warned that while this increases speed it makes for awful listening if your drive doesn't have solid error correction and you are attempting to rip from a less than perfect source CD. **PCP**

GOING FURTHER

CDDA Paranoia, www.xiph.org/paranoia/. This is the best tool for ripping CD audio on any platform. It recovers perfect data from even the most badly scratched CD, and it's used internally by Grip.

Krabber, krabber.automatix.de/. Krabber is another all-in-one front-end for ripping and encoding CDs, this time designed to fit in with KDE rather than GNOME.

Xory's MP3 FAQ, webhome.idirect.com/~nuzhathl/mp3-faq.html. A good read for background info on the format, as well as some useful tips on getting the best encoding results.

NEXT MONTH

Next month we'll be looking at lossless compression and CD burning.

The other formats

MP3 may be the most popular compressed digital audio format, but it isn't without its problems

The MP3 format is technically owned by the Fraunhofer Institute in Germany and Thomson Multimedia. Software producers need to pay a license fee to use the format.

On the Windows platform, another option is to use Microsoft's proprietary Windows Media Audio or WMA format. This format is owned and heavily guarded by Microsoft, and while the company states that it produces better sound files at a smaller size than MP3 compression, the jury is still pretty much out. WMA sounds good though, and many hardware players including portables and in-car kit support WMA.

Tools to create WMA files under Linux

are non-existent, and even playing back the format isn't easy. Applications with WMA playback support exist, but they're not falling out of trees, and some require extensive configuration.

The only true alternative to MP3 (in Linux terms at least) is the wonderfully named Ogg Vorbis. The big difference between Ogg and the other formats is that it's completely open – open source, and totally unpatented. File sizes and sound quality are easily comparable to both MP3 and WMA – some would say better – but the relative lack of maturity means Ogg aficionados suffer when it comes to playback support. There are applications for all operating systems

we can think of, but hardware support is almost non-existent. We'd like to see portable Ogg players become more popular, as the format sidesteps the MP3 licensing issues and the proprietary nature of WMA completely.

One of the most recent formats to emerge is AAC, or Advanced Audio Coding. As part of the MPEG-4 specification, AAC was designed by the MPEG group which includes Dolby, Sony and Nokia, and is designed as a multichannel replacement for MP3. As yet, support is thin, but this is a format to watch. If you have one of the new Nokia phones like the N-Gage, you can even listen to AAC files on the go. ■



Nokia's N-Gage gaming phone supports audio codecs like MP3 and AAC, but not WMA.



David Coulson

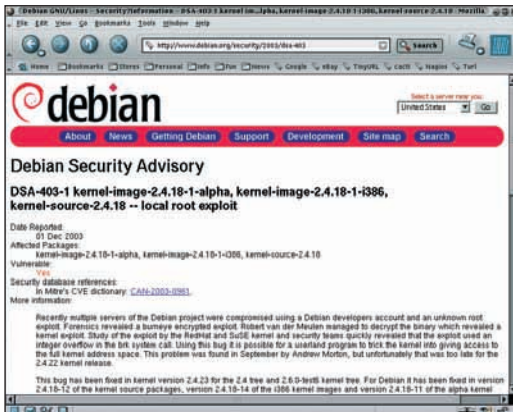
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David Coulson is a Linux consultant specialising in network architecture and system management. He contributes to User-mode Linux and PHP4

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The recent `do_brk()` exploit demanded that everyone running 2.4 kernels upgraded to ensure they weren't vulnerable.

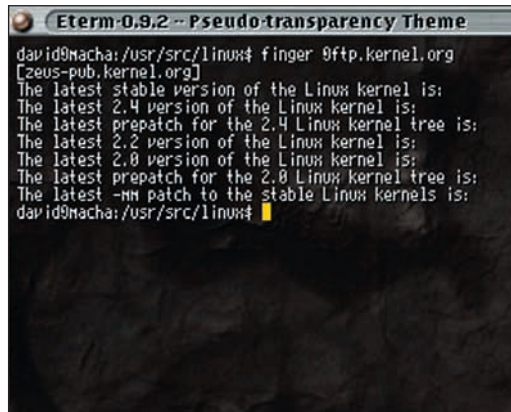
While it may not be best to use this configuration, it's a good starting point when building the kernel.

Before we do anything with the kernel, we need to symlink our kernel tree to `/usr/src/linux` so that the kernel headers in `/usr/include` are linked correctly. If `/usr/src/linux` already exists, we can move it to `/usr/src/linux.old` just in case something goes wrong:

```
# mv linux linux.old
# ln -sf linux-2.4.23 linux
# cd linux
```

With the symlink in place, we can prepare the kernel configuration and copy in our vendor kernel configuration:

```
# make mrproper
# cp /boot/config-2.4.18-bf2.4 .config
```



If we `finger ftp.kernel.org`, it gives us a simple, yet useful, output of the current kernel versions.

Running code With a vendor configuration in place, we need to run 'make oldconfig' which compares the entries in the `.config` file with what is currently available. If there's a new configuration option that has been added since our `.config` was created, it will prompt us to find out if we want it or not. Generally, unless it's something important that doesn't work, it's best just to hit [Enter] to accept the default 'No' when it displays a prompt. We can always come back to the kernel later and compile it once we know our standard build will work with the hardware.

After the earlier kernel configuration has been cleaned up, we can run 'make menuconfig' to change any specific configuration options we need. The kernel configuration is sorted into a number of categories, making it easy to locate specific options we want to enable or disable. With all this configuration done, we can save our settings and start on the compilation process.

PASSING SHOT

The Linux kernel isn't particularly small, so downloading it from a mirror is generally a good idea. Many larger ISPs, including Demon Internet, mirror `ftp.kernel.org` on their own FTP server, making for rather quick downloads if you happen to use those ISPs.

`kernel.org` mirrors are arranged by country code, so UK users can download from `ftp.uk.kernel.org`, US users from `ftp.us.kernel.org` and Germans from `ftp.de.kernel.org`. Just because the server is located in Germany doesn't always make it a bad choice, as it may be closer to us compared to servers that are more obviously local. It usually takes some experimentation to locate the best `kernel.org` mirror.

Kernel trees

While there's only one official Linux tree, there are many branches with additional features

The standard Linux kernel has patches introduced on a regular basis to fix broken pieces of code, or to add new features to the tree. However, not everything makes it into the standard kernel tree quickly, or even at all. Many alternative kernel branches exist that provide bleeding edge capabilities, or offer fixes currently not found in the 'vanilla' tree.

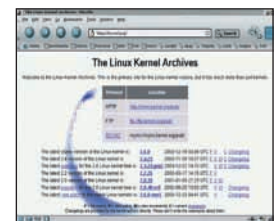
The most popular of these was the `-ac` series, which was maintained by Alan Cox prior to his sabbatical. This offered many improvements, particularly when it comes to support for weird hardware, as well as including

many larger patches to the kernel, such as updates to the IDE subsystem, which took many months prior to being included in the 2.4 tree. While this did contain some code that many considered to be unstable, it was always a great choice for workstations that often had chipsets that were not well supported under the vanilla kernel tree.

With the recent developments of 2.5 and 2.6, Andrew Morton is maintaining a separate tree known as `-mm`, which contains patches not yet merged into his 2.6 tree. As the new maintainer of the stable kernel tree, while Linux works on 2.7, Andrew uses

`-mm` as a 'queue' to test patches prior to merging them. This tree isn't something most people will want to use in production. It will offer many improvements not found in the 2.6 tree on a test system.

As new kernels are released, pre-release and release candidate kernels are distributed so users can test new features or fixes prior to the release of a stable kernel tree. These are generally stable, as patches are merged without breaking too much, so are ideal as an interim solution if there's a problem with a stable kernel release which has been fixed, but the next release is a few weeks or months away. ■



`kernel.org` has all the information we need on the various kernel branches, along with Changelogs and patches.

Optimising the kernel

As the kernel is the core of any Linux installation, making it run smoothly is a priority

The first step is to compile the kernel for our specific CPU architecture. This will allow CPU-specific optimisations to be used during compilation, using instructions which are only available on the specific CPU we're using. If we run a 386 kernel on a Pentium 4 Xeon system, it's not going to run as well as a kernel compiled specifically for a Pentium 4 system.

For people with IDE storage devices, having the correct chipset compiled into the kernel, rather than using the generic IDE drivers will ensure that full DMA capabilities are available to the kernel. This means we can run our drives in UDMA/133, rather than good old PIO4 mode. DMA mode can mean the difference between 5Mb/s and 40Mb/s across an IDE channel,

making it a rather desirable feature.

It's always a good idea to remove anything from the kernel that we're not going to be needing. While this doesn't give a major performance improvement, it will reduce the amount of memory the kernel is using, as well as making things a little neater when we come to reconfigure the kernel at a later date. ■



As well as hardware support, we can select a wide range of options for our kernel to add capabilities.

GOING FURTHER

More often than not, the vendors of specific Linux distributions will patch the kernel to provide support for specific hardware devices, or to backport features from a more updated kernel. The end result of this is that nine times out of ten, when we try to run a regular kernel on these devices, a few bits and pieces might break. Usually it isn't anything too major, but for some distributions it does mean that some hardware won't work.

As the Linux kernel is distributed under the GPL, they're required to release their source code, but we can still compile their code with our own options. Unfortunately, third-party patches probably won't work correctly with these kernels because so much stuff is changed they simply won't apply. Even with knowledge of C, it will require significant changes to enable the code to compile.

NEXT MONTH

Next month we'll be patching the kernel to support new features.

6 Installing the kernel There are a number of steps which are required to correctly compile and install the Linux kernel. The first is to create all the dependencies for compilation, then clean up the tree to ensure there are no object files hanging around. Since we're starting with a fresh tree, it's not a problem, but once we start patching kernels or modifying the source, cleaning up prior to building will ensure we get a nice clean kernel binary out of the build.

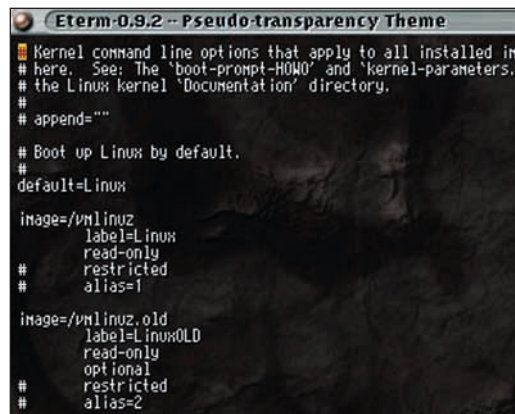
To generate the dependencies, we do a 'make dep'. We can then do a 'make clean' to delete old object and binary files, but these can be combined into a single command.

```
# make dep && make clean
```

7 Compressing the kernel When the kernel is built, it can be compressed using one of two different techniques. The first is standard gzip, which provides the minimal level of compression. The second is bzip2, which offers the best compression. Compression is required if we build a large kernel without modules, otherwise it won't fit within the boot sector of the hard disk when lilo tries to write the image. If we want to build a kernel image using gzip compression, we need to run 'make zImage', otherwise for bzip2 we need to do 'make bzImage'.

We can also have the kernel compilation scripts run lilo for us, assuming our default location for the kernel is /vmlinuz. It will automatically copy the existing vmlinuz file to /vmlinuz.old, then install our new kernel in its place. To do this using gzip, we need to do 'make zlilo', or for bzip2, 'make bzlilo'. It's best to use bzip2 for consistency, plus if the kernel grows in size we know that we have the best compression, and we have to compile it using modules if it's too big.

8 Copying the kernel Once the kernel is compiled, assuming we didn't use 'zlilo' or 'bzlilo', we need to copy it to the correct location in order to rebuild our boot sector using



Our lilo configuration allows us to select a back-up kernel should ours decide not to work correctly.

lilo. After the kernel is in place, we need to run 'lilo' to write it to the boot sector. We'll then have to put the kernel in /boot or in /. All we have to do is modify lilo.conf to have it stored somewhere else. It's not a good idea to store kernel images on filesystems other than / or /boot, as many older systems require the image to exist under the 1024th cylinder, so the filesystem has to be at the start of the hard disk.

9 Compiling modules The final stage of the process is to compile our modules, install them, and then reboot. Modules can be compiled and installed using the following:

```
# make modules && modules_install
```

Once we have a back-up kernel to revert to, we can issue a 'shutdown -rnf 0' and once the system reboots our shiny new kernel will be up and running. **PCP**

Configuring the kernel

There are quite a few options for the Linux kernel, so what do they all do?



Compiling the kernel for the specific CPU enables an optimised kernel to be generated.

When we perform a 'make mrproper', it will set our kernel up with default options that kernel developers think is the best generalised kernel build. Of course, there's a whole lot of stuff in there which most users won't need, such as SCSI support, but it does make a good starting point for any new kernel build.

Prior to selecting options, it's always wise to do a quick 'lspci' to establish exactly what hardware is living within our system. This will give us useful information, including the chipset numbers of all of the devices, so it's easy to pick out specific kernel options for our build. Most kernel options are

very specific to a chipset, particularly for sound cards and controllers. If the correct one isn't compiled into the kernel, it's not going to work happily when up and running.

The main sections outside of hardware are 'Networking Options' and 'General Setup'. The former contains almost every networking capability known to man, but more importantly includes all of the non-hardware networking options for the kernel, including firewall support and advanced routing preferences. This is also where many options for Ethernet exist, such as VLANs and bridging, along with quality of service modules

for the kernel. Anyone who's building a kernel for a router or firewall will want to poke around in here, as many useful capabilities are included.

We can choose to compile in many useful core capabilities, such as PCMCIA support, although this requires userspace tools to be installed, as well as power management through APM or ACPI. For a server, power management isn't particularly important, although ACPI can be used to monitor thermal devices and other components. For a laptop it will monitor battery life, as well as changing the clock speed of the CPU when we switch from AC to battery if that's supported by the CPU. ■

network businessnews

Edited by Robert Jaques



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Robert Jaques has been an IT journalist for over 10 years, and has worked at the helm of a raft of prominent IT titles

WIRELESS NETWORKING

Voice-data convergence with wireless LANs

Industry experts are predicting that the next generation wireless networks (WLANS) will increasingly be characterised by support for converged voice and data over a single Internet Protocol (IP) infrastructure.

According to Joel Conover, principal analyst at Current Analysis: "Voice has emerged as a major factor in many businesses deciding to deploy wireless LANs."

The benefit for companies deploying such systems will centre on the increased flexibility that a WLAN can bring – most notably because it means that networks can be easily and cheaply changed without the need to dig up floors for cable laying. In addition, there are potentially large cost savings from having only one converged network to maintain and manage, rather than two discreet systems for both voice and data.

However, there are still technical difficulties that vendors must address in order for converged systems to become commercially viable. One of the greatest challenges centres on dealing with real time voice traffic when users are roaming between different

access points on the wireless LAN: at the point when a client is transferred from one AP to another, there will be a break in transmission.

Clive Longbottom, service director at analyst group Quocirca told PC Plus: "On the data side, roaming between different access points isn't a problem with a mobile IP address. Users won't really notice the change from one hotspot to another. But when it comes to voice, then you get latency and this means that there will be gaps in the transmission." He continues: "Voice doesn't require a lot of bandwidth, but to keep the transmission going in real-time you must take steps to keep under the wireless latency."

Enterprise WLAN vendor Trapeze Networks says it has cracked these problems and can deliver seamless roaming between access points via its newly unveiled Mobility System Software (MSS).

The company explained that the technology behind its ability to solve the WLAN voice latency conundrum is based on Quality of Service (QoS), and is achieved through the integration of SpectraLink Voice Priority (SVP) for SpectraLink voice-over-Wireless IP (VoWIP) telephones into its Mobility Point access point devices.

Current Analysis' Conover added: "Support for seamless roaming, even as users cross subnet boundaries, is critical for enabling applications such as voice that can't withstand the interruptions that wireless LAN systems typically cause when clients roam."



Trapeze's newly revamped Mobility Points enable voice to be converged with data over wireless networks.

MICROSOFT

Microsoft muscles into global CRM market

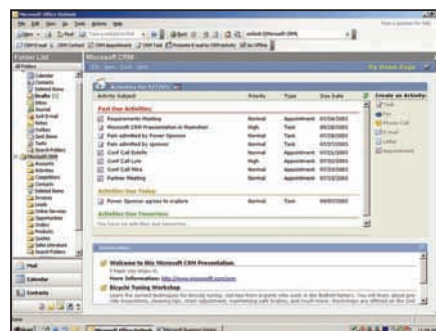
Microsoft Business Solutions has unveiled its latest Customer Relationship Management (CRM) offering. The global roll out of Microsoft CRM Version 1.2 – which offers sales, marketing and customer service modules – marks the firm's first global foray into a CRM sector. Many industry watchers predict that it's about to enjoy explosive growth, particularly in the small and medium-sized corporate sector.

"We anticipate that there will be a significant increase in demand for CRM applications among small and mid-sized businesses in EMEA,"

said Ed Thompson, research director with Gartner Europe.

Karen Smith, research director with the Aberdeen Group observed that within a year, Microsoft's first CRM had clocked up 1,000 CRM customers. But she went on to predict that the software giant's move into the market would make waves for established players: "There's no escaping the fact that the Microsoft CRM is a growing tsunami in the CRM space."

Microsoft's CRM package has been designed specifically for small or mid market firms with 25 to 1,000 employees.



Industry watchers expect Microsoft CRM 1.2 to make a splash in Europe.

WIRELESS NETWORKING

Productivity gains drive WLAN deployments

The popularity of wireless networking continues to soar with over 80 per cent of firms indicating that they intend to expand their 802.11x networks during the first six months of this year.

According to a study, 'WLAN Adoption Trends 2004', from US market watcher Sage Research, the key driver behind the technology's unstoppable march is employee productivity improvements.

Joshua Weiss, project manager at Sage Research, said: "Wireless LANs are fulfilling that requirement through productivity benefits, which have served not only to justify current WLAN expenditures, but to ensure that spending on this technology will expand throughout 2004."

The analyst firm observed that WLAN technology is now moving

beyond early-adopters and hitting the commercial mainstream as it becomes popular in a range of industries including healthcare, retail, and manufacturing.

Sage added that plans to expand WLAN infrastructures are being made despite the fact that many firms were still concerned over the poor security reputation which has long dogged WLAN technology.



WLAN technology is expected to carry on expanding throughout 2004.

VIDEO CONFERENCING

Firms tune into video conferencing bonanza

Industry watchers have predicted that the global market for business video-over-Internet Protocol services will top £1.2 billion during 2007, representing a hefty compound annual growth rate of over 45 per cent between 2003 and 2007.

According to In-Stat/MDR, two key technologies will account for the growth; Live Two-Way Video for Interactive Communications, and Live One-Way Video for Information Distribution.

During 2003, these two 'live' categories combined, only accounted for 17.3 per cent of the total market. However, by 2007, they will hold a 42 per cent share of the worldwide market for all professional video-over-IP network services.

Gerry Kaufhold, principal analyst with In-Stat/MDR, pointed out that IP networks provide a great deal of bandwidth at low cost: "Corporate networks and broadcast video delivery services are taking advantage of improvements, such as MPLS and IPv6, as well as using video encapsulation products to send real time quality video over IP Virtual Private Networks."



Business video conferencing over IP is poised for explosive growth.

PCPlus NEWS

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Illustration: Stuart Harrison

BPI kills the CD star

BPI puts your 'right to choose' into contention, and battles it out with CD-WOW! **Benny Har-Even** wonders if the devil owns the best tunes

Well, it was fun while it lasted. After years of buying our CDs online for reasonable prices, the British Phonographic Industry (BPI) is going to make sure we all pay more for our music. In mid-January, the popular online supplier of CDs, DVDs and games, CD-WOW! sent out an email to its customers explaining that it had been forced to slap a £2 surcharge on every CD it sells in the UK and Ireland, pushing prices up to £10.99. This is due to ongoing legal wrangling with the

BPI. The organisation which represents the major UK record companies, took exception to CD-WOW! sourcing CDs cheaply from outside the European Economic Market (EEM), and oh-so-criminally, passing on those savings to its customers. The BPI claims that this 'parallel importing' breaks UK copyright laws.

The BPI and the Hong Kong-based retailer were gearing up to battle it out in court, but reached a settlement two weeks before the trial was due to start. BPI chairman

Peter Jamieson says, "I'm delighted that we've been able to resolve this case on agreed terms without the need for a trial". While he may be delighted, CD-WOW!'s true feelings about the BPI are thinly veiled. They state: "The UK major record companies, through their mouthpiece, the BPI, have unfortunately restricted the UK and Irish consumers' rights to enjoy the freedom of the World Wide Web." It goes on to encourage its customers to enjoy its low prices, "while you can still

VITAL STATISTICS

The numbers that rocked the PC Plus world this month

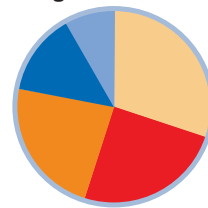
120,722 VideoCDs were seized by the forces of FACT – the Federation Against Copyright Theft. This is nothing compared to the 1,568,997 DVDs acquired, but impressive enough next to the 86,501 VHS tapes.

30,000 hours a month are spent handling IT administration in the workplace, according to Softricity. www.softtricity.com

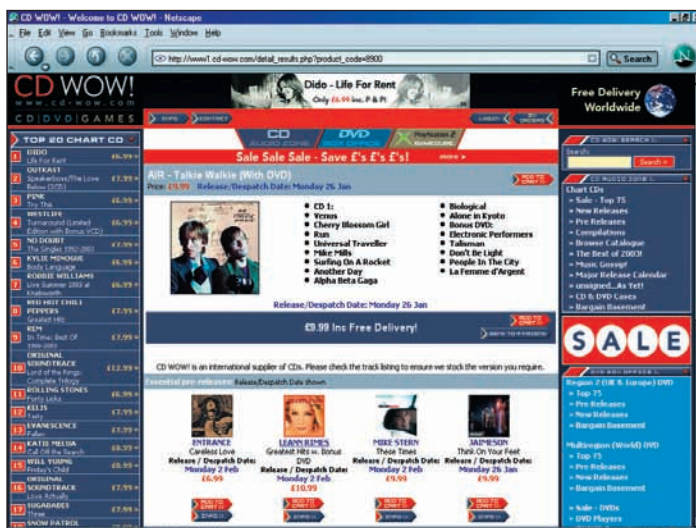
500,000,000,000 spam emails were blocked by AOL in 2003. Leading the top 10 list of subjects were 'Viagra online', 'online pharmacy' and 'get out of debt'.

0 spammers gave the slightest thought to the new CAN-SPAM act, at least according to the state of our in-boxes at the time of writing.

America's most hated, but necessary inventions – according to MIT



Cell phones: 30%
Alarm clocks: 25%
Shaving razors: 14%
Television: 23%
Other: 8%



exercise your right to choose."

This right to choose is the key bone of contention and it's not a new issue. For years, consumers have been exercising their right not to put up with outrageously overpriced high-street CDs, and many have turned to P2P services to obtain their tunes. The US equivalent of the BPI, the RIAA, has been vociferous in clamping down on music file sharing, even going so far as to prosecute little old ladies and young children – notably Brianna LeHara. Ironically, UK CD sales for 2003 actually showed an increase by 76 per cent, despite the BPI adopting a hands-off, 'wait and see' attitude.

While the record companies would no doubt argue that these higher prices enable them to invest in new and exciting music, consumer groups believe that the BPI's action is a poor move.

Phil Evans, of the Consumers' Association, says: "The fact that CD-Wow! is so successful is proof that the UK music industry has been ripping customers off for years. The arrogance of the music industry is staggering. This is a sad day for consumers and a sad day for e-commerce."

CD-WOW! isn't the only company caught in the BPI's Gestapo like glare. Market leader Amazon and the popular Play.com are also being investigated.

Of course, the music industry isn't the only one trying to control its market. Hollywood is guilty of saddling consumers with the nuisance that is DVD region coding, where discs bought from one area, such as the US, are designed not to work in players from other regions, such as the UK. This is yet another example of how large corporations arbitrarily, and quite literally, carve up the world for their own benefit, at the expense of the consumer.

Multi-region players, which enable discs from anywhere to be played are obviously commonplace. There are even two all-region DVD players on the International Space Station, and if that isn't a message to mankind, we don't know what is.

Consumers will always find ways of doing what they want, rather than what large corporations tell them they should be doing. By raising CD prices, the BPI is likely to halt the healthy increase in sales, encouraging people to illegally obtain music over P2P networks such as Kazaa. We can but hope that this will encourage it to persuade the major UK record labels to embrace the new online music services like the Apple iTunes store and Napster 2. Ultimately, both consumers and the music industry will benefit from a more genuine choice.

PATENTS

Microsoft backs free Unix tools

The latest tactic in Microsoft's war against Unix, is for it to release their Services for Unix (SFU) system at no cost. Previously priced at \$99 per user, SFU is a fairly complete port of the Unix system to Windows, and gives Windows admins the ability to use old Unix favourites such as wc, grep, less, and diff. If this sounds familiar to Red Hat's free Cygwin system for Windows, you're on the right track.

In reality, the name of this product should be Unix Services for Windows, as that's what it is. The bundled Unix tools, many of which come with the 'viral' GPL licence agreement are here because they bolster Windows' poor command line system. In essence, SFU has enabled Microsoft to combine Windows' reliability with Unix's user-friendliness, which seems strangely backwards to us.

Dennis Oldroyd, the marketing manager for Microsoft's Windows Server Group, summed up their position on the matter. "This is really about the interoperability. Very few of our customers are going to have a pure Unix or pure Windows environment". We're pretty sure he's saying that very few Microsoft customers are all Unix-based. This presumably means that there are some Microsoft customers that are all Unix-based, so we'd like to know how many, and what Microsoft Unix software they're using.

SFU is based on Microsoft's old Interix environment, which itself was largely ripped from OpenBSD – running "strings * | grep -i bsd" from the /bin directory shows 2215 references to OpenBSD, and this has, naturally led to many calls that MS are being hypocritical over open-source code. However, it does have its benefits. For example, thanks to it being an MS product, SFU hooks into Windows much deeper than Cygwin will ever be able to do, which is great if you don't mind the penalty of having to read the EULA very, very carefully. On the flip-side, much of the software in SFU is old or missing, which is where Cygwin will continue to score points.

In the long term, we don't see SFU enticing any Unix – (or we may as well say it even if Microsoft won't), Linux users switching to Windows. It might show some hardcore Windows admins that Unix isn't so scary after all, or it could enable users with non-server versions of Windows like Windows XP to act as a server for far more than the five users that they're able to do by default. If this is stage one in a Microsoft 'embrace and extend' plan, it will be a long time yet before we're convinced!

```
Korn Shell
Welcome to the Interix UNIX util

DISPLAY=localhost:0.0
$ bash
/bin/ksh: bash: not found
$ emacs
/bin/ksh: emacs: not found
$ gcc
/bin/ksh: gcc: not found
$ python
/bin/ksh: python: not found
$ bison
/bin/ksh: bison: not found
$
```

If this is the best Microsoft can do, Unix is set to last a few more years yet.

INTERVIEW

Bill Gates speaks out



PC Plus speaks to Microsoft's Chief Architect to discover his vision of the future; where Windows is going, where the PC is going, and what Longhorn will enable us to do



"With software interaction, all information is brought into one rich visualisation".

PCP: There are three big areas in Longhorn; Avalon, the new display system; the way you can manage information better with WinFS; and Indigo, which is web services. That sounds useful for big companies, but what does it mean for most users?

BG: We've integrated more and more capabilities. You don't have to think, 'I'm going to the Internet to get this' versus 'I'm going to the local disk', 'I'm going to the local network'. That was our philosophy with the browser from the very beginning. We're going to take that to a whole new level in terms of going out to get information, but you'll still be able to do it in such a way that you know whether you're getting secure information, and that the right things can happen even if you're going out to the Internet.

Today you end up with tons of different passwords or you have to do things in an insecure way. This is really the next level of Internet integration, and the thing that didn't exist was the programming model, to unify things. Until we had this concept of web

services software on the Internet, we couldn't talk to other software on the Internet. The only thing that worked was that you could move bits – TCP/IP – or you could put up screens, that's HTML. But software couldn't talk to software, and it's fundamental to think about web services and how that's built in.

That's what takes the Internet to the next level – where you're going out and getting price quotes or the latest results; and with software interaction all that information is brought into one rich visualisation.

PCP: Do you have any idea of the kind of things that Longhorn applications will do that we haven't seen before?

BG: There will be things that are very innovative, and there will be things that will surprise us when other people come along with them. The most popular application on Windows by a substantial amount is Microsoft Office, and we're already hard at work on a version of Office for Longhorn. The Office team is very involved in saying to the Windows people: 'WinFS has to do

this so Outlook can just use WinFS as the native store', 'Avalon has to do this' so that their existing code can do the new graphics. Every major version of Windows where we've had the Office team engaged – the last time they really did a version that was dependant on a Windows release was Windows 95 – we've benefited from their involvement. The really deep involvements come where they're making the full 100 per cent back from the OS, which was true of the original GUI. Excel was the first really deep application that ran on Windows. Even things like printing and fonts that we don't even think about today got refined because of that. I totally expect hundreds of developers to come along with new things to do great stuff.

PCP: So we're going to get a new generation of software for Longhorn. Are we going to get new kinds of PCs to run it all on?

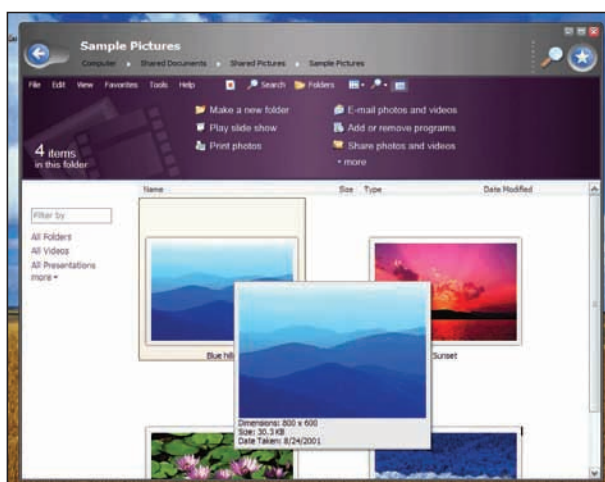
BG: With hardware, you're going to have lots of variety, whether it's on the wrist, in the pocket, a tablet, the desk, the wall – and the wall at work and the wall at home are slightly different. There's also the car, which is slightly special because of the need to not distract the driver. The theme is integrating your information needs across all those different device types, so you get the information you care about, when you want it, whatever you're doing during the day.

PCP: It sounds like the PC could just fade away and we wouldn't be thinking about using a computer any more?

BG: Well, did paper fade away? You take it for granted, but it's still there. If you light it on fire it burns. So the computer will be there, but it will be a real tablet that will become lighter and thinner. It basically comes down to common sense. The device will be in your pocket – you can pull it out and get a map, look at your schedule, or see the urgent things that you wanted to know about. Not just mail, but stock price or business developments, any of those things. You will take these things for granted, in the same way that we don't sit here and say electricity's the key. You know I didn't wake up this morning and think 'gosh, thank goodness we have electricity!' We just take it for granted.

PCP: Do you worry that we're becoming too reliant on technology, as we take more and more of these things into the digital world? Do we lose the human touch?

BG: The idea of technology is to give people more free time. Believe me, when you were out in that field ploughing 12 hours a day, there was no wonderful thing about it. Leisure time is a



Check out our full Longhorn preview starting on page 126.

creation of specialisation and the dependency you get, with transportation, electricity and all these things.

Because of technology – in two areas, which are computers and medicine – in the future the world will be a better place and people will have more leisure time, and they'll use that to get together, no doubt. Some of that will be facilitated, because you can share your schedule and ideas about what to do, using the technology when you're apart from each another. Hey it's not as great as all that, but the fact that you'll be able to talk synchronously or asynchronously and work together where you're connecting those screens up will be beneficial. These are all just tools that people will use, and they will be as popular as they are easy to use, and appeal to the normal interests we have to socialise, get work done, stay in touch with people – even people who aren't right where we are at the time.

That's partly why you're never sure if technology will be used, because you're not shaping the basic goals that people have, you're just providing the tools. Did I know that instant messaging would catch on, be such a big phenomenon particularly among young people? No. But then you see that and you say 'Okay, let's respond to that – let's get the platform to really incorporate that'. Some things we lead, like with the idea of the tablet form factor, reading on screen; we've always anticipated that that would be a very big thing and made the investments to drive that forward.

PCP: Is Longhorn definitely the next big step for the PC, or still something of a gamble?

BG: Certainly it's a big gamble. All our credibility, our developer energy is on the line here. Developers are pragmatic – they need to keep licensing coming in, so a lot will split between continuing to upgrade the things they have, and hopefully a number doing Longhorn things. It's always a minority of developers who really drive the new platform. When we first came out with Windows 95 mostly people were running 16-bit applications and a lot of DOS applications. It's easy to forget today that in Windows 95 half the users were spending half their time in character mode, because they had some applications that they were used to. So even with Longhorn we have to add value to existing applications. You can take the files you create in applications and have those in that WinFS system. We have to have ways to enable you to immediately get the benefit without buying new applications, then we need Office, then we need a bunch of other ones.

This is the big release for this decade – all the releases of the rest of the decade will be essentially substantial refinements of this release. Managed code only happens once. WinFS, Avalon, Indigo – we won't be creating new sub-systems for those capabilities in this next decade. We actually have a group that's off writing an operating system from scratch, and doing those things, but that's very, very futuristic.

LACIE

Are a thousand gigabytes enough for anyone?

Feeling cramped for disk space?

LaCie is now offering enough space for even the most nefarious of MP3 archives, with the aptly named BiggerDisk. This new external drive takes up just a standard 5.25in model's space on the desk, but packs in a whole terabyte – 1,000GB – of data. In practical terms, that offers up to a month of non-stop video, almost two years of non-stop music, the first third of War and Peace, or whichever maxes out its capacity first. It's an easy-to-use product, unlike a standard RAID drive or other high-storage product, hooking up to your system via either

USB or FireWire. It requires no drivers, and can therefore be slotted straight into your own system, or moved from machine to machine for immediate access to your data.

The drive as a whole has been designed for quiet running, with an on/off switch to both conserve energy and further cut down on excess noise. It can be placed horizontally or vertically, courtesy of provided feet, or loaded onto a rack for more convenient storage.

The LaCie BiggerDisk is on sale now, priced £700. For more information, consult the LaCie web site at www.lacie.com.

STAMP STORY

Paying your stamp duty



SmartStamp prints out unique bar codes rather than picture stamps.

Always looking for a way to tap into new postal services, the Royal Mail has come up with an interesting new take on email. You still post your documents as before, right down to heading for the red pillar-box, but there's no need for a stamp – you simply print your own. The service is called SmartStamp, and priced at £50 a year or £5 a month.

The trick is that SmartStamp prints out unique barcodes rather than actual picture stamps, thus enabling her Majesty's mail couriers to check that nobody is taking advantage of the old bubble-jet in the corner to snag free post. The software provided to print off the stamps is capable of reading in addresses from many popular mail clients, although Outlook is unsurprisingly the recommended

option for business purposes. More stylistically minded users can also import their own logos and other graphics to create custom stamps that sit alongside the all-important barcode – especially now that the traditional Queen's head logo is no longer the key symbol to look out for.

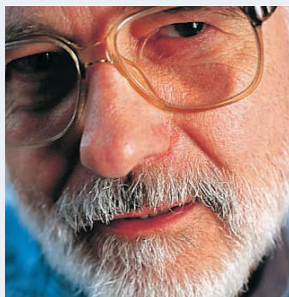
Once installed, extra stamps are purchased as and when you need them, with the option to post (that's Freepost) any unwanted or damaged envelopes back to the Royal Mail for a refund on the stamp. As a way of breaking out of the traditional queues, for everything from CDs to documents that have to go by Special Delivery, the SmartStamp system offers an interesting new way to work. For standard communication? Don't expect your email client to start sweating the competition though.

Desktop Diary

Chris Bidmead

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Chris Bidmead has been using and writing about computers for more years than he cares to remember



The Consumer Electronics Show has launched 'High Definition Radio'. Chris Bidmead takes a jaundiced look

US citizens lucky enough to be within range of the 100 digitally broadcasting radio stations will now be able to hear what's described as 'near CD quality' transmissions – if they're willing to pay out around \$350 for an appropriate receiver.

Déjà vu? Back in January 1999 this column discussed Europe's Digital Audio Broadcasting technology (DAB), and the imminent arrival of a UK manufactured DAB tuner, the Arcam Alpha 10. It was my first opportunity to hear DAB, and I've been a keen fan ever since.

This Christmas UK sales of DAB receivers beat industry forecasts by over 25 per cent. With 400,000 sets now in use it's clear that what, these days is just called 'Digital Radio' is becoming part of the national infrastructure. Back in 1999 I had some doubts about this. At around £1,000 a set, Digital Radio was excellent for Radio 3 music snobs like me, and a perfect in-car solution for Porsche owners. But it needed the public to climb on board.

Three things have made this happen; the choice of stations has been greatly extended, prices have dropped to below £100, and one key problem has been solved – Digital Radio depends on heavy processing power. When I asked (back in 1999) about the chances of a battery portable DAB radio, I encountered a lot of head shaking. But today you can't only buy regular bedside table battery portables, there are even a few pocket-sized personal receivers, like the UK designed PocketDAB. It's about the size of an iPod, and its three AA batteries power crystal-clear reception for up to 18 hours.

Eureka 147 has been adopted in 28 countries around the world, with a dozen more developing consumer trials. Not, however, in the US, where commercial pressure from established media owners, and control of the relevant wavelengths by the military has resulted in a compromise that piggy-backs digital signals onto existing AM and FM transmissions. Otherwise known as In-Band on Channel (IBOC) it's a technology that, in the words of one US radio engineer, "is incapable of reproducing even a simple male voice without generating objectionable artifacts. It gets worse with music."

US marketeers are touting HD Radio as 'the hottest technology that's transforming the broadcast industry'. In reality the US is at least five years behind Europe. With an estimated million sets in use by the end of the year, and 50 plus stations to choose from, our Digital Radio is hitting critical mass, the US venture is still on the launch pad, and I don't know many engineers who are betting it will ever leave the harbour – or even float.

WRITE IN

Do you agree with Chris? Write in and let us know



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Alternatively, join in our online discussions at <http://forum.pcplus.co.uk>

PREVIEW

Asus WL-330



Wireless networking is currently the 'coolest' thing in computing.

It doesn't matter if you're eight or eighty, 802.11b is the fastest way to become fashionable. It seems a little odd, therefore, that most of the wireless kit that's currently on the market looks a little dull. Fortunately, Asus is looking to change that.

The WL-330 is a wireless access point, bridge and Ethernet adaptor in one. Contained within a stylish silver chassis, it's about as sexy as a PC peripheral can get. What's more, its dimensions extend to just 86x62x17mm, making it the smallest Wi-Fi product we've ever seen. This means that you can take it with you wherever you go, and set up ad hoc wireless networks anywhere.

The WL-330 is about as sexy as a PC peripheral can get.

The other main use of this device is with laptops. If you happen to own a portable without built-in 802.11b compatibility, upgrading can be a costly business. Slip this gadget into your carry case, though, and you've got all you need to connect to any of the wireless hotspots around the country.

According to Asus, the WL-330 is easy to set up, whether for access point, adaptor or bridge functionality, and requires no knowledge of TCP/IP. We'll be testing this, along with its data transfer performance, in our full review next month. www.asus.com

FIRST LOOKS



BenQ FP767-12

www.benq.co.uk

It's not often recognised among the top tier of display manufacturers, so it's quite a feather in BenQ's cap that it's the first to come up with a monitor with a 12ms response time. We'll find out how this makes a difference next month.



Canon SmartBase MP390

www.canon.co.uk

Canon is quite enthusiastic about its new Multi-function printer, which is apparently ideal for photo enthusiasts. We're told that it's stylish, compact and simple-to-use. We'll see how it fares in an extremely competitive market.



IBM ThinkPad R50

www.ibm.co.uk

IBM is looking to take the market by storm with this ultra-portable notebook. Armed with 802.11a/b/g capability, innovative security features and a 10-hour battery life, it certainly has the necessary tools.



Pinnacle ShowCenter

www.pinnaclesys.com

Pinnacle has combined the concepts of a set-top box and media management software to create this all-in-one Media Center alternative. Many products enable you to stream video and music from your PC. This could be the best yet.

TECHNOLOGY

Next generation DVD playing spinning forth from Toshiba

Few technologies have taken off faster than DVDs, but the format does have its limits



Time to re-buy all your old movies.

Toshiba hopes to slowly wean people onto an even better video storage standard with its brand new HD DVD-ROM system, with a mix of new technology and full backward compatibility.

Currently in the prototype stage, the HD DVD-ROM works with the help of two separate

lasers: a standard red model for reading existing discs and a brand new blue counterpart for the new format, sharing an optical head in the interests of economy. Using this more advanced laser, a dual-layered, single-sided disc will be able to hold up to 32GB worth of high-resolution data.

Beyond this, the DVD technology remains much the same as before, bonding together two 0.6mm, 120mm substrates, and requiring no cartridges or other equipment that would cause problems for slimline drives.

HD DVD-ROM players are currently in the prototyping stage, but have been approved by the DVD Forum. The technology offers a simple enough twist on DVD creation to make it a viable alternative; although as ever, the technology's success will depend on take-up. High resolution sound and video, while always welcome, will find a much tougher reception when competing with earlier DVD rivals rather than obsolete old VHS. It will have to offer something rather more exciting than extra Directors' Commentaries to persuade everyone to replace their old system overnight, or face the uphill struggle of gradually supplanting the thousands of discs on the market as and when people upgrade.

BRIEF HISTORY

In the world of portable music, it's all about getting smaller physical units and more storage space. Take a look at the early days of the Walkman, and its development to present day

That'll be the Walkman, then?

Just so. The idea of wandering around with a record player slung under one arm was never the most appealing prospect, and the same applied to old fashioned hard drives. Not that many people would want to pass their time listening to the bleeps and bleeps of the PC speaker, though. The technology itself hasn't changed that much between then and now, at least in terms of pure hardware, but the handling most certainly has.

Size does matter?

When you're carting a boom-box around on your shoulder, certainly. When Sony came up with the Walkman, the big question wasn't sound quality but 'Sore shoulders?' Of course, they still relied on analog tapes, with all the disadvantages that came with them.

Such as?

Tapes didn't last long, and the sound quality was relatively poor – but they had one crucial advantage: you could record to them. CDs started off in much the same boat, but their durability, ease of portability and greatly improved sound quality soon saw their popularity shooting up.

Sound quality. But MP3 is no competition!

In terms of quality, no, it's not. The MP3 format works by

throwing out sound data that it doesn't think you'll miss. This is how it crushes songs down as powerfully as it does, and makes it perfect for online purposes. Smaller file, smaller download.

Why use them in portable storage?

There are three types of MP3 players available. You can burn the files onto a CD – not as tracks, but the individual files. You can save them on a memory stick (usually between 128MB and 256MB in size). Finally, you can carry them around in a hard drive. Each has their own specialities – playing from a CD means that you can play any regular discs that you buy, a hard drive offers gigabytes of space to store files, and a memory stick has no moving parts to get in the way.

How's the sound quality?

Depends on the player. The MP3 file can never be returned to full CD quality, but there are often filters capable of touching up the sound. Players like the Creative Jukebox borrow their processing power to offer everything from club atmospherics to caves and concert halls.

What's next for portable music?

Nothing. At least, not yet. More storage space and smaller physical units are the industry's current goals.

The way to do IT

Dean Evans

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Dean has been involved in the IT industry for 10 long years. This month: does Microsoft's Media Center PC idea actually have a future?



Is the future idiot-proof? Dean Evans discovers if the penny is dropping, and if a transformation is upon us

Sometimes you don't really know how much you like a product until you lose it. For me, Thomson's TiVo was one such gadget. When I first encountered one several years ago, it transformed the way my TV was recorded, a set-and-forget system that automatically taped and catalogued programmes. Running a Linux OS, TiVo was simple to use, yet powerful enough to learn what you liked to watch. By way of a thumbs-up and thumbs-down rating system, it would auto-record similar programmes if there was any spare space on the hard disc.

Suffice it to say, when I had to give the test unit back, barely three days passed before I was standing in Dixons with my credit card, buying a TiVo for myself. Going back to a sluggish, set-and-hope-for-the-best VCR was a grim and hugely disappointing experience. TiVo, I'd discovered was a technology I couldn't live without.

I wonder if I'd feel the same about Media Center if I didn't have a TiVo? Media Center is an undeniably slick system in that it apes most of TiVo's automated recording functionality. It also adds extra media goodies such as an MPEG, AVI and DivX video player, an image-viewer and a digital audio jukebox function. But sadly, Media Center's bad points far outweigh its good ones. For a start, it's too expensive and too noisy for the living room, and the fact that it's an IT rather than a CE device makes it far too complicated for the majority of high street shoppers.

Worse still, not only is a PC-based video recorder too fiddly for mainstream consumers, it doesn't go far enough. Microsoft had a genuine opportunity to create an entirely new category of PC. Its cool-blue media shell is a good start, but that's all it is. What Microsoft should have done is extend the idiot-proof UI to include the extra functionality people buy a PC for: an integrated email client, a web browser, file copying and automatic networking. And if the PC push is to continue, Media Center should be available as a standalone product, intelligent enough to detect the hardware that your PC has installed, and display an appropriate menu listing. For example: no TV tuner, no TV.

It's common sense. And perhaps the penny is finally dropping at Redmond. Microsoft is facing the fact that the PC won't invade the living room; hence its Media Center Extender announcement at this year's CES. Media Center Extender acts as the missing interface between TV and PC (or TV and PC and Xbox), enabling the PC to remain hidden. Rumour mongering on The Register that Media Center is on its last legs seems a little OTT. A transformation of the technology, from IT half-breed to CE-style set top box would be a better option, but even then Microsoft faces the prospect of convincing consumers that a hard disc video recorder is the TV-recording way of the future.

TiVo tried it. And you can't buy a TiVo in the UK any more.

WRITE IN

Do you agree with Dean? Write in and let us know



mailbox@futurenet.co.uk



Alternatively, join in our online discussions at <http://forum.pcplus.co.uk>

TECHNOLOGY

Weird and wonderful gadgets

Control your dreams, recharge your mobile phone by wearing a coat, and power your devices with a packet of alcohol. Ladies and gentlemen, welcome to The Future (at least when it comes to novelty gadgets), for the discerning technocrat.

Results may vary, of course, especially when the subject is something like Japanese toy manufacturer; Takara's Yumemi Koubou – the Dream Workshop. This sits next to your bed, holding a picture of whatever you want to dream about, whispering more in-depth plots through your ears whenever it believes you're enjoying receptive REM sleep, and backing it all up with soothing sounds and odours to help you wake up gently, remembering the experience properly. Unusual? Of course.

We're talking about the creator of the 'Bow-Lingual' dog translator.

Luckily, there are plenty of more useful ways to wear your technology on your sleeve. One for snappy followers of geek fashion is the SCOTTeVEST coat, demonstrated at CES, which comes with solar panels on the shoulders specifically for charging up any devices that you place into many pockets.



Rather speaks for itself we think. At least one of them is impressed.

If this seems like overkill, there's always more conventional batteries to fall back on – or alternatively, modern fuel cells. These are gearing up to enter the market in a big way, albeit not until 2005, with everyone from Toshiba to the US Department of Homeland Security investigating the benefits of methanol-based power sources. Startup PolyFuel made a play for individual machines this month with a honeycomb membrane designed to help create cells for laptops, mobile phones and other small units.

news blitz

FACING THE MUSIC The RIAA has finally hired itself a mini-army, dressing ex-cops in yellow-stencilled riot gear and sending them in to 'persuade' music pirates to sign over their Jim-lad sanctioned copies.

FIRING UP EMAIL Managers have been warned against sending aggressive emails to members of staff after the discovery that the overuse of capital letters, especially in words like WARNING!, were likely to raise blood pressure and potentially lead to serious health hazards in the future.

PLAYING OUR ITUNE Microsoft has earned itself a chutzpah award by complaining that a deal between HP and Apple to pre-install iTunes on new computer systems would rob users of choice. In semi-related news, the megacorporation has just been

forced to recode a feature in Windows that had Internet Explorer pop up every time somebody attempted to buy music using the shortcut in the Explorer interface.

JACK THE BLOGGER Death Row serial killer Jack Trawick has put himself in the middle of a free speech fracas after letters that he wrote to gloat about his activities and taunt his victims' relatives worked their way onto the web via an intermediary. An Arizona judge recently declared a law intended to prevent inmates publishing their writings on the web as unconstitutional.

PATENTS FOR EOLUS What could be more satisfying than stinging Microsoft for \$521 million in a patent infringement suite? Turning around and distributing the wealth to the open-source world! This looks to be the plan for one-man company Eolus, should judges be in his favour later this year, although no firm information has been released just yet.

ADVERTISING

The future of advertising, brought to you by...

Almost before the New Year bells had finished chiming, the advertising world was preparing itself to turn 2004 into one of the most contentious years for advertising since the dawn of the Internet. Microsoft has already announced its plan to build pop-up blocking into Internet Explorer, thus joining Firebird, Opera and every other major browser on the market, and forcing advertisers to think up new ways of squelching their unwelcome messages through the world's eyeballs.

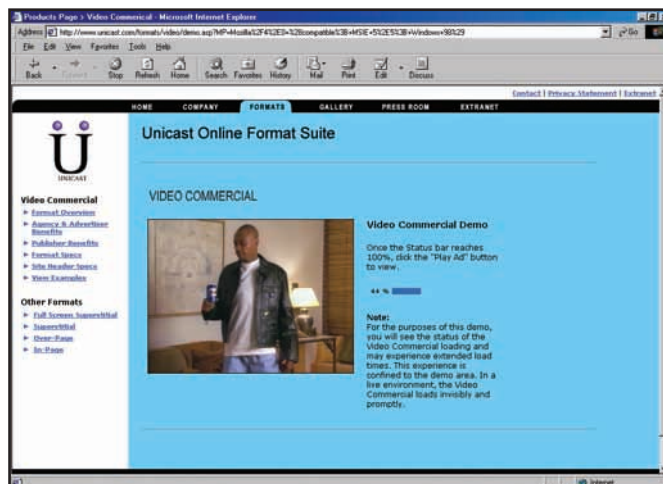
Interstitials are looking to take over where pop-ups stopped, appearing between web-pages much like a traditional commercial break. Unicast has come up with one of the most intrusive methods to date, promising advertisers full-screen video that downloads itself while the reader works through a page, jumping in to take over only when downloaded – 600K or so worth of advert, lasting up to 15 seconds.

At the other end of the subtlety scale come rumours that Google is looking at a webmail service to boost its increasingly portal-like webpage. Google AdWords are already deployed around the world, displaying adverts according to the content on the page. Tying the

latest adverts to the contents of email would seem like an obvious next step.

Finally, don't think that the lawyers are sitting idly by while the three-way war rages between advertisers, web page owners and annoyed viewers. The Playboy empire has finally managed to overturn a ruling from back in 2000, that prevented it taking action against search engines promising results to advertisers looking to appear with any searches for 'playboy' or 'playmate'.

The only question now is just how long it will be before the first person gets sued for skipping their adverts. With the advertising market becoming increasingly shrill as the months tick by, it's going to be a straight



The advertising world has been preparing itself to turn 2004 into one of the most contentious years for advertising since the dawn of the Internet.

choice between that, and simply admitting defeat. Somehow, we don't see that happening any time soon. Reach for your blocker.

Things To Come

Martin Banks
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Martin Banks has been a journalist writing about hi-tech since 1968, and personal computers since 1977. He has even won awards for it



Martin Banks is fascinated by the can of worms opened up by Intel and its dealings with Wi-Fi

I'd like to introduce you to Intel's new Vice President of House Brick Development, but I can't. At least, not yet. However, there is an outside chance it could just happen.

Why? Well, once Intel got itself stuck into the world of wireless communications and Wi-Fi with Centrino, it opened up not only a huge market, but a can full of other fascinating worms. These worms have little or nothing to do with semiconductor technology, but they do have a great deal to do with the future success or failure of wireless-based systems – and Centrino in particular.

For example, while there's an obvious application for wireless around an office, or indeed a home (Banks Towers is itself about to become de-wired as ADSL makes it to the wilds of darkest Bedfordshire) the real application for the technology is the chance to access the Internet while away from base. Wi-Fi may be snazzy technology, but it's completely pointless without the other half of the equation – the Wi-Fi hotspot it can connect to. That's why Intel has spent much time, and a lot of money promoting the growth of Wi-Fi service providers.

But that raises another problem. To maximise their investments, those service providers want to make sure that they sign up as many users as possible. But the point of Wi-Fi is that you can use a computer anywhere, and if users have to keep signing up to different suppliers they're soon going to be fed-up, and probably broke.

The analogy for Wi-Fi is the mobile phone, and so now Intel is finding itself obliged to get into the realm of political and contractual arm-wrestling with the service providers.

The rationale is simple: to try and forge some decent roaming agreements between them. This, according to the company's UK Centrino king Andy Greenhalgh, is likely to take about 18 months of push, shove and cajole. But without it, Wi-Fi will be far less use than it could be.

That's where the house bricks come in and Greenhalgh himself highlighted the problem. He, lucky lad, lives in an old cottage with really thick, old walls to which radio signals find themselves strangely allergic. As I have found – my mobile phone works outdoors but hardly ever, indoors – it's a common problem, and our house is anything but old.

It's unlikely that Intel ever thought of this when it started down the Wi-Fi road, but if building materials inhibit radio signals, it's in the company's urgent interest to solve the problem. If Wi-Fi is to be what it could be, then Intel (and others) now really do have to step outside of their own technology boxes and solve all sorts of other problems to make it work.

WRITE IN

Do you agree with Martin? Write in and let us know



mailbox@futurenet.co.uk



Alternatively, join in our online discussions at
<http://forum.pcplus.co.uk>

News Digest

We rake through over a thousand monthly news releases and sort the wheat from the chaff for you

BT

www.bt.co.uk

Two new services are now hitting the copper wires. For home users, BT Yahoo! Broadband is now available in 1MB form in addition to the standard 512Kb connection, priced £38 a month. Data-hungry companies in London and Coventry can also take advantage of SDSL – Symmetric Digital Subscriber Line – for speeds of up to 2Mbps in both directions.

SCO

www.caldera.com

The chaos continues. Finally ordered to produce its elusive claims against IBM and Linux, the SCO group produces sixty pages of excuses for the corporate dog eating its homework. Does anyone really think that its directors would have been unreachable in matters relating to a multi-billion dollar lawsuit, even over the Christmas break? That's the excuse, believe it or not.

FAST

www.fast.org.uk

The Federation Against Software Theft is cracking down on unlicensed software usage in UK companies, threatening jail time for company directors caught overseeing illicit usage. It claims that 2002 saw piracy rates rising at a rate not seen since 1994.

MACROMEDIA

www.macromedia.co.uk

The acquisition of RoboHelp gives Macromedia a whole new training and screen recording system to sit alongside its existing multimedia portfolio.

APPLE

www.apple.com

A new Mini iPod is on its way – smaller in size and price, but by considerably less than everyone was expecting. Your \$250 (UK prices yet to be announced) will buy you a 4GB drive in a choice of colours.

SGI

www.sgi.com

A whole new range of graphical Linux code and software applications are on their way from Silicon Graphics in an attempt to make the platform the most important for rendering and visualisation purposes.

ATI

www.ati.com

More graphics power is screaming its way to cellphones, courtesy of the ATI Imageon 2300. This new mobile graphics platform offers MPEG-4 decoding, JPEG codecs, twin display engines and more to provide hardware boosted 2D and 3D on portable devices.

MICROSOFT

www.microsoft.com

Rumours of Windows 98's death have been grossly altered, thanks to a massive outcry from companies not willing to upgrade their old systems with shiny XP installations. As such, Microsoft has postponed 98's consignment to the dustbin until July 2006.

MSN

www.msn.com

Meanwhile, online wing MSN is gearing up for the launch of a whole new range of premium services, including spam and pop-up blocking, virus scanning, extra email storage, and full parental controls on home equipment.

EPSON

www.epson.com

It's the photo album you can take on the road with you. Epson's PhotoPC P-1000 is a much more focused portable computer than the likes of Tablet PC, fitting in your hand and carrying 10GB worth of space to store, displaying and printing your images on the go.

This Series

Features of the .NET Framework

Part One

Creating and using custom Attributes and Reflection

Part Two

Understanding Delegates and putting them to good use

Part Three

An examination of Memory Management and Garbage Collection

Do-it-yourself attributes

PROJECT TIME



1 HR 15 MINS

SKILL LEVEL


4 INTERMEDIATE
 You will need to understand object orientation

YOU'LL NEED THIS



Visual Studio .NET, C#Builder or another C# development tool, the MS C# compiler, the .NET 1.1 framework

FILES ON SUPERDISC



All the files you need to complete this Masterclass are on this month's SuperDisc. Look in the Programmers' World section

Huw Collingbourne creates custom Attributes to document your code and configure the runtime behaviour of applications

There are several major features of .NET programming with C# that are likely to be alien to most people used to programming in other languages. In the course of this series we'll be examining three of the most important of these features. This month, we find out all about custom Attributes. You may recall that we used several 'ready-made' Attributes in last month's projects. This month we discover how we can make our own.

1 Creating Attributes You can define your own Attributes in much the same way that you would define any other derived class in your code. Your own Attributes should descend from System.Attribute. A simple class called MyAttribute is the immediate descendent of Attribute and has a string field, _mys, which is initialised by the constructor, and accessed via the mystring property:

```
public class MyAttribute : Attribute
{
    private string _mys;
    public MyAttribute(string s)
    {
        _mys = s;
    }
    public string mystring
    {
        get
        {
            return _mys;
        }
    }
}
```

So far this looks like a pretty ordinary class. There's one more thing we need to do in order to transform it into a fully

working custom Attribute. We need to specify its essential characteristics and, in particular, the varieties of code element (such as class, method or property) to which it can be applied. The way to do this is – surprise, surprise – to apply an Attribute to your Attribute definition. The particular Attribute required is called AttributeUsage, and it may take several parameters. In our example, we only need one parameter to specify the code elements to which it applies. This parameter takes the form of an AttributeTargets enumeration. We want our MyAttribute to be available to all program elements so we select the All member of AttributeTargets:

```
[AttributeUsage(AttributeTargets.All)]
```

Other members can be used to restrict the Attribute for use with a Class, Constructor, Method, Event and so on. If you want to make the Attribute available to two or more specific program elements you can do so by combining the parameters using the bitwise OR operator ('|') as in this example, which restricts the Attribute to being used with classes or methods:

```
[AttributeUsage(AttributeTargets.Class | AttributeTargets.Method)]
```

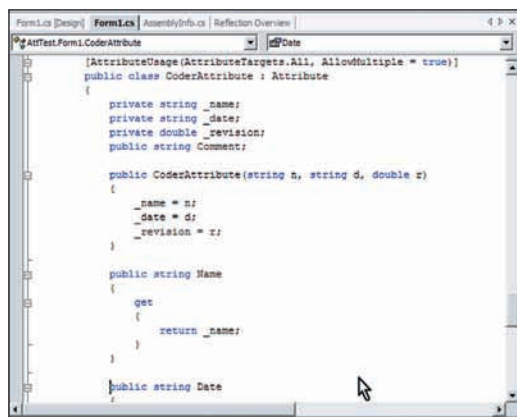
By convention, Attributes are declared with the word 'Attribute' appended to the Attribute name. So, for example, you might create a Programmer attribute, which would take a string parameter to keep track of the names of the person who has written each bit of code. In its declaration, this attribute would be named ProgrammerAttribute. The .NET framework considers the 'Attribute' suffix to be optional. This means that when you use the attribute, both of the following would be permissible:

```
[ProgrammerAttribute("Huw Collingbourne")]
[Programmer("Huw Collingbourne")]
```

Similarly, the pre-defined attributes such asBrowsable, Serializable and AttributeUsage may be used with the 'Attribute' suffix. You could, if you wish, enter this:

```
[AttributeUsageAttribute(AttributeTargets.All)]
```

You may want to think about whether or not you plan to use the full name, suffix and all, when defining custom attributes. If you don't, then you should be sure to give your attributes highly descriptive names. If you use names as terse, as our example, MyAttribute, it would obviously be a bit silly to shorten this to My, though syntactically this is quite legitimate!



Creating a custom Attribute is just like creating any other type of class. Just be sure to make it a descendent of the Attribute class and to mark it with the AttributeUsage Attribute.



Huw Collingbourne

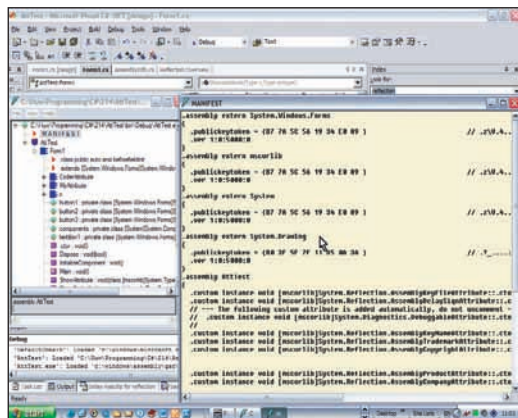
huw.collingbourne@futurenet.co.uk

Huw Collingbourne has been programming for more than 20 years. He claims to have started at the age of three!

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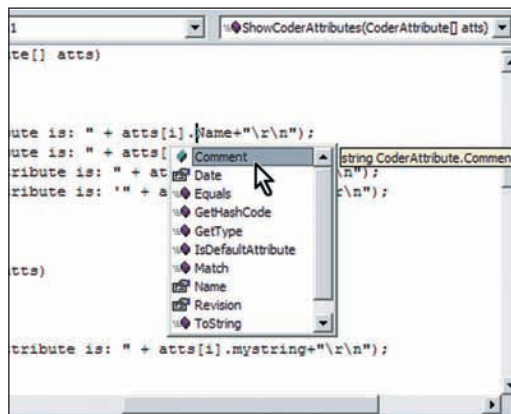
http://forum.pcplus.co.uk



Using the ILDasm tool you can load the Manifest from an executable file and view the metadata which it contains. This shows you both its dependencies and its resources.

2 Documenting code One possible application of custom Attributes is the documentation of source code, especially in a team programming environment. You might create a *CoderAttribute* to contain the name of the programmer, the revision number and the date of the last modification. Whereas ordinary comments could be used for this purpose, those comments will be stripped out when the code is compiled. Attributes will be compiled into the executables, however, so that the documentation associated with individual classes and methods can be examined without referring to source code. See our *CoderAttribute* class.

We've applied an instance of this Attribute to the *x* class. Notice that the *CoderAttribute* constructor only initialises three of its four internal fields in its constructor. The fourth field, *Comment*, is a public string. When you use this Attribute you may ignore this field altogether or, as we've done, you may initialise it by name:



Once you've created some custom Attributes, their fields and properties can be selected from a drop-down list using the code completion or IntelliSense features of your code editor.

```
[Coder("Huw", "01/01/2004", 1.4, Comment="Must  
try to do something useful with this  
class!")]
```

Incidentally, we've applied this same Attribute twice to the *x* class. This enables us to keep track of code modifications. By default, the same Attribute can't be repeatedly associated with a code element, and trying will result in a Build error. To overcome this, we've set the *AllowMultiple* parameter to true in the *AttributeUsage* Attribute of *CoderAttribute*.

3 Retrieving Attributes In order to tap into the real power of Attributes, you need to be able to examine and respond to them in your own code. This is easy to do. The *Attribute* class provides a *GetCustomAttributes()* method for this purpose. This method retrieves an array of custom attributes of a specified type applied to a specified member

PASSING SHOT

In .NET all programs are composed of Assemblies. Executable EXE files and DLLs are Assemblies. In addition to containing executable code, an Assembly also contains a Manifest, which describes the Assembly itself. It contains 'metadata' describing the data types used by the program, and it contains resources such as graphics. Every time you create a project you'll see that an *AssemblyInfo* file is created for you. This is displayed in the Solution or Project explorer pane. This source file contains information that describes the Assembly. You may edit this. In the *AttTest* project, we've added some strings to the *Assembly Title* and *Assembly Copyright* Attributes. If you open *AttTest.exe* in ILDasm and double-click the Manifest branch you'll see that these strings have been compiled into the Assembly. A fundamental feature of an Assembly is that it's self-descriptive. It doesn't rely on data hidden deep inside the Registry, so that co-operating components can check compatibility and avoid the kind of version clashes that have plagued DLLs in the past.

Beginners' guide to C#

If you're switching to C# from some other language, start here

If you're familiar with another programming language, you may find that C# has a number of syntactical elements which seem odd or confusing. Programmers familiar with a C-like language such as C++ or Java will have fewer problems than those people who are more comfortable with languages such as Delphi or Visual Basic. Over the next few months we'll look at some essential features of C# syntax. This month we'll consider some features that are common to all C-like languages.

Unlike Pascal and Basic, C# is strictly case-sensitive. So when a

variable called *MyVar* is different from one called *myVar*. A method called *Mymethod* is different from one called *mymethod*.

C# uses two types of comments. Multiple lines can be commented out between */** and **/*. A single line is commented from *//* to the end of the line.

A variable is declared with its type name followed by an identifier and a semi-colon. You can optionally assign a value when you declare a variable as shown below:

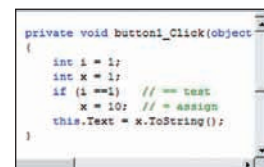
```
int i; //  
int i = 10; //
```

The assignment operator is a single equals sign, *=*. The equality testing operator is a double equals sign, *==*. Here's an example that tests the value of *i* and assigns a value to *x*:

```
if (i == 1) x = 10;
```

To increment or decrement a value you can use the plus and minus operators using either a long (Pascal-like) or a short (C-like) syntax, *++* and *--*. Assume in the following examples, that *x* begins with the value 1:

```
x = x + 10; // x equals 11  
x += 10; // as above
```



The syntax colouring of your code editor will indicate data types such as *int* and any text contained in comments.

Reflection and metadata

To look inside your compiled programs, you need to reflect upon it

The Attributes stored inside an Assembly form part of that Assembly's 'metadata'. Metadata is the descriptive binary information that's stored inside a .NET executable. All data types and members are described by metadata. Since objects and modules describe themselves with metadata, it's no longer necessary to use separate header files (as in C/C++) or entries in

the Windows registry. It's the internal metadata that forms much of the input to the ILDasm utility ('Disassembling Assemblies'). Examining metadata to obtain information about the internal details of assemblies is called 'Reflection'. One familiar example of reflection is provided by the Visual Studio code editor, which displays the members inside objects as a drop-

down list when you enter the full-stop after an object's name. The .NET framework defines a System.Reflection namespace, which contains, among other things, Assembly, Module and Type classes to assist in accessing internal metadata. The entry on reflection in the Help index provides a more detailed overview of this subject. ■



Reflection is a fundamental feature of .NET. Consult the help system for detailed documentation on this and related topics before experimenting.

GOING FURTHER

You may want to try using Attributes to control the runtime behaviour of your programs. For example, you might have a Demo Attribute, which could be used to disable certain functions when you distribute a demonstration version of an application. Or you might have a Password Attribute, which allows access to certain features only when a parameter matches a string entered by the user. Once you start to experiment with Attributes you will find that they can be used in place of configuration data, comments and compiler directives.

of a class. The GetCustomAttributes() method is overridden and you should refer to its entry in the help system for details of the alternative versions.

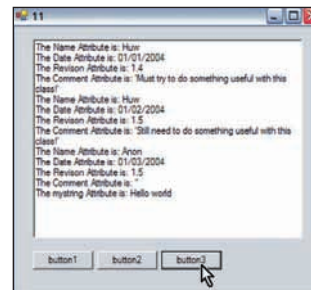
You can retrieve the Attributes of a specific type and class, such as the CodeAttribute applied to class x, like this:

```
CoderAttribute[] atts =
(CoderAttribute[])Attribute.GetCustomAttributes
(
typeof(x), typeof(CoderAttribute));
```

You could then simply iterate through the Attributes in the array, atts, obtaining the properties or fields of each:

```
for(int i = 0 ; i < atts.Length ; i++)
{
textBox1.AppendText("Name Attribute is: " +
atts[i].Name);
}
```

This approach is a bit restrictive which is why we've adapted the technique. We've written a method called ShowAttribute(), which takes two arguments, a class type and an attribute type. To ensure compatibility with all Attribute types, we initialise our array, atts, to the object type with which all classes are compatible. Our code then examines the actual type of the attribute that has been passed in the parameter, atttype and calls methods specific to each Attribute type. This is necessary since each Attribute type will have different properties and fields, which need to be accessed. The array of object, atts, is cast to an array of the specific type of Attribute, such as CoderAttribute[] and each member is accessed and displayed using the following:



Our application is executing some code to display the values of various custom Attributes which we've applied to elements within the application itself.

```
textBox1.AppendText("The Name Attribute is: " +
atts[i].Name+"\r\n");
```

The calling code need know nothing of implementation details, however. If you look at button3_Click(), you'll see that this simply passes to the ShowAttribute() method, the type of the class and Attribute that it wants to examine:

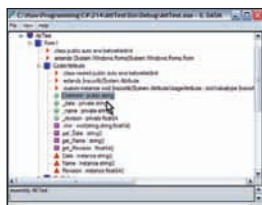
```
ShowAttribute(typeof(x), typeof(CoderAttribute))
;
ShowAttribute(typeof(x), typeof(MyAttribute));
```

You could make the ShowAttribute() method more generic by making it iterate through all the Attributes applied to all the elements within the scope of a specific object, such as Form1. This would provide you with a good way of displaying, saving to disk or printing out a list of Attributes, which could be used as a code documenting utility.

Next month we'll move on to delegation. If you thought function pointers were fun, you ain't seen nothing yet! **PCP**

NEXT MONTH

Delegates are supposed to be one of the great ideas embodied in .NET. So what are they and how do you use them. All will be revealed next month.



Visual Studio provides the useful ILDasm tool, which lets you load up compiled files and examine a hierarchy of their contents.

Disassembling assemblies

Here we learn about a tool that enables you to look inside an executable file

The easiest way to take a look inside a compiled program is by using Microsoft's MSIL (Microsoft Intermediate Language) Disassembler, ILDasm.exe. This translates information contained inside .NET assemblies into a readable format, which is displayed as a tree-structured hierarchy. Users of Microsoft Visual Studio .NET will find the ILDasm.exe program located in the \SDK\vl1.1\Bin subdirectory beneath your Visual Studio directory.

While you can run ILDasm from the command line, you'll find it more convenient to install the tool into your development environment. In Visual Studio you can do this by selecting the Tools menu then External Tools. Click Add, and in the Command

field navigate to ILDasm.exe. This will add ILDasm to the Tools menu. Now, when you want to examine an assembly, run ILDasm and open a .NET .exe or .dll file. You will now see certain elements contained within that file displayed in the ILDasm window. For example, if you examine our AttTest.exe file you will see objects such as Form1 and button1 and methods such as Main() and button1_Click(). You will also see our custom Attribute, MyAttribute, and all the internals of that class such as the private string, _mys.

You can determine which code elements have been marked with specific Attributes. Here, for instance, you can see that the class named x

has been marked with an instance of MyAttribute, which has the string parameter, 'Hello world'.

The items on each branch displayed by ILDasm are categorised graphically. The small blue 'pocket' on the AttTest branch shows that it's a namespace, the blue rectangles before MyAttribute and x show that they're classes. Magenta squares indicate methods while pale blue diamonds indicate fields. Right-facing red arrow heads show that more information can be displayed by double-clicking the branch. Note the Manifest branch. A Manifest contains information ('metadata') about an Assembly such as its name, version number and the files that it uses. ■

This Series

.NET Systems
Programming with
Managed C++

Part One

Built-In .NET
System Classes

Part Two

Working with
P/Invoke

Part Three

Reflection issues:
Through a
mirror, darkly...

Part Four

Working with
assemblies

Part Five

Of AppDomains
and Apps...

Working with P/Invoke

PROJECT TIME



2 HRS 00 MINS

SKILL LEVEL


7 INTERMEDIATE
Assumes some
familiarity with .NET and
Win32 programming.

YOU'LL NEED THIS


 A .NET compatible C++
development system
(like Microsoft VS.NET)

FILES ON SUPERDISC


 All the files you
need to complete
this Masterclass are
on this month's
SuperDisc. Look in
the Programmers'
World section

This month, **Dave Jewell** helps you understand how to make unmanaged Windows API calls from your managed .NET code

Welcome to part two of our series on system-level programming with managed C++. This month, we delve into the world of P/Invoke, a mechanism which makes it possible for managed code running in the .NET environment to call down to unmanaged code. In simple terms, this enables .NET programs to make use of existing Windows API routines. Microsoft is working towards making the .NET framework library as self-contained as possible, but for now, you'll certainly need to be familiar with P/Invoke.

It's rumoured that by the time Longhorn arrives, the .NET frameworks library will encompass all the functionality of the existing Win32 API. In fact, Microsoft is hinting that there are new features of Longhorn that will only be available through .NET classes and methods. This sounds great, but it's also looking increasingly likely that Longhorn won't be with us until 2007 at the earliest. Don't hold your breath...

The bottom line is that, for now, if you want to do systems-level programming with .NET, you'll frequently need to use Win32 API routines whose functionality might not be readily available via the .NET class libraries. So how does one invoke Win32 routines from managed code? Microsoft's solution is to use a technique which is variously called P/Invoke, Plnvoke or (to use its full name) Platform Invoke.

1 Sleuthing the .NET socket implementation In order to give a real-world example of P/Invoke in action, let's 'lift the hood' on Microsoft's implementation of Socket, the .NET class which forms an object oriented wrapper around the WinSock services provided by the operating system.

Using Socket, you can implement web browsers, email readers, and all sorts of goodies – some of which we've experimented with in the past.

2 Using Lutz Roeder's Reflector utility

Download this from: www.aisto.com/roeder/dotnet/. I browsed through the .NET class libraries to locate the implementation of the Socket class, which is contained in the System.Net.Sockets namespace. If you examine the code, you'll see that it contains a large number of different methods, such as Accept, Bind, Receive, Send, and so on. If you're familiar with the underlying WinSock implementation, you'll probably suspect that many of these methods correspond to the WinSock routines of the same name.

Let's take the Accept method as an example. Using Reflector, we can peek inside the implementation of the method and we quickly find that the real 'meat' of the routine is this statement:

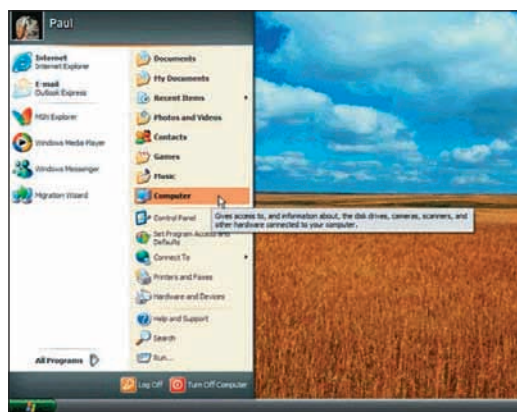
```
ptr1 = OSOck.accept (this.m_Handle,
address1.m_Buffer, &address1.m_Size);
```

A nice feature of Reflector is that we can just click on the accept method and it will take us to the implementation, wherever this might be. In this case, we find that accept is a method of the internal OSOck class, which is nested within the System.Net.UnsafeNclNativeMethods class. And that's where we come unstuck! If you try to decompile the accept method, Reflector will simply display this rather cryptic message: "Method body is either empty or contains native/optimised instructions." What this means in simple terms, is that there's no MSIL code corresponding to the method, and therefore it can't be decompiled.

Fortunately, that's not the end of the investigation. There are more .NET hacking tools around than Reflector. One is the Salamander decompiler marketed by RemoteSoft. You can find more details on this utility at: www.remotesoft.com/salamander/. While Reflector doesn't have much to say regarding the implementation of the OSOck.accept method, Salamander is considerably more forthcoming. Try decompiling the accept method and you'll see this:

```
[DllImport("ws2_32.dll",
 CharSet=CharSet.Ansi, SetLastError=true)]
internal static extern IntPtr accept(IntPtr
socketHandle, out byte[] socketAddress, out
int socketAddressSize);
```

This is a Plnvoke declaration for the accept method. Let's look at the second line of code first, bearing in mind that the declaration is expressed in C# rather than C++. It defines an internal routine (only accessible from within the defining



Longhorn will hopefully give us a version of the .NET class libraries which – functionally – are a superset of the Win32 API. However, we may have some time to wait...



Dave Jewell

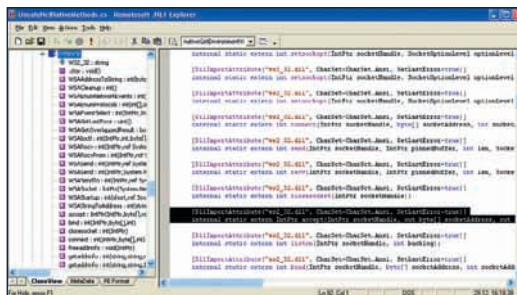
dave.jewell@futurenet.co.uk

Dave is a freelance journalist, consultant, and programmer. He has worked with Windows ever since version 1

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Not all .NET sleuthing tools give full details on PInvoke'd routines, but all is revealed when we run RemoteSoft's Salamander decompiler on the methods in question.

assembly), which is also static; in other words, you don't need to create an instance of OS SOCK before you can use the routine. The routine returns a value of IntPtr (about which more later) and takes as arguments a socket handle, an array of bytes representing a socket address, and an integer that returns the size of the socket address array. Like I said, this is expressed in C#, but a more familiar C++ declaration might look something like this:

```
int accept (struct socket *sock, struct
socket *newsock, int * addrlen);
```

3 Introducing DllImport The really important stuff is in the first line – the DllImport attribute. This attribute tells the .NET runtime system that the target routine, accept, resides in an external, unmanaged code DLL. The first part of the attribute declaration is always a string corresponding to the name of the external DLL. In this case, WS2_32.DLL contains the WinSock implementation. The next part of the declaration specifies the character set to use. Here, an ANSI character set has been indicated, but we could easily specify



No, MessageBox isn't the world's most exciting Windows API routine to call from managed code, but this month's project shows you how to invoke it using both PInvoke and IJW.

Unicode strings by using CharSet = Unicode. This is relevant where you're passing strings to an unmanaged routine; if you specify Unicode strings, then the runtime code will first check the DLL for a routine name suffixed with 'W' (e.g. the Unicode version of MessageBox is called MessageBoxW) before looking for the routine name you've specified.

CharSet, SetLastError, and so on are all fields of the DllImport attribute and they can appear in any order. Another important field is SetLastError. This tells the runtime code (it's correct name is the 'marshaller') whether or not the called routine sets the last error code for the calling thread. In this particular case, the SetLastError field is true, indicating that accept sets the error code. When you set this field to true, the marshaller will call the DLL routine and then immediately call GetLastError to retrieve the error code. This result is then cached inside the .NET runtime and can be retrieved by calling the static Marshal.GetLastWin32Error routine. If you don't set the SetLastError field of DllImport to true and the target routine uses the Windows last-error mechanism, you'll only ever see garbage when you call GetLastWin32Error. ➔

PASSING SHOT

The focus of this month's C++ Workshop is on calling unmanaged code from managed .NET code. But what happens when you want to go in the other direction? What approach can you use when calling managed code from an unmanaged client? This is a common requirement. All the major .NET development systems (Microsoft Visual Studio .NET, Borland C++ Builder, Delphi 8, and so on) are actually implemented as Win32 executables! They start life using unmanaged code, but then 'go to warp' in order to access .NET.

One possible approach to this problem is to use a CCW or COM callable wrapper. This is a chunk of code that 'wraps' the managed code so it looks like a plain-vanilla COM object. It can then be called from any development language that can handle COM objects; Delphi, C++ Builder, and so on. If you like working with cutting-edge technology, you might be interested in Delphi 8, which makes it possible to expose managed code as an ordinary Win32-callable DLL.

An introduction to .NET marshalling and COM interop

Transparent access to unmanaged code, and COM objects from your .NET apps

Whether you're working with .NET or with COM, you'll eventually come face to face with the issue of marshalling. Webster's Unabridged Dictionary defines this as 'the act of arranging in due order' and from a programming perspective, that's a pretty good description. As an example, let's consider what happens when a managed application calls an unmanaged DLL routine.

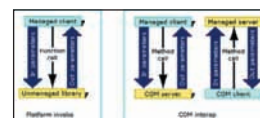
Inside .NET, needed parameters are pushed onto the stack of the MSIL 'virtual machine'. Win32 API routines, on the other hand, expect parameters to be pushed onto the processor stack – so already we're

talking about two different stacks here! Not only that, but we can't just 'change gear' in switching from MSIL code to native code and back again. Based on these considerations alone, it ought to be obvious that there must be some cleverly-written code (the marshaller), interposed between the managed application and the unmanaged DLL, which takes care of moving parameters between the different stacks.

Accessing COM objects from managed code is just as easy as the IJW mechanism, thanks in part to the design-time support provided by the Visual Studio IDE. In order for managed

code to communicate with a COM client, it needs to go through something called an RCW – Runtime Callable Wrapper. It's effectively the reverse of a CCW, mentioned elsewhere in this article.

Using the VS.NET IDE, you can simply right-click the 'References' node in the Solution Explorer, choose 'Add Reference...', navigate to the COM tab of the resulting Add Reference dialog and then select the COM object that you want from the displayed list of all registered COM controls. The IDE will generate the necessary assembly required to access the COM object just as if it were a 'native' .NET component. ■



The .NET infrastructure introduces a rich set of interop mechanisms, which greatly simplifies access to all types of legacy code.

It just works!

An alternative to DllImport for managed C++ developers

This month's C++ Workshop has focused on PInvoke as a means of calling unmanaged DLLs from your .NET software. However, if you want to use your own, existing, unmanaged legacy code, there's another approach that you can try called 'It Just Works' (IJW). Using IJW, it's possible to directly compile your legacy C++ code into

a managed code project. Simply package the old code as a library (.LIB file) in the time-honoured fashion, generate an import library for the code, and then include the import library and relevant header files into your VS.NET project. It sounds impossible, but it believe it or not, it does work, and that's true even if the legacy code makes

use of MFC, ATL, or other legacy technologies! This is something unique to managed C++; the IJW feature isn't available to C# or VB.NET developers. To read more about this topic, you can find a Microsoft PowerPoint presentation from Tech-Ed 2003 at the following location: <http://tinyurl.com/3btkh>. ■

It Just Works

- If you have unmanaged code you want to compile as managed, just compile it
 - It will compile
 - It will run
- Even if it calls out to unmanaged code
 - Statically linked
 - Dynamically linked
 - MFC
 - ATL
 - Whatever!

Using 'It Just Works', it's possible to link existing unmanaged C++ code directly into your application.

GOING FURTHER

As ever, we've only covered the basics of PInvoke, IJW and interop in this month's C++ Workshop. Potentially, it can be a very complex subject, and this is particularly true when you bring COM into the picture. If you want the full (and we do mean full!) story, there are a couple of books that you'll want; COM and .NET Interoperability by Andrew Troelsen (Apress) and .NET and COM for C#, C++ and Visual Basic.NET Developers by Adam Nathan (Sams). Both these titles can be obtained from www.amazon.co.uk or from www.compman.co.uk.

NEXT MONTH

Next month, we'll be focusing on the powerful reflection capabilities of the .NET class library. Reflection allows a managed application to discover things about itself and other software!

4 Creating your function prototype Once you know what unmanaged DLL routines you want to call from your .NET application, the next step is to isolate them in a class that's created for this specific purpose – see the section entitled 'Using Classes To Encapsulate Imported DLL Routines' for more information on this. You're then ready to create your function prototypes. As an example, let's take a look at the ubiquitous MessageBox routine. In managed C++, the function prototype for this routine would be as below:

```
[DllImport ("user32",
 CharSet=CharSet::Ansi)]
extern "C" int MessageBox (HWND hWnd, String
 * pText, String * pCaption, unsigned int
 uType);
```

In order to get the managed C++ compiler to recognise the DllImport attribute, you must make sure to include the following using namespace statement near the beginning of your code. Amongst other things, this namespace contains the implementation of the DllImport attribute:

```
using namespace
 System::Runtime::InteropServices;
```

This month's sample project, Demo2, is actually a very simple C++ .NET application which demonstrates how to call the MessageBox routine we've been discussing. It's a simple console app rather than a WinForms application. Hence, there's no GUI – the program does nothing except call MessageBox. Of course, we're only doing this to demonstrate Platform Invoke; in a real .NET application you'd typically use the System.Windows.Forms.MessageBox class when you want to display a message box on the screen. The 'guts' of the MessageBox class are contained within a private static routine called ShowCore, which – yes, you've guessed it –

invokes the same Win32 API routine of the same name.

There will be times when you might want to use a combination of PInvoke and IJW (see the section 'It Just Works!'). Much of the time, it's much easier to use IJW: you don't need to bother with creating those DllImport declarations if you're using Managed C++. However, if you're planning to port your code across to C#, you might want to create DllImport declarations from the start.

For this reason, the demo project shows how to do both. You'll notice that the source file (Demo2.cpp) contains a pre-processor definition near the top of the code:

```
#define IJW // Undefine this to use PInvoke
```

With IJW defined, the standard windows.h header file will be included in the compilation and the DllImport definition of MessageBox won't. This means that when MessageBox is invoked from the _tmain routine, it will refer to the standard Windows API routine. Courtesy of IJW, this will cause the C++ compiler to automatically generate all the necessary magic to call the unmanaged DLL entry in USER32.DLL. With the IJW pre-processor definition undefined, the DllImport definition is compiled and windows.h has no part to play. At the bits and bytes level the two situations amount to pretty much the same thing, but I'm sure you'll agree that IJW represents a simpler option. Eat your hearts out, all you C# developers!

You can find a great deal more information about marshalling, interop and other related issues by browsing Microsoft's online MSDN library at <http://msdn.microsoft.com/>. Microsoft has recently put preliminary Longhorn programming documentation online as well, and you can find this at <http://longhorn.msdn.microsoft.com/>. As you'll discover when you browse the documentation, the discussed DllImport facilities will be available in Longhorn too. **PCP**

Using classes to encapsulate imported DLL routines

How to stay on top of your platform-specific code

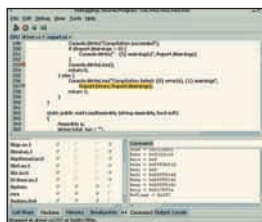
Earlier, we looked at the way in which the .NET classes encapsulate the underlying Win32 WinSock implementation. You'll remember that each WinSock routine is 'DllImport'ed into a class called OSSOCK. If you examine the source code of the class, you'll see that it starts off something like this: (These are C# declarations, but the equivalent C++ syntax should be obvious).

```
namespace System.Net
{
 [ComVisibleAttribute(false)]
 [SuppressUnmanagedCodeSecuri
```

```
tyAttribute()]
class
 UnsafeNclNativeMethods
{
 [SuppressUnmanagedCodeSecuri
 tyAttribute()]
 [ComVisibleAttribute(false)]
 internal class OSSOCK
{
 // DLL-Import declarations
 go here...
```

OSSOCK is a nested class. Obviously, you don't have to nest your encapsulation class if you don't want to. More important is the rather lengthy-

named attribute, SuppressUnmanagedCodeSecurityAttribute, which is associated with both classes. Using this attribute suppresses low-level security checks, which normally take place when your managed code calls down to the unmanaged DLL. The main reason for doing this isn't to bypass security but to improve performance. This attribute automatically applies to all members of the class with which it's associated; in this case, each of the DllImport declarations in OSSOCK. Finally, notice the ComVisibleAttribute declaration. This simply tells the runtime system that the contents of this class aren't visible to COM. ■



Through open-source initiatives such as the Mono project, it's possible to run .NET applications on Linux now.

This Series

Archiving Data
using Abbrevia

Part One

An overview of the
Turbo Power
Abbrevia Toolkit

Part Two

A closer look
at the capabilities
of Abbrevia

Part Three

Adding Zip
functionality to
our back-up Tool

Management and zip archives

PROJECT TIME

**1 HR 30 MINS**

SKILL LEVEL

**5 INTERMEDIATE**
We assume a
sound background
knowledge of Delphi

YOU'LL NEED THIS

Delphi 7 and Abbrevia
304, which can be
downloaded from
Source Forge at
www.turbopower.com

FILES ON SUPERDISC

All the files you need
to complete this
Masterclass are on this
month's SuperDisc. Look
in the Programmers'
World section

Huw Collingbourne introduces Abbrevia and develops a simple web site management utility and a handy zip file browser

This month we start a series examining ways to archive and compress files using TurboPower's Open Source, Abbrevia toolkit. If you followed our previous series, it may occur to you that it would be handy to add a file zipping capability to the back-up program we developed. We'll consider how to do that at the end of this series. This month we'll have a gentle introduction to Abbrevia, but before we do so, we'll start work on a new file management tool.

I recently moved my web site to a new hosting service. This meant that there were an awful lot of pages left lying around on the server of my previous host. I didn't want to delete these pages since some other people's web sites or search engines may still link to them. Instead, I wanted to replace each of the old pages with a new page, which informed people that the web site had moved and was now to be found at a specified location. This left me with the problem of finding a simple way of copying one new file over numerous old ones. It occurred to me that the back-up program, which we've developed over the last few months could be easily adapted to create a new copy-and-replace tool that would do the job nicely. We've supplied last month's project (BackupThing.dpr) on the SuperDisk so you can compare this with our new MultiCopy.dpr project to understand the changes we've made.

1 A batch file replace tool Load up MultiCopy.dpr and make sure the form design view is visible. As you can see, we've added a second ShellTreeView and ShellListView to the main form. We'll use the Shell views at the top of the form to select a source file and the Shell views beneath to select one or more target files. Next, we click the Copy button in order to start the process of replacing the target files by

copying the same source file over each of them. As we want to restrict the user to selecting one file in the source list view, SourceLV, we've set its MultiSelect property to false, whereas we've set this property to true in the target list view, TargetLV.

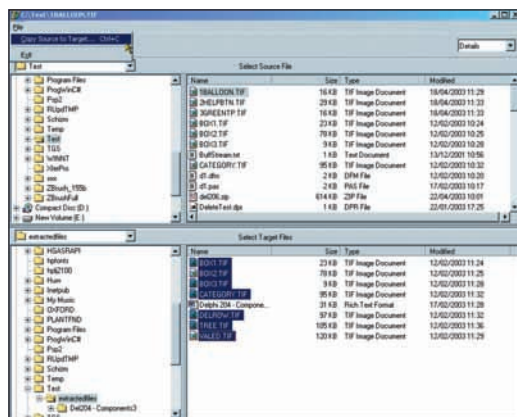
The main coding changes to the project begin with the CopyBtnClick() procedure. Before doing anything else, this checks that one source file and one or more target files have been selected in the list views. If so, the code iterates through all the selected files in TargetLV and adds them to the checklistbox on the form named FileVerifyForm. This form is associated with the dobackup unit. You'll notice that while we've renamed the components in the project, the unit files have the same names as those in BackupThing.dpr to make it easier to compare the changes. Finally, the check boxes in CheckListBox are checked, the source file name is displayed in the label SourceFileLabel and the form is shown modally:

```
for i := 0 to
FileVerifyForm.CheckListBox.Count-1 do
FileVerifyForm.CheckListBox.Checked[i]
:= true;
FileVerifyForm.SourceFileLabel.Caption :=
sourcefile;
FileVerifyForm.ShowModal;
```

In our back-up program, we used the checkmarks preceding the files names displayed in CheckListBox to indicate the files that had been processed. Each item was unchecked by default and only checked once the file had been backed up. In the current application, we use the checkmarks in a different way. All the selected target files are checked by default and the user is given the option to uncheck selected files before initiating the 'Replace Now!' button to copy the source files over the target files. Only those target files preceded by a check mark will be replaced.

2 Multiple file selection It would be useful to have some feedback to show when the source file has been copied over each target file, so we've decided to highlight each file name as it's replaced. In order to do this, the CheckListBox's MultiSelect property must be enabled. It's a curious feature of the TCheckListBox class that its MultiSelect property isn't published and doesn't appear in the Object Inspector. The property can be accessed in code, however, and we've set it to true in TFileVerifyForm.FormCreate(). The actual copying of a source file over a target file is performed using the CopyFile() procedure in MyFmxutils.pas. As you can see, the code needed to select each checked item and copy the associated file is quite brief:

```
for i := 0 to CheckListBox.Count-1 do
begin
if CheckListBox.Checked[i] then
```



Our MultiCopy tool can be used to copy a single source file over multiple target files. One of its applications is to replace files in an old web site with a redirection page.



Huw Collingbourne

huw.collingbourne@futurenet.co.uk

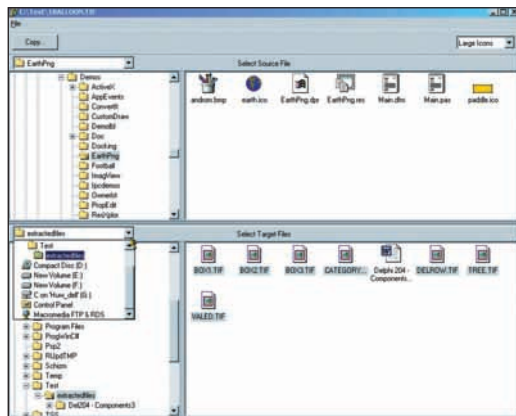
Huw Collingbourne has programmed in every Borland Pascal product from Turbo Pascal 3.1 to Delphi 7

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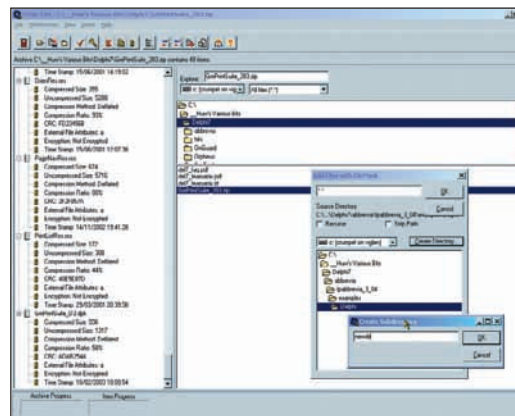
http://forum.pcplus.co.uk



Our MultiCopy application has been adapted from the back-up tool we created last month. The most obvious change has been the addition of a second file browsing pane.

```
begin
  CheckListBox.Selected[i] := true;
  CopyFile( SourceFileLabel.Caption,
    CheckListBox.Items[i] );
end
else
  CheckListBox.Selected[i] := false;
end;
```

Before you attempt to use the program, bear in mind that a file replace operation is destructive. In effect, it erases the original target files. If you use it, you do so at your own risk. We strongly suggest that you only use it with files that you don't care about and have backed up previously. You would need to make this program considerably safer and more user-friendly before unleashing it on the general public. This is something we'll work on next month.



This is Abbrevia's TPZip demonstration project. This enables you to look inside zip files, add files to it or delete files from it. You can unzip the archive with the click of a button.

The Abbrevia toolkit The Turbo Power Abbrevia toolkit is a data compression library that can be used to store files in space-saving archives in various formats, including zips and Microsoft's CAB files. Before you can use Abbrevia, you'll need to set it up for use with Delphi and install various components into the Delphi toolbar. Refer to the box, 'Installing Abbrevia' for help with this. Abbrevia comes with comprehensive documentation supplied in an on-disk manual, Abbrevia.pdf.

Before using Abbrevia, we suggest that you create a test directory and copy some document files and zip archives into it. Use unimportant files that you can afford to mess about with. From the Abbrevia\examples\Delphi subdirectory, load and run the TPZip.dpr project. This is one of the more complete archiving demos supplied with Abbrevia. Use the combo box at the top right to select zip files. Navigate to your test directory. The bottom right-hand

PASSING SHOT

Abbrevia is just one of a remarkable set of free TurboPower (www.turbopower.com) add-on libraries and components suites for Delphi. It was formerly a commercial product, but at the beginning of 2003, TurboPower ceased trading and placed its products into the public domain, where they're now being extended and developed as Open Source libraries. Previous Delphi Workshops have been devoted to TurboPower's OnGuard, SysTools and Orpheus suites. Currently we're using version 3.04 of Abbrevia. At the time of writing, two beta versions of 3.05 have been released. You may want to keep track of further developments by logging onto the TurboPower area of the Source Forge site from time to time (sourceforge.net/users/tpsfadmin). Once on site, navigate to the Abbrevia section (sourceforge.net/projects/tpabbrevia). Click the News link in the horizontal menu to see all the latest lists of additions, enhancements, bugs and bug fixes.

Installing Abbrevia

If you want to avoid problems when installing Abbrevia, follow our instructions

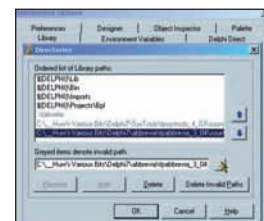
Before you can make use of the Abbrevia toolkit, you need to install the files for use with Delphi. If you're new to installing packages, you may find the following instructions helpful.

To begin the installation, install Abbrevia into a directory of your choice, such as C:\Delphi\Abbrevia. Start Delphi and select Tools, Environment Options. In the dialog box that pops up, select the Library page. Click the dotted button to the right of the Library Path field. Now, in the Directories dialog, click the dotted button to the right of the bottom field. Browse to the Source subdirectory beneath the directory into which Abbrevia has been installed. Click OK.

Check that the selected directory path is displayed in the field in the Directories dialog. Click Add. Click OK to close the Directories dialog and OK again to close Environment Options.

Now you need to install the Abbrevia runtime and designtime packages. There are packages available for various versions of Delphi, C++Builder and Kylix. The naming of these packages is explained in the Readme.txt file on disk. We'll assume that you're using Delphi 7. Select File, Open and navigate to the Packages subdirectory beneath your Abbrevia installation. Find the package ending vr70.dpk (in 3.04 of Abbrevia, this is called B304vr70.dpk but the

numbers will change as new versions of Abbrevia are released). In the Package window, click Compile. Now open the designtime package, ending vd70.dpk and compile this. If you're using the Personal edition of Delphi, the compilation may halt with an error stating that designdgm isn't found. This package supplies modelling support for commercial versions of Delphi. To fix the error, simply comment out designdgm from the 'requires' section in the source code and recompile. Click the Install icon in the Package window to install the designtime components. You should now see a tab labelled Abbrevia in the Delphi toolbar. ■



You'll need to add your Abbrevia directory to Delphi's library path using the Environment Options dialog.

Creating arrays

Arrays provide a simple way of creating fixed-length lists of data items

The syntax of an array declaration can be summarised as follows:

```
<variable name> :  
array[<start index>..<end  
index>] of <type> ;
```

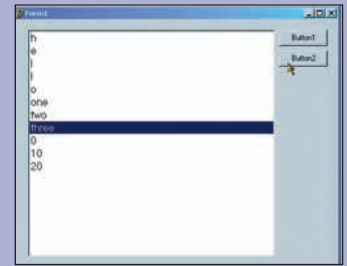
In our Arrays.dpr project, this is how we declare an array of strings – sarr – indexed from 1 to 3:

```
sarr : array[1..3] of  
string;
```

Look at Button1Click(). You'll see that we iterate through this array using a for loop to index each item in turn:

```
for i := 1 to 3 do  
ListBox1.Items.Add(sarr[i])  
;
```

In arrays indexed from 0, the third element is at index 2 rather than 3. The integer array, iarr, is indexed from 0. It's a common error to attempt to index one item beyond the final one in arrays starting from 0 or one item before the first in arrays starting from 1. To avoid this problem, use the Low() function to index the first element and the High() function to index the last. ■



Our Arrays.dpr project shows how to create arrays of various types.

GOING FURTHER

The principal improvements that need to be made to our MultiCopy project are concerned with protecting the user against accidentally erasing the target files. A warning message might be produced asking for confirmation before overwriting the target files. An option to create back-ups before overwriting would also be desirable. You might also want to check that the source file itself is not included in the list of target files as you would cause an error if you try to copy a file over itself.

pane should display the zip files found here. Select one of these and drag it into the pane at the left of the form. The zip file should now be expanded to show all the files it contains along with detailed statistics of their original and compressed sizes. To extract these files, click the Extract Files button (with the red arrow) or select Extract Files from the Items menu. You may want to click the Create Directory button to create a new directory for the extracted files.

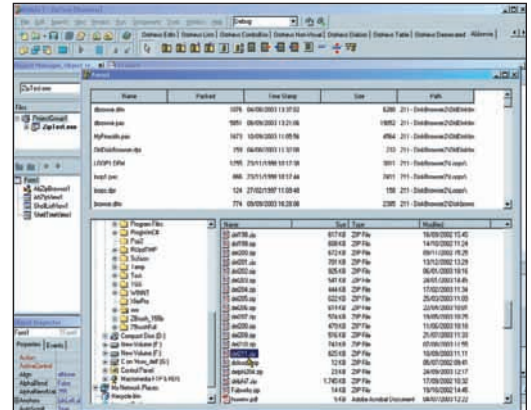
If the zip archive contains files in subdirectories, you'll probably want to recreate the directory structure on extraction, in which case, make sure the 'restore path' option is checked in the Extract Files dialog. Finally, click OK to start the process.

4 A simple zip browser While the TPZip project gives you some idea of the power of Abbrevia, it's difficult to understand at first sight. Let's therefore reduce the complexity by creating an Explorer-style zip viewer that requires just a few lines of hand coding. To do this, create a new Delphi Application and drop on a ShellTreeView and a ShellListView from the Samples page of the toolbar. As in our previous projects, we can connect these together by setting the ShellListView1 ShellTreeView property to ShellTreeView1.

Now click the Abbrevia tab of the toolbar and drop an AbZipBrowser component and an AbZipView component on to the form. The AbZipBrowser is a non-visual control that provides zip data to visual controls. In order to connect these two zip components together, select AbZipView1 and set its ZipComponent property to ZipBrowser1.

Now all we need to do is write a small piece of code to set the Filename property of ZipBrowser1 to any zip file that we select in ShellList1. For the ShellList1 OnClick event:

```
procedure TForm1.ShellListView1Click(Sender:  
TObject);  
var
```



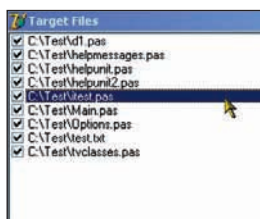
Abbrevia makes it easy to add Zip capabilities to your own applications. It has only taken a few lines of code for us to create this Zip file browsing tool.

```
path : string;  
begin  
if ShellListView1.SelCount > 0 then  
begin  
path :=  
ShellListView1.Folders[ShellListView1.Select  
ed.Index].PathName;  
if ExtractFileExt(path) = '.zip' then  
AbZipBrowser1.Filename := path;  
end;  
end;
```

When a zip file is selected, the zip browser shows a detailed view of its contents. You can find this application, ZipTest.dpr, on the Superdisk. In the months ahead we'll be exploring Abbrevia in more depth and finding out how to zip and unzip files in our own projects. **PCP**

NEXT MONTH

Having covered some of the basics of Abbrevia, we'll be developing a more elaborate Zip project next month.



In our project we iterate through the arrays of items in a checklist box to select them and toggle the check marks.

Learn to program arrays

This month our series for new programmers continues with a look at arrays

In the dorebackup.pas unit of our MultiCopy.dpr project, you'll see that we've iterated through the Checked, Selected and Items properties of the CheckListBox component by incrementing the value of the integer variable, i, from 0 to Count-1 and using i to obtain an index to each item:

```
for i := 0 to  
CheckListBox.Count-1 do  
begin  
if  
CheckListBox.Checked[i] then  
begin  
CheckListBox.Selected[i] :=  
true;
```

```
CopyFile(  
SourceFileLabel.Caption,  
CheckListBox.Items[i] );  
end  
else  
CheckListBox.Selected[i]  
:= false;  
end;
```

If you refer to the help entry for the TCheckListBox class you'll see that the Checked, Selected and Items properties are arrays. You can obtain an index into each by placing an integer between square brackets. An array can be thought of as a set of numbered slots which can contain a value of a specified

type. In the Items array, the first item is found at index 0 and you can refer to this item as Items[0]. If there are 10 elements in the array, the last element is at Items[9]. Since the Count property returns 10, the last element can be found at index Count-1.

In most programming languages, arrays are indexed from 0 upwards but this is not obligatory. Just to confuse us, Pascal often indexes from 1 upwards, in which case the last element is indexed at Count rather than at Count-1. The Pascal traditional string data type is an array of characters, indexed from 1. If s is the string 'hello', then s[1] is 'h' and s[5] is 'o'. ■

This Series

Network
communications in
Visual Basic .NET

Part One

TCP/IP basics

Part Two

.NET Services

Part Three

Pipes and maps

.NET Services

PROJECT TIME



1 HR 00 MINS

SKILL LEVEL



5 INTERMEDIATE
Some knowledge
would be useful

YOU'LL NEED THIS



Windows 2000, XP
Visual Studio .NET 2003

FILES ON SUPERDISC



All the files you
need to complete
this Masterclass are
on this month's
SuperDisc. Look in
the Programmers'
World section

If you need to run processes in the 'background', look no further. According to **Dermot Hogan**, a .NET service may be just the solution

You can compare Windows to an iceberg: 90 per cent of it is hidden. If you were feeling unkind, you might make further connections to the Titanic, but we won't go down that route. Windows is structured into user programs that you or I might run, and the operating system 'kernel', which enables us to run these programs. But there's a class of processes that sit between the kernel and things like Office or Visual Studio. These are Windows 'Services'.

The kernel is conceptually very simple, and serves three purposes; it allocates system resources such as memory and processor time among competing programs; it protects processes against one another, and it gets data in and out of the system as a whole. If you were a professor of computer science, you might come up with a few more things, or draw the boundary elsewhere, but effectively, that's what the kernel does.

In a user program, such as Office, you might want to use the date or time in a letter. The operating system certainly knows the date or time but it may not be correct. You can get the correct date and time from a number of Internet sources (see boxout), but is it the job of Word to get it? Not really. Nor is it the job of the kernel either – especially if you stick to the minimalist definition of the kernel's job that I've given above.

This is where services come in. They're normal programs that usually run continuously, but aren't directly started by you. For example, getting an 'authoritative' time – the right time, in other words – is done by the W32TIME service, which runs in the 'background'. That is, it's running but you don't see it on your desktop. W32TIME is started by Windows when it starts, and connects at regular intervals to a time

server that you specify, and without any intervention from you keeps the correct time.

You may not want to write your own time synchronisation server, but there are other reasons why you might want to have something that doesn't rely on a user (or yourself) to start it up. One might be to act as a routing channel from two or more desktop programs to an external device that's connected by a communications port or a USB cable. Normally, only one program can 'own' a port, and if you have two or more programs that want to communicate with the device, you need to do something a little different.

This is where VB .NET comes in. With the previous version of Visual Basic, VB6, you couldn't write your own service. You had to do it in C++ or Delphi, or some other such language. But now you can! So this month we'll build a simple service that runs the 'server' TCP/IP program that I described last month. Then, once we've got that working, I'll show how to modify it to handle multiple process communication channels.

To start with, create a new Visual Basic project and select 'Windows Service' from the Templates. This just creates a file with a class in it derived from the appropriate base class:

```
Public Class Service1
    Inherits System.ServiceProcess.ServiceBase
```

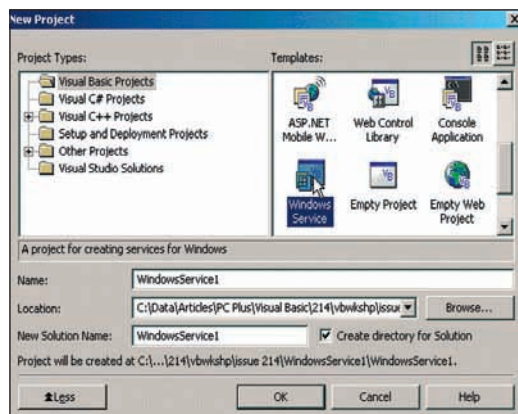
That's virtually all it does, too. If you look in the class' methods, you'll see just two (apart from those generated and hidden by the designer) – OnStart and OnStop. For once, these do exactly what you might think they do. OnStart is called when the service starts, and OnStop when it stops.

If that was all there was to it, it would be hardly worth the bother. But, as usual, there are a few wrinkles. OnStart is called by the Windows service initialisation process, and expects it to return when it's done the job of initialising. This means that you can't do any on going processing in this routine. You have to create a 'worker' thread to do the business.

This is easy. .NET provides a nice Thread class, which does all the messy stuff. All you need to do is this:

```
Dim t As
New System.Threading.Thread(AddressOf
Class1.Listen)
t.Start()
```

Here, I've passed the name of the actual method, Class1.Listen, that will do the work using the AddressOf argument to the thread. The next step is to simply start the thread. The routine then exits just after writing a message to the event log. We do this using one simple line of VB code.



Start building a Windows service by selecting the Windows Service template from the Templates section of Visual Studio's New Project menu.

PCPlus Back Issues

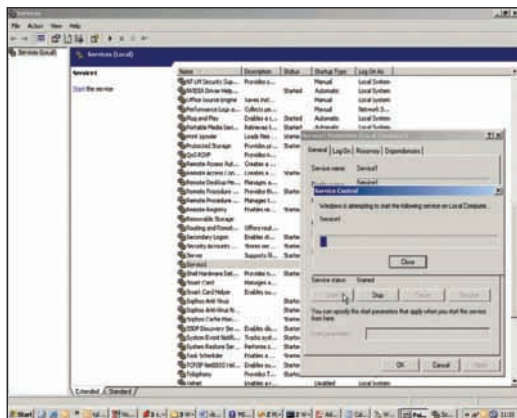
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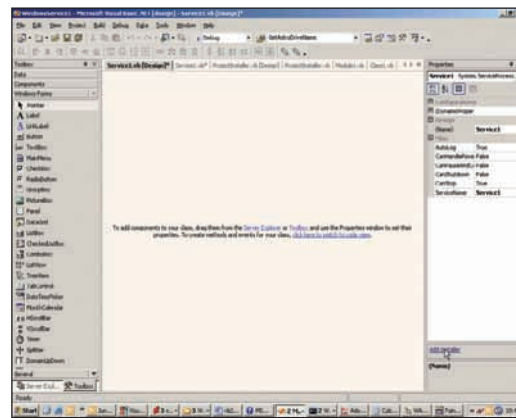

Dermot Hogan

dermot.hogan@futurenet.co.uk

Dermot Hogan has been programming (aka hacking) in more languages than he cares to remember – for more years than he can remember



Install the service with the InstallUtil program, and start and stop it from the Administrative Tools folder of the Control Panel.



The design screen for a service is a bit featureless. But it does contain one highly important item – the Add Installer option.

PASSING SHOT

One of the odder features of .NET is the differences in keywords between C# and Visual Basic. You wouldn't expect the major syntax differences to go away, and the VB and C# forms of declaration are as different as they can be. C# will usually be more terse than VB, and VB will almost always be easier to read than C#. I use both, and my personal experience is that my C# programs tend to be both smaller and more cryptic. But one area where I think that Microsoft has lost the plot is over keywords like 'Shared' and 'static'. They both mean the same thing, in that Shared/static defines a method or variable that's scoped differently from dynamically allocated variables. Since C# has historical precedence on its side, I would have preferred VB to use 'static'. But on the other hand, VB of old used 'static' in a different way. It gets worse – why 'Overrides' in VB and 'override' in C#? C# may not be as clear for historical reasons, but having two lots of keywords – some with trivial differences – is confusing.

```
EventLog.WriteEntry("Service1 Starting ...")
```

This brings us to the second wrinkle. How do you get the service to tell you what's going on? You can't do the usual trick of writing some diagnostic information to a text box, since there isn't a window to create a text box on. A simple way to indicate what's happening is to use the Eventlog class to write to the Windows event log. You can view the Event log by selecting the Event Viewer from the Administrative Tools folder of the Control Panel (depending on which version of Windows you're using).

The third wrinkle involves installing the service. Since a service is really started and stopped by Windows itself, this involves putting things in the Registry and doing other unpleasant activities. However, there's a simple way to sort this out, though it's not at all obvious. In the rather featureless Service design screen (in normal Windows

applications, this would contain the form layout), you'll see a small and insignificant looking item in the Properties window – Add Installer.

If you click this, you'll find a ProjectInstaller module added to your service with two classes in it. These allow you to set various options, such as whether the service is started automatically and what other services depend on this one. The other really important thing that can be set is the 'user' that runs the service. Windows is a little picky about running a service since it's not really part of the normal desktop, and so doesn't have to go through the usual log-in security mechanism. There's a special user set up just for services, LocalSystem, which doesn't have a password and you can't log-in using it either. Set this by modifying the account property of the ServiceProcessInstaller class. This is the usual 'user' for a service, though it does impose some restrictions on what it can do.



Service with a smile

Build a desktop application to test your service

Visual Studio has ways of debugging remote applications and processes, but the best way of developing a service is to build it as a desktop application, with a form and a couple of buttons for OnStart and OnStop. You can interact with your 'service' without having to install and uninstall every time you want to make a change. While it's tempting to use textboxes for debug output, it's better to use diagnostic and logging techniques. On the SuperCD, there's a TEST application that contains the two classes used in the real service. Click the OnStart button to simulate the service's OnStart method. This creates a new thread with the static member

Listen of Class1 as its argument:

```
t = New
System.Threading.Thread(Add
essOf Class1.Listen)
```

The Listen method will set up a socket on port 10000 and 'bind' it:

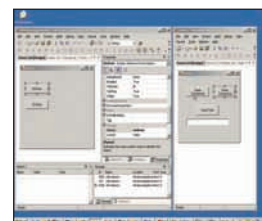
```
localAddr =
IPAddress.Parse("127.0.0.1")
ep = New
IPEndPoint(localAddr, 10000)
server = New
Socket(ep.AddressFamily,
SocketType.Stream,
ProtocolType.Tcp)
```

```
server.Bind(ep)
```

The main work is now done in a loop:

```
Do While True
server.Listen(10)
client = server.Accept()
x = New Channel(client)
Dim tt As New
Threading.Thread(AddressOf
x.Process)
tt.Start()
Loop
```

The loop will 'block' until a connection request is made, and continue to create a new thread. ■



The easy way to test a service is to develop it in a desktop application. You have to be careful not to include any methods that require a desktop in the final code, though.

Time base

There are better ways of getting the time than asking a policeman

Getting and keeping the correct time may seem to like a trivial operation, but it isn't. Leaving aside the peculiar bits as discussed by a certain Mr. Einstein, measuring time is messed up by all sorts of effects like wobbles in the Earth's rotation, and even planets perturbing the Earth's orbit.

Getting time from the Internet, however, is quite easy. All you need

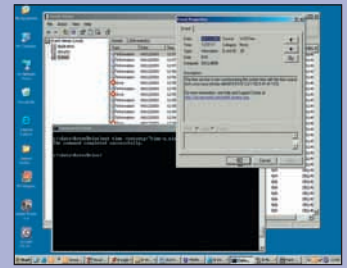
to do is specify the name of the time server to the W32TIME service in a command box like this:

```
net time
/setstnp:tock.usno.navy.mil
```

This tells the W32TIME service to use the US Navy's time, 'server'tock.usno.navy.mil' as the synchronisation

source for your Window's clock. There are several other synchronisation servers around, though I haven't been able to find one in the UK.

Interestingly, the time synchronisation protocol, Simple Network Time Service, or SMTP is a good example of a UDP datagram protocol, as I described last month. ■



You need to stop and start the W32TIME service to get the new time server to take immediate effect.

GOING FURTHER

As mentioned in the main text, it's possible to single thread the server by using non-blocking TCP/IP sockets. You can try this out, (if you're sufficiently adventurous) but if you do, in effect, you'll be doing the operating system's job for it. However the blocking/multiplexing is done, there's still only one microprocessor, and it's better to let the operating system deal with splitting up the available time than trying to do it yourself. There is of course a trade-off. Using multiple threads is less efficient in terms of processor resources, but doing it yourself is quite time consuming.

Once you have built the service, you can install it using the InstallUtil.exe program. This is available in a Command Prompt window. Use one created from the Visual Studio .NET Tools menu. Just type:

```
InstallUtil WindowsService1.exe
```

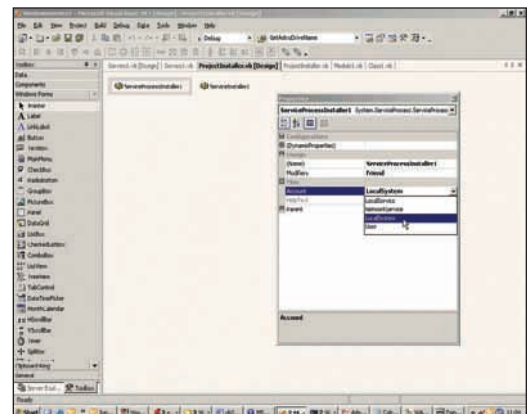
You should see some diagnostic text output. You can start the service from the Services section of the Administrative Tools folder. If you change the service program, you must uninstall it by adding a /u qualifier to the InstallUtil command before trying to recompile, otherwise Visual studio won't be able to write the executable file.

Turning to the Listen method of Class1 (this does the work on the worker thread launched by the service's OnStart method) it's the same as last month, except that the functionality is embedded in a shared class method, and I've used the event log as the diagnostic output medium. An interesting point here is the Shared keyword required by the AddressOf operator when creating the thread. You need this because there isn't an instance of Class1 around – nothing has created one. But there are properties and methods that can be associated with the class – as opposed to an instance of the class. These are specified using the Shared keyword – it's equivalent to 'static' in C#.

You can try the service out after installing it by running the Client1 program and typing some text in. You should get a reply from the service.

message streams separate and making sure that they don't interfere with one another. If it's done correctly, it's difficult to see what the fuss is about. But if it's not – and it's easy to get it wrong – you can end up with some incredibly obscure problems.

There are a couple of ways to do this sort of thing. One way is to use non-blocking sockets in a single thread, keeping track of what's going on with 'control blocks' – data structures representing the separate communication channels. Another way is to create individual threads for each client. This is the method I've chosen. The problem here is that you have to synchronise access to the single shared resource such as the communications port. But that's not too difficult given the variety of synchronisation mechanisms available in .NET. I cover the program that handles multiple clients in the boxouts below. **PCP**



The ProcessInstaller class lets you select the 'user' responsible for starting the service. Normally, you would select 'LocalSystem' from this drop-down.

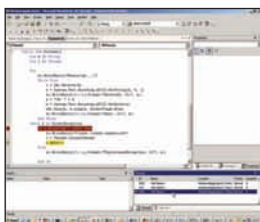
NEXT MONTH

We'll look at connecting the server up to a COM port, and other methods of communication between client and server processes.

1 Sleeper service Now we can try something more interesting. Instead of just having one client, we can modify the service to handle multiple clients. This is no more difficult than handling a single client in principle, but you have to watch the book keeping aspects. In particular, be very careful about keeping the different

Stopping service

Even though it's not strictly necessary, it's better to tidy up the threads



The easy way to test a service is to develop it in a desktop application. You have to be careful not to include any methods that require a desktop in the final code, though.

The Channel object is created from the listener thread. It services the socket connection to the client:

```
Try
While True
i = skt.Receive(b)
s =
System.Text.Encoding.ASCII.
GetString(b, 0, i)
s = "OK: " + s
b =
System.Text.Encoding.ASCII.
GetBytes(s)
skt.Send(b, b.Length,
SocketFlags.None)
End While
```

```
Catch e As SocketException
If e.ErrorCode = 10053 Then
el.WriteEntry("Client closed
connection")
t = Thread.CurrentThread
t.Abort()
Else
el.WriteEntry(String.Format
"Error:: {0}", e))
End If
End Try
```

The server returns text to the client with 'OK' on the front. There's some fancy work in converting between a byte array and a string. The Receive/Send pair does the business.

How do you stop? The client can disconnect at any time, therefore the thread is useless. You could leave the thread hanging around. For a small number of clients that don't disconnect very often, it wouldn't hurt.

The way to stop a thread is to call the Abort method, which works quite well. The only problem is getting a thread object to call it on. Locate the thread using the CurrentThread method and call abort from the exception handler.

This is only necessary for unexpected client terminations. Normally, you would send a 'close' message to the server, and the server would then be able to terminate more gracefully. ■

This Series

Simple probability calculations within programs

Part One

Practical use of random numbers

Part Two

Markov chaining and self-correction

Part Three

Unexpected problems and paradoxes

Part Four

Probability and impossibility

Random numbers

PROJECT TIME



2 HRS 00 MINS

SKILL LEVEL

7 INTERMEDIATE
Some knowledge of the subject matter required

YOU'LL NEED THIS



A very healthy interest in numbers

FILES ON SUPERDISC



All the files you need to complete this Masterclass are on this month's SuperDisc. Look in the Programmers' World section

This month, **Wilf Hey** delves into data handling, calculates many probabilities, and plays around with random numbers

For the next few months we'll be looking at anomalies in the handling of data. There are some correct ways, but even more incorrect methods that seem right. For example, we know that almost all adult humans have a height between five feet and six feet six inches. Over that range, the average is five feet nine inches. This sounds reasonable so far. Can you model this within a computer program? That is, can you generate a thousand (artificial) people, all with heights in this range, but more usually somewhere in the middle?

You may be tempted to compose a formula like this:

```
Height = 60 + 18 * RND
```

This will create a height (in inches) in the range. But over a thousand creations, you're likely to get as many people at one height as another. In real life most people are near the middle height. What we need is a different distribution of random heights. The simplest random distribution is one caused by binomial partitioning. If you drop an object and it hits the top of a wall, it will be forced to go down on one side or the other. We call this process 'partitioning'. If you arrange it so that an object that's partitioned falls only to be partitioned again, you have binomial partitioning, and the final result is called a distribution. In fact, it's a 'normal' distribution. Some months ago we saw a Galton board in Workshop, with several rows of nails in neat array. When you hold the board at an angle and drop marbles onto the

uppermost part of the surface, the marbles will fall through the forest of nails and form a pattern at the bottom. The consequent distribution forms a bell shape in which the majority of marbles have ended up in the middle, away from the edges. This is called the normal distribution. It may vary in height and width, but the bell shape it makes is distinctive.

On the SuperDisc this month I've included the source and executable forms of a QBasic program, BELLCURV. This simulates the action of a large Galton board, substituting deep blue pixels for marbles. The program virtually drops pixels, one at a time, so that they're distributed over the width (640) of the screen, and it only stops when 120,000 have been processed. It will also stop earlier if one of the categories becomes full (480). The distribution is achieved by chance, and some categories will be filled faster than others (making for a ragged outline to the bell), but with such a large number of pixels the familiar bell shape will emerge.

The earlier use of RND resulted in an even distribution over the whole range. What calculation can provide a normal distribution, then? RND will do nicely, but it must be used repeatedly for each instance. The average of these repeated samplings of RND are distributed in this normal pattern:

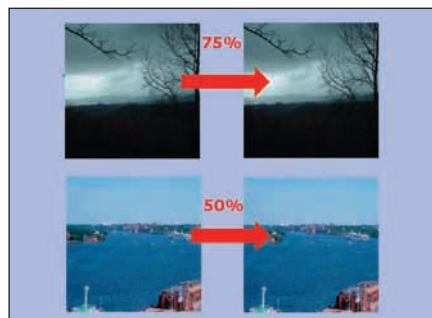
```
Height = 60 + 18 * (RND + RND + RND) / 3
```

For very large numbers in a population, you may be more satisfied by including more than three random numbers, but be sure that you always divide their sum by the number of random numbers you use. In theory, the distribution of samples made by this method will be

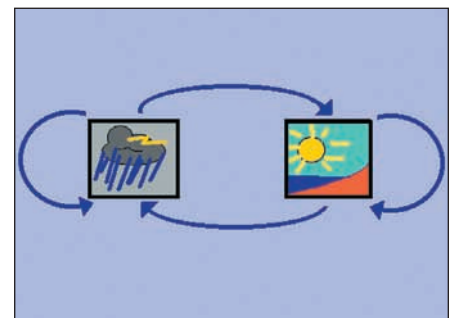
Markov chaining



1 Andrei A Markov was a Russian mathematician (born 1856, died 1922) who developed many concepts of probability calculus. It was he who first noted the importance of Markov chains – the very lifeblood of statistics.



2 Chances are that if you experience a rainy day in your area, you're more likely to get a rainy day tomorrow. Similarly, particularly bright days follow each other, though maybe not quite so regularly.



3 Remember in past workshops when we noted that a sequence of events can be modelled as a Transition Network? Let us take this example of rainy days and bright, and see if we can beat the Met Office.


Wilf Hey

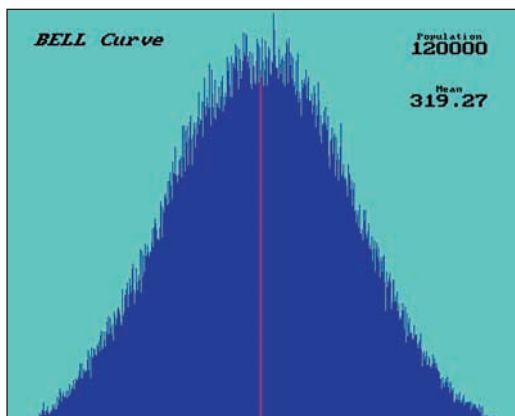
wilf.hey@futurenet.co.uk

Wilf Hey has been grappling with programming for several decades now – he has not been counted out yet

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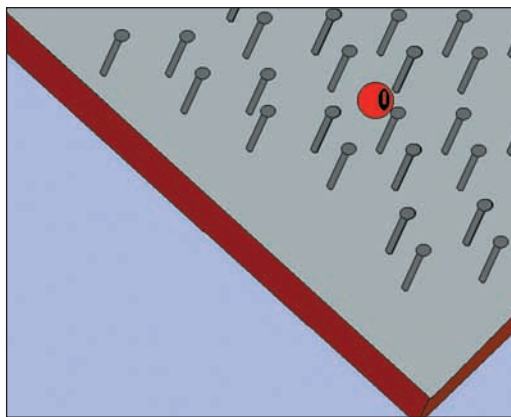
 <http://forum.pcplus.co.uk>



You can use a simple computer calculation to obtain a sample from a normally-distributed data group. In most cases this more faithfully simulates what happens in real life.

smoother the more random numbers you use, but in practice I've always found that three suffices. If you try the process with only two random numbers, the plan goes awry. You can try this out for yourself by changing the value of the variable named [Depth!] in line 83 of the source of BELLCURV on the SuperDisc. This tells you how many RND functions are used in the generating formula. When set to two, the shape traced out by a large population is a triangle rather than a bell.

1 A piece of Pi Whether you're simulating reality (in a model, or even in a game) you may well come to a formula that involves Pi. You'll remember from early schooldays that this constant is the ration between the circumference (outer edge) and diameter (length across) of a circle, and is about 22/7. It's actually irrational, which means that you can never represent its value precisely, even with floating point available on your computer. The value 22/7 is fine for an



The Galton board illustrates binomial partitioning and the resultant bell curve by providing an assault course for marbles rolling down a slope.

estimate you may do in your head. A circle 10 metres across has a circumference of about 220/7 – very nearly 31.4 metres. In my 'CRUST' source code – the common bits I include in nearly every QBasic program – I define a constant called Pi as 3.14159, which is about as exact as I've ever needed to be in a simple program. However, it's often more convenient to work in integers, which is where 22/7 comes in. You multiply by 22, then divide by 7, possibly somewhat later in a chain of calculations.

There's a much better approximation of Pi as a fraction: 355/113. It's not as easy to multiply and divide in your head, but it's simple within computer code, and accurate to six decimal places instead of the two decimal places of 22/7.

You can do a little programming exercise to see your PC calculate Pi for itself. Imagine that you have a circular pond in a garden. Rain falls randomly over it and the ground around it. Consider a square in which the pond fits snugly, the width →

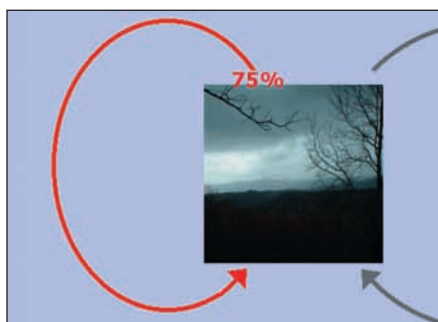
PASSING SHOT

Evaluating odds is an interesting pastime, and it's instructive to make estimates and then check how correct (or more often, in my case, how wrong) they are. How many words are there in the anthem, Land of Hope and Glory? What proportion of them have all different letters?

Take a pack of cards and turn them one at a time, saying to yourself Ace, Deuce, Three...up to King, and then repeating it four times. How many times did you find yourself saying the value of the actual card turned? What are the chances of this happening?

I'm amused by a recent ad campaign for the lottery, pointing out that one in four wins is by a syndicate. What does that really mean? Can it be that you're actually three times more likely to be a winner if you're 'not' in a syndicate?

Next time you look at nonsense results from testing your own program, what does logic tell you about the probabilities of that particular nonsense occurring?



4 One node represents rainy days, and there's a transition arrow looping back for consecutive days, with a probability of 75 per cent, (except perhaps for bank holidays).



5 Another node stands for bright days, and it too has a transition arrow looping back for the less common phenomenon (50 per cent) of consecutive bright days. Put them together and we can get to work.



6 This whole transition network embodies the idea of Markov chaining. At the end of this course you'll be able to calculate some non-given probabilities, and recognise the significance of the Markov chaining for forecasting.

Shuffling along

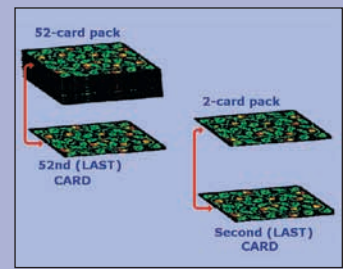
It's obvious that shuffling involves randomising items, but how can this be done effectively?

I've demonstrated the easy, quick way to shuffle data several times in the past, but I still get requests to show it again. This method works for any sized group of data. It involves randomising the POINTERS to the data, but if the data is small enough you can do the job with the data directly. Essentially you randomise for the last item in the pack, and then

repeat the process as if you had a shorter pack. Other methods get complicated when testing whether an item has already been moved, but not with this bright little algorithm:

```
FOR i = 52 TO 2 STEP -1
  SWAP Pack(i), Pack(INT(RND
    * i) + 1)
NEXT
```

If the language you use doesn't have a SWAP command or its equivalent, then by all means use a three-way move. The chief advantage of this very simple loop is that it always takes the same amount of time. Some other methods effectively repeat until all possible values have appeared among the random numbers, which may take a long time. ■



Shuffle a pack of cards by swapping the bottom card with any above it, chosen at random. Then work with a pack one card shorter and repeat until finished.

GOING FURTHER

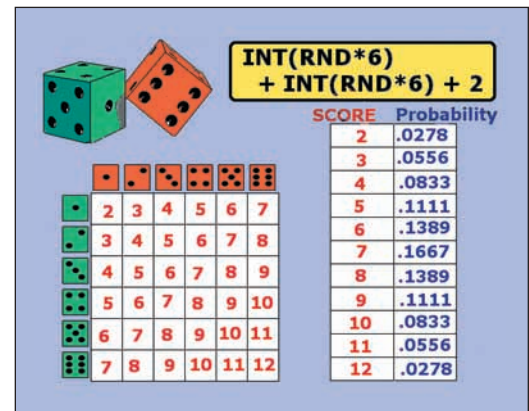
Soon we'll embark on a project based on Markov chaining. This is a program that will write text based on the prose style of famous authors. In our schooldays we learned to recognise the style of Shakespeare, Dickens, Tennyson and others. Do you know how easy it is for your PC to imitate those styles? No guarantee that the meaning will be there, though. Think about Shakespeare – can his style be boiled down to a few Markov chains?

of its side being the same as the diameter of the pond. Geometry tells us that if that diameter is two metres, the surface of the pond will be Pi square metres. Of course, the square itself will occupy four square metres. If you can write a simulation of rainfall over the pond, you can count the drops that hit the pond, and compare it with the drops that fall within the square (including the pond). The ratio of these two counts should be the same as the ratio of Pi to four. That brings us to the third program on this month's SuperDisc, POND.BAS. It will be better if you write a version for yourself. Almost any computer language would do fine, including many 'scripting' languages.

2 Order out of chaos Randomness is not an easy concept. No doubt you think of randomness as the factor that leads you to uncertainty about the throw of a coin – the chances of a head appearing are fifty-fifty. Perhaps you think of randomness as a lack of pattern. Consider Pi – is it made up of random decimal digits? It all depends on what you mean. If you're thinking of counting the first ten thousand digits of its decimal expression, you'll probably find that there are just about the same number of sevens as there are eights. But this is no indication of randomness, because there are millions of numbers that will give the same result, and they aren't in the least 'random' themselves.

In your PC the usual method of simulating randomness involves a tricky calculation based on the last created random number. Each number serves as the basis for the next. I start each QBasic program with the command 'RANDOMIZE TIMER'. This ensures variety, so the numbers generated each time aren't the same. If you start a program with 'RANDOMIZE 200' the sequence of numbers generated for RND each time would be identical, even if each number may seem unrelated to the previous.

In many computer languages the generated number is a real value between zero and one that you can use in



A simple line of Basic (or almost any other language) will readily produce a virtual pair of dice, producing scores that observe the probability you'd expect.

multiplication to select items according to their stated probability. Remember that RND is 'not' a real random number, but a digital calculation whose relationship with previous numbers isn't easy to see. If you need a simulation of a die (1 to 6) within a program, you must digitise the number delivered by RND. The correct way to do this is:

```
Diecast = INT(RND * 6) + 1
```

You may like to write a program that includes a simulation of a pair of dice. Use the following code to do this:

```
Dicecast = INT(RND * 6) + INT(RND * 6) + 2
```

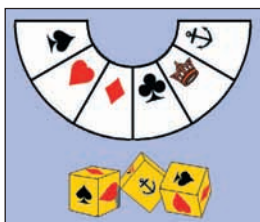
This result will be somewhere between two (snake-eyes) and twelve (boxcars) with the correct probability. **PCP**

NEXT MONTH

We delve further into probability and easy statistics, and see tools to create helpful test data, and more accurate programming models. We take a peek at some of the more difficult-sounding subjects and test the waters with decidedly weird concepts.

Crown and Anchor

Probabilities can be hard to estimate, but it's best to do it before you play a game involving money



The basic implements of Crown and Anchor provide an innocent-looking, but cruel betting game. How accurately could you have guessed the number of occasions when the board owner makes a profit?

There's an old dice game called Crown and Anchor. One person lays out a semicircular board with six sectors in it; one marked Spades, Hearts, Diamonds, Clubs, Crown and Anchor. Others lay bets in any of the sectors, and three dice are tossed to determine who profits. Each die has its six faces marked with the symbols. The owner of the board must return the stake and that much more for each sector that shows up on a die. For example, if Spade-Heart-Anchor appeared on the dice, those who bet in any of these three sectors would have their bet doubled.

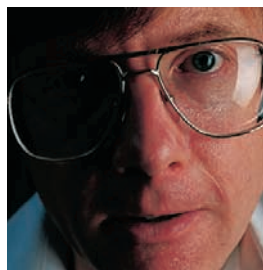
At this stage, most people think that this is a 'fair' game, offering equal chances – six possible results, three of them pay out and three do not. But the board owner now introduces another wrinkle. If two dice end up with the same symbol uppermost, those who bet on that symbol win twice as much. If all three dice show the same, the single winner gets three times as much. This sounds too good to be true – a fair bet, plus the occasional bonus!

Model this game, and calculate the odds carefully, assuming for example that there are always enough suckers to keep money on all the sectors. You'll see why almost all counties

and fairgrounds now outlaw this innocent-looking game.

The board owner stands to make a very sizeable win. Suppose six gamblers keep the board filled with one pound in each sector – much of the time the board owner will collect from three and pay to three. In fact, this is in 120 out of the possible 216 results. However, in 90 cases (when two dice show the same) he pays out three pounds but collects from 'four' losers. In six cases he pays out three pounds again, 'five' losers. The crafty board owner has a nice little earner of nearly eight pence on every pound bet. ■

Rants and raves


<http://forum.pcplus.co.uk>


News flash: **Huw Collingbourne**, talentless hack turned Oscar-winning screenwriter, quits the green grass of home and heads for Hollywood

Orson Welles had his own theatre company at the age of 10. At 13 he had taken the title roles in Hamlet, Othello and Little Orphan Annie on Broadway. By the age of 15 he was one of the most highly paid movie actors and directors in the world. And at 18 he was a has-been who was destined to eke out a meagre living doing voice-overs for sherry commercials.

My own artistic career has taken a somewhat different course. I devoted myself to sherry at a very early age and it's only in my declining years that I've felt the urge

It promises to help you 'plan and prepare better movies'. I must admit that I was a bit put off by the introductory clip, which suggested that I might want to write a script 'that includes your children or friends'. Damn it all! I want to write a script that includes Sir Ian McKellan, Keanu Reeves and Dame Judy Dench at the very least!

To get you started, you can take inspiration from (or to use the technical term 'rip off') the plots of one of four established blockbusters – Bridget Jones's Diary, Rain Man, Star Wars: The Empire Strikes Back, or West Side Story. The software displays an outline plot of your chosen film with gaps for you to add new names for the characters. The idea is that you can then follow and adapt the plot to highlight the main conflicts and development points of your own story.

Other elements of the program let you create characters or themes by answering sets of questions about roles, motivations and subject matter. Finally, there's a built-in editor that provides tools to format a script in the standard styles favoured by European or American directors. The editor is fairly rigidly structured, and you're obliged to enter scenes, character names and dialog by clicking on icons.

I'm not in all honesty convinced that Write Ambition will significantly advance my desire to win an Oscar or two. But for anyone encumbered with histrionically inclined children and friends, it might help to while away a few afternoons.

Rants and ravengers

I've recently become addicted to movies on DVD. Watching a film on the PC on my desk doesn't have quite the same appeal as being slumped in front of the TV with the cat on my lap, the dog on my feet, a log fire crackling away in the grate, and a glass of wine in my hand. But

it does have one advantage. The user interface of my PC is a good deal more comprehensible to me than that of my DVD player. I've wasted far too many hours fast-forwarding endlessly through Hobbiton and Lothlorien in search of the scene where Gandalf fights the Balrog. At times like these I yearn to have a mouse in my hand. The cat, I believe, is of a similar opinion.

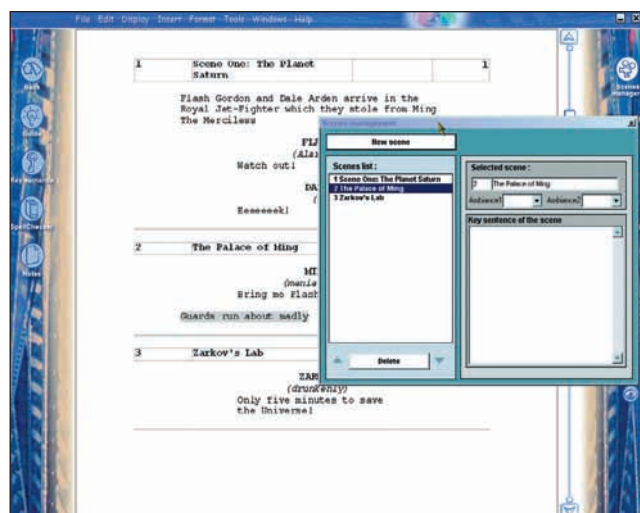
There are, of course, several free DVD playing programs for PCs. These provide the basic functionality needed to play, pause and stop a DVD. One of the things they don't do is capture the screen. Video playback from a DVD can't be captured by ordinary screen-grab utilities or by the PrintScreen key.

As I mentioned last month, I've been brushing up on my long neglected artistic talents, and having recently invested in a collection of the TV version of The Avengers, I thought some still pictures of Honor Blackman kicking the living daylight out of people while wearing tight fitting black leather would be the perfect source material for a few sketches. Well, that's my story anyway, and I'm sticking to it.

PowerDVD (\$50, about £29 from www.gocyberlink.com) has come to my aid. It not only captures video screens, but it also supports high definition video playback at varying screen sizes – even including widescreen and Dolby surround sound if you have the appropriate hardware. Let the kicking commence!

Web weaving

I've used all kinds of web page editors over the years, ranging from fairly basic text editors to sophisticated design systems such as Adobe's GoLive and Microsoft's FrontPage. My favourite, however, is Macromedia's Dreamweaver (www.macromedia.com/uk). Not only is this extremely powerful,

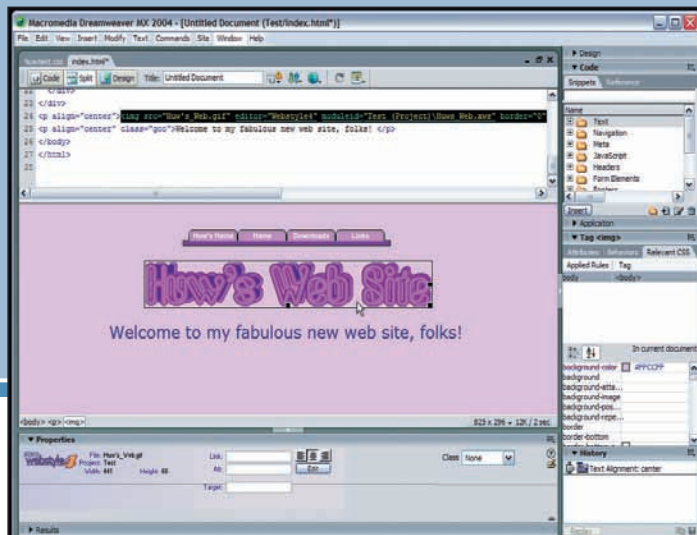


Here I'm writing my script in Write Ambition. All I need now is a few million dollars and a cast of thousands.

to go theatrical. In spite of a gruelling schedule of ranting and raving, I often find myself with an hour or two to spare at weekends, and I feel I owe it to my devoted public to use this spare time to dash off a few West End plays and Hollywood blockbusters. But how does one start? The answer to that question landed on my front door mat this week with a deafening thud, like an Oscar waiting to happen.

The write stuff

The software is called Write Ambition, and costs £30 from Mindscape (www.mindscape.com).



Huw Collingbourne

huw.collingbourne@futurenet.co.uk

Huw Collingbourne is currently writing a fantasy blockbuster trilogy about a computer journalist who takes on the Forces of Darkness. It's provisionally entitled *The Lord Of The Hacks*

Xara WebStyle has created the menu and logo which has here been imported into Macromedia's Dreamweaver MX 2004.

but it also has a better name than its competitors. When used in cahoots with Macromedia's web graphics program, Fireworks (£249), this really is a tremendously good web site design and management package. At £339, Dreamweaver isn't cheap, so it's not going to appeal to someone who just wants to put a few pictures of the family pets online. But for anyone developing a professional quality web site, it's worth its weight in gold.

Not that the latest release, Dreamweaver MX 2004, weighs all that much. Gone are all the heavy paperback manuals, and in their place comes on-disk documentation in the form of Acrobat PDF files. I must confess that while I approve of saving the rainforests and all that, I would prefer to have the good old wood pulp documentation to take for a quiet browse in the bath.

There are lots of useful new features in Dreamweaver MX 2004.

For example, cascading style sheets are now integrated so that properties can be altered in a panel, much as in a programming system such as Visual Basic or Delphi. There are new coding tools to help you to format text and insert tags using a pop-up menu. And the user interface has been

"I feel I owe it to my public to dash off a few Hollywood blockbusters. But how does one start? The answer landed on my front door mat this week."

jazzed up to include a quick-zoom site manager, which makes it easier to use Dreamweaver on a single monitor system. If money is no object, Dreamweaver can be bought as part of the Studio MX 2004 suite, (£699) which also includes Fireworks, Flash, the Freehand vector graphics package and Cold Fusion for developing web applications.

Fortunately, not all web design tools are this expensive. If you're looking for a good value, powerful

and accessible web graphics program, Xara WebStyle 4 is a great choice (about £40 from www.xara.com).

This lets you create navigation bars and menus, buttons, logos and backgrounds in almost no time at all. You just pick a menu or graphic from a large library of pre-designed

elements and then customise it with your own text, colours, bevels and so on. This is the kind of slick, user-friendly software that propeller-head technical journos like me tend to look down on from a great height. The fact of the matter is that Xara WebStyle is so easy to use that it leaves nothing for us self-proclaimed software gurus to guru about! As an added extra, it integrates with FrontPage and Dreamweaver. All in all, a great little program... **PCP**

GOING FURTHER

If you're serious about script writing and you use Microsoft Word, you should waste no time in getting hold of a copy of ScriptSmart Gold, a wonderful free script-formatting tool from the BBC (www.bbc.co.uk/writersroom/help/scriptsmart.shtml). ScriptSmart takes the form of a document template complete with macros to help you create a properly formatted script for TV, film, radio, stage drama, or even a comic book! Once you select the desired script format, you can inset scenes, dialog, sound effects and directions by clicking icons in the toolbar.

Amazon Hacks

The ultimate guide for searching for, and selling goods on Amazon

TITLE Amazon Hacks
PRICE £18
AUTHOR Paul Bausch
SUPPLIER O'Reilly
INFO www.oreilly.com
ISBN 0-596-00542-3

I spend a frightening proportion of my hard earned dosh at Amazon, so it was inevitable that a book called 'Amazon Hacks' would attract my attention. According to the Microsoft Encarta dictionary, the definition of 'hack' in the computer-related sense is: "hack: (verb) to get into a computer system: to explore and manipulate the workings of a computer or other technological device or system, either for the purpose of understanding how it works or to gain unauthorised access." Now, while I wouldn't condone such unscrupulous activities when conducted by other people, you have

to remember that I'm a highly respected investigative journalist (or, as Encarta phrases it: "hack (noun) a writer paid to produce routine often down-market writing"), and therefore feel it my solemn duty to explore the seamier side of computing.

In fact, 'Amazon Hacks' isn't, as you might have imagined, an instruction book on electronic fraud, but is rather a collection of hints and tips on how to make more efficient use of the Amazon site ("hack: (transitive verb): to succeed at or endure something (informal)"). It starts with fairly basic stuff such as how to search for a book and other products more efficiently, then moves on to an overview of selling goods on Amazon or maximising your profits by selling Amazon products on your own web site.

Now, it has to be said that much of this stuff can be learnt by trial and error

on Amazon itself and a good bit of it is documented in the Amazon help system. All the same, it's a lot quicker and easier to flick through a book to find the information you want. This is particularly the case when you get onto the final section which is devoted to web services. The Amazon web services can provide dynamically updated information so that your own web site may, in effect, be transformed into a mini branch of Amazon itself. Assuming that you already have some basic knowledge of programming and formatting languages, 'Amazon Hacks' will give you some invaluable tips on using Amazon web services. Or, as Encarta puts it "hack (noun) computing: extremely good, often very time-consuming, work effort that produces exactly what is needed." ■



INFORMATION

PRICE £1,469 (£1,250 ex VAT)
DELIVERY £12 (£10 ex VAT)
INFO www.acer.co.uk
SUPPLIER www.laptopshop.co.uk
 0870 766 1784
WARRANTY One year

SPECIFICATIONS

CPU 1.6GHz Intel Pentium-M
RAM 512MB DDR
HDD Hitachi 60GB
DRIVES Matsushita DVD-RAM
GRAPHICS ATI Mobility Radeon 9200
SCREEN 15.4in Widescreen TFT (1,280x800)
SOUND Intel AC'97
SPEAKERS Stereo
COMMS 802.11b Wi-Fi, IR, 56K Modem, LAN
PORTS 3x USB 2.0, 4-pin FireWire, PCMCIA, Serial, VGA-Out, S-Video, Headphones, Mic
OTHER HARDWARE Built-in 4-way Card Reader (SD, MMC, Memory Stick, SmartMedia)
OS Windows XP HE
OTHER SOFTWARE Adobe Acrobat Reader, Aspire Arcade, CyberLink PowerDirector, Norton AntiVirus 2003, NTI CD-Maker 6 Gold
SIZE, WEIGHT 360x273x30mm, 34g

1.6GHz PENTIUM-M NOTEBOOK PC

Acer Aspire 2003 WLMi

Laptops can usually be put into one of two categories. They're either suited to constant travel, thus possessing a lightweight chassis and extended battery life, or they boast the flat-out performance of a dedicated desktop replacement machine. It's rare indeed that a notebook is able to combine these two functions to prove itself as a truly multi-faceted machine. That's why we're so excited by Acer's Aspire 2003 WLMi.

Thanks primarily to a 1.6GHz Pentium-M processor, which is backed up by 512MB of DDR RAM and a 60GB Hitachi hard drive, this laptop is capable of some seriously impressive speeds. A score of 186 in MobileMark2002 is quite simply the best we've ever seen. We severely doubt that you'll have any trouble convincing the Aspire 2003 to run any of your software.

But MobileMark isn't only a test of system performance. It also runs the rule over a machine's battery life. In that regard, this notebook not only excels, it positively astounds. In fact, during our tests, the Aspire took so long to shut down that we were beginning to despair of ever getting a result. It finally died an honourable death at the 5 hour, 24 minute mark – again, the best result we've seen.

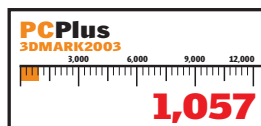
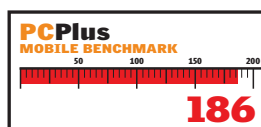
These excellent performance figures are made all the more remarkable by the fact that the Aspire 2003 hasn't been configured as an office machine. Its main application is supposed to be within the field of multimedia. This is reflected in the Matsushita DVD-RAM drive (the presence of a DVD re-writer should always be commended)

and the 15.4in widescreen. This monitor is clear if a little dull, and capable of resolutions up to 1,280x800.

The most obvious signal of this machine's intentions comes in its Aspire Arcade functionality. This enables you to use the laptop as a multimedia console without firing up the Windows XP operating system. Simply hit the 'Arcade' button, and you're greeted with a user-friendly menu that provides access to CDs, DVDs, MP3 files and even your photo collection. Unusually for a mobile PC, the built-in stereo speakers are capable of reasonable music playback. You'll still need to attach some external offerings to get any real power, though.



The Aspire 2003 WLMi is the most well-rounded notebook we've ever reviewed. Acer may not be as well-known as HP or Toshiba, but it has pulled off a major coup here.



Handy lights on the front panel of the attractive chassis let you know when your wireless connections are turned on.



The 4-way card reader is representative of some superb multimedia functionality.

The Arcade features are controlled using a set of controls based right at the front of the chassis, jutting out even beyond a closed lid. These add a few millimetres to what is an already considerable footprint. Despite this size, the Aspire isn't particularly heavy. It's never going to compete with the JVC MiniNote or the Sony TRIMP in terms of portability, but if you have a reasonable carry-case, you'll have no trouble carting it about. Equally importantly, it looks extremely pleasant, with Acer's usual silver finery put to good work.

Communication's what you need

As you'd expect from a modern Centrino notebook, Acer's latest offering is well-stocked in terms of communication. For starters, it's armed with built-in 802.11b Wi-Fi capability. According to Intel, we'll soon start seeing Centrino laptops that are compatible with the faster 802.11g format. For the time being, though, 11b's the best you're going to get from a 'Chipzilla'-powered notebook. This is supplemented

by an infra-red sensor. It's not all about wireless communication, though. The Aspire 2003 is also capable of sending and receiving information down a number of different cords. A skim of the various panels reveals three USB 2.0 ports, a single 4-pin FireWire, PCMCIA and a serial socket. And in case you want more than the 15.4in widescreen when showing off your DVDs, S-Video and VGA-Out are available for connection to an external monitor.

If this notebook has a failing, it's in its 3D graphics performance. A Mobility Radeon 9200 is far from a poor provision, but it's not quite at the top-end of the market. Tested in 3DMark2003, the Aspire 2003 managed 1,057 – respectable but not great. If you're anything less than an avid games player, this limitation won't worry you, but if you try and run Halo or Unreal Tournament, you're going to have a few problems.

Don't let that minor blemish on an otherwise immaculate face worry you too much. Compared to the masses of mediocre notebooks that have been flooding the market of late, this machine is positively flawless. We're not going to try and convince you that £1,469 is a bargain price; you can get laptops for half that price, these days. Still, they do say that you get what you pay for, and if you have that kind of cash, there are few better ways in which to spend it. This is one of the best notebooks we've reviewed, and comes extremely highly recommended.

Russell James

PC Plus ratings

ACER ASPIRE 2003 WLMi

Value: ●●●●●●●●●●

Features: ●●●●●●●●●●

Performance: ●●●●●●●●●●

OVERALL: ●●●●●●●●●●

3D IMAGING

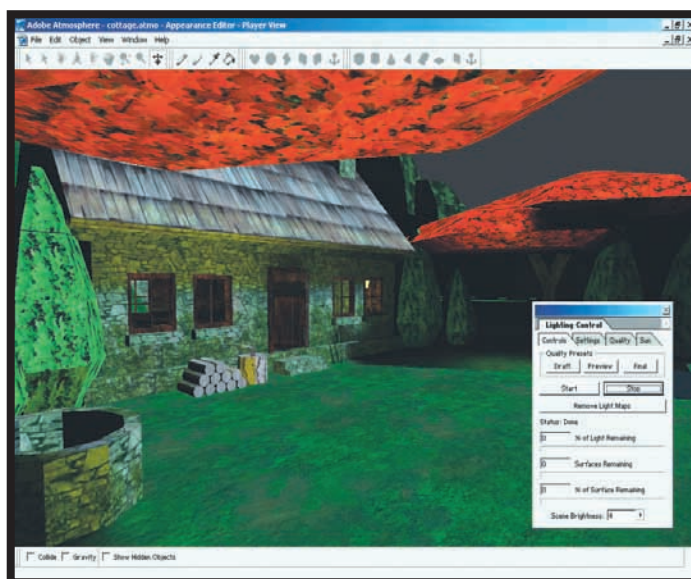
Adobe Atmosphere

Remember when 3D was going to be the next big thing? The Internet would no longer be a collection of 2D pictures and text documents, but huge 3D vistas of imagination and wonder, where everyone would be able to gather together and explore worlds as easily as popping into a chat room. It never happened. 3D certainly took off for dedicated games, such as Half-Life, but the community spirit soon moved away from static pages to instant messaging and online forums. The virtual world craze came and went and returned and left a number of times, but never sprawled into the futuristic, all-encompassing cyberspace that we were originally promised.

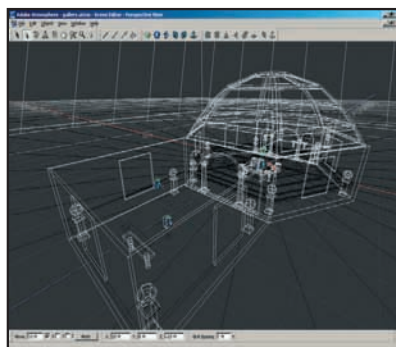
Adobe Atmosphere is a bridge back to those days, almost literally. It has been in development for several years, and available in public beta form for almost as long, and is still one of Adobe's most obscure products. It's not hard to spot why. The viewer utility only runs under Internet Explorer on Windows, and is one of the most problematic that we've encountered in recent years. Even moderately complicated Atmosphere Worlds that we hunted down online had a tendency to reduce our test PC to a crawl. Considering that it routinely runs the likes of Halo and Final Fantasy XI without breaking a sweat, it's hard to work out why. The samples provided are frankly laughable; static models, often inane animal hybrids, like a tuxedo-wearing lion in a beard, or walking animations screaming futility for a roll of 3D toilet paper.

A bad workman

In many ways, this is more relevant than the tools themselves. Any tool can be learned, and there aren't many direct competitors to pitch Atmosphere against. Unfortunately, again, modern games – and tools like the Unreal Editor – have come on so far in recent years that there's no excuse for any program to be quite this unfriendly. Get the biggest monitor you can find, because the Atmosphere editor is very greedy for screen estate, and decidedly non-intuitive, even with the manual open next to you. It's still only part of your solution, of course, as you'll want other 3D software to handle model building and characters. Unbelievably, the suggested package for the latter is Curious Labs' Avatar Lab – in short, using cut-down Poser models with mix-and-match elements to represent yourself online.



Atmosphere is quite capable of creating detailed worlds with photo-realistic textures, but that doesn't mean that they'll actually be any good.



Getting used to the controls takes time, and Atmosphere does little to ease you through the opening confusion.

The demonstrations of Atmosphere's graphical power are deeply unimpressive. If you've used Photoshop Album, you'll already have seen Atmosphere in action: it's the 3D engine that powers the virtual gallery option. Beyond that, however, you'll find blocky, un-detailed environments that would have looked quaint and old fashioned if Atmosphere had been launched back in 2001, but are now positively antediluvian. Going online does little to improve matters, with our detachable jaws never even contemplating a trip down to the office carpet. People have made impressive projects with Atmosphere, don't get us wrong, but they're still squeezing desperate drops out of an engine that is no longer up to par.

Behind the scenes, Atmosphere gets a bit more impressive. You aren't restricted to wandering through your worlds, courtesy of a full Javascript-based scripting system to help you

control everything from revolving objects to full interactive games. The 3D worlds are fully light-sourced for proper detail and shadows, and it's easy to pull in objects and textures for decoration. Atmosphere has the ability to produce multi-user worlds, and the server software that you need to host them is freely available. Nevertheless, unless such worlds offer something dramatically and radically impressive, it's hard to

imagine them remaining as bustling hives of activity for long. There are major technological hurdles in your way; the Atmosphere player is only available for Windows users running Internet Explorer. Considering the advances made by companies like Macromedia with the Shockwave 3D plug-in – a general take on the genre rather than dedicated virtual worlds – this is very disappointing.

It's hard to fight the feeling that Atmosphere is a thoroughly missed opportunity. A system that made it easy to build 3D worlds would have been a good idea, as would an up-to-date system that's capable of standing up against dedicated games titles for advanced marketing, detailed online walkthroughs and other multimedia purposes. Landing in this unsatisfying halfway house, Atmosphere simply slouches its way through old-fashioned interfaces. Worth experimenting with? Certainly. A must-have addition to a creative toolbox? Sadly not.

Richard Cobbett

INFORMATION

PRICE £218 (£185 ex VAT)

INFO www.adobe.co.uk

SUPPLIER Adobe 0208 606 4000

REQUIREMENTS

CPU Pentium III or equivalent

RAM 128MB

OS Windows 2000 (XP recommended)

GRAPHICS CARD Radeon 7500/GeForce 2 or better

TESTED ON

CPU 2GHz Pentium 4

RAM 256MB

OS Windows 2000



You can create decent-looking worlds, like this one, but the majority feel far from finished, even after two years of beta.

PCPlus ratings

ADOBE ATMOSPHERE

Value ●●●●●●●●●●●●●●●●

Features ●●●●●●●●●●●●●●●●

Performance ●●●●●●●●●●●●●●●●

OVERALL 6

INFORMATION

PRICE Small systems from £324 to £653 (£276 to £556 ex VAT)
Larger systems from £2,744 to £10,978 (£2335 to £9,343 ex VAT)

INFO www.arkeia.com

SUPPLIER Arkeia
+33 (0) 1 4810 8989 (France)

REQUIREMENTS

CPU Pentium 200 or equivalent

RAM 128MB

OS Windows 98 or later

TESTED ON

CPU 800MHz Athlon

RAM 768MB

OS Windows XP

BACK-UP

Arkeia Backup 5



With installation being far from straightforward, Arkeia seems to favour style over usability in its design ethos.

twice as long reviewing this product as we'd normally spend, but that was simply because the installation of Arkeia is far from straightforward. We haven't a clue how it got through QA, or why they have put together such a dastardly and evil installation mechanism, which forced

us to dig through and read various pieces of documentation to use it. You do get a strong feeling that everything would have been so much better if they had just used Java across the board.

Once installed, you're presented with Arkeia's mixed-up idea of administration, and by that we mean a list of 35 or so files in a directory, with little explanation of how to use them. Of course, there's the GUI option, but it's often overbearing and usually

useless. We really can't fathom whose idea it was to create a fancy GUI, rather than a workable installation system, particularly when previous versions were much less fancy, and thus easier to use.

The primary place Arkeia shines is with its features. It can do everything on the block, and then some. Whether you want incremental or differential back-ups, library management, or data encryption, Arkeia can handle it all. That is, if you can find the option while wading through the commands.

We hate to be so hard on a company that has clearly tried to be so cross-platform friendly, but there are too many bad design decisions in Arkeia Backup, which are all compounded by a complicated pricing scheme. This product really should have stayed on the drawing board for several more months. If you want a helpful back-up tool, use NetVault from BakBone. It's a lot easier to install and use, and doesn't have a GUI that appears to have come straight from a Photoshop artist's daydream.

Paul Hudson

An outsider looking into the corporate IT world might presume that back-up software was the easiest possible application to write. After all, it just copies files from source A to destination B, keeping a log as it goes. If only things were that simple!

The latest release from Arkeia, now the fifth release in its line, seems to have strayed further off the tangent of usability and more into the dark depths of feature-itis. We spent about

PCPlus ratings

ARKEIA BACKUP 5

Value: ●●●●●●●●●●●●●●●●

Features: ●●●●●●●●●●●●●●●●

Performance: ●●●●●●●●●●●●●●●●

OVERALL: 7

INFORMATION

PRICE £299 (£255 ex VAT)

INFO www.symantec.com

SUPPLIER Symantec 01628 59 2222

REQUIREMENTS

CPU Pentium II or higher

RAM 256MB

OS Novell NetWare 6.5, 6, (5.1 with limited features)

OTHER ServerMagic 4 included

TESTED ON

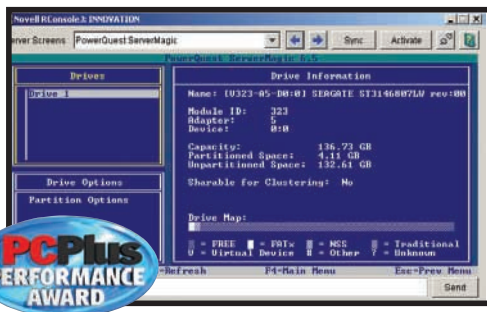
CPU 866MHz Pentium III

RAM 768MB

OS Novell NetWare 6 with SP3

DISK IMAGING

Symantec ServerMagic 6.5 for NetWare



The new interface offers options for sending images to other NetWare servers.

hide NSS volumes, and ServerMagic's SmartSector technology can speed up operations by determining which sectors

contain data. Note that this latest version only fully supports NetWare 6 and 6.5. It doesn't allow management of NetWare 5.1 volumes, and can only display status information on these; although, Symantec has thoughtfully included ServerMagic 4, which covers all other versions of NetWare.

Installation is simple enough as you run NWCONFIG and load ServerMagic as an optional product. The server console interface is easy-to-use, and we found it simple to move, resize, and add and delete partitions. Upgrading the server's hard disk to a larger version was simply a case of installing the new drive, using ServerMagic to copy the

DOS and NetWare partitions across, and rebooting the server with the old drive removed. ServerMagic still requires exclusive access to NetWare partitions, and will dismount any active volumes. Also, the DOS Remote Agent utility has been replaced with a new feature in the server console, which enables images to be sent over TCP/IP and stored on remote NetWare servers. Complete server recovery can be carried out using the PQRE (PowerQuest Recovery Environment) on the bootable product CD-ROM, which provides a Windows style interface for easy restoration of complete drives. You can also browse image files, select individual files and choose a destination. PQRE is a useful tool, but it won't run with less than 256MB of memory.

If you're a NetWare administrator, we can't recommend ServerMagic enough. It's the only worthwhile imaging and restoration tool for this OS. It's very simple-to-use and provides a wealth of disk tools, making it an ideal partner for support departments.

Dave Mitchell

Symantec starts 2004 with a similar philosophy to Network Associates — if you can't beat the competition, then buy it. Its Norton Ghost has always played second fiddle to PowerQuest's mighty Drive Image. The latest ServerMagic on review has never had any significant competition in the NetWare market, so PowerQuest was always a prime candidate for acquisition.

ServerMagic 6.5 sees a number of new features that centre primarily around enhanced support for NSS (NetWare Storage Services) partitions and volumes. Previous versions offered very limited support, but now you can

PCPlus ratings

SYMANTEC SERVERMAGIC 6.5 FOR NETWARE

Value: ●●●●●●●●●●●●●●●●

Features: ●●●●●●●●●●●●●●●●

Performance: ●●●●●●●●●●●●●●●●

OVERALL: 9

INFORMATION

PRICE £92 (£78 ex VAT)
INFO <http://uk.asus.com>
SUPPLIER www.scan.co.uk
 0870 755 4747
WARRANTY Three years

SPECIFICATIONS

CPU SUPPORT Athlon XP/Athlon/Duron 400/333/266/200MHz FSB
CHIPSET Nvidia nForce2 Ultra 400 (MCP-T)
MEMORY 3x DDR400 DIMM (Max 3GB)
EXPANSION AGP Pro 8X, 5x PCI, 1x Asus Wi-Fi slot, gigabit Ethernet, 10/100 Ethernet, 2x Ultra ATA 133, 2x Serial ATA RAID, 2x IEEE1394, 6x USB 2.0, PS/2 keyboard, PS/2 mouse, serial, parallel, 5x Audio, 1x S/PDIF
SIZE 305x245mm

ATHLON ATX MOTHERBOARD

Asus A7N8X-E Deluxe Wireless Edition



Offering outstanding value for money, the A7N8X-E is in a league of its own.

motherboard using a proprietary connector. When combined with the wizard-driven software, this enables you to turn your prospective machine into a fully-fledged software Access Point, which you can use to

This latest addition to the ever-growing family of motherboards from Asus will surely catch your eye. The title is pretty impressive, but there's much more to this motherboard than just an overly-long name, with an impressive array of features rounded off by unmatched network connectivity.

The biggest draw for the A7N8X-E Deluxe is the support for wireless networking straight out of the box. This comes in the form of a daughter card and small antenna that connect to the

bridge your wireless and wired networks. The A7N8X-E Deluxe also boasts two Ethernet connectors.

You'll also find support for all of the major standards, including AGP Pro 8X, Serial ATA RAID, IEEE1394 and six-channel audio. With the nForce2 Ultra 400 chipset as a base, you can employ the latest Athlon XP processors, and the 128-bit dual channel memory controller supports DDR400 memory, too. The layout is also a cut above most, with clear labelling, and room

around the important components.

Driver installation lacks an automated routine, but many of the features are covered by the nForce chipset, so there's a minimum of restarts to endure. A couple of drivers lack WHQL approval, which slows the process unnecessarily, and hardly bodes well for stability, but the A7N8X-E Deluxe was solid in our operation.

Memory throughput is reasonable at 3,028MB/s (FPU) and 2,819MB/s (CPU), but with an overall SYSMark2002 score of 253, this motherboard can only play second fiddle to the powerful solutions from Gigabyte that won our recent motherboard group test (PC Plus 212). The overall 3DMark2001SE and 3DMark2003 scores of 17,232 and 5,593 respectively tell a similar story.

If you've already got a wireless-enabled laptop, or are thinking of getting one, the A7N8X-E Deluxe Wireless Edition is in a league of its own. When you consider the cost, compared to the price of a hardware wireless AP, it offers outstanding value for money, too.

Alan Dexter

PCPlus ratings

ASUS A7N8X-E DELUXE WIRELESS EDITION

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 9

INFORMATION

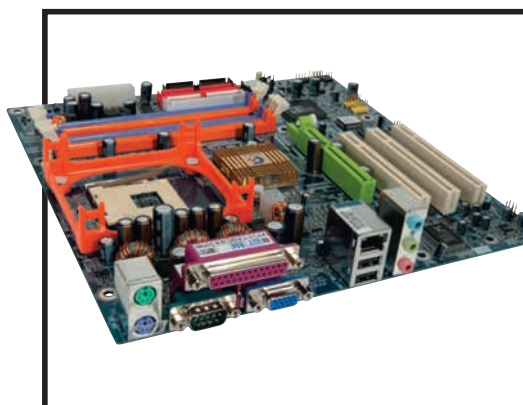
PRICE £67 (£57 ex VAT)
INFO <http://uk.giga-byte.com>
SUPPLIER www.dabs.com
WARRANTY Three years

SPECIFICATIONS

CPU SUPPORT Socket 478 Intel Pentium 4/Celeron 800/533/400
CHIPSET ATI RS300 + ATI SB200
MEMORY 4x DDR400 DIMM (Max 4GB)
EXPANSION AGP 8X, 3x PCI, 10/100 Ethernet, 2x Ultra ATA 100, 2x USB 2.0, PS/2 keyboard, PS/2 mouse, 3x Audio, serial, parallel, VGA
SIZE 245x244mm

PENTIUM 4 MICRO-ATX MOTHERBOARD

Gigabyte GA-8TRS300M



If you want to build a compact system from scratch, this is a fine budget offering.

As this is a micro-ATX motherboard, there isn't exactly an abundance of room, and you only have three PCI slots to play with. Even so, this should be sufficient for most mainstream uses, and you do get an

AGP slot to play with. The old bugbear of the AGP connector being pushed tight against the memory slots makes it a frustrating option if you like to tinker on a regular basis. Still, most prospective buyers will probably want to use the integrated graphics, so this shouldn't be a major problem.

ATI is justifiably proud of the RS300's graphical prowess, and while it isn't going to challenge the performance of a Radeon 9800XT, it's still surprisingly capable for an integrated solution. The

3DMark2001SE score of 5,523, for instance, is far better than anything you'll get from Intel's current range of integrated offerings, and equates to just over 40 frames per second at high quality settings, rendering most of today's titles quite playable. Unfortunately, things aren't quite so rosy when it comes to DirectX 9 titles, as illustrated by the 3DMark2003 score of 790 (equating to an average frame rate in the tests of 5.0fps).

Memory throughput isn't great, at 3,837MB/s (compared to 5,000MB/s from SIS and Intel solutions). Despite this unexciting score, the SYSMark2002 result of 280 is more than reasonable, and shows that the budget route needn't incur woeful performance.

If your existing case is on the small side, or you're looking to build a compact system from scratch, this is a fine budget offering. The only mark against it is the lack of USB slots. With only a pair of connectors present on the ATX connection block, this will make for a frustrating experience if you have a fondness for such devices.

Alan Dexter

With the majority of modern motherboards rolling off production lines with all manner of added extras, the 8TRS300M is a little shocking in its simplicity. There are no PCI plates boasting countless ports and connectors, and there's little in the way of enticing modern day extras, such as FireWire and onboard Serial ATA RAID. While this will make for an unexciting option for the 'enthusiast' segment, it does mean that this board rolls in at half the cost of most competitors.

PCPlus ratings

GIGABYTE GA-8TRS300M

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 7

PROGRAMMING SERIES

O'Reilly
'HACKS' series

PRICE £12 each (£10 ex VAT) ISBN Various AUTHOR Various
SUPPLIER Amazon www.amazon.co.uk



Each book in this series contains more than 100 tips and tools from industry insiders. Their collective closeness to their subjects is reassuringly obvious, and their knowledge shines through. The titles are diverse, with Amazon, eBay and Google at one end, and wireless, Windows XP, spidering and Linux server hacks at the other. Despite the topics being eons apart, all content shares the same hands-on technical focus, making these books ideal companion texts for advanced users looking to use their programming skills to squeeze out every last drop of usability. These are serious books that are clearly aimed at the serious programmer. For example, Google Hacks shows you how you can integrate searches into your own applications using the Google API and lots of code. It mainly concentrates on PERL, although Java, PHP and Python also get a look in. eBay Hacks explains in detail how to create an automated search robot, and once again exposes the eBay API



to those wishing to develop auction tools. The Linux Server Hacks title covers everything you need to know about fine-tuning the kernel using CVS or RCS, through to the management of large-scale web installations running Apache or MySQL. The success of these books will become evident when you quickly find yourself buying the whole lot!

Davey Winder

OVERALL

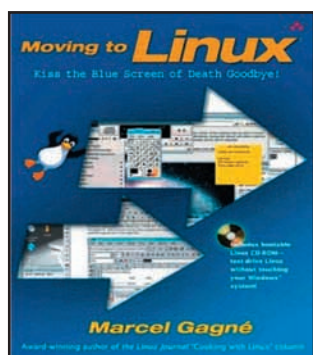
9

LINUX

Moving to Linux: Kiss the Blue Screen of Death Goodbye

PRICE £20 (£17 ex VAT) ISBN 0-321-15998-5 AUTHOR Marcel Gagne
SUPPLIER Computer Manuals www.compman.co.uk

Many PC Plus readers have jumped Microsoft's ship and now sail the OS sea proudly flying the Linux flag. Plenty more might follow if they only knew how to bridge the transitional gap. This is where this book comes in handy. It's aimed squarely at the Linux virgin, with no pretence of addressing anyone else. With this in mind, it does an adequate job of communicating the basic differences between the platforms, and the right strategies needed to minimise problems that will be encountered. Marcel Gagne is a good teacher and feels like a friend as you follow his instructions. If we were to wield criticism at this book it would come from just one angle – the 'Linux is God' evangelical tone becomes tedious very quickly. We're all grown ups, after all, and appreciate that both Windows and Linux have their good and bad points. Gagne doesn't go into enough detail of what to do if the Linux installation shouldn't go as planned, and for



those used to relatively painless Windows installations, that could be an important oversight. When peripherals don't play ball or applications go pear-shaped, the Linux virgins are left paddling their own canoes. The web is your friend at such times, just pray it isn't your Internet connection that's not working.

Davey Winder

OVERALL

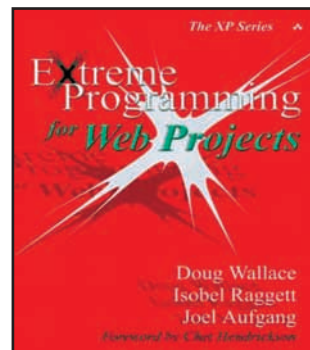
7

WEB PROGRAMMING

Extreme Programming
for Web Projects

PRICE £23 (£20 ex VAT) ISBN 0-201-79427-6 AUTHOR Wallace, Raggett, Aufgang
SUPPLIER Computer Manuals www.compman.co.uk

Extreme Programming has become something of a buzzword bingo phrase, that's up there with web services, and knowledge mining in the 'used by many, understood by few' stakes. It is because of this that we admit to getting just a little excited at the prospect of a book to help explain real world 'XP' techniques. The premise is that extreme programming, originally applied to software project development, can be adapted into web-based projects and processes so as to get the same benefits from the discipline and techniques. And why not? Web development shares many of the same problems and challenges – achieving the goal of delivering a project on time and within budget, and maintaining client relationships. The authors do make compromises of course, with team members having to specialise (which goes against the XP grain) and a 'strategist' added to enable people to create the user stories that XP



demands. However, on balance, the authors succeed in translating the XP message into the web market, with well-written chapters that truly understand the importance of both XML and XSL in the development process. A holistic approach brings together the myriad skills of numerous individuals, and integrates them into a focused team without losing sight of their specialisms.

Davey Winder

OVERALL

7

WEB PROGRAMMING

Build Your Own Army of
Web Bots Within 24 Hours

PRICE £10 (£8 ex VAT) ASIN B0000CBX73 AUTHOR Monica Lamb FORMAT Adobe Reader
SUPPLIER Amazon www.amazon.co.uk

Monica Lamb has built an online army of AI-based 'Virtual Humans', and since January 2001 they've been chatting to unsuspecting humans across Internet chat rooms, eventually becoming adept at shaping chats depending upon the human interaction. Don't expect to be coding quite such complex bots after reading this book, but basic chat bots for populating your own web site are most definitely within reach. Having said that, this isn't a beginners' guide to bots, and you'll need to have some understanding of the technologies involved before you start. Assuming that you do, or at least that you don't mind doing some on-going web-based research between chapters, there aren't many more entertaining and engaging ways to get to grips with the technical nitty gritty of programming chat bots. The transition from paperback to eBook could have been handled better, as it feels like little thought went into the design of



the electronic version with regard to layout. There's no such lack of thought when it comes to content though. Lamb successfully guides the reader through finding the right tools for the job, and then using them in the most efficient manner. Best of all is the first volume: this is an essential reference for the more adventurous web programmer.

Davey Winder

OVERALL

7

Borland Delphi 8 in close up

Tabbed editor
As with VS.NET, Delphi 8 features a tabbed editor for switching between all open files

Object Inspector
Delphi 8 includes a new-look, more streamlined Object Inspector for a hierarchical display of nested properties

Form designers
Two different form designers are used, one for .NET forms, and a built-in one for VCL.NET forms

Macro recording
This button provides access to a simplistic macro-recording facility – the red button starts the recording

Project Manager
Delphi 8's Project Manager is the equivalent of the Solution Explorer in Visual Studio.NET

Tool Palette
The new IDE sports a more colourful but space-efficient and highly customisable Tool Palette

Display switching
This tab lets you switch between the design-time form and its accompanying code

INFORMATION

PRICE £2,350 (£2,000 ex VAT)
INFO <http://shop.borland.co.uk/>
SUPPLIER Borland Software Corporation 0800 454 066

REQUIREMENTS

CPU 850MHz Pentium III or equivalent
RAM 256MB
OS Windows 2000, XP, Server 2003

TESTED ON

CPU 2.66GHz Pentium 4
RAM 1GB
OS Windows XP Pro

.NET DEVELOPMENT SYSTEM

Borland Delphi 8 for the Microsoft .NET Framework

Delphi 8 for the Microsoft .NET Framework is Borland's shiny new Delphi-based .NET development system. At the outset, it's important to stress that this product is for .NET programming only. The original plan was to release an IDE (Integrated Development Environment) that would target both .NET and traditional Win32 programming, but in the event, this didn't happen. We'll hopefully be seeing Delphi 8 for Win32 (or at least, an update to D7) later this year.

At first sight, Delphi 8 looks like its arch rival, Microsoft's Visual Studio.NET. It sports an HTML-based 'Welcome Page', Object Inspector, Project Manager, Tool Palette, and other IDE windows, most of which can be made to dock with one another or slither silently off the screen when not in use. Seasoned Delphi developers may initially be disconcerted to find that the entire IDE appears as a single unified window on your desktop, but for those that prefer the looser approach of Delphi/Win32, there's a menu option that gives a more familiar 'Classic Undocked' layout.

Whereas VS.NET is a true, language-neutral, development system, Delphi 8 is unashamedly Object Pascal only. The language has been enhanced in a number of ways to provide a better fit with the .NET platform. As

you'd expect from a .NET programming tool, the compiler spits out MSIL executables and assemblies that can be incorporated into other .NET projects, including those created with VS.NET.

A strong legacy

One of the strongest features of this product is its support for legacy Delphi applications, thanks to VCL.NET, a managed code implementation of the VCL framework classes. Borland has done a good job here, re-engineering the VCL library so that all of our old friends, such as TButton, TPanel, and TMemory, are now available on the Delphi 8 Tool Palette. The new Tool Palette, incidentally, has been completely re-written and now takes up a lot less screen space than was the case with the old Component Palette. It's now more colourful too!

Rather than working as a layer on top of the .NET class libraries, VCL.NET actually maps down onto the Windows API. As a consequence, we anticipate that VCL.NET will be used chiefly by developers who are porting existing Delphi Win32 applications across to .NET. You wouldn't want to use VCL.NET to create a new .NET application from scratch for two reasons: Firstly, using VCL.NET will substantially increase the size of your application. Secondly,

initiatives like Mono (www.go-mono.com) offer the possibility of someday running your .NET application on a non-Windows platform. If you lock yourself into VCL.NET, this is much less likely to happen. On the positive side, VCL.NET flattens the .NET learning curve for experienced Delphi developers and also comes with full source code. In contrast, Microsoft doesn't supply the source to their .NET class libraries.

Of course, Delphi 8 doesn't force you to go down the VCL.NET route. If you want to work directly with WinForms and the other .NET goodies, Delphi 8 allows you to produce 'pure' .NET applications. In the same way, Delphi 8 will let you develop web applications using the ASP.NET class library built into the .NET application framework with 'code behind' modules authored in Delphi Pascal.

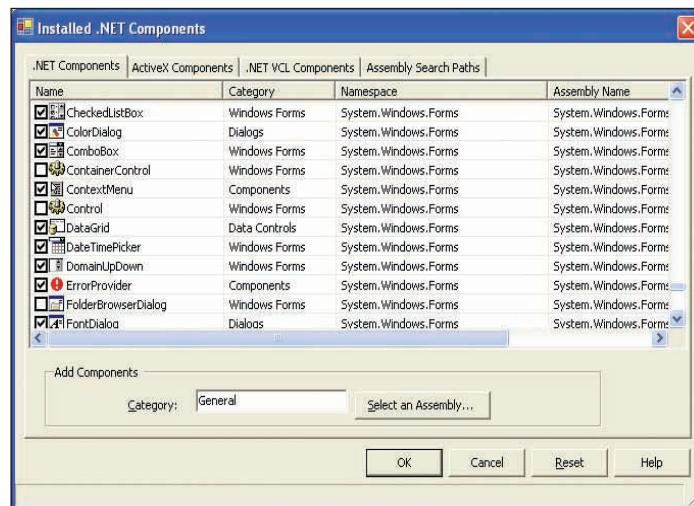
In order to support both VCL.NET and WinForms projects, Delphi 8 actually uses two separate form designers. As well as a proprietary VCL.NET form designer, the IDE also acts as a host for Microsoft's WinForms designer – the same one that's used by VS.NET. As you'd expect, you can drop VCL.NET components onto a VCL.NET form, and you can drop WinForms components onto a WinForms form. The IDE will even enable you to drop WinForms

components onto a VCL.NET form – it automatically creates a ‘wrapper’ that makes the WinForms component look like a VCL control. This is directly analogous to the way in which ActiveX controls can be made to look like VCL components back in Win32-land. The one thing that you can’t do is drop a VCL.NET component onto a WinForms form, either in Delphi 8 or in VS.NET. Devious techniques do exist for accessing VCL.NET controls from a WinForms project, but they’re beyond the scope of this review. Suffice to say that if you want to carve out a niche as a .NET component developer, the arguments in favour of using WinForms rather than VCL.NET are overwhelming.

One minor, but important point, is that if you use Delphi 8 to create WinForms components suitable for use by other developers, you’ll need to deploy a small Borland-specific DLL called Borland.Delphi.DLL. This 90KB DLL must be deployed alongside the assembly that contains your component implementation. It’s a point in favour of using C# for WinForms component development.

Borland has also revamped its code editor, bringing it more into line with the features offered by VS.NET. The biggest improvement here is a code-folding facility that enables you to expand and collapse methods, class declarations, the interface and implementations parts of a unit, and the entire unit itself. It’s not as polished as the code-folding facilities provided by VS.NET. You can’t simply hover the mouse over a ‘folded’ area of code and see a pop up view of the contents, as you can with Microsoft’s offering.

Delphi 8 is currently available in three different editions; Professional, Enterprise and Architect. Hopefully,



Delphi can use WinForms and VCL.NET controls. Rather than working as a layer on top of the .NET class libraries, VCL.NET actually maps down onto the Windows API.

by the time you read this, there will also be a freely-downloadable Personal edition for non-commercial use, as is the case with Borland’s C# Builder product line (a free trial CD can be ordered from Borland’s online UK shop). The Architect edition carries a hefty price tag for new users, although upgrades are considerably cheaper. For example, you can upgrade from Delphi 7 Pro to Delphi 8 Pro for £270 plus VAT.

The high-end Architect edition has a strong emphasis on UML modelling, plus support for Borland’s ECO (Enterprise Core Objects) and other technologies that are perhaps of less importance to small developers. This release includes a copy of Borland’s Optimizelt Profiles for .NET, but this isn’t bundled with the Professional or Enterprise editions.

Where’s the support?

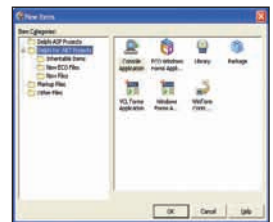
Another negative point is the lack of support for Microsoft’s Compact Framework – a stripped-down implementation of the .NET class

libraries that’s designed to run .NET applications on handheld devices. Microsoft’s VS.NET 2003 development system has out-of-the-box support for CF development (including visual form design), but Borland is still waiting for Microsoft to make this available to them. A cynic might suggest that the software giant isn’t in any terrific hurry.

Delphi 8 does have one interesting string to its bow that sets it apart from the likes of C# and VB.NET. There’s a new, unmanaged export feature of the compiler, which enables you to create a DLL that’s callable from other .NET code, and from unmanaged, Win32 applications. This makes it possible to create a Delphi-authored DLL that acts as a link between a Win32 process on one hand, and managed .NET code on the other. Using this feature, you might, for example, expose certain capabilities of the .NET class libraries in such a way that they can be used from a Win32 app. The only real downside to this is that the interface must be ‘flattened’, or procedural.

Dave Jewell

IN A NUT SHELL



In traditional Win32 programming, Delphi towers above competing tools such as Visual Studio 6. On the .NET platform, however, it doesn’t. In many areas, Visual Studio.NET outperforms Delphi 8 through its support for multiple programming languages and the Compact Framework. We anticipate that the main customers for Delphi 8 will be those who wish to port legacy VCL applications across to .NET. However, with Longhorn not now expected until early 2007, there’s no pressing need to do this. Delphi 8 is an expensive solution in need of a problem.

PCPlus ratings

BORLAND DELPHI 8 FOR THE MICROSOFT .NET FRAMEWORK

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	6

Delphi 8 language enhancements

Check out some changes that have been made to Borland’s Object Pascal language

Borland has been busy enhancing the Object Pascal language for better compatibility with .NET. The new Delphi 8 compiler generates namespace information that’s derived from the name of the unit being compiled.

Attributes are a key concept in .NET programming, and the compiler has been augmented so that you can add attribute metadata to classes, properties and methods within your Delphi Pascal source code. This metadata can be used to specify categories for properties, and associate design-time classes with components.

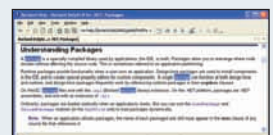
That said, not all of the Delphi 8 language changes relate directly to .NET.

A welcome enhancement is a new operator overloading facility. For years, Delphi developers have envied the ability of C++ (and more recently, C#) to overload existing operators for use by new custom types and classes. Now, Delphi programmers can do this too. As with C#, you can’t define entirely new operators (you can’t make an operator from three per cent signs, for example), but you can overload the existing binary and unary operators when applied to the custom types defined in your own program source code. The classic example of this is matrix multiplication and addition where the ‘*’ and ‘+’ operators are redefined so as to

improve the readability of matrix manipulations.

The .NET infrastructure introduced the concept of ‘final’ methods, which can’t be overridden, as well as ‘sealed’ classes, which you can’t inherit from. The Delphi 8 compiler supports both of these concepts.

Finally, previous Win32 versions of Delphi were capable of producing special ‘packages’, which you can think of as being like a DLL on steroids. Rather than merely exposing a list of exported functions, a Delphi package is a fully type-safe compilation unit. With Delphi 8, a package is now essentially the same thing as a .NET assembly. ■



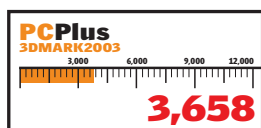
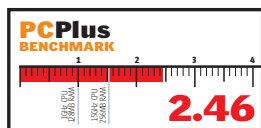
In Borland’s Delphi 8, a package is pretty much a .NET assembly.

INFORMATION

PRICE £939 (£799 ex VAT)
DELIVERY £34 (£28 ex VAT)
INFO www.carrera.co.uk
SUPPLIER Carrera SSC 0871 222 3456
WARRANTY Three years on-site

SPECIFICATIONS

CPU 2.08GHz AMD Athlon XP 2800+
RAM 512MB DDR333
CORE LOGIC nForce2
HDD Hitachi Deskstar 120GB
DRIVES NEC DVD/RW,
 16x DVD-ROM, FDD
GRAPHICS ATI Radeon 9800 SE
 128MB
SCREEN AOC LCD 17in
SOUND nForce2 onboard audio
SPEAKERS OG-310 Stereo
COMMS 10/100 Ethernet,
 56K modem
PORTS 6x USB 2.0, 2x Serial, 1x
 Parallel, PS/2 mouse & keyboard, DVI,
 S-Video in/out, TV RF aerial in 3x
 FireWire (6-pin)
OTHER HARDWARE Mouse
 and keyboard, IR extender,
 IR remote control
OS Windows XP HE, SP1
OTHER SOFTWARE Microsoft Works
 Suite 2004, PowerDVD



Don't underestimate the usefulness of front-mounted USB and FireWire ports. They are perfect for hotswapping.

PCPlus ratings

CARRERA OCTAN 2800 PLUS

Value 1 2 3 4 5 6 7 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL **7**

OVERALL

2.08GHz ATHLON XP 2800+ DESKTOP PC

Carrera Octan 2800 Plus

Despite the fact that future PCs will be giant media servers hidden in cupboards – so who cares what the case looks like – a stylish PC still stands out from the crowd. Carrera's all-rounder makes an instant impression thanks to a gleaming black chassis and a front panel faced with a sheet of 8mm-thick glass. But in technical terms it's quite an odd system. Built around a Radeon 9800 SE card, which gives you some of that 'Media Center'-style TV functionality everyone's talking about, this PC is too loud and too large for a living room, and it comes with several peripherals that you should flog at a car boot sale.

System builders always make certain compromises to hit a friendly price point and to improve the quality of some components you've got to reduce the quality of others. The 17in. AOC LCD here, for example, is as basic as a TFT gets, blandly black and silver with few controls. It also only possesses a VGA connection, despite the fact that the Radeon 9800 SE card only features a DVI output – at least there's a suitable adaptor included. Similarly, the OG-310 speakers scrape the bottom of the audio barrel. Prices for this two-speaker/subwoofer set on the web start at £10. It's a bargain, at least for Carrera.

Whatever PC you buy, there's a good chance that AMD and Intel's interminable our-chips-are-better-than-yours battle will render it outdated in six to eight months. But as new processors are sold at premium prices, older chips can be snapped up surprisingly cheaply. This Octan PC runs an AMD Athlon XP 2800+ running at 2.08GHz, backed by two 256MB modules of DDR400 RAM. Performance under SYSmark2002 conditions walks the grey area between 'impressive' and 'uninspiring'. A PC Plus index of 2.46 is decent, but nothing to get excited about.

Yet the Octan 2800 Plus is not entirely built to a mantra of 'cheap and cheerful'. There are some highlights: the NEC ND-1300A DVD/RW drive can read/write almost all popular digital media formats (apart from writing to DVD-RAM), while the system boasts a decent 120GB Hitachi Deskstar hard drive. Alongside a total of six USB 2.0 ports, the PC also seems to feature four 6-pin FireWire ports – three at the rear and one on the front. However, the front port can only be activated by plugging a trailing cable into one of the three rear ports, reducing the machine's



The exterior may be eye-catching, but Carrera has chosen some strange peripherals for the Octan 2800 Plus, which lessens the value of an otherwise impressive PC.



**NEC's multi-format ND-1300A DVD
rewriter supports CD-R plus -R/-RW
and +R/+RW DVD formats.**

overall available total to three.

But ATI's 'The Beast' Radeon 9800 SE card takes centre stage here. It's a Dr Moreau-style half-breed, a tech-blend of the enduring 9800 GPU and a stereo TV tuner. 3DMark scores of 13,350 and 3,658 in the 2001SE and 2003 versions aren't stratospheric, but they're solid enough. The AquaMark score of 28,022 is equally healthy.

Admittedly, ATI's own TV software isn't as flexible or as friendly as ShowShifter (see this month's discs for a trial version). But it does have some interesting options, such as the ability to specify a TV source as your desktop background. It also comes with its own remote control. So while we may have reservations about some of the peripherals with this system, the PC itself is strong enough to be all things to most users — an office workhorse by day, a TV replacement or games machine by night.

While it's not the most powerful or fully featured PC you can buy — a fact driven by pricing more than anything else — there's a lot of potential for expansion. There are four 5.25in bays on the front panel, the bottom two of which are free. Below the FDD, a 3.5in bay is available for a multimedia card reader, or if anybody still finds one useful, a ZIP drive. Inside the casing, four of the five

internal 3.5in bays are empty, while the WinFast K7NCR18D Pro motherboard has three PCI slots going spare. While we might bemoan the machine's size, the innards of this Octan PC are surprisingly neat and it's easy to get at every component from the AGP card to the RAM modules.

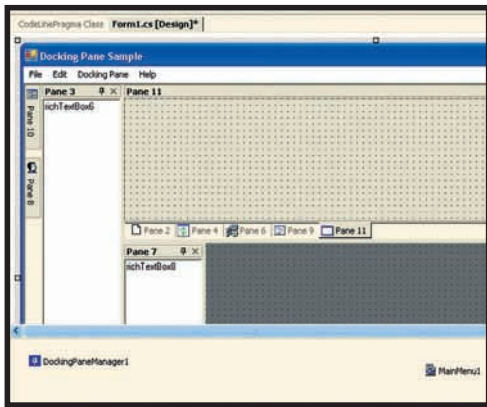
At a price of £799, plus £34 for delivery, plus £145 in VAT... let's start again. At an all-in price of £973, the Octan 2800 Plus seems like a tempting prospect. We've got few complaints with the PC itself, although there are times when the system can be sluggish, especially when handling video playback. Nor do we feel cheated by the three-year on-site warranty. Our beef is with the low quality extras, and we'd recommend that you consider a version without the LCD and the substandard speakers rather than putting up with peripherals you'll end up hating.

Remember: the cliché 'you get what you pay for' rings loud and true in the PC industry.

Dean Evans

.NET COMPONENT SUITE

Codejock Xtreme Suite 8.6



The 'Microsoft Foundation Classes' edition is one of three versions available.

should always have full source code.

Be that as it may, the suite is made up of three distinct functional groupings. Firstly, there's a sophisticated Xtreme Command Bars component, which can be used to add

Office-style menus and toolbars to your .NET components. As with most similar toolsets, there's extensive support for run-time customisation, making it possible for the end-user to rearrange toolbar items, change the visual appearance of the toolbars and so on. Xtreme Command Bars supports XP-style visual themes and is bang up-to-date with an Office 2003 theme.

Next out of the box is the Xtreme Docking Pane component. As the name suggests, this implements a

VS.NET-style docking pane, which can be docked along an available edge of the application frame (or against another pane), or made to 'float' on top. As with VS.NET panes, you can configure individual panes to 'auto-hide', sliding off the screen when they don't have input focus. This even works at design-time – very cute! Once again, theme support is integrated into this component, and pane layouts can be persisted as an XML file if desired.

Bringing up the rear is the Xtreme Property Grid. Complex applications have a large number of configuration options, and a categorised property grid represents a space-efficient, familiar way of modifying those options. Functionally, the property grid control looks remarkably similar to that built into VS.NET itself. This is perhaps not surprising, because the property grid that you see there is part of the .NET framework, not part of the IDE. The Codejock people may well be using the exact same control. Overall, this suite is functional, but imperfect.

Dave Jewell

X Xtreme Suite 8.6 from Codejock Software is available in a number of different editions. There's an MFC (Microsoft Foundation Classes) version for Visual C++ developers, an ActiveX implementation, which is aimed primarily at VB programmers, and the .NET Windows Forms edition. Source code is only available for the MFC implementation, which is a major disadvantage for those (like us) who believe that if your livelihood depends on third-party components, you

INFORMATION

PRICE £280 (£238 ex VAT)

INFO www.codejock.com

SUPPLIER Codejock Software
+989 723 1442 (USA)

REQUIREMENTS

CPU Pentium or equivalent

RAM 12MB

OS Windows 98 or better

TESTED ON

CPU 2.66GHz Pentium 4

RAM 1GB

OS Windows XP Pro

PCPlus ratings

CODEJOCK XTREME SUITE 8.6

Value: ●●●●●●●●●●●●●●●●

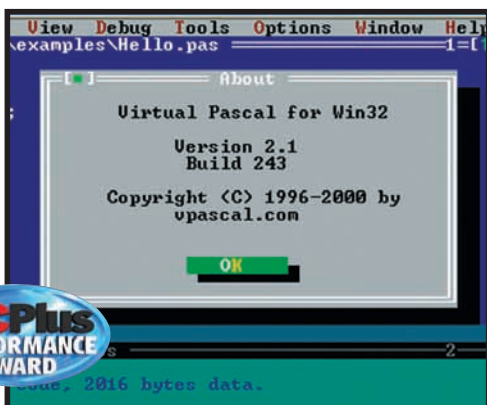
Features: ●●●●●●●●●●●●●●●●

Performance: ●●●●●●●●●●●●●●●●

OVERALL 7

PASCAL 7 DEVELOPMENT SYSTEM

Virtual Pascal for Win32 2.1



It may be essentially a Pascal 7 clone, but Pascal for Win32 is still impressive.

executables that you create will be tiny; a do-nothing Windows app tips the scales at around 10KB!

In use, Virtual Pascal looks and feels just like those old Turbo Pascal/Borland Pascal development tools

of yesteryear, spitting out tight, efficient EXE files with impressive speed. The IDE can be configured to run in 43/50 line mode, and the debugger and compiler are all integrated with the system. Help documentation is included in PDF format, and numerous sample projects also get installed automatically. The compiler even has some advantages over Borland Pascal, without sacrificing source code compatibility. For example, when creating DLLs, you don't have to

explicitly set up an exports statement; every routine marked with the export attribute will be automatically exported.

Although this review is primarily focused on Virtual Pascal for Win32, it's important to point out that Virtual Pascal also runs under Linux and (for the real die-hards) OS/2. The Virtual Pascal IDE is itself an example of a complex application, running on all three platforms and compiled in each case from the same sources. Virtual Pascal is therefore a highly credible cross-platform development tool for text-mode applications. This cross-platform emphasis is reflected in the source code that's provided. For example, all the platform-specific code has been (as far as possible) removed from the System unit and placed into a lower-level unit. In principle, porting to another platform involves rewriting this unit and reconfiguring the IDE to support the new platform. Full source code for the Turbo Vision application framework and Object Professional are also included. This only adds to an already impressive package.

Dave Jewell

In a nutshell, Virtual Pascal is a very impressive clone of Borland Pascal 7, and is also highly compatible with Delphi 1 and 2. That said, it's important to stress that Virtual Pascal itself is a text-based DOS application. The IDE isn't a Windows app, but if you don't mind going back to classical 'Petzold-style' Windows programming (message loops, window procedures, class registration, and so on), you can certainly use it to create Windows programs. Not only that, but the

INFORMATION

PRICE Free

INFO www.vpascal.com

SUPPLIER Allan Mertner and friends
www.vpascal.com

REQUIREMENTS

CPU Pentium or equivalent

RAM 25MB

OS Windows 95 or later

TESTED ON

CPU 2.66GHz Pentium 4

RAM 1GB

OS Windows XP Pro

PCPlus ratings

VIRTUAL PASCAL FOR WIN32 2.1

Value: N/A ●●●●●●●●●●●●●●●●

Features: ●●●●●●●●●●●●●●●●

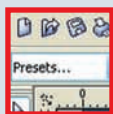
Performance: ●●●●●●●●●●●●●●●●

OVERALL 9



CorelDraw Graphics Suite 12 in close up

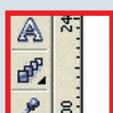
Property bar
Context-sensitive options and controls for whichever tool is currently selected



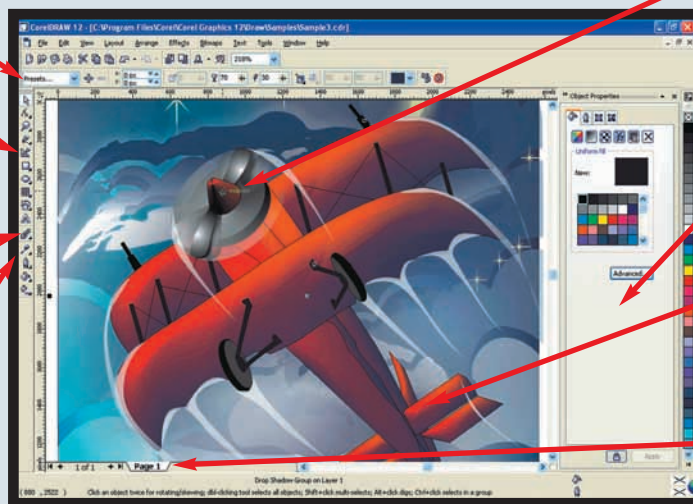
Smart Drawing tool
New option for quickly turning sketches into regular shapes and smooth curves



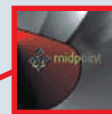
Interactive tools
Add blends, transparency, drop shadows and distortions 'live'



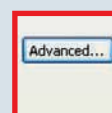
Eyedropper tool
Enhanced in this version, it enables you to quickly transfer one object's properties to another



Snap point
Barely visible here, it's a new feature for instantly 'snapping' one object to the centre, edge or corner of another



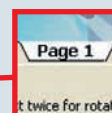
Docker
Screen area given over to commonly-used palettes, which can be combined as docker 'tabs'



Mesh and gradient fills
Powerful gradient options matching those first introduced in Illustrator



Multi-page capability
Not just a vector art tool, CorelDraw is actually rather good at page layout too



INFORMATION

PRICE £422 (£359 ex VAT), upgrade £210 (£179 ex VAT)
INFO www.corel.co.uk
SUPPLIER Corel 0870 612 8527

REQUIREMENTS

CPU 200MHz Pentium or equivalent
RAM 128MB (256MB recommended)
OS Windows 2000 or XP

TESTED ON

CPU 2GHz Pentium 4
RAM 512MB
OS Windows XP



VECTOR, BITMAP AND MULTIMEDIA AUTHORING

CorelDraw Graphics Suite 12

CorelDraw has been the mainstay of PC graphics creation for as long as most computer users can remember. Now up to version 12, it continues to battle it out at the top end of the market against Adobe Illustrator and Photoshop, as well as Macromedia Freehand MX and Flash MX.

Note that the rival programs are individual packages, not all-in-one suites. This is the key to CorelDraw's continuing appeal. Indeed, these days it's called CorelDraw Graphics Suite, in recognition of the fact that it contains not one program but three. In addition to CorelDraw 12, you get the Corel Photo-Paint 12 image-editor and Corel R.A.V.E. 3 for multimedia creation.

That's not all. Corel has also thrown in a selection of smaller utilities, including CorelTRACE 12 for converting bitmap logos and other artwork into vector files, and CorelCAPTURE 12, which can capture movie footage.

Before you read on, you should check the hardware requirements. Corel Graphics Suite 12 runs on Windows XP and Windows 2000 only. If you've got Windows Me or 98, you've had it.

What's new?

CorelDraw Suite is an inexpensive alternative to established professional rivals. The question is, is it as good? Also, is there enough that's new in this version to tempt existing users into upgrading?

As a suite, it's pretty well integrated, with a consistent look and feel across all three applications. The drawing tools in R.A.V.E. 3, for example, are the same as those in CorelDraw. Importantly, you can also move projects between the applications with ease.

Powerful applications like these come with a complex interface, but there are more options than ever for customising and saving your workspaces, and even sharing them across networks. It's the improvements to the individual applications that will be of most interest, though, and it's CorelDraw that gets the lion's share of the changes.

It seems obvious, but when a product is about as good as it can get, there's not a lot that you can do to make it better. CorelDraw was already an excellent vector drawing application – not better or worse than Adobe Illustrator, necessarily, but different. As well as being a powerful tool, it's a useful one, as it's able to import/export more than 100 different graphics formats. Corel's also justifiably proud of its various interactive tools, which enable you to see the results of your adjustments in real-time. These include the interactive transparency, drop shadow and distortion tools.

As good as the program already was, Corel has found a few more bells and whistles to add, and it has to be said that they're really quite clever, if a little esoteric. There's the new Smart Drawing tool, for example, (which we

cover in more depth in the box-out on the adjacent page), which turns your quick sketches into neat geometric shapes. Version 12's Dynamic Guides are quite an innovation, too. When you move an object, horizontal, vertical or diagonal guides appear, allowing you to move the object a fixed distance in a fixed direction. This does require a little practice, as it's not the most intuitive of concepts. It's likely to suit people that are designing plans or engineering drawings, though.

It's worth mentioning at this point that in addition to its many other abilities, CorelDraw is quite a good basic drafting tool. There's a dimensioning tool for accurately measuring and labelling distances, and you can export graphics to the AutoCAD DXF/DWG format – in version 12, CorelDraw preserves line thicknesses when you do this, too.

In order to be precise, it's possible to snap objects to other objects using the Move tool. As you float over a snap 'node', the cursor changes, indicating that you can drag the selected shape towards another. As you do this, the snap nodes on the target shape appear, depending on where you drag the shape that you're moving. In this way, it's easy to snap the edge of a circle to the edge of a rectangle, for example.

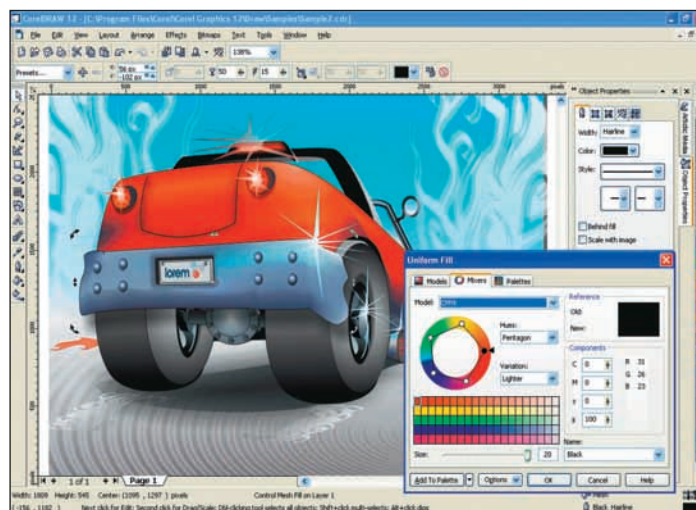
An enhanced 'intelligent' eyedropper tool means that it's easy to copy the properties of one shape to another, and version 12 also features

improvements to the program's Symbol handling. This is a feature borrowed from multimedia authoring programs, and cuts down on file sizes by storing one centralised object, which you can then use as many times as you like as multiple 'instances' of that single object.

CorelDraw 12's font handling has also been improved, with a superior rendering engine that makes fine adjustments easier to gauge at a wide variety of magnifications. There's also better multi-language Unicode support.

Better alignment tools (you can align and distribute objects according to their text baselines) and a new Virtual Segment delete tool (if you can ever work out from the documentation what it does) round off the major changes. They're all worthwhile, but they don't really constitute a major upgrade. It's all downhill from there. Photo-Paint 12 is improved too, but only to the extent that you now get a touch-up brush, which is useful for removing marks and blemishes. It does this by taking pixels from the surrounding areas to cover up the offending spot. It works well enough in a quick-and-dirty kind of way, but it's no substitute for careful cloning, and Photoshop's Healing Brush makes it look a bit silly.

Photo-Paint and CorelDraw can export graphics directly to Microsoft Office or Corel WordPerfect documents. Meanwhile, the third major program in the suite, Corel R.A.V.E. 3 is a pretty fair motion graphics authoring application. It shares the enhancements seen in CorelDraw 12, and can export Flash animations and other interactive web graphics. It's likely that serious developers will prefer to use the established and widely-used



This is a graphics suite rather than a single application. Nonetheless, CorelDraw remains the star attraction, and the program with most enhancements.

Macromedia solutions, but designers working on their own may prefer the cheapness of this Corel alternative.

Is the price right?

One of the key factors in deciding whether to buy Corel Graphics Suite 12 is inevitably going to be its price. The other is whether you prefer its individual applications to their market-leading, professional alternatives.

CorelDraw is very good indeed. Feature-for-feature, it's hard to separate from Adobe Illustrator, and it may come down to which one you prefer working with (CorelDraw's node editing tools, for example, are slicker), or which one your colleagues are using.

With Photo-Paint, though, Corel has dropped the ball. At one time it was a serious Photoshop rival, but while Adobe's been developing Photoshop at a breakneck pace, Corel has contented itself with a few minor tweaks and modifications. The result is that Photo-Paint's been left behind. What's more, anyone who's serious about image-editing or graphic design needs to use

Photoshop just because the techniques, the language and the know-how have become near-universal. Use Photo-Paint by all means – you may well achieve some striking and unique results – but you'll be ploughing a lonely furrow.

You could say the same about R.A.V.E. 3. It's a good tool for interactive graphics and animation, but professional designers are more likely to favour Adobe Illustrator and ImageReady, or the integration of Macromedia's Flash and DreamWeaver web site tools.

Price-wise, CorelDraw Graphics Suite 12 costs less as a package than the likes of Photoshop and Illustrator do individually. It enables you to create professional-level graphics at an amateur-friendly price. Self-employed designers could do a lot worse, and most print bureaus are happy to accept CorelDraw files. As long as you don't mind going it alone, CorelDraw Graphics Suite is a powerful, versatile and very keenly-priced choice.

Rod Lawton

IN A NUTSHELL



CorelDraw Graphics Suite 12 offers a trio of professional-level authoring applications for less than the price of a single Adobe application. But the enhancements in version 12 are scarcely enough to tempt any existing users into upgrading. Designers that are weighing this up against Adobe or Macromedia alternatives should consider the price, but also the fact that they'll be taking a different route to everyone else. CorelDraw does offer file-compatibility with rival applications, but aspiring professionals should note that Photoshop or Illustrator experience is a much more useful career qualification.

PCPlus ratings

CORELDRAW GRAPHICS SUITE 12

Value: ●●●●●●●●●●

Features: ●●●●●●●●●●

Performance: ●●●●●●●●●●

OVERALL 8

Smart drawing tool

Can't draw? Never mind, CorelDraw 12 can do it for you

Some designers are happy building shapes one node at a time. However, others can't get used to this coldly analytical way of working, and prefer freehand sketching. The trouble with sketching, though, is that you can end up with jagged lines, unclosed curves, and an afternoon's worth of clearing up before you finally arrive at the neat, geometric shapes that you need.

The new Smart Drawing tool gets around that. It's the artistic equivalent of handwriting recognition. CorelDraw works out what sort of shape you're trying to draw and renders it for you almost as soon as you release the mouse button. Your wobbly egg shapes

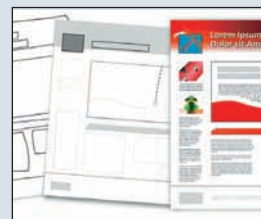
are turned into proper ellipses, shaky scrawls into straight lines and jagged arcs into smooth curves.

The Smart Drawing tool is a new option rather than an alteration to the existing freehand tool. You can adjust its behaviour using the context-sensitive Property Bar at the top of the screen. There are six different shape recognition levels, six different smoothing levels, and you can set the line width.

There's a short delay between the moment you finish drawing and the activation of the shape recognition process. This is deliberate, though, and you can change its length in the program preferences. The point of this

is that you can, by lengthening the delay, give yourself the chance to modify parts of the shape where you've gone wrong. In practice, you might find it just as quick to delete the recognised shape and simply draw it again.

The Smart Drawing tool is extremely useful. There are a number of instances where you might want to use it; for example, if you're designing a page or poster layout and you want to sketch in the rough shapes, text blocks and tonal areas first. On a much simpler level, it's often easier to draw simple shapes this way and fix them up afterwards, than it is to do it node-by-node using traditional bezier drawing techniques. ■



Corel's schematic walkthrough demonstrates how the Smart Drawing tool could be used to produce a page layout.

INFORMATION

PRICE £153 (£130 ex VAT)
INFO www.conceptdraw.com
SUPPLIER Computers Unlimited
 0208 200 8282

REQUIREMENTS

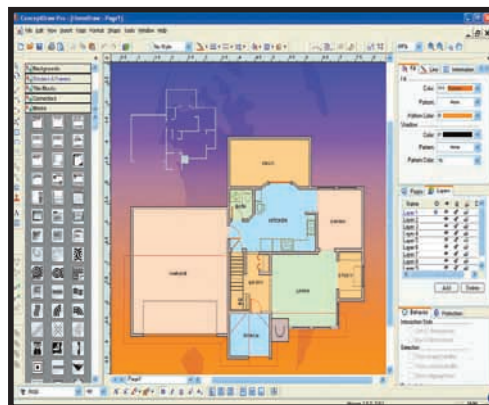
CPU Pentium 166 or equivalent
RAM 128MB
OS Windows 98 or later

TESTED ON

CPU 2GHz Pentium
RAM 512MB
OS Windows XP

VECTOR DRAWING

CS Odessa ConceptDraw V



ConceptDraw isn't just an efficient design tool, it's versatile as well.

The shapes are taken from a library, so they have an appearance that can be kept consistent throughout a series of diagrams in a report, presentation or publication.

To a degree, other drawing programs offer this kind of ability. The drawing tools in Microsoft Office XP, for example, include AutoShapes and Smart Connectors, which fulfil a similar role. They're very basic compared to what's on offer here, and it's not easy to export graphics created in Office in a form that other applications can use. ConceptDraw, however, can generate JPEGs, TIFFs, EPS files and PDFs, as well as a whole host of image formats.

The main point, though, is the sheer speed at which you can

generate diagrams, and the breadth of this program's tools. The template libraries include tools for creating interior design layouts, electronic circuits, computer networks, business processes, database structures, flowcharts, forms and scientific schematics. Each library contains a huge array of ready-to-use symbols; you just drag them on to your workspace and resize, reformat and connect them as necessary.

The advantage of the 'smart connectors' used is that they stay linked to the objects they're connected to. You're not restricted to working with preset shapes and lines, either. There are also sophisticated Bezier-based vector drawing tools for fine-tuning the design elements or creating your own shapes.

ConceptDraw V is extremely good, but in order to justify the outlay, and the learning phase, you have to be producing quite a number of these diagrams. Make sure that you're familiar with Office's integral tools before you take the plunge.

Rod Lawton

ConceptDraw V is aimed not at designers or artists, but at those who need to create explanatory graphics as part of their work. It requires no drawing or design skills, but supplies a large library of pre-drawn shapes, connectors and other devices. You drag, drop, move, resize and connect these shapes to produce your diagrams. It's a lot quicker than doing it from scratch. Non-designers can produce professional-looking graphics in minutes.

PCPlus ratings

CS ODESSA
CONCEPTDRAW V

Value: 9

Features: 9

Performance: 9

OVERALL: 8

INFORMATION

PRICE £16 (£14 ex VAT)
INFO www.bradsoft.com
SUPPLIER Bradbury Software
 www.bradsoft.com

REQUIREMENTS

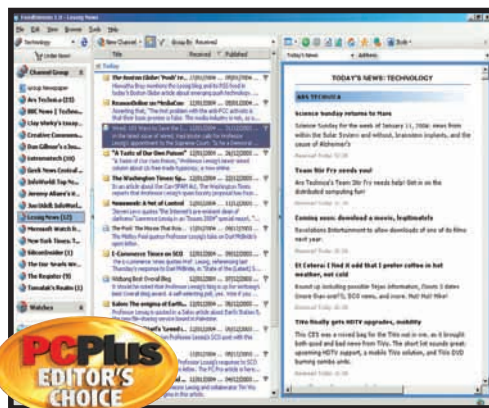
CPU Pentium 300 or equivalent
RAM 64MB
OS Windows 98 or later

TESTED ON

CPU 2GHz Pentium III
RAM 256MB
OS Windows 2000

RESEARCH TOOL

Bradbury Software FeedDemon



Feed your hunger for news with the only research tool you'll need.

its ease-of-use, fluidity and general usefulness.

RSS (Really Simple Syndication) isn't a new idea. In short, it offers a way of syndicating a web site's content in other forms, from new-

tickers to news feeds on external sites. With FeedDemon, you set up links to any site that captures your interest, and it automatically downloads the latest post and keeps you up-to-date with new stories. So far, this isn't an astounding concept. Where FeedDemon really earns its keep is in its handling of stories once they're on your system. Everything is presented in a smooth interface, with 'newspapers' available to summarise everything in each of your news categories, and straight lists from all of your feeds.

The time savings are obvious. Instead of having to visit all of your news sites one after another, you can pull all of the information in at once, and scan it for anything of interest. It's even faster if you're looking out for specific information, courtesy of automatic Watches. By setting keywords, any stories will be gathered up into one bin. The only catch is that you have to manually flick between categories to have all of your feeds updated, although the online FAQ promises that this is due to be amended in a future version.

The only other minor problem is in no way FeedDemon's, but rather the sites' that it pulls information from. Their refusal to display entire news stories in their RSS stream is annoying. This forces you to click through to the main web site to read the story. The third of a screen that FeedDemon defaults to for its web browser can make this uncomfortable to read. Even so, if this is the highest price you have to pay for such a powerful research tool, it's well worth it.

Richard Cobbett

Rarely do we have the pleasure of running into a genuinely new piece of software. It's easy to get caught up in Version 7 of this, or release 12 of that, but packages that appear out of nowhere and fulfil needs that you didn't even know you had, are few and far between. FeedDemon is one of these. There are other applications that are capable of doing its basic job – which is to gather up the latest news stories from RSS news feeds – but none that even approach

PCPlus ratings

BRADBURY SOFTWARE
FEEDDEMON

Value: 9

Features: 9

Performance: 9

OVERALL: 9

INFORMATION

PRICE £234 (£199 ex VAT)
INFO www.draytek.co.uk
SUPPLIER Draytek 0870 745 8550
WARRANTY Three-years RTB

SPECIFICATIONS

CONNECTIVITY 4-port 10/100BaseTX Ethernet switch, auto MDI/MDI-X, internal ADSL modem, supports PPPoE, PPPoA, DHCP and SIP, 2x RJ-11 VoIP ports, USB 1.1 printer port
SECURITY Stateful packet inspection firewall, NAT, RADIUS, URL filtering, Java, ActiveX, cookie and data file download blocks, supports 16 VPN tunnels
OTHER External power supply, Ethernet, and ADSL cables, 2x ADSL filters supplied

ADSL/VoIP ROUTER

Draytek Vigor2600V



Standard PSTN telephones are supported using the supplied filters.

member of this family, as Draytek also offers versions with an 802.11g WAP or ISDN fall-back mode. Another feature is the USB port for sharing a printer over the local network.

At present, only SIP (Session Initiation Protocol) is supported, but Draytek plans to add improved protocol support in later firmware releases. At its most basic level you can make a voice call to another SIP compliant router, simply by dialling a sequence comprising the star and hash keys, along with the remote user's IP address. Obviously, to set up a VoIP network between, say, a couple of offices, you're going to need another router, and Draytek is currently offering a Vigor2600V twin-pack for

£359. There are other options; remote users can use software utilities such as the X-Lite SIP softphone from Xten Networks (www.xten.com) or Windows Messenger 4.7 or later to make VoIP calls to the router.

Installation is fairly straightforward, although the documentation comes in for some criticism. It merely lists each function of the web interface, rather than providing advice on where to go to achieve a particular objective. Even so, using the VoIP features is simple enough. You can use the DialPlan option to create a list of up to 60 IP address/domain entries, and link them to one or two-digit numbers for speed dialling. Security options for standard Internet access are typically good, as the router uses NAT and a stateful packet inspection firewall. There's also support for VPN services, web content filters based on URL keywords, and extensive options to block ActiveX controls, Java applets, cookies and web proxies. It also has the ability to stop HTTP downloads of compressed, executable and multimedia files.

Dave Mitchell

Draytek has always ensured that its Vigor ADSL routers have more features than you can shake a stick at. Its latest 2600 range adds VoIP facilities, allowing you to make and receive calls directly over the Internet for a fraction of the cost of normal PSTN calls. Along with an integrated 4-port Ethernet switch and ADSL modem, the Vigor2600V provides a pair of RJ-11 ports, which enable standard PSTN telephones to be connected using the supplied filters. This is the entry-level

PCPlus ratings

DRAYTEK VIGOR2600V

Value: 9/10

Features: 9/10

Performance: 9/10

OVERALL 8

INFORMATION

PRICE £1,683 (£1,432 ex VAT)
INFO www.hp.com
SUPPLIER Hewlett Packard
 0845 270 4222
WARRANTY Lifetime on hardware

SPECIFICATIONS

CONNECTIVITY 20x 10/100/1000 BaseT Ethernet ports, 4x dual SFP/Copper Gigabit ports, MDI/MDI-X on all ports, 48GB/s backplane capacity, store-and-forward switching, 16K MAC addresses
SUPPORTS 60 port-based VLANs, 802.1p, 802.1d, 802.1w, 802.1x
OTHER Web browser management, ProCurve Manager software included, Optional 1000BaseSX, LX and LH SFP modules

GIGABIT ETHERNET SWITCH

Hewlett Packard ProCurve Switch 2824



Remote management has been improved to provide a high degree of control.

enterprises looking to deploy Gigabit Ethernet to the network edge, but require a high degree of control over traffic. Remote management facilities have been improved.

The Switch 2824 introduces HP's new ProCurve Manager utility, which takes over from its TopTools software. It offers a similar level of features to its predecessor so you get automatic device discovery and network mapping, plus traffic monitoring and analysis. The optional Plus version can analyse network performance data to identify traffic trends, or potential bottlenecks. It supports remote VLAN creation and policy deployment to multiple switches. You also get the standard ProCurve

remote browser console, which is one of the best-designed interfaces available. It provides easy access to switch and port settings, along with plenty of performance details. It provides an alert log, which highlights any problems, and has links to screens offering advice on likely causes and possible actions to remedy them.

Physically, the 2824 is well built with four of the Gigabit ports serving a dual function. They can accept SFP (Small Form-factor Pluggable) fibre modules, or you can use the corresponding copper port instead. With a 48GB/s backplane, the switch clearly has enough horsepower to handle the target market. Standards support is also particularly good. Basic Layer 3 capabilities are on offer, although these only extend to supporting 16 static routes, which can only be configured via the CLI (Command Line Interface).

Overall, HP sets a high standard for switch management. The 2824 also supports virtual stacking, which allows up to 16 ProCurve switches to be managed using a single IP address.

Dave Mitchell

The raft of budget-priced Gigabit Ethernet switches on the market is making high-speed networking a reality for smaller businesses. Products such as 3Com's BaseLine Switch 2824 are offering an unbelievably low price per Gigabit port. If you're after a quick fix for bandwidth blues then these are ideal solutions. The biggest drawbacks are a minimal feature set, and a lack of remote management tools.

HP's latest ProCurve desktop switches are aimed primarily at

PCPlus ratings

HEWLETT PACKARD PROCURVE SWITCH 2824

Value: 9/10

Features: 9/10

Performance: 9/10

OVERALL 8

EXTERNAL STORAGE

Freecom FHD-1 80GB USB 2.0



It's sleek, and it's snazzy. But in a competitive market, that's not enough.

to mark itself out from the braying pack. Maxtor's One Touch drive, for instance, combines a 120GB capacity with a similar one-touch back-up utility, all for a few quid less. Similarly, for an additional £30,

LaCie will give you a 160GB USB drive that sports a Porsche Design chassis. The FHD-1 fails to make a compelling case for itself, either on paper, or in literal aesthetic terms.

That's not to say that this drive is a dog. In our theoretical performance tests, it achieved an average read speed of 25.8MB/s and a random access time figure of 13.3ms. In more practical terms, our write test revealed that 4.5GB-worth of MP3 files will whizz down the USB cable in just 3 minutes

and 41 seconds. Just as impressive is a read performance of 20 seconds for a 550MB data file. You'll not be left hanging around with this drive, but given the standard 7200rpm desktop drive housed inside its sleek lines, and the speedy USB 2.0 interface, this is nothing more than you'd expect.

Freecom's one-touch syncing software is well-conceived. Once installed, it's fully integrated into the Windows shell, allowing you to right-click any file to add it to the back-up schedule. It's then a simple matter of hitting the hardware Sync button on the drive to transfer all the files you have selected for back-up. Any changes that you then make to those files, either on the host machine or on the drive itself, can be synchronised at the touch of a button. It's all very intuitive, and with the FHD-1 at your disposal, you'd have to go seriously out of your way to suffer any data loss.

Sadly, there's no reason to recommend this drive over its rivals. It won't let you down, but it's not that exciting, either.

Jeremy Laird

INFORMATION

PRICE £126 (£107 ex VAT)
INFO www.freecom.com
SUPPLIER www.dabs.com
WARRANTY Two years

SPECIFICATIONS

CAPACITY 80GB
INTERFACE USB 2.0
ROTATIONAL SPEED 7200rpm
BUFFER 2MB
SIZE, WEIGHT 11.2x18.6x4.7cm, 0.9kg

Spare a thought for Dutch storage company, Freecom. A lot of effort went into the FHD-1, and attention to detail abounds; from its swooping lines hewn from glossy transparent plastic, to the well-implemented one-touch back-up facility, right down to the natty little fan integrated into its chassis.

The unfortunate truth, however, is that this 80GB external hard drive is just another mutt in a ruthless commercial environment of canine cannibalism. In terms of price and features, it does little

PCPlus ratings

FREECOM

FHD-1 80GB USB 2.0

Value ●●●●●●●●●●●●●●●●
 Features ●●●●●●●●●●●●●●●●
 Performance ●●●●●●●●●●●●●●●●

OVERALL

6

FILE ENCRYPTION

DES DESLock+



If you're serious about security, this dongle adds a valuable level of physical presence.

standard encryption protocols; 3DES, Blowfish and AES. These all offer solid 128-bit security, and up to 64 keys can be stored on the sturdy keyring-mounted DESKey. You then stuff it in a USB port and

unlock files with a password before they can be accessed.

It all works very well, introducing an old-fashioned physical element of security. On our 2GHz Pentium 4, 512MB RAM test machine, it took just a few seconds to transfer data to the key. There's no flash-memory-style removable storage potential, but you do get 2KB of space on each key for secure notation of personal data, and a plug-in for Outlook 98 to encode your emails.

Business buyers will be pleased to note that you can keep a tight hold on distribution by limiting the device keys given out, or by confining them to a group identity. You're regularly prompted to keep a back-up, too.

Unfortunately, while the lock-style operation does become blissfully simple, the initial set up will probably leave you wishing you'd invested in a padlocked chest instead. The printed manual is poorly laid out and lacks an index, and you've got to read it from cover to cover to grasp the resolutely taciturn interface. Distributing new encryption keys is fiddly, too, requiring manual swapping of configuration files. In addition, the lack of onboard intelligence means that you have to roll out the software to every user's PC.

These aren't crippling problems, and if you're serious about security, this dongle adds a valuable level of physical presence to basic coding. Our only other concern is the price, which doesn't compare well with that of more encryption-heavy software alternatives.

Jon Hicks

INFORMATION

PRICE £117 (£99 ex VAT)
INFO www.deslock.com
SUPPLIER Deslock 01823 35 2357
WARRANTY One year

SPECIFICATIONS

INTERFACE USB 1.1
STORAGE SPACE 2KB
OS Windows 98 or later

PCPlus ratings

DES DESLOCK+

Value ●●●●●●●●●●●●●●●●
 Features ●●●●●●●●●●●●●●●●
 Performance ●●●●●●●●●●●●●●●●

OVERALL

7

With viruses, Trojans, exploits and other attacks a constant concern for the PC user, it's increasingly important for you to ensure that confidential data doesn't go wandering from your hard drive. This hardware offering is an interesting way to do that, treading a middle ground between the built-in encryption of Windows XP and highly secure, but fiddly, dedicated encryption programs. This device enables you to secure files using your choice of one of three

INFORMATION

PRICE £158 (£135 ex VAT)**INFO** <http://uk.giga-byte.com/>**SUPPLIER** www.dabs.com**WARRANTY** Three years

SPECIFICATIONS

GPU Nvidia NV35**CLOCK SPEED** 390MHz (Core),

350MHz (Memory)

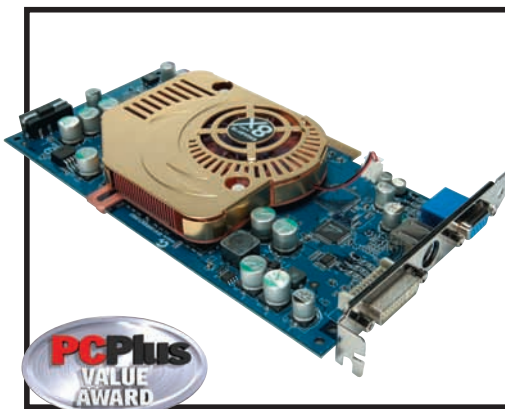
MEMORY 128MB**BANDWIDTH** 22.4GB/s**INTERFACE** AGP 8X**OUTPUTS** VGA, DVI,

S-video/composite

EXTRAS Rainbow Six 3, Will Rock, Tomb Raider: The Angel of Darkness, Power DVD 5

GRAPHICS CARD

Gigabyte Nvidia GeForce FX 5900XT



It may look like a bulky beast, but this is a high-value card that delivers.

has a mid-range 3D board, the 5700 Ultra, which was the best option at its price point. That was until this XT version came along, with a slightly cheaper price tag. We're guessing that it's all part of a plan to make the Nvidia

name synonymous with decent performance cards at reasonable prices, as its recent attempts at top-end boards have been a little less successful than it would have hoped.

What you're getting here is a stripped down 5900 or 5950 Ultra (Nvidia's two top-enders), with half the memory and a slightly slower clock speed. Despite this scaling down, the core clock speed is still 390MHz, and can be pushed up by a further 50MHz using Nvidia's own auto-overclocking

software. Not only does this put ATI's mid-level card, the 9600 XT in the dust, but it leaves its own precursor, the Nvidia 5700 Ultra, coughing and spluttering as well.

The continued controversy over driver-tweaking for better performance in benchmarks means that there's only so much that can be read into an impressive 3DMark2003 score of 5,509 at default settings, or a truly mighty 37027 score (4,617 on GPU-only) in Aquamark 3. However, all of the tests agree that the 5900XT is second only to the 59xx Ultra and 9800 series.

In real terms, any game will play very well on this card. Deus Ex: Invisible War, probably the most performance-hungry PC game of the moment, became playable at 1280x1024 – something that it couldn't manage on the 5700 Ultra or 9600 XT. And if you're using the card for graphics or multimedia work, you really will have no trouble whatsoever.

This arguably represents the best value card on the market today. It comes highly recommended.

Alec Meer

If nothing else, this wins top marks for pettiness. Nvidia is unconvincingly claiming that it came up with the 'XT' branding before ATI launched a range of cards with the same name last year. Considering that it's generally acknowledged that ATI is current lord of the 3D card manor, it's more feasible that someone in the depths of Nvidia couldn't resist the chance to take a bitter pop at its rival.

Onto the card, which is a quiet and slightly bizarre release. Nvidia already

PCPlus ratings

GIGABYTE NVIDIA
GEFORCE FX 5900XT

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 8

INFORMATION

PRICE £107 (£91 ex VAT)**INFO** www.s3graphics.com**SUPPLIER** Club 3D www.club-3d.nl**WARRANTY** One year

SPECIFICATIONS

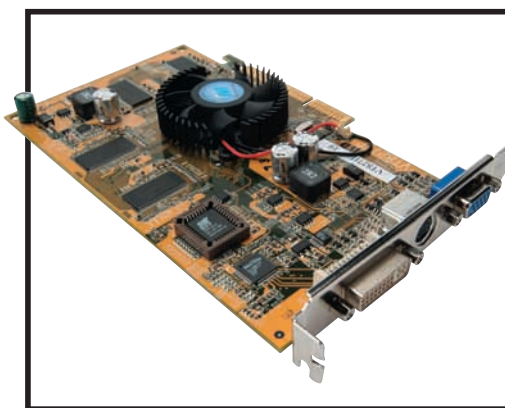
GPU S3 Delta Chrome**CLOCK SPEED** 300MHz (Core),

600MHz (Memory)

MEMORY 256MB DDR**BANDWIDTH** 96GB/s**INTERFACE** AGP 8X**OUTPUTS** VGA, DVI, S-Video**EXTRAS** None

GRAPHICS CARD

S3 Delta Chrome S8



It's small and perfectly formed, but the Delta Chrome still leaves a lot to be desired.

compliance with DirectX 9. It's therefore a serious competitor to the current 5700Ultra and 9600XT boards. There are some extra features, like HDTV output and improved playback of video files, but the two

advantages of this chip are price and low power consumption. S3 and its parent company, VIA, are quite excited about this, although at present, only the little-known Club 3D is planning to produce boards based on the design.

Our benchmarks perhaps show why other companies are reluctant to play ball. At all resolutions in DirectX tests – Unreal Tournament, 3DMark2003, Aquamark and so on – the card performs well. Figures are a little shy of any Nvidia or ATI

equivalents, but S3 can be proud of this initial performance. The problems don't take long to show up, though. The most criminal flaw is the lack of support for OpenGL. While games will run using the Quake engine, there are numerous texturing and colour depth errors that are unacceptable. We used the latest driver release, which doesn't even provide feature options for OpenGL settings, perhaps demonstrating how deep this problem goes. Almost as bad, the merest suggestion of anti-aliasing or anisotropic filtering caused the card to crash. This didn't just happen once; we wasted hours trying to get the card functioning properly. Most ironic of all were the 'out of memory' errors, especially given the whopping 256MB of on board memory.

To be fair, it does seem that these problems lie in the driver rather than the card itself – except possibly those memory issues. That does mean that in the future the Delta Chrome could be considered a true contender, but right now, it's impossible to recommend it.

Adam Oxford

There can't be a computing enthusiast in the country who isn't ready to break up the squabbles between ATI and Nvidia, by welcoming a newcomer. This means that we're almost prepared to let S3 get an easy ride. Take note – we said almost.

Of the six planned boards in the S3 Delta Chrome range, we've got our hands on a 256MB version of the S8 model. Like the rest of the series, this boasts a 128-bit memory bandwidth, an eight-pipeline architecture and full

PCPlus ratings

S3 DELTA CHROME S8

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 4

2.8GHz PENTIUM 4 NOTEBOOK PC

HP Pavilion zd7050

As a reviewer, you sometimes take a product out of its packaging, and know immediately that it's going to score well. The Pavilion zd7050 is such a product. This is how a desktop replacement notebook should look. It makes no attempt to be portable, with a size and bulk that a bodybuilder would balk at. It is, however, stylishly designed; it will certainly look nicer in your office than any desktop PC. What's more, that extra real estate has given HP room to fit in a range of features that other manufacturers can only dream of.

It may sound dull, but the first thing that strikes you about this notebook is its keyboard. HP has taken the simple, but extremely cunning step of adding a number pad to the usual portable layout. Now that we've seen a laptop that incorporates this addition, it seems incredible that nobody has used it before. The extra few keys not only add functionality, but also make you feel much more comfortable.

The other part of the zd7050 that has obviously gained from its mammoth size is the display. The widescreen TFT measures a true 17in – we even got a ruler out to check. What's more, it's the brightest, clearest screen that we've seen on a portable for quite some time. This is great for business use, as it means that eyestrain is kept to a minimum. You don't really see the benefits, though, until you watch a DVD movie on it. Fortunately, you're provided with an LG DVD+RW on which to play and copy your DVDs.

The monitor is driven by a Nvidia GeForce FX Go5600 GPU. We have a slight preference for ATI's Mobility Radeon 9600, but there's little to choose between them. A score of 1,849 in 3DMark2003 represents a 3D capability that, while not up to the highest standards, is well beyond what most notebooks can offer.

If it's multimedia use you're interested in, you'll also be hugely impressed by the built-in Harman Kardon speakers. Unlike most laptop speaker sets, you can actually get these to operate at a volume that can be heard across a room. This doesn't come at the expense of any quality, either.

Despite its strictly desktop nature, this notebook hasn't bucked the wireless trend. In fact, it's gone one better than most rivals, bringing you 802.11g support as standard. That means that you can set this machine up anywhere in the house, and



You won't want this beast sitting on top of your lap, but the Pavilion zd7050 is still one of the finest notebooks we've ever seen. Who needs a desktop PC, anyway?



The LG DVD+RW is ideally paired with a 17in widescreen. DVD movies, anyone?

wirelessly feed it your broadband connection without worrying about slow transfer speeds. Corded connections are just as impressive, with four USB 2.0 ports and a 4-pin FireWire, plus a proprietary connector for hooking up to an optional expansion base.

As if all that wasn't enough, HP has added a couple of methods for porting multimedia information, particularly photographs. First up is a 3-way card reader; these are becoming more prevalent, but it's still a welcome inclusion. More unusual is the 'USB Digital Drive'. This innovative device enables you to connect SD cards to USB ports. That may not sound that useful when you've already got a card reader on tap, but it gives you greater scope for taking data off the laptop, and transferring it to older machines, which may not have SD slots.

Processor power

It may seem strange that we've come 500 words into a laptop review without mentioning its processing power. The fact is, though, that the zd7050 offers

so much that it's difficult to know what features to cover first. You certainly shouldn't assume that just because we haven't mentioned it up to now, that the processor isn't up to scratch. A 2.8GHz desktop Pentium 4, backed up by 512MB of DDR RAM, provides more power than you'll get from the vast majority of today's PCs, be them static or mobile. A SYSMark2002 score of 260 translates into an extremely healthy PC Plus index of 2.74, and beats anything that we saw in our desktop replacement Lab Test (PC Plus 207) by at least 30 points.

We only have one extremely minor complaint about the zd7050, and that concerns its storage space. One 60GB hard drive is far from awful, but it doesn't meet the high standards set by the rest of the components. You could argue that a battery life of just 2 hours, 35 minutes is also criticism-worthy, but there's simply no way that anybody will want to carry this machine further than from one room to the next, so that's not entirely relevant.

Having taken in all of the features, we were bracing ourselves for a rather hefty price tag. We were therefore pleasantly surprised to find the zd7050 on sale for just £1,699. Admittedly, that's hardly bargain-basement territory, but when you get this much power and functionality, it translates into excellent value for money.

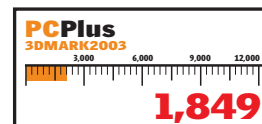
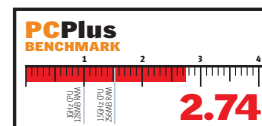
Russell James

INFORMATION

PRICE £1,699 (£1,446 ex VAT)
DELIVERY £50 (£43 ex VAT)
INFO www.hp.co.uk
SUPPLIER HP 0845 270 4222
WARRANTY One year RTB

SPECIFICATIONS

CPU 2.8GHz Intel Pentium 4
RAM 512MB DDR
HDD Toshiba 60GB
DRIVES LG DVD+RW
GRAPHICS Nvidia GeForce FX Go5600
SCREEN 17in widescreen TFT (1,440x900)
SOUND Conexant AMC Audio
SPEAKERS Harman Kardon stereo
COMMS 802.11g Wi-Fi, 56K Modem, LAN
PORTS 4x USB 2.0, 4-pin FireWire, Parallel, VGA-Out, S-Video, Headphones, Mic
OTHER HARDWARE 3-in-1 Card Reader (SD/MMC, Memory Stick, SmartMedia)
OS Microsoft Windows XP HE
OTHER SOFTWARE Microsoft Works 7, Microsoft Word 2002, Microsoft Money, Microsoft Picture It! Photo 7, Microsoft Encarta WE 2003, Microsoft AutoRoute 2002, Easy CD and DVD Creator 6, InterVideo WinDVD
SIZE, WEIGHT 398x278x47mm, 4.2kg



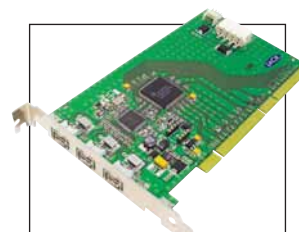
This notebook's size leaves room for four USB 2.0 ports, plus a 4-pin FireWire socket.



PC Plus ratings	
HP PAVILION zd7050	
Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	9

LaCie Big Disk

A white, rectangular, foldable emergency shelter, likely a Mylar blanket, is shown standing upright. The LACIE logo is embossed on its side. The shelter has a blue circular fastener or latch on the left edge.



8

Director MX 2004 in close up

Playback controls

The Stage is the all-important preview of your work, with playback controls available at the foot



The Stage
Selecting a Cast member on the Stage provides summarised information, along with any inherent direction paths



Help files
The help files have been greatly enhanced to include both Lingo and JavaScript reference material



DVD support
With DVD support, a new panel is available to preview raw footage before it is integrated into your movie



The interface

The general interface sees a few refinements to bring it up to date with the overall MX 2004 range



Property Inspector

Most routine panels, such as the Property Inspector, are docked to the right of the interface by default



Title bar

Clicking visible panels on the title bar will contract the content to keep screen clutter at a minimum



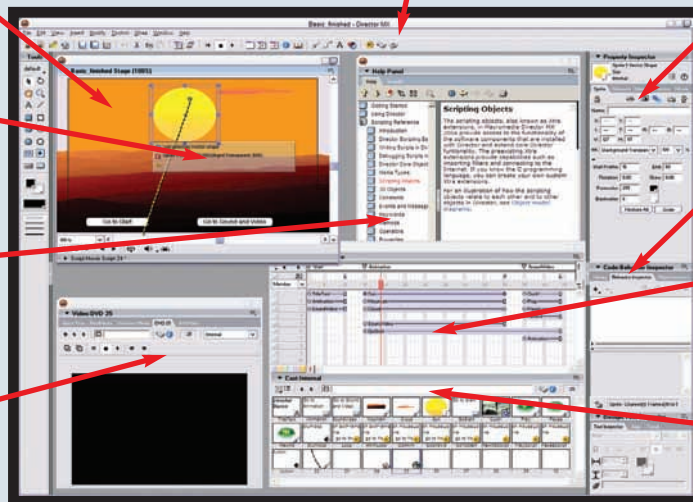
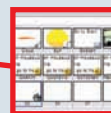
Interface elements

Alternatively, interface elements can be freely moved around or docked to other elements



Score and Cast

Free floating panels can be docked together, as shown here with the Score and Cast



INFORMATION

PRICE £959 (£816 ex VAT), upgrade £319 (£271 ex VAT)
INFO www.macromedia.com/uk
SUPPLIER Macromedia
0131 458 6766

REQUIREMENTS

CPU 600MHz Pentium III or equivalent
RAM 128MB
OS Windows 2000 or XP

TESTED ON

CPU 1.4GHz Athlon
RAM 512MB
OS Windows XP SP1



MULTIMEDIA AUTHORIZING

Macromedia Director MX 2004

A title like Macromedia Director should need little introduction. For almost 20 years, the software has been the dominant force in multimedia authoring. It led the way during the multimedia revolution and throughout the 90s, and still garners a huge amount of respect from the existing user base. There has been a slight decrease in the number of 'new' users being attracted to the title, and this can be attributed to the emergence of the Internet, and the development of more efficient methods of distributing information within titles such as Macromedia Flash, which is a more powerful authoring environment.

Director has now taken on a slightly revised role, acting almost as a final stop for Flash users. Flash has been split into two variant titles, with the regular and professional versions introduced to the MX 2004 range. There is, therefore, an argument for advanced Flash users drifting into the high end arena that Director occupies, and this is only made stronger by its new found support for the JavaScript syntax, which complements the existing Lingo coding.

In fact, it's Director's support for importing work from Flash MX 2004 that may well encourage advanced Flash users to explore their options as they look to extend their content beyond the browser. Macromedia has been quick to capitalise on this possibility, and it's attempting to blur

the boundaries between the titles further by introducing increased support for the Flash components concept within this new release of Director. Allowing such users to introduce pre-built content into Director will save development time. And with the familiar MX interface now fully-integrated, it also enables such users to easily cross over into other complementary titles. They could, for example, take advantage of Fireworks MX 2004 to develop bitmap content, using the powerful Launch and Edit feature found across the MX range. It looks as though Macromedia is continuing its quest for the software grail of the single solution application.

Multimedia possibilities

History has shown that Director is much more than a web-authoring tool. It will always have its multimedia authoring following, but as the boundaries between the various media become blurred, we can't forget the other markets that the software is beginning to encroach upon. A number of these markets are represented with new features in this release.

3D developers were drawn in with the 8.5 release when real 3D support was introduced, and Director MX 2004 enables the import of 3D models, textures and animations from the most popular 3D applications. This is done via the provision of extended 3D capabilities such as physics, particle

system effects, bones animation, motion blending and cartoon rendering. With interactive real-time 3D, the title is also able to work effectively with educational applications and product demonstrations, as well as the more popular entertainment options. Games developers will also be attracted by such 3D capabilities, especially when you consider the self-contained tools that the title presents to finally output your work directly into stand-alone applications or to web-based Shockwave platforms.

Another important development within the MX 2004 release is its DVD authoring. It's now possible to embed, control and play back the increasingly popular DVD-Video format inside Director movies. And by making use of Director's existing support for other media types, Macromedia has also added new-found support for Real and WMV format. Therefore, the potential for creating truly multimedia presentations becomes even larger. By truly multimedia, we mean not only across different media, but also across platform applications. It's this flexibility that has enabled, and will continue to enable Director to lead the authoring and development field across the various forms of media, rather than simply for CD content creators.

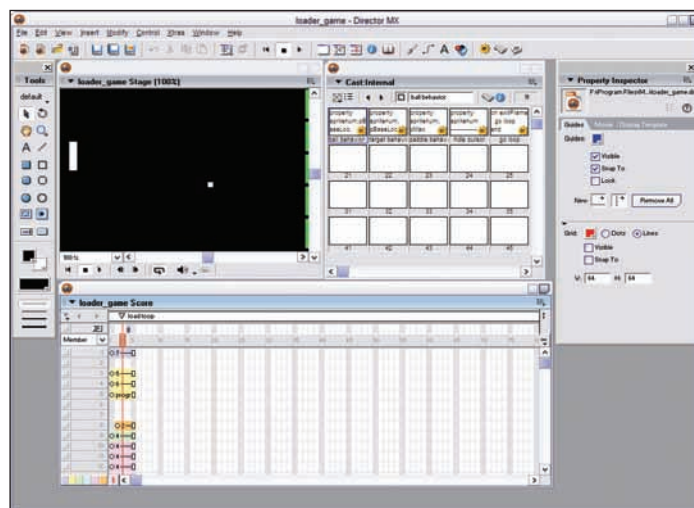
The consideration of other media types is one way of considering the advantages of upgrading to the new version of the software. However, this

will mainly appeal to people that were previously sceptical about its capabilities. What about existing Director users? They haven't been ignored, and a number of new features have been introduced to help the workflow and efficiency of the title.

The Director mantra of 'author once, publish anywhere' still holds true as you convert your created content for CD, DVD, Internet, intranet and kiosk platforms. But there are certain practical improvements found in the MX 2004 generation. These include the ability to publish through a single action to both Windows and Macintosh platforms. The new Project Publishing Panel minimises the amount of configuration that's necessary for such conversions, regardless of your preferred platform. It's easy to save projector settings unique to your specific project.

The revised MX 2004 interface also brings it into line with the rest of the series, meaning that things will be familiar to users of related MX 2004 titles. This brings many advantages for new users, many of whom will be familiar with the concept of customising your workspace to create the ultimate environment best suited to your own particular work methods.

Your work can be further streamlined with the ability to give sprites and channels custom names, with absolute sprite references no longer necessary. You can freely drag sprites anywhere in the score without disrupting your code, thus making last minute changes faster and more stable. The new window properties available to the display template pane enable you to create windows and drag masks through a simplified process of selecting a cast member in a drop-down list.



The ability to customise the interface means that you can lay things out as you prefer. In this instance we've emulated the older Director 8 layout.

Director has evolved over its 20 years into the definitive multimedia authoring tool, with few titles able to challenge its ever increasing range of tools. There may be individual titles that do certain aspects better, but you'll be hard pressed to find a self-contained application that caters for the extensive range of options and large user base. The huge number of users that are now able to view the Shockwave format native to Macromedia's programs is impressive. However, it's not until you also consider the range of additional third-party media types that are supported, including QuickTime, Windows Media, RealVideo and AVI, that you get some idea of the potential this title gives you. You'll have no problem importing or exporting to your chosen formats.

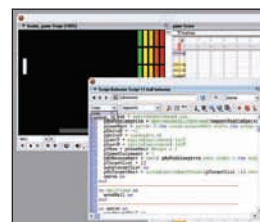
There's bound to be a resurgence in the number of Director users with the latest release, especially with the rising number of broadband users that can start to take advantage of the media-rich output the application can provide. Advanced Flash developers

can also start to take advantage of the improved capabilities that the software brings now that the JavaScript code syntax is available to them. With any new user base comes a new range of comments, complaints and queries. Another universal MX feature, more comprehensive help documentation, should help to reduce the confusion. In addition to the regular help files that we've all come to rely on, the MX 2004 range expands on the amount of practical support that's available. Along with the usual Getting Started and Using Director type documentation, is a large and comprehensive scripting reference panel in which you can find all of the information that you need, including Lingo and JavaScript syntax reference guides.

It would seem that the title that started the whole multimedia ball rolling is refusing to grow old. Director continues to encompass new technologies, and many authors simply won't need another application. We're big fans of this latest release.

Chris Schmidt

IN A NUTSHELL



Throughout its long history, Director has benefited from a huge amount of development time from its creators. This is evident in the stability of the application. Although it has fallen in and out of favour with the times and trends, there's plenty to be found within the latest version that suggests its ranks of users will soon be swelling again. As happened when Flash incorporated the JavaScript syntax into its ActionScript concept, we're sure that there will be a good many new users moving over to the application. And with its general usability improvements, existing users should be more than keen to upgrade too.

PCPlus ratings

MACROMEDIA DIRECTOR MX 2004

Value: ●●●●●●●●●●

Features: ●●●●●●●●●●

Performance: ●●●●●●●●●●

OVERALL 9

Director MX 2004 and DVD video

Director has seen increased support for new media. Now it looks like MX 2004 is turning to DVD

Despite the relatively short amount of time that the DVD format has been around, it's already making VHS into a thing of the past. It's not only consumers that have flocked to the format, either, as multimedia developers have also been quick to realise the potential behind DVD. It enables end users to view their work not only on the computer screen, as was the restriction with CD-ROM, but also when sprawled out on the couch in front of the TV with a remote control in one hand and a bag of popcorn in the other. Applications such as Adobe Encore DVD, Apple DVD Studio Pro and Sonic ReelDVD have equipped authors

with the necessary tools to edge into the market. Although there are some impressive DVD interfaces, it's a sad fact that many are quite unimaginative and lacking the kind of creativity that was often put into the earlier CD-ROM developments. This isn't entirely due to any laziness on the part of the developer; it can also be blamed on the limitations of individual applications, especially when you consider the restrictions imposed by the cost of the more powerful packages, and particularly those that support cross-platform content authoring.

As Director MX 2004 branches into the DVD arena, we can be sure that

we'll be in for some interesting developments as dedicated multimedia authors find another avenue to explore. Many of the previous limitations, such as an inability to create cross-platform, enhanced DVD content, are done away with in the latest release.

The simple yet powerful approach for DVD authoring found within Director MX 2004 includes the ability to embed DVD movie playback inside projectors, trigger events during DVD movie playback, and control DVD navigation with custom user interface components including Flash movies. Hopefully, we should start seeing some much more imaginative DVD content very soon. ■



As Director MX 2004 branches into the DVD arena, we'll see some interesting developments.

Matchware Mediator 7 Pro

INFORMATION

PRICE £150 (£128 ex VAT)
INFO www.matchware.net
SUPPLIER MatchWare
 0208 940 9700

REQUIREMENTS

CPU Pentium 400MHz or equivalent
RAM 64MB
OS Windows 98 or higher

TESTED ON

CPU 2Ghz Pentium 4
RAM 256MB RAM
OS Windows XP

BRAINSTORMING TOOL

MatchWare OpenMind



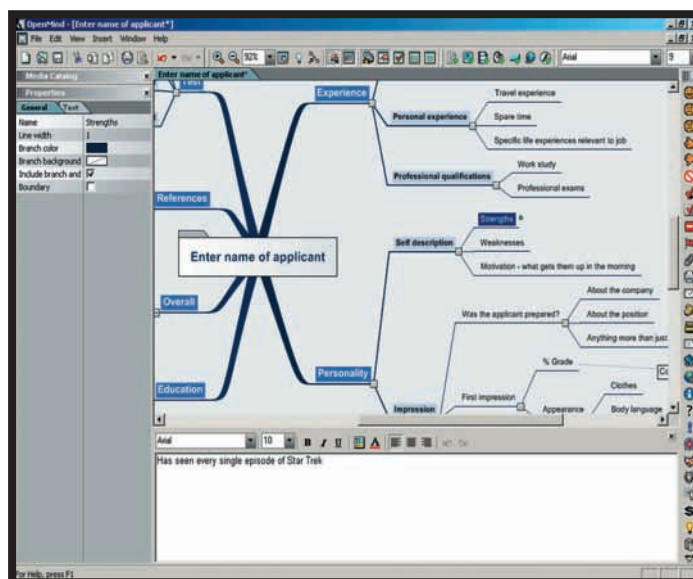
Mind mapping appears to be the new big thing. Last month, we saw the superb Mind Manager X5 Pro from Mindjet, and now we're basically seeing it again. There are differences between it and MatchWare OpenMind, of course, but they largely comprise of minor observations, like the Notes panel being at the bottom of the screen rather than the side, and an ever so slightly greater focus on assigning pictures to your trees and branches, instead of making use of MindManager's more cut-down text.

None of this is overly surprising, and it all works well. Mind mapping is a long established discipline, and for the most part, both of these packages are perfectly-designed to bring it to your screen. Beginning from a point in the middle of the screen, all you need to do is hit the [Enter] or [Insert] key to add new branches to the ever-growing spider of ideas on the page, filling in details in exacting detail. The MatchWare example of this is a dog, and a graphic of the mutt provides access to its history, breeding, and the reason why it's kept in work as a pet. Exactly the same chart could be used for charting anything from story ideas, meeting plans or members of the Bush administration.

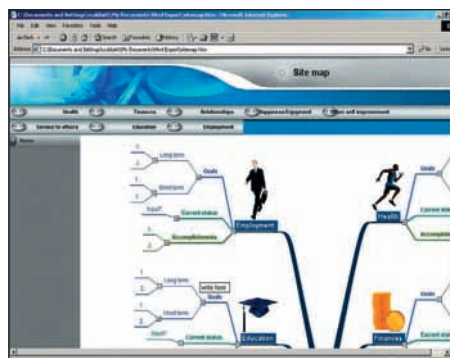
Each branch that you add to the tree can be further decorated with a range of symbols to indicate any progress or actions, such as a reminder to send out an email, or a phone icon to point out an important context. More directly useful are the Notes and Comments

features. Notes sit at the bottom of the screen and can hold reams of text on any branch in your tree (although it doesn't include the more advanced formatting tools, found in MindManager).

The implementation leaves a little to be desired, and most notably in the way that the note preview only gives you the first three words of the note. This isn't updated along with the body copy, but offers the benefit of multiple notes for each entry. A more unique OpenMind feature is the 'Comments' system. These work much like expandable Post-It notes, sitting next to any entry, but animating out into the map when selected. They are excellent for keeping little scraps of



The smooth curves help to give OpenMind a professional finish, and switching on anti-aliased text makes a big difference on pre-Windows XP systems.



Exporting your MindMap into HTML format gives you an immediately stylish site that's worth showing off.

information close at hand. Unlike with Notes, however, you can only have one per entry.

Perhaps more directly relevant are the hyperlinks that you can attach to each branch. As well as conventional URLs, these can attach to specific media files, opening them automatically on demand. As with Notes, you can have multiple buttons on each branch to make it easy to group your information.

Decoration time

As you'd expect from a company with MatchWare's multimedia experience, elements like clip-art and decoration play a heavy part in making a map look up to scratch. You get plenty of clip-art to drag-and-drop into position, accessed via a media library panel and open to positioning either freely on the page or attached directly to specific

branches (including your central point). The catch is that the business side isn't quite as fully featured as the equivalents in Mindjet's product, with the sample templates largely focusing on educational examples like student and teacher groups, rather than more overtly corporate activities such as planning and training. It's very easy

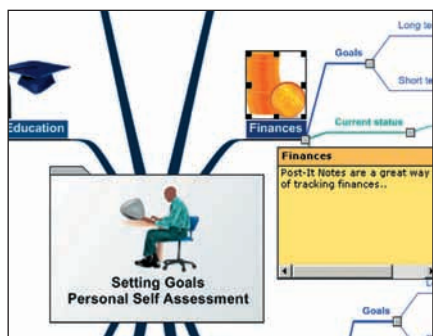
to make such charts, of course, and to make them look very good indeed – especially if you switch on text anti-aliasing from the menu.

OpenMind has excellent export features. Although there's no support for PDF, it can produce extremely attractive HTML pages for the web, presentations for PowerPoint and MatchWare's own Mediator, Microsoft Office files, image and vanilla RTF. You can also package everything up into one easy to handle ZIP file, but so far there's no free viewer to let those without a copy of OpenMind view the contents.

It's these little dings that ultimately push MindManager X5 Pro just into the lead in terms of pure features, but whether or not you'll find them essential is questionable. Both products are excellent at their core business of creating mind maps, both have all the features that you need, and both offer exceptional ease-of-use. The only question is; which of their slightly different takes on the process will serve you better?

Richard Cobbett

Comments appear like Post-It notes, zooming on and off the screen when summoned. It's an excellent way to keep notes.



PC Plus ratings

MATCHWARE OPENMIND

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 8

ADSL MODEM/WIRELESS NETWORKING

Netgear DG834G



The DG834G is a stylish all-in-one solution, and it's worth every penny.

This unit may look the same as Netgear's usual access points, but it's 50 per cent larger. This means that it's quite demanding in terms of desk space, although there is the option to have it wall-

mounted. The original 802.11b all-in-one was this size as well, so we can only assume that it's down to the modem components.

The DG834G is more stylish than anything else in its class and would look great in any lounge. It's also a very secure solution, adding to the standard WEP encryption and MAC address filtering with an incorporated firewall, meaning that you can keep Internet nasties at arms length from your home network.

This box is a true jack-of-all-trades. It incorporates Netgear's familiar 802.11g access point, and packs in a four-port 10/100Mb/s auto-sensing Ethernet switch. Crucially, it's an ADSL modem, too. Netgear has long been the best choice for those in the market for a combined box, but it's only with the arrival of this unit that the networking specialist has upped the ante, bringing in the increasingly-prevalent 802.11g standard, while naturally retaining 802.11b compatibility.

One of the most impressive features of the DG834G is its range. 100m is better than most, and there's very little drop-off over open distances. Performance never dropped below 60 per cent inside our large open-plan office. Expect a decent performance in the home, too.

On an 802.11g network we achieved a decent throughput, with 802.11b performance expectedly slow at around 3Mb/s. Our only niggle is that the DG834G seems ready to drop down speeds when connecting with adaptors from other manufacturers, even if the adaptors are 802.11g compatible.

Many wireless access points either need to be connected via your Internet-enabled PC, or attached to a modem with an Ethernet connection. This can lead to a complicated set-up, and often means that the host PC has to be switched on all the time. The DG834G circumvents these problems, and for a shade over £120, it's a great all-in-one solution that enables you to have a stand-alone connection. It's worth every penny.

Dan Grabham

INFORMATION

PRICE £123 (£105 ex VAT)
INFO www.netgear.co.uk
SUPPLIER www.dabs.com
WARRANTY Two years

SPECIFICATIONS

TYPE ADSL Modem/Router/
 Access Point
COMPATIBILITY 802.11b and 802.11g
FREQUENCY 2.4GHz
OPERATING CHANNELS 13
RANGES 100m stated
SECURITY True Firewall with Stateful
 Packet Inspection and Intrusion
 Control, 128-bit WEP and 128-bit
 WPA-PSK Encryption plus MAC
 Address Authentication
CONNECTIVITY 4 Port 10/100Mb/s
 Ethernet switch

PC Plus ratings

NETGEAR DG834G

Value: 9/10

Features: 9/10

Performance: 9/10

OVERALL 9

POWER CABLE NETWORKING

Phonex NeverWire 14



NeverWire 14 boasts connection speeds that are faster than ever: up to 14Mb/s.

wiring. See www.smarthome.com. The difference here is that you can share your broadband. You can have one NeverWire 14 connected to your router or Ethernet ADSL modem. Make this act as the 'hub' by flicking a switch on the side of the box, and it dishes out your broadband to other computers in different rooms.

To set it up, you use the 'hub' setting for any network devices, and a 'PC' setting for any PCs. The box simply contains the NeverWire itself, an Ethernet lead that goes to your PC or network device, and a power lead that you plug in. The simple set-up process defies the rather large instruction manual; hunt for the Quick Start guide, as that's all that you need. On your PC,

you'll just connect to your Local Area Network in the usual way; there's no software or other configuration. This is a major plus point. One of the prominent problems with wireless networking remains the clunky set up.

The NeverWires do have advanced security features. This is vital, because if they didn't, your neighbours could plug a NeverWire in and hijack your Internet connection. The units have a 'Secure' button on top. Press that, and the device is isolated from any other NeverWires by an encryption key.

This is a great solution if all you want to do is connect a couple of computers throughout your house to the Internet, but you should note that it doesn't work with surge protectors. If you're talking about a myriad of laptops in a small office, wireless is still going to be your favourite option.

You can either buy the units singly (£88) or as a pair (£168), but you'll need two or more to get going, and you can connect up to 16 at a time. This is a reminder that the simple ideas are generally the best ones.

Dan Grabham

INFORMATION

PRICE £168 per pair (£142 ex VAT)
INFO www.datasource-uk.com
SUPPLIER Datasource 01582 50 2500
WARRANTY One year

SPECIFICATIONS

TYPE Power cable networking node
 Compatibility IEEE 802.3 (10BaseT),
 IEEE 802.3u (100BaseTX), HomePlug 1
POWER FREQUENCY 4.3 MHz –
 20.9 MHz
SPEED 14Mb/s
SECURITY Standard encryption
 (56 bit DES), Private encryption key
CONNECTIVITY Ethernet,
 Power supply

PC Plus ratings

PHONEX NEVERWIRE 14

Value: 9/10

Features: 9/10

Performance: 9/10

OVERALL 9

You've heard of wireless networking, and wired networking. Well, this is wired networking with a twist. Instead of linking PCs via Ethernet cables, you use the cabling that's already there. This technology uses your power supply to connect your PCs together at speeds of up to 14Mb/s. That's faster than any 802.11b wireless network.

The technology is similar to that used in X10, a home automation system that uses your home's electrical

WIRELESS ADSL ROUTER

NetGear Prosafe FWG114P

SMC has traditionally been the only vendor that has offered printer sharing capabilities in its multi-function routers. This was one of many features that earned its excellent Barricade an Editor's Choice award in the last ADSL modem/router round-up (PC Plus 209). Now Netgear joins the club with its FWG114P. This offers an impressive range of communications and security features and adds a USB 1.1 printer port to the equation.

Clothed in Netgear's standard blue metal chassis, the compact FWG114P offers a quad of switched, dual-speed Ethernet ports, while a separate port is provided for the WAN connection. This requires an external ADSL modem, but after some fiddling we did get the router to talk directly to a Windows SBS (Small Business Server) 2000 proxy server, thus avoiding using a modem. The USB 1.1 port sits alongside and is partnered by a 9-pin serial port, which can be used to connect a modem or ISDN TA (Terminal Adaptor) for a fallback dial-up link. A wireless access point comes as standard and supports both 802.11b and g operations. Installation is nicely handled, and Netgear includes a CD-ROM based assistant to guide you through the initial set up. The router provides DHCP services so you can point your management PC at the unit's default IP address where a slick wizard-based process attempts to identify the type of broadband connection, configuring itself accordingly. The web interface is very well designed and easy to navigate, with all menu options neatly arranged down one side.

Security maintenance

Security options are impressive, and the help files recommend changing the default password immediately. The remote management feature can be used to restrict administrative access to specific IP addresses and secure HTTPS sessions. Wireless security starts with the basic 64/128-bit WEP encryption, and WPA (Wi-Fi Protected Access) is supported by downloading and applying a firmware upgrade. At the time of writing, this was still in its beta stage and was not supported by Netgear. We upgraded the test unit and can report no problems other than the fact that a number of values including DHCP services and the LAN IP address were annoyingly reset to their default values. SSID broadcasts can be switched off while access can be restricted to specific MAC addresses. A handy table of connected clients makes for easier configuration. DHCP



Clothed in Netgear's standard blue chassis, the FWG114P offers a quad of switched, dual-speed Ethernet ports, while a separate port is provided for the WAN connection.

Schedule

☐ Use this schedule for rules

Days:

☒ Every Day

☒ Sunday

☒ Monday

☒ Tuesday

☒ Wednesday

☒ Thursday

☒ Friday

☒ Saturday

Time of day: (use 24-hour clock)

☒ All Day

Start Time: 0 hour 0 minute

End Time: 0 hour 0 minute

Time Zone

(GMT-08:00) Pacific Time (US Canada)

Content filters and rules can be scheduled to be active only on specific days and times.

services can be disabled and larger networks can also bring Radius servers and 802.1x port authentication to bear.

Firewall features are impressive for the price, with a stateful packet inspection behind the scenes. You can leave this on its default settings, but if you're brave enough you can add your own rules for controlling inbound and outbound traffic. Another handy option is the ability to schedule these restrictions to be active on specific days and set time periods. Java, ActiveX and cookie blocking can be switched on and you can control Internet access by blocking sites with specific URLs and keywords. Alerting features are good, as the router can email system logs at regular intervals and send out a warning mail whenever someone tries to access a blocked site.

Installation

Modem installation is simple enough and you can use this as your primary Internet connection if you have cash to burn. In 'auto-rollover' mode the router uses a simple process to determine when to use the modem as a back-up link. It will then run look-ups on the ISP's DNS address or another address entered manually. You can add a countdown time in minutes and if the broadband connection hasn't been established, the router will automatically start a dial-up link. You'll need to keep an eye on the router though, as it won't tell you if it has switched to a modem connection.

Printer installation couldn't be easier, although we recommend checking Netgear's list of supported devices as this is somewhat limited. The supplied print server utility searches for Netgear routers and displays the attached printer, after which, you load the relevant driver. We found the router accepted a range of Epson printers and although not supported, the print server also worked happily with an Oki colour laser as well.

Competition in the multi-function router market has always been fierce, and this puts small businesses in the enviable position of being spoilt for choice. The FWG114P compares particularly well with Zyxel's more costly Prestige 652HW (PC Plus 213). Although you need to add the cost of an ADSL modem, you get 802.11b/g wireless access as standard, the modem fallback option, good security measures, and the network printer port.

Dave Mitchell

INFORMATION

PRICE £199 (£169 ex VAT)

INFO www.netgear.co.uk

SUPPLIER Netgear 01344 39 7021

WARRANTY Three year replacement

SPECIFICATIONS

CONNECTIVITY 4-port 10/100BaseTX Ethernet switch, auto MDI/MDI-X, 802.11b/g wireless access point, 10/100BaseTX WAN port, USB 1.1 printer port supports PPPoE, DHCP, 9-pin serial port for modem back-up connection

SECURITY Stateful packet inspection firewall, NAT, RADIUS, 802.1x, 64/128-bit WEP encryption, WPA (with upgrade), SSID masking, MAC address control, URL filtering

PCPlus ratings

NETGEAR PROSAFE FWG114P

Value: ●●●●●●●●●●

Features: ●●●●●●●●●●

Performance: ●●●●●●●●●●

OVERALL: 9

ASSET MANAGEMENT

NetSupport DNA

The competition between asset management tools is incredibly hot right now, which makes for a buyer's market. In the race to be victorious, asset management tools are now bigger than ever, and continue to take on more and more areas of functionality. You can pick and choose the exact software to fit your company, and get the best price for it too.

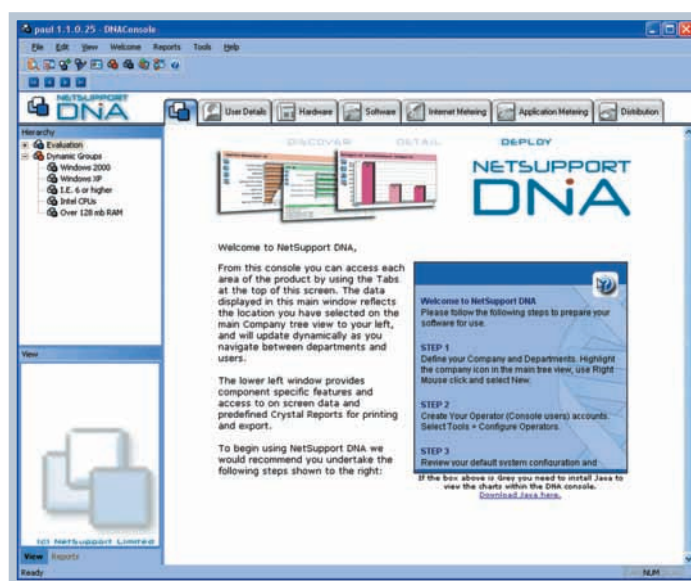
There are two primary ways to handle asset management. You can either create a program that does everything all in one, like Microsoft's Systems Management Software 2003 (reviewed issue 211), or create a module-based system where you pick and choose what you want. It's in the latter category that NetSupport aims to dominate with DNA (Dynamic Network Administration).

It's not easy

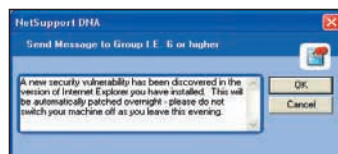
We had a heck of a time getting DNA installed on our test machines. To start with, DNA requires a Microsoft database present, which means you either need to license SQL Server or be happy using the free MSDE version, which is substantially less powerful. Installing MSDE was the least of our problems. Just getting the DNA server to install smoothly was a nightmare, and ended up failing entirely on our Windows 2003 test box. With a half install of DNA on the system, and no option in Add/Remove Programs to clear up the failed install, we had to delete files by hand to get the system back to its original state, and even then DNA refused to install, stating that there was a version installed already.

Eventually we switched to Windows XP (not the smartest choice for a server system, mind you), and things worked more smoothly there. Installation is broken down into three parts; server, where the data is sent and stored; client, where the data is recorded and sent to the server; and console, which is the administration interface into the server. Of these, only the server was problematic. The client works perfectly, and was sending back data to the server with no configuration required.

The first thing that strikes you in the DNA console is that it doesn't use the Microsoft Management Console (MMC) for its interface. This is a bit annoying at first, as MMC snap-ins are standard in their design and layout, and no one really has the time to bother learning a new interface just for the sake of it. Having said that, using their own layout style does mean that



NetSupport has insisted on using pretty much every colour in the rainbow to design their GUIs, so be sure you have a contrast knob on your monitor before installing.



You can define user groups through any criteria.

you get a more interactive, more helpful interface that's laid out the way most people would want it. We think NetSupport went a little too far by having scrolling Java applets in there, and we could certainly do without these.

The flexible interface means that NetSupport has been able to cram a lot more information in than we've seen in other packages. The Dynamic Groups system, for example, is an administrator's dream come true. You can define groups of people based upon pretty much any characteristics you can think of. For example, when Windows 2000 launched, there was a bug in there that affected AMD chips. You could create a group that matches the Windows 2000 OS and the AMD chips, then roll out a patch to them in just a few clicks. This kind of ease of use is utterly uncommon in the first release of an application, which means that NetSupport must really have worked hard to get feedback before they started work.

Being modular, you can choose which parts of DNA you'd like to license, and only pay for them. However, we would highly recommend getting as many as you can – the modules integrate together so you feel like

you're using just one application, which is ideal. The efficiency with which the modules worked by default quite surprised us. We left the client running in the background for a couple of hours, then checked the console and saw that it had tracked every application that was launched by default, storing its version number, time started, time finished, and overall active time, as well as providing a list of all the web sites we had visited, how long we had spent there, and how many times we had visited each one. Thanks to the tree-like organisation of groups and departments, you can have DNA create graphs based upon a single machine or whole groups with just a single click.

There are some downsides apart from the installer. Firstly, the software distribution isn't to the standard set by SMS 2003, which is somewhat predictable thanks to the extra integration that you can expect from Microsoft's own products. Secondly, there was no obvious way to filter the installed application list for a given computer, meaning you had to read through lots of irrelevant information just to find the nuggets you're after. Finally, and this is admittedly a fairly small point, NetSupport has insisted on using pretty much every colour in the rainbow to design their GUIs, so be sure you have a contrast knob on your monitor before installing.

Paul Hudson

INFORMATION

PRICE £40 (£33 ex VAT)

INFO www.netsupportsoftware.com

SUPPLIER NetSupport 01778 38 2270

REQUIREMENTS

CPU 500MHz Pentium III

RAM 256MB

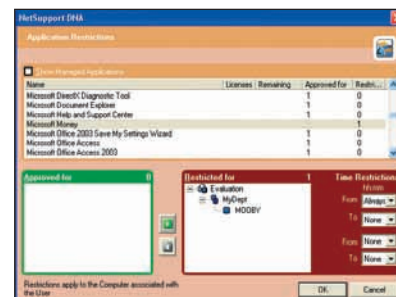
OS Windows NT, 2000, XP, 2003

TESTED ON

CPU 800MHz Athlon

RAM 768MB

OS Windows XP



Although the application restriction control in DNA is very well thought out, it would be better to be able to make bulk changes easily.

PCPlus ratings

NETSUPPORT DNA

Value: ●●●●●●●●●●

Features: ●●●●●●●●●●

Performance: ●●●●●●●●●●

OVERALL: 8

VIDEO EDITING

Pinnacle Studio 9



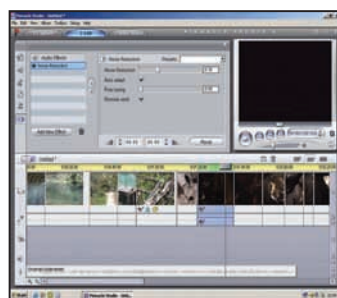
Although the consumer editing market is pretty crowded, Pinnacle's entry level NLE (Non-Linear Editor) has always had a strong following because of its intuitive interface and strong feature set. Not wanting to mess with a winning formula, Pinnacle has largely left the front end alone for this new edition, concentrating instead on implementing a set of new tools that will help improve the overall quality of your footage, especially if you're working with older analog material.

That's not to say that there haven't been some improvements to the interface. The fact that it's no longer fixed at 1,024x768 pixels will be a welcome addition for anyone with a larger monitor; you can now run the application at resolutions up to 1,600x1,200. Also handy is the addition of a full-screen preview, although we would have liked to have seen previews across FireWire as well. As it is, if you want to hook up to a TV monitor for previews, you'll still be dependent on a dual-display graphics card with composite or S-Video output.

You'll still find all of the features that made Studio 9's predecessor so popular, with the same Storyboard/Timeline view options as before. However, existing features like Slow/Fast motion, audio ripping and narrative recording, scene detection and DVD authoring from the timeline, are now complemented by a raft of new additions. These can mostly be found in the video and audio toolboxes.

Audio tools

Given that Pinnacle recently bought up long-time audio developer Steinberg, it's no surprise to find a set of new audio tools, including a graphic equaliser and reverb controls, plus more advanced features like the Grungelizer (which adds noise, crackle and distortion to your clips) and Noise



The new audio clean-up filter helps to take some of the unwanted noise out of your recordings.



Existing Studio users will be glad to find that the main interface remains largely unchanged, retaining its friendly appearance.

Reduction. Additionally, the Leveller can even out the audio balance across your recordings, which will prove useful if you're using recordings from a variety of sources. What's more interesting is that Studio now supports Steinberg's industry-standard VST architecture, so third party plug-ins are highly likely to follow. Another interesting addition is the surround sound feature, which lets you play with the position of the three audio channels for Dolby ProLogic-compatible systems. Don't confuse this with full 5.1 Dolby Digital, though. You won't get a space-saving digital AC3 track for your DVDs.

It's not just audio that's been improved, though. In the video toolbox, you'll find a video clean-up filter, a colour correction tool, and an image stabiliser. This last tool works in a similar fashion to the digital image stabiliser found in most current camcorders, by cropping the borders and rearranging the centre to reduce camera shake, but with an unavoidable loss of around a fifth of the image detail. Another common issue with video footage is dodgy colour balance, especially when artificial light is involved. Applying the colour correction filter will help to sort this out, although you may find that it adds a little grain to the overall picture. If this is the case, Studio 9's noise reduction filter may come in handy, as it will smooth out some of the noise and jitter. This is also helpful if you're working with analog captures – which are often quite noisy to begin with – or cleaning up footage that was shot in low light.

Slightly less obvious, but no less useful, is background rendering, which was previously a feature unique to Pinnacle's higher-end edition. This means that when you stack too many effects for your system to preview in real-time, Studio 9 will get busy with the rendering while leaving enough system resources free for you to carry on with your editing.

If you want Studio to do the hard work for you, you can use the new AutoMovie function to put together a quick video that's synchronised to your chosen music track. Much like the original auto-producer from Muvee, this is an extremely simple option, but manual editing will provide better results if you've got the time.

The verdict

That said, there's not much to dislike about the new Studio. It was already an extremely simple product to use, putting a pretty advanced set of features and tools at the disposal of the novice and intermediate editor alike. The new tools only serve to reinforce the product's overall appeal, and while it would have been nice to see an extra video track or preview over FireWire, we'd recommend it as an upgrade for existing users, or to anyone looking for a simple, yet powerful video editor.

Eddie McGee

INFORMATION

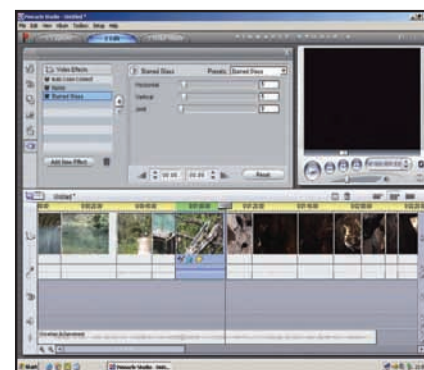
PRICE £60 (£51 ex VAT)
INFO www.pinnaclesys.com
SUPPLIER Pinnacle Systems
 01895 44 2003

REQUIREMENTS

CPU 800MHz or better
 (1.5GHz recommended)
RAM 256MB
OS Windows 98SE or later

TESTED ON

CPU Dual Athlon 1900
RAM 1GB
OS Windows XP



Studio 9 lets you stack effects on top of each other, with background rendering kicking in when you've exceeded the capabilities of your system.

PC Plus ratings

PINNACLE STUDIO 9

Value: ●●●●●●●●●●

Features: ●●●●●●●●●●

Performance: ●●●●●●●●●●

OVERALL: ●●●●●●●●●●

INFORMATION

PRICE £465 (£395 ex VAT)
INFO www.seapine.co.uk
SUPPLIER Seapine 01344 29 7613

REQUIREMENTS

CPU 100MHz Pentium
RAM 32MB
OS Windows 98, NT, 2000, XP

TESTED ON

CPU 800MHz Athlon
RAM 768MB
OS Windows 2000

SOURCE CONTROL

Seapine Surround SCM 2

If you're part of a software house, the examination of your programs' source code is vital to the success of the company. To fulfil this task you need special software known as 'Source Code Management' software. Surround SCM 2 is Seapine Software's groupware development platform, and fits in well with TestTrack Pro and QA Wizard. These are also purchased separately.

Although we found the installation unnecessarily tricky, it's fairly easy to use once you've got everything set up. It's important to remember that this is only the second release of Surround SCM. Microsoft's SourceSafe has had a much longer run to get it perfect. The problem with installation is that everything is separated into small components. You install and configure the licensing server, then the SCM server, and then distribute your clients around as necessary.

SourceSafe, on the other hand, only has one of those three elements. The clients use a shared database as their repository, with no need for a licensing server or the SCM server. Having said that, Surround SCM has more complex licensing options if you want it. You can set up floating licences if your team has limited access requirements. This problem is lessened if you use

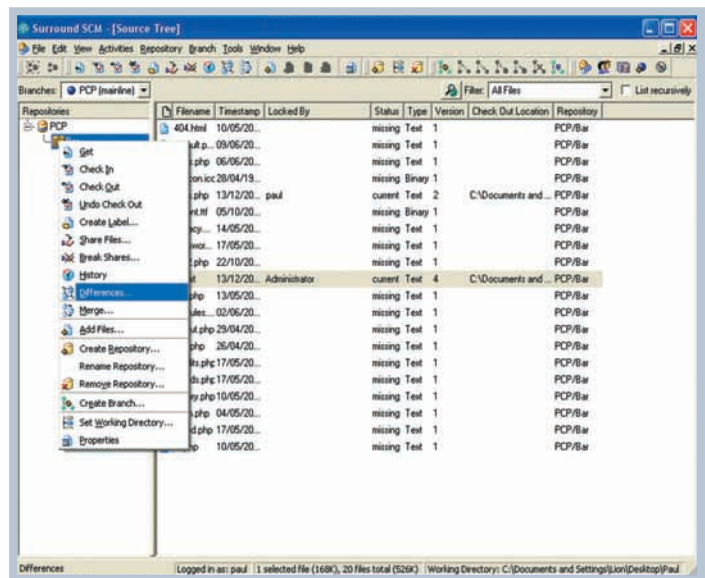
TestTrack Pro, as the same licensing server works for both programs.

Once you're logged into the Surround SCM client, you can check in and check out files as

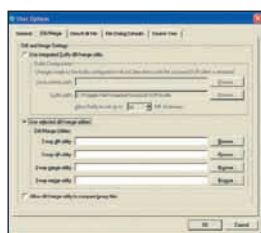
necessary, merge files with the work others have done, track versions of files, and other day-to-day SCM actions. Surround SCM has some tricks up its sleeves, though. We were particularly impressed with the trigger's functionality, which enables you to specify programs that should be run when certain actions are taken, for example, when checking in and out.

Surround SCM also enhances its integration capabilities by supporting Borland JBuilder and Macromedia Dreamweaver, (including the latest MX 2004 release). This is in addition to the existing support for Visual Studio.NET, and means that no matter where you develop or what language you use, you can make use of Surround. One of the advantages of Surround SCM is that it's cross-platform compatible, so it works smoothly on Windows, Linux, Mac, and Solaris without the overhead of Java.

So far we've been using Microsoft SourceSafe as our comparison here,

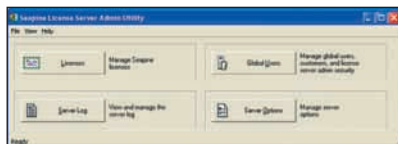


The Surround SCM interface allows you to check in and check out files all through the easy-to-use menus – you can even compare file versions.



Surround SCM isn't that configurable, but it does let you choose your own diff, diff3, and merge utilities.

The licence server admin program helps you wade through the licensing red tape, but also enables you to work with floating licences easily.



and to be honest SourceSafe is a pretty poor product as SCM software goes. Its last release was with Visual Studio 6 in October 1998, and hasn't really moved on since then. To really put Surround SCM to the test, you need to compare it against Subversion, the open-source replacement for the Unix standard tool CVS. Sadly, it's when compared to this – a free tool – that Surround SCM becomes a bit of a house of cards.

There are three very important advantages to Subversion that Surround SCM 2 simply can't compete with. Firstly, Subversion uses Apache/ WebDAV as its file serving mechanism, which means it's a cinch to allow developers to work from home, even with authentication for security. Furthermore, to add flexibility, Subversion has a separate server system that enables people to tunnel into the Subversion server over SSH.

Secondly, Subversion has truly atomic commits. This is crucially important for teams larger than 20 or so people. If you've never used an atomic SCM program, it's designed to commit batches of updates instead of single files – no part of a commit takes effect on the server until all files have been committed. Consider the situation in Surround when person A has files foo.c, bar.c, and baz.c all checked out; person B has bar.c checked out after person A. Person B commits some changes and checks them back in. Person A then checks in foo.c, bar.c, and baz.c. Surround SCM will check in foo.c, then pause on bar.c and say, "you have a different

copy to the one on the server – what do you want to do?" It then offers person A some options. Now, while this is happening, person B (or C, D, E, F, G, and so on) checks out foo.c and bar.c – what do they have? They have a version of a file that has been changed by person A (foo.c), and a version of a file changed by person B (bar.c), which may not work together well.

As you can imagine, this is where the chaos begins, and why atomic commits are so much better. If the above example was replayed on Subversion, the last check out would retrieve the original foo.c, because person A's commit, and the new bar.c, which is the current best-available version, had not finished all files yet.

Subversion is of course completely free, saving you £500 or so in costs per developer. Naturally, this isn't much of a concern if you're not short on cash, but every little helps – the printed manual adds to the value, too. For that money you do get some nice extras, such as the attractive Surround SCM user interface, plus the cross-platform RapidSVN GUI for Subversion.

Put against SourceSafe, Surround SCM is an all-round better product available at approximately the same price. Put against Subversion, Surround SCM starts to look quite shaky, with only integration with TestTrack Pro, and support from Seapine holding it up. If you don't need help using your SCM software, then it's all down to features, features, features, and in this arena SCM is a bit of a lightweight.

Paul Hudson

PCPlus ratings

SEAPINE SURROUND SCM 2

Value: ●●●●●●●●●●●●●●●●

Features: ●●●●●●●●●●●●●●●●

Performance: ●●●●●●●●●●●●●●●●

OVERALL: ●●●●●●●●●●●●●●●●

INFORMATION

PRICE £335 (€285 ex VAT)
INFO www.sharp.co.uk
SUPPLIER www.planetmicro.co.uk
 0870 745 3555
WARRANTY Three years

SPECIFICATIONS

NATIVE RESOLUTION 1,280x1,024dpi
INPUTS D-Sub, audio
VIEWABLE ANGLE 170 degrees horizontal, 150 degrees vertical
PIXEL PITCH 0.264mm
RESPONSE TIME 20ms
CONTRAST RATIO 430:1
BRIGHTNESS 250cd/m²
WEIGHT 6.3kg

17in LCD MONITOR

Sharp LL-T17A4-B



It's black, it's basic, but this display boasts excellent picture quality.

forced to make do with the bare minimum again.

The Sharp LL-T17A4-B is typical of this trend. Shorn of any added finery, it makes no attempt to be anything more than a PC display.

Sharp hasn't even attempted to do anything clever with the design, opting for a plain, inoffensive black. There's also a shortage in terms of video inputs. With only a D-SUB on offer, you aren't left with much flexibility.

Still, if you're only paying out £335, you can't be too demanding. The one thing that you do want is good picture quality, and the LL-T17A4-B certainly brings you that. Belying its 250cd/m² brightness rating, it fires out a vivid, clear picture. You'll even need to turn

the brightness down to avoid burning out the brighter colours. Colours are consistent from corner to corner, and lose little definition even when you're viewing from an angle; we suspect that the specified viewing angles may be a little under-stated. If you're worried about your monitor keeping pace with faster applications, a 20ms response time should allay your fears.

The other feature of this screen that deserves credit is its menu system. Screen position, brightness/contrast and colour (cool, standard and warm) settings are all just a couple of button presses away. You may not even need them, as the auto set-up will satisfy all but the most demanding of you. This is typical of the professional approach that Sharp has obviously taken towards putting this display together. The trouble is, it just isn't that exciting. If you can put up with your current monitor for a couple more months, we recommend holding out until the end of the current component crisis, at which point you'll almost certainly get a bit more for your money.

Russell James

PCPlus ratings

SHARP LL-T17A4-B

Value ○○○○○○○○●●●●●

Features ○○○○○○○○●●●●●

Performance ○○○○○○○○●●●●●

OVERALL 7

It was only a year ago that manufacturers were piling as much functionality as they possibly could into their LCD monitors. USB hubs, fancy speakers, and even cameras were all tagged on in an attempt to add more value to displays. Sadly, those days are gone. Due to the world shortage in raw TFT panels, and the resulting upturn in prices, companies have been forced to cut costs in other areas to avoid shooting their prices up. This means that we're

INFORMATION

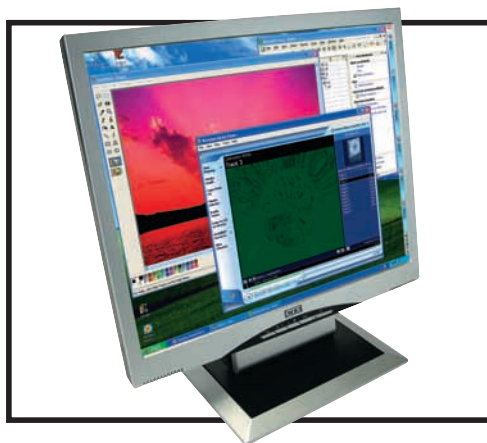
PRICE £316 (€269 ex VAT)
INFO www.ctxeurope.com
SUPPLIER CTX 01923 81 0800
WARRANTY Three years

SPECIFICATIONS

NATIVE RESOLUTION 1,280x1,024dpi
INPUTS D-Sub (wired-in), audio
VIEWABLE ANGLE 60 degrees horizontal and vertical
PIXEL PITCH 0.264mm
RESPONSE TIME 25ms
CONTRAST RATIO 450:1
BRIGHTNESS 260cd/m²
WEIGHT 6.1kg

17in LCD MONITOR

CTX S762A



Won't somebody send us an exciting monitor? The S762A is another simple option.

Like Sharp's offering, the S762A has very little in the way of extras. The only addition to the obligatory screen is a pair of stereo speakers, and these are only capable of very minimal volumes. When it

comes to video inputs, this display is even worse off than its rival. The rather lonely-looking D-SUB connector is wired in, meaning that if you break the cord, you're looking at replacing the entire monitor.

Specifications are very similar to those on the LL-T17A4-B. 260cd/m² brightness, a 450:1 contrast ratio, and a response time of 25ms are all average. On this occasion, at least, the figures do translate into real-life performance. The picture is far from awful, but it's

not as well-defined as with more expensive alternatives. You're also forced to make a choice between slightly washed-out colours and an image that's a little dull. We're equally disappointed with the viewing angles. We're not going to dispute the stated 160 degrees, but if you do stray that far, you'll find that the picture loses a lot of its clarity.

With CTX monitors, you're pretty much guaranteed a precise menu system, and that's what you get here. There's plenty for you to fiddle with, as well, including screen adjustment and a pixel smoothing function. As for colour, you can select 9300K, 6900K or a user-defined option if you don't like the auto setting.

£316 represents excellent value for any 17in LCD screen, and the S762A won't let you down. The fact is, though, that it's no better than a host of rivals, many of which have been around for months. We're beginning to despair of ever seeing a truly innovative monitor again. Is there anyone out there that can prove us wrong?

Russell James

PCPlus ratings

CTX S762A

Value ○○○○○○○○●●●●●

Features ○○○○○○○○●●●●●

Performance ○○○○○○○○●●●●●

OVERALL 7

We'd love to say that this CTX monitor is more interesting than the Sharp model reviewed above. We'd be delighted if we could tell you that it boasts several innovative features and a specification list that will make your eyes bulge. The truth is, though, that this simply isn't the case. This is another bog-standard display. It's only saving grace is its price. In our book, any 17in screen that costs less than £300 ex VAT has got to be worth a look.

INFORMATION

PRICE £41 (£35 ex VAT)
INFO www.showshifter.com
SUPPLIER Home Media Networks
 07980 807 207

REQUIREMENTS

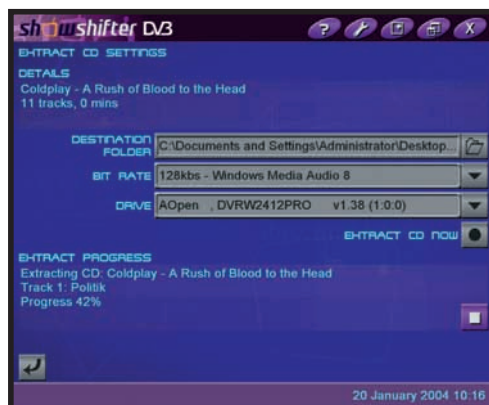
CPU Pentium III 800MHz or equivalent
RAM 64MB
OS Windows 98 or later
EXTRA Compatible TV tuner card

TESTED ON

CPU 2.8GHz Pentium 4
RAM 256MB
OS Windows XP HE

MEDIA ORGANISATION

ShowShifter DVB



It's a media centre without Media Center. What a wonderful idea.

limited by the components that you have installed in your PC. If you have the capabilities, you can make use of any of the program's main options – Television, Video Files, DVD, Jukebox, CD and Picture

Viewer. You access the lurid menus via the mouse, or via an RF remote for the full couch-potato experience. In this version, a Nvidia MPEG 2 decoder is included as standard, and Home Media Networks has extended the list of compatible TV tuners to include the latest Hauppauge PVR cards. There's extra support for DVB tuners, enabling digital broadcasts to be received and processed, while a new integrated EPG uses XML utilities to extract appropriate TV listings for your area.

It's criminal that ShowShifter doesn't get the respect it deserves. True, the software is still a little rough around the edges; Media Center beats it hands-down in terms of big-fonted prettiness. Plus, there's less automation in ShowShifter. The software doesn't easily auto locate files, and you have to nudge it along in the right direction. But then again Media Center's automated processes don't give you any room for fiddling if things go wrong. ShowShifter is less intuitive, but more flexible. Media Center has an AV-style minimalism but a limited design. It's possible to like both approaches, but for entirely different reasons.

If you want your PC to enter the media centre realm, ShowShifter is the best independent option. Microsoft may have the marketing muscle, but its refusal to sell its software as a boxed product can only be to ShowShifter's advantage. Ultimately, it all comes down to cost – £41 for ShowShifter (plus £115 for a WinTV PVR 250 card) versus £1,000-plus for a Media Center PC. No contest surely?

Dean Evans

With all the PR hoo-hah surrounding Microsoft's Media Center software, it's easy to forget that ShowShifter was quietly recording TV long before Redmond decided to hop on the bandwagon. Crucially, while the Windows XP Media Center Edition is only available on new 'Media Center' PCs, ShowShifter is available as a standalone product – the 15-day trial is a 20MB download from www.showshifter.com. Now at version 3, ShowShifter's functionality is only

PCPlus ratings

SHOWSHIFTER DVB

Value: 10/10

Features: 10/10

Performance: 10/10

OVERALL: 8

INFORMATION

PRICE £56 (£48 ex VAT)
INFO www.corel.co.uk
SUPPLIER Corel 0870 612 8527

REQUIREMENTS

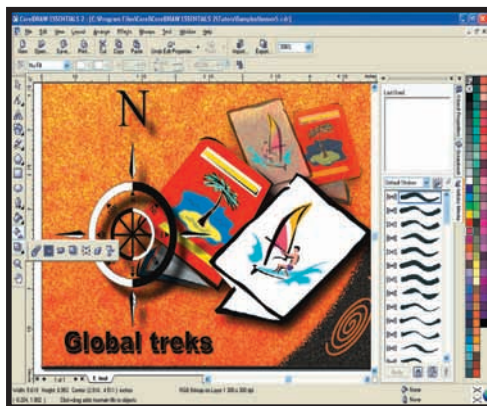
CPU 200MHz Pentium II or equivalent
RAM 64MB RAM
 (128MB recommended)
OS Windows 2000 or XP

TESTED ON

CPU 2GHz Pentium 4
RAM 512MB
OS Windows XP

VECTOR DRAWING

CorelDraw Essentials 2



Essentials 2 is a real graphics powerhouse at a stonking price.

On top of that, there's a collection of 100,000 clip-art images and photos, plus a multimedia training CD, 250 project templates to get you started, and 250 TrueType fonts.

We'll start with the bad news. Corel

PhotoBook isn't good. It's even more simplistic than Microsoft Picture It! and Ulead PhotoExpress, with a crude-looking interface and minimal image-enhancement tools. You'll almost certainly have a better image-editor already, so it's not worth the bother.

The Photo Album application is marginally better, but only because many users won't necessarily have an image-cataloguing tool. Those that do are likely to have a better one than this. It means paying extra, but Adobe

Photoshop Album is streets ahead for this kind of thing. The clip-art collection is worth having, but not necessarily worth using, while the interactive training CD lacks any kind of polish or even appeal.

Now that all of that's out of the way, we can concentrate on the good points. CorelDraw itself is a very good program, even in this limited form. You get object transparency, interactive drop shadows, gradient, texture and bitmap fills, distortions, blends and 3D extrusions – all the important stuff that you need to produce high-end vector art. You can open multiple documents at the same time, create multi-page, multi-column DTP-style layouts, and export images to EPS, PDF and practically any other graphics format you can think of.

In short, CorelDraw Essentials 2 is a wolf in sheep's clothing. The beginner-friendly slant and cheap and nasty add-on apps don't do it justice. The core application is a very, very good vector art package at a bargain price, and you should buy it for that reason.

Rod Lawton

Can't afford the cash for CorelDraw Graphics Suite 12 (reviewed page 70)? You can now get a taste of Corel's renowned vector drawing application for a whole lot less, in the form of CorelDraw Essentials 2.

Like its high-end stablemate, the Essentials package is a suite of programs; you get CorelDraw, (not the full version 12, but a slightly older, cut-down version); a photo editor called Corel PhotoBook; and an image organiser called Corel PhotoAlbum.

PCPlus ratings

CORELDRAW ESSENTIALS 2

Value: 10/10

Features: 10/10

Performance: 10/10

OVERALL: 8

1.6GHz PENTIUM-M TABLET PC

Toshiba Portege M200

It has been over a year since Microsoft launched the Tablet PC concept into a largely sceptical world, and while the under-powered and overpriced initial designs didn't bring the revolution that Bill might have been hoping for, it has at least survived. Now we're seeing what manufacturers have made of a year's worth of user feedback, and if this offering from Toshiba is anything to go by, this year could see a lot more people being drawn to the Tablet design.

First impressions are good, thanks to a convertible chassis, giving it genuine laptop functionality. A quick twist of the screen switches between notebook and slate form, so it's easy to live with even when you're sat at a desk. More impressively, there's a bit of genuine power in the engine room, with a 1.6GHz Centrino processor, 256MB of RAM and a 60GB hard drive. While this proves surprisingly sluggish compared to comparable notebooks – perhaps due to the profusion of Toshiba utilities that prevented us from running a full MobileMark test – it's a big improvement on its predecessors. It also makes it much easier to venture beyond note-taking in Microsoft Journal into more demanding applications. Remarkably, this even extends to gaming, thanks to the unusual presence of a 32MB GeForce FX Go. While this is hardly the gutsiest GPU around, a 3DMark2003 score of 511 is a first for Tablets, and further cements the M200's versatility.

While such enhanced entertainment potential is an admirable addition, the Tablet has always been a business machine. Any corridor warrior is going to be happy with the communications options. The standard Wi-Fi connection comes with dual-band capability, meaning that it's ready for both 802.11b and 802.11a networks – not tremendously useful on this side of the Atlantic, but nevertheless worth having. There are also Bluetooth and infra-red ports for more traditional wireless connectivity. Desktop use is all but indistinguishable from a conventional notebook thanks to the good-sized, robust keyboard, and decently responsive trackpad. The remarkably clear 1,400x1,050 screen is a joy to behold, even if it is a little too reflective in bright lighting. It's very handy for pen notation too, enabling precise writing, as well as a healthy amount of screen space on which to doodle.

One-handed operation is further soothed by the stylus, which is a good size and fitted with an eraser-tip



The Tablet PC was launched into a sceptical world, but if this offering from Toshiba is anything to go by, this year could see a lot more people being drawn to the design.



A spare stylus is an extremely innovative extra. If you lose your original, you'll be thankful for Toshiba's generosity.

and right-click button that makes short work of both desktop navigation and conventional note-taking. The extremely handy gyroscopic sensors also mean that the screen automatically rotates according to its orientation, although if you're not in a crowd-pleasing mood, there's a more conventional manual control that serves the same purpose. This is tucked away next to the standard fittings of a navigational d-pad and [Ctrl]+[Alt]+[Del] button, lying within finger range on one corner.

Four other pen-operated buttons sit along the top edge, although their default settings aren't very useful. Once you've loaded the supplied copy of OneNote they become shortcuts for copy, paste and undo, but this only works within the one program. We'd have preferred to see these functions across the board. The supplied utility for translating pen movements into program commands is similarly

troublesome, although handwriting recognition is surprisingly good. There's not much else to keep you from protracted penmanship. The battery lasts for nearly four hours with the Wi-Fi connection switched off, so you'll be mobile for a good while, and while your arm will probably be sagging under the 2kg weight before too long, it's still eminently portable. There's also the genius touch of a spare stylus, hidden behind

the battery, so if the original pen is misplaced, you're not doomed to solely keyboard operation.

Unfortunately, the desirability of this machine is hampered somewhat by an eye-watering price tag, which is hard to bear considering that it doesn't include an optical drive, or a case that stands much chance of keeping the screen fingerprint-free. Wired connectivity isn't fabulous either, with only two USB ports and no FireWire connection, meaning that it's more than likely that you'll have to splash out on a docking station. Despite all this, the sheer functionality on hand is fantastic. While it's certainly true that you can find cheaper Tablets and much cheaper laptops around, this is the first we've seen that makes a decent first attempt at combining the features of the two, while demanding very little in the way of compromise. We'll be watching other manufacturers with interest to see what their improvements amount to, but for the moment, this is the best Tablet around.

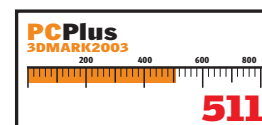
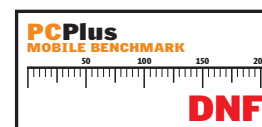
Jon Hicks

INFORMATION

PRICE £1,879 (£1,599 ex VAT)
DELIVERY £10 (£9 ex VAT)
INFO www.toshiba.co.uk
SUPPLIER Toshiba 0870 444 8944
WARRANTY Three years

SPECIFICATIONS

CPU 1.6GHz Intel Pentium-M-M
RAM 256MB
DRIVES None
GRAPHICS Nvidia 32MB
GeForce FX Go5200
SCREEN 12.1in TFT
SOUND SoundMAX Digital
SPEAKERS Mono
COMMS Bluetooth, 802.11b/a
WLAN, IR, 56K modem, LAN
PORTS 2 x USB 2.0, SD card,
RGB, Headphone, Mic
OTHER HARDWARE Optional dock
OS Windows XP Tablet PC Edition
OTHER SOFTWARE Toshiba Utilities,
Microsoft OneNote
SIZE, WEIGHT 295x249x33.2/36.9mm,
2kg



**The Portege line serves as
Toshiba's stable for Tablets and
highly mobile laptops alike.**

PCPlus ratings

TOSHIBA
PORTEGE M200

Value **1** 2 3 4 5 6 **7** 8 9 10

Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL **8**

PCPlus SUPERDISCS

→ The UK's best-value cover discs!

This month, we've got products from Acronis, Matchware and Alias Systems. But that's just the tip of the free software iceberg...



David Wiltshire
david.wiltshire@futurenet.co.uk

With online spending continuing to rise, why not earn extra cash with your own web shop? No product limits, plus three months free hosting and marketing courtesy of Shop In A Book. If you were lucky enough to receive a PDA for Christmas and want to keep data safe, take a closer look at NMS for PDA Professional 1.2.

You've probably seen 3D modelling software before, but not quite like this. Maya is a feature-packed program, so accomplished that it's regularly used for post-production on top Hollywood movies.

The SuperDVD offers additional content including MandrakeMove and PAL - Computer Surveillance System 2.2 worth £16.

Further products include Acronis PartitionExpert 2003 Personal Edition and Ashampoo Uninstaller 2002-2003. Enjoy!

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→ www.pcplus.co.uk/downloads/default.asp

The PC Plus website is your one-stop resource for thousands of amazing free downloads, from essential utilities to major full programmes. You're bound to find something that you want!

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Upgrade and save money



Save money on upgrades to the latest versions of our SuperDisc software

Complete SuperDisc listing

PRESENTATION TOOL:
AS SOLD FOR £27

MatchWare Mediator 5

CD 1

It takes a real level of attention to make the most of a presentation package. Years of watching dull corporate slideshows, all bar charts and bullet points, would be enough to put anyone off the topic. It doesn't have to be that way though. Mediator can create much more interesting projects.

PARTITIONING TOOL:
FULL PROGRAM

Acronis PartitionExpert 2003 PE

CD 1

Creating one partition for your operating system and applications, and another for data is often a good idea. PartitionExpert Personal is extremely well designed, and all the main functions are divided into three different wizards. You can create a new partition, resize or copy an existing one.

E-COMMERCE PACKAGE:
AS SOLD FOR £35

Shop In A Book

CD 2

Online spending continues to rise, big companies like LastMinute.com are making money, and individuals can earn extra cash on the web, too. If you have a business idea, why not open your own Internet store with Shop In A Book?

ENCRYPTION PROGRAM:
AS SOLD FOR £50

NMS for PDA Pro 1.2

CD 2

Pocket PCs are a great way to extend the reach of your desktop, especially for businesses. They're the most convenient way to record meetings, and to carry around important company data. The trouble is, that there's also no easier way to lose this information. NMS for PDA Professional can keep your information safe in several ways.

SPAM BLOCKER:
AS SOLD FOR £22

SpamEnd Pro 1.9

CD 2

When you first run SpamEnd, it scans your Outlook contacts and sent items, and adds them to a whitelist. These people will be able to send you emails without them being blocked. This scanning process happens regularly, to keep the 'good' list up-to-date.

MANAGEMENT TOOL:
AS SOLD FOR £27

Remote System Information 1.01

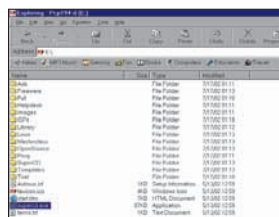
CD 3

Remote System Information installs simply on your PC. Run the program, and it checks every system on your network, recording such details as computer name, memory and processor speed.

Using your SuperDiscs



1 Insert the SuperDisc into your CD/DVD drive and it will autorun. Read the terms and conditions and click OK to proceed or Cancel if you do not wish to use the disc. If you click OK the interface will launch enabling you to navigate the CD using the PCPlus custom interface.



2 If the SuperDisc fails to autorun after you've inserted the disc into your drive, simply run the program D:/SUPERDISC.EXE (D: being the DVD/CD drive, or other drive letter if appropriate).



3 The PCPlus SuperDisc is designed to perform at its best using Internet Explorer 5.5 (or above).

Technical Support

Got a problem with your SuperDisc?

CONTACT PC PLUS CD AND DVD READER SUPPORT

Email pcplus.support@futurenet.co.uk

Tel **01225 822 743**

Website www.futurenet.com/support

Our support staff will do their utmost to help you, but cannot provide assistance for Linux or BeOS software, or extensive training on the software or on PC hardware, DOS or Windows.

Damaged or missing SuperDisc

MISSING SUPERDISC If you bought this issue of PC Plus but did not receive the discs, then see your newsagent.

DAMAGED SUPERDISC If in the unlikely event your cover disc is faulty, please call our reader support team on **01225 822 743**



David Wiltshire

david.wiltshire@futurenet.co.uk

David is responsible for sourcing the best programs each month on our fantastic SuperDiscs



<http://forum.pcplus.co.uk>

**UNINSTALLER TOOL:
AS SOLD FOR £14**

CD 3

Ashampoo Uninstaller

Ashampoo Uninstaller works by taking two snapshots of your PC, one before installing a new program, and one immediately afterwards. It then compares the two, recording all the changes in folders, the Registry, and configuration files.

**GRAPHICS TOOL:
FREE VERSION**

CD 2

Maya 5 Personal Learning Edition

You've probably seen 3D modelling software before, but nothing quite like this. Maya is a feature-packed program, so accomplished that it's regularly used for post-production on Hollywood movies (Gollum in Lord of the Rings being just one example).

**SECURITY SOFTWARE:
AS SOLD FOR £16**

DVD ONLY

Computer Surveillance System 2.2

Whether you want to monitor what your kids are doing on their PC, or just want to keep a closer eye on your own system, then Computer Surveillance System has the answers. Once installed, the program runs in the background, providing a host of monitoring options and tools.

**ESSENTIAL
FREEWARE**

AnalogX Packetmon 1
BadBlue PE
CD-WAV and MP3 Ripper 1.15
Clic 2.00.228
CodeJax 3
Comet VideoPhone 4
Computer Profiler 2.51
Copernic Meta Cryptainer LE Free Encryption Software 4.0.1.0
Disk Investigator 1.31
FreeProxy 3.6
IP Discoverer 1
MBizGroup FTP 1
MP3-WAV Converter Decoder 1.15
PeerGuardian 1.99.12.29.2003
PicPerk 4.2
Powerbullet Presenter 1.309
RAM Idle LE 1.4.6
SlickRun 3.0.0.1
TrueWallet 1.2
Virtual Pascal 2.1
WAV-MP3 Converter Encoder 1.15

**ESSENTIAL
RESOURCES**

MySQL 4
PHP 4.3.4
Apache HTTP Server 2
Mozilla 1.6
Mozilla Firebird 0.7
Netscape 7.1
Opera 7.23
Adobe Reader 6
RealOne Player 2
Macromedia Flash Player 7.0.14
Stuffit Expander 8
WS_FTP Pro 8

**ESSENTIAL OPEN
SOURCE**

Bochs 2.1
e107
FCKEditor
NetOffice
nget
phpMyAdmin
PiRC
Scintilla
TinyXml
TurboPower Abbrevia 3.04

ESSENTIAL LINUX

athcool 0.3.2
bluemoon 2.9
Bochs 2.1
ClanBomber 1.04
Delineate 0.5
Ethereal 0.10.0
fiPhoto 1.2
GLAME 1.0.2
Dot Htaccess generator 0.9
KSambaPlugin 0.5
LTTOOLS 6.6
MadrakeMove DVD only patchutils 0.2.26
Smoothwall Express 2
SoundTracker 0.6.7
TestDisk 5.1

**PROGRAMMERS'
WORLD**

C# Masterclass
C++ Masterclass
Delphi Masterclass
Visual Basic Masterclass
Wilf's Workshop

MASTERCLASS

Brickout (GBA Program)
Brick Command Centre (BrickCC) 3.33
Cygwin

**WAVEY'S WEB
SOFTWARE**

Ability Office 2002
MySQL 4
OpenOffice.org 1.1
StarOffice 7
Office Suite

TRIAL SOFTWARE

CRM Switch!
Mediator 7 Pro
PAL - Computer Surveillance System 3.2
QuoteWerks 3
Remote System Information 2
Seapine Surround SCM 2.1
ShowShifter 3
Stonefield Query Xtreme Suite 8.6 for .NET Windows Forms Zero Popul Killer 787 Copernic Agent Professional 6
iRider 2.09
FileMonkey 9.05
MemMonster 4.45
PerformanceTest 5
Beyond Compare 2.1
Double Image 5.00.0024
FotoTime FotoAlbum Pro 4.0.4.9
KS-Soft IP-Tools 2.2

LAB TEST SOFTWARE

MYOB Accounting 11
Simply Books

PDF ARCHIVE

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HELPDESK

This month's SuperDisc software tutorials



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WORTH
£12.99
EACH

**FULL PROGRAM
AS SOLD FOR £27**

MATCHWARE Mediator^{version 5}

REQUIREMENTS



Windows 98 or later,
60MB HDD

SKILL LEVEL



3 BEGINNER

Experience of event-driven programming would be helpful

SERIAL CODE



Not required

INFORMATION

SUPPLIER MatchWare
INFO www.matchware.net

RESTRICTIONS



None

Build interactive multimedia presentations for your desktop or the web, with this easy-to-use, event-driven programming tool

It takes a real level of attention to make the most of a presentation package. Years of watching dull corporate slideshows, all bar charts and bullet points, would be enough to put anyone off the topic. It doesn't have to be that way though. Mediator can create much more interesting projects.

Perhaps you've taken a bunch of pictures at a family wedding. You can use the program to build an electronic photo album, and if you've got video clips they can be included as well.

You could create an animated greetings card, or a multiple-choice test. Mediator can build Help files and tutorials for you, or demo movies

that you can just leave running.

As Mediator can export your projects in HTML, you can also think of it as a web site designer. It's never going to be the tool of choice for big business, but it's great for producing eye-catching personal sites.

For extra flexibility, Mediator also supports distribution of your projects via floppy disks or CDs. There's even the option to bundle everything into a single EXE file, suitable for emailing to friends and colleagues.

Easy to use

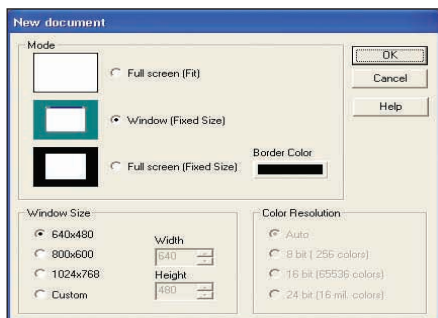
Normally getting to grips with features like these involves learning lots of complicated features, perhaps even

a scripting language. Mediator is an exception, however. You don't need to be a programmer to try it out.

Select 'Use Template Wizard' to create a new document when the program starts. Mediator comes with pre-built templates for product catalogues, slideshows, invitations, greetings cards, photo albums, videos and so on.

Each template has further options. Pick Greetings Cards and you can choose from Birthdays, Congratulations, Merry Christmas or Weddings, say. You even get precise details on customising them further, specifically set up so you can open and follow them in Wordpad.

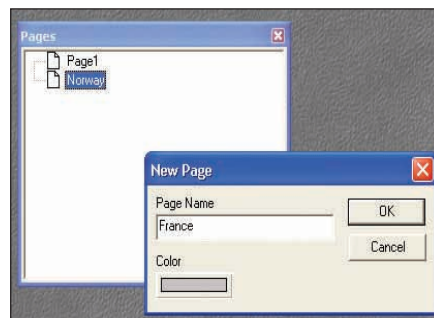
Your first multimedia masterpiece



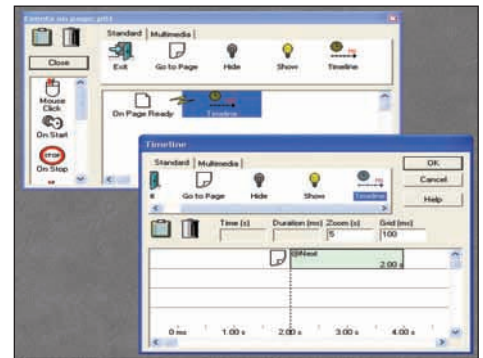
1 The simplest way to get started is via the Template Wizard (File|Wizard). If you want full control, there's no substitute for doing things yourself. Choose File|New, select Windows (Fixed Size), then choose a resolution. Click on 'OK' and a blank window will be created.



2 The empty window looks a bit dull, so open the Multimedia Catalogue, click on Backgrounds, then drag-and-drop one of the thumbnails onto your window. Now click on the Text tool in the toolbox, and draw a box over the window. Choose a large text size, and enter the caption 'Pick a holiday'.



3 This screen is going to point to favourite holiday photos on other pages, so we'd better create those pages now. Select View|Page List, then right-click in the list and select New. Add a couple of new pages, and give them meaningful names. We've called them Norway and France.



Most Mediator document objects can be customised through programmable events.

Pre-built templates like this video viewer mean you can quickly build an attractive multimedia presentation.



Upgrade to Mediator 7 Pro

If you like Mediator 5, just look at what version 7 can do

The latest Mediator includes dazzling new features like custom window shapes (no more boring rectangles), Flash support, a built-in FTP manager, and much more. Order before 31 April 2004 and it's yours for £224 (www.matchware.net). Please quote reference: M7PCPlus when placing your order.

www.matchware.net

If you need more assistance, there's a good Help file on hand. Mediator comes with five sample documents, so that you can immediately get a feel for what's possible. Open a file, then select Test!Run Document to see how it works. Close the document window when you're done.

Tweaking one of the examples is a good way to learn the program's basics. Mediator considers the items that make up your document to be 'objects', so right-click on one and select 'Properties' to see how it works.

A video window will have a file name property, for instance. Change its default setting to point to a video of your own, and you've immediately created your own project.

Of course, none of this explains how you get the objects to do anything useful. For that, you'll need to take advantage of another clever Mediator trick.

Event handling

Objects in Mediator aren't simply static blocks on the screen, displaying text or graphics. They can also respond to 'events', such as movements and clicks you make with the mouse. Select File!Open, and choose the Slide1.MD8 project for a good example (normally found in the C:\Program Files\Mediator5\Examples\Slides folder).

On the bottom-right of this screen is an 'Exit' button. Test the document, and you'll see it works as advertised: clicking on it ends the slideshow.

To see how and why this happens, right-click on the button and select Events. The resulting dialog box shows one event (a mouse click), and one resulting action ('Exit'). If someone clicks on the button, they will exit from the document.

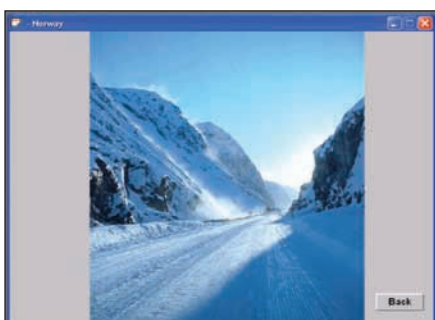
Scroll down the list of potential events to the left of this dialog for a full list of events you can customise.

There's a full list here, so you could perform one action if the right mouse button went down over the button, and another if it lifted up.

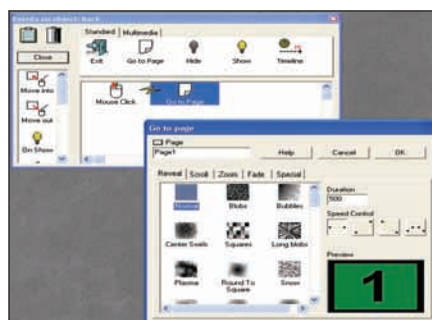
At the top of the dialog are several actions that your Mediator project can perform. Click on something, and your document can jump to the next page, play a sound, perform an animation, and much more.

To put the events and actions together, you simply drag-and-drop them onto the Events dialog. It's very straightforward, and by customising each action you can produce some surprisingly versatile presentations.

There's no real need to go this far immediately, though. In fact, there's plenty you can do in Mediator without even knowing that Events exist. Just install the program, and give it a try – you'll be producing high-quality multimedia documents within minutes. **PCP**



4 Click on Norway in the list, and the page will be displayed. Use the toolbox to add a picture, and point it to a matching graphics file on your PC. Add a button to the page, too, and give it the caption 'Back'. We need this to point us back to page 1, so right-click on it and pick Events.



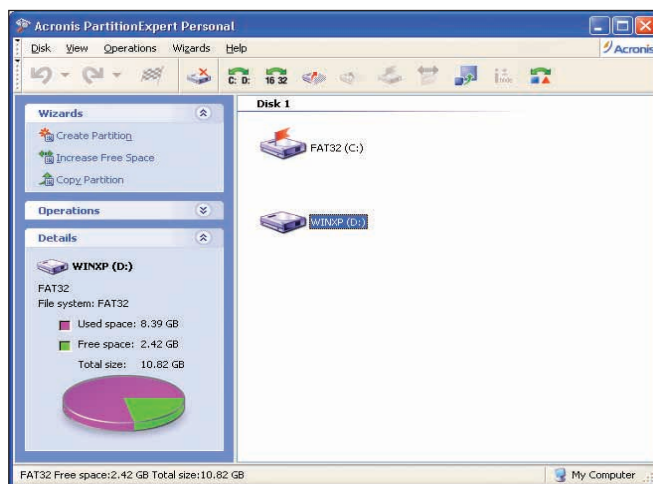
5 We want the button to respond when we click on it, so drag 'mouse click' from the left, and drop it into the centre. For the Action, drag 'Go to page' and drop it next to the event. Choose 'Page 1' as our destination, and pick one of the fancy transitions available if you're interested.



6 Click on Close, and choose Page 1 in the Page List. Add a couple of buttons, and use the Events dialog to point them at the France and Norway pages. Select Test!Run Document and try out the Norway page. If all is well, close the window, add a photo and button to 'France', and you're done.

Acronis PartitionExpert Personal

FULL PROGRAM



You can create and manage your own hard drive partitions without losing data with help from PartitionExpert Personal

REQUIREMENTS



Windows 98 or later,
15MB disk space

SKILL LEVEL



6 INTERMEDIATE
A friendly XP interface
makes partitioning easy

SERIAL CODE



Visit www.acronis.com/mag/pcplus-ape

INFORMATION

SUPPLIER Acronis
INFO www.acronis.com

RESTRICTIONS



None

Windows enables you to repartition your drive, but it's not exactly a simple process. Even if you can find out how to do it, the process will wipe your hard drive, and force the reinstallation of Windows and all your applications. Not very convenient then.

That's a pity, because dividing up your hard drive into separate partitions has a lot of advantages. You might recover wasted disk space by reducing your drives cluster size, for instance. You could install another operating system on a second partition, perhaps trying out Linux, or keeping an older version of Windows to hand.

Creating one partition for your operating system and applications, and another for data is often a good idea. Defragmentation of your drive will be much quicker if it doesn't have to move all your program and system files around. If you're infected by a virus that destroys the system partition

table, your data won't be affected.

PartitionExpert Personal gives you all these benefits, without the worry of losing any data. You don't have to be a file system expert, either. The XP-style interface means you'll be using the program immediately, and it avoids much of the jargon that usually surrounds this topic. Whenever the program refers to concepts like a 'logical partition', clear and concise help provides everything you need to know.

PartitionExpert Personal is extremely well designed, and all the main functions are divided into three different wizards. You can create a new partition, resize an existing partition, or copy an existing one.

The detailed Help file will answer any queries you may have. This also covers PartitionExpert 2003, so will demonstrate some features that aren't available in the Personal Edition. See the Upgrade information if you'd like to try these out. **PCP**

£
**UPGRADE &
SAVE
£££s**

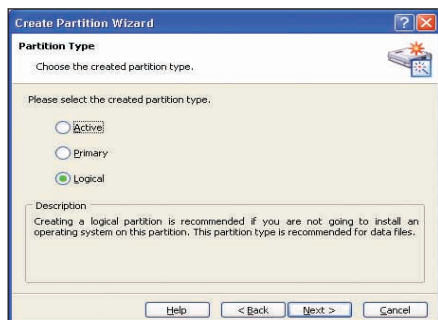
Upgrade to Acronis PartitionExpert 2003

Get more control with the full version of this powerful utility

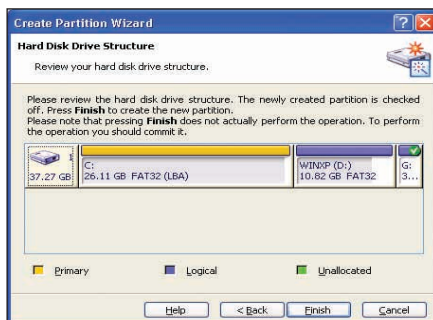
PartitionExpert 2003 has all the simplicity of the Personal edition, and adds manual options to provide extra control (delete, resize, move partitions and more). These extra goodies can be yours for \$39.99 (around £23), a big discount on the normal price of \$49.99. Read more at www.acronis.com/mag/pcplus-ape, but be quick – the promotion ends April 30 2004.

www.acronis.com

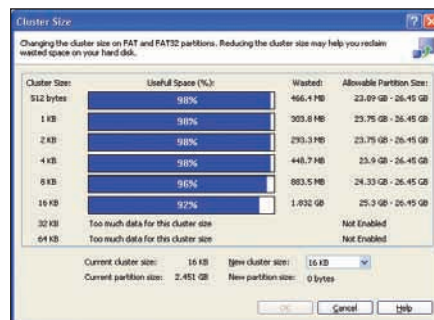
Create a new hard drive partition



1 Forget the nightmare that was FDISK, this program makes it a cinch to set up new partitions. Select the drive you'd like to use, then click on Create Partition. Choose the partition you want to use (if it's partitioned already), then select the file size and partition type.



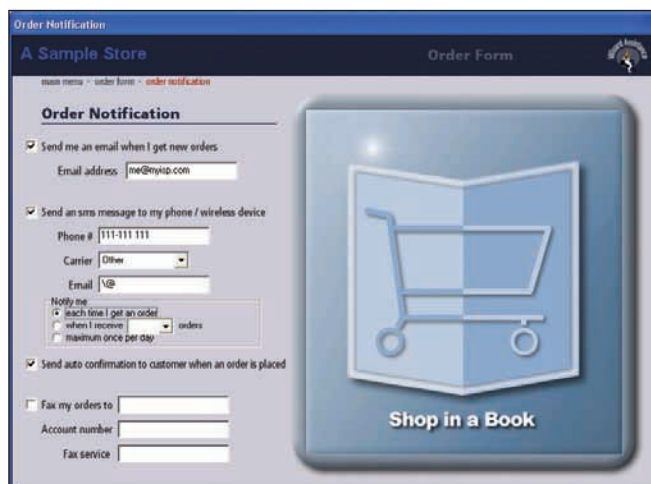
2 PartitionExpert understands that there's more to life than Windows, and it supports several different file systems (Linux Ext2, Ext3, ReiserFS and Swap, as well as NTFS, FAT16 and FAT32). The program can also assign a drive letter to the partition for you, along with a volume label.



3 PartitionExpert can also adjust your cluster size, handy for saving disk space if you have partitions already. Select View/Tools/Advanced, then click on Change Cluster Size. By cutting the cluster size on this system, we could recover around 1.35GB of wasted disk space.

Shop In A Book

FULL PROGRAM



You can now open your very own Internet store and claim free hosting with this feature-packed e-commerce package

REQUIREMENTS



Windows 98 or later,
100MB disk space

SKILL LEVEL



5 INTERMEDIATE
Far more straightforward
than any other e-commerce package

SERIAL CODE



Visit shopinabook.co.uk/pcplus.html

INFORMATION

SUPPLIER UKShop Limited
INFO www.shopinabook.co.uk

RESTRICTIONS



None

In the late 90s, people thought that simply opening an online store could make you an overnight millionaire. No.

After the dot-com crash, folks said e-commerce was dead, and Internet companies would never make money. Wrong again.

Spring 2004, and we're finally more realistic. Online spending continues to rise, big companies like LastMinute.com are finally making money, and individuals can earn extra cash on the web, too. If you have a business idea, why not open your own Internet store? It's a lot easier than you think, especially with Shop In A Book.

There's no need to worry about your lack of HTML experience. Enter some company details and information about your products (there's no limit on the number you can sell), and it generates the whole site for you.

Most other e-commerce packages stop there, but Shop In A Book is just

getting started. UKShop Limited will host your site, (this offer is valid for three months) and, more importantly, help you get sales.

Want to take credit card (Visa, Mastercard, Solo, Switch or debit card) orders online? Shop In A Book can help here, too. The company has a number of low-cost and simple options available, and you won't need to have a bank merchant account to start trading. There's even an SMS alert option, so you can be sent a text whenever an order is placed.

The real bonus with Shop In A Book, though, is the extra features to help market your shop. As well as being included in the Shopping Mall (www.ukshop.org), you can also target listings right down to a specific UK town or city (235 are available). With free inclusion in the search engine Suck A Mint (www.suckamint.com) as well, your site should soon be getting a steady stream of customers. **PCP**

£
UPGRADE & SAVE
££££

Upgrade to a full hosting package

Get cheaper hosting and a free domain name with these great deals

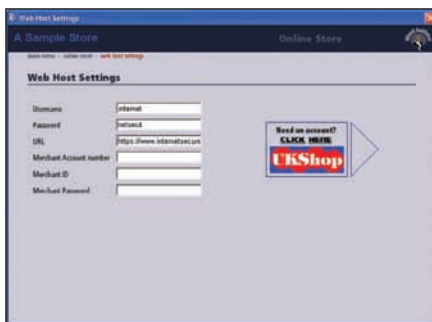
Want to extend the free three months hosting period? Upgrade to the 12 month package before 18 December 2004 for only £100, 20 per cent off the regular £125 price. Buy before 18 June and it's only £75. Make your mind up before 18 April and you'll get the £75, plus a free .co.uk domain name. Visit shopinabook.co.uk/pcplus.html for the details.

www.shopinabook.co.uk

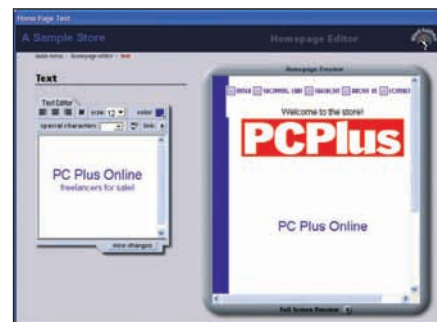
Setting up your own web store



1 Registering at www.shopinabook.co.uk/pcplus.html will get you a license key to unlock the software, and claim your free hosting. To use it, launch the program and click on Store Information Menu. Choose UKSHOPS as your web host, and enter your key in the box. Click on Validate, and the key should turn green.



2 When registering for free hosting you'll need to choose a user name. This will be used as your store name, so choose wisely. You'll also need to choose a password (maximum of 8 characters) and this can't be the same as the user name. Once your choices have been confirmed by UKShop, enter them at Online Store!Web Host Settings.



3 Now get to work configuring your store. Use Main Menu/Product Catalog to enter details of everything you're selling, while Homepage Editor manages the store's look and feel. Main Menu/Online Store/Publish Store puts your work online, and includes a link so you can see how it looks in a browser.

FULL PROGRAM AS SOLD FOR £50

NMS for PDA Professional 1.2



Keep your PDA data safe from unauthorised access and prying eyes, by installing this sophisticated encryption program

REQUIREMENTS



A PDA running Pocket PC 2002, an ActiveSync connection from your desktop, Windows 98 or later

SKILL LEVEL



3 BEGINNER
Hassle-free security, requires no special knowledge or experience

SERIAL CODE



Not required

INFORMATION

SUPPLIER New Media Security Ltd
INFO www.newmediasecurity.com

RESTRICTIONS



Only runs on Pocket 2002

Pocket PCs are a great way to extend the reach of your desktop, especially for businesses. They're the most convenient way to record meetings, and to carry around important company data. The trouble is, that there's also no easier way to lose this information. Whether you leave your PDA behind on a table somewhere, or it gets stolen, the end result is identical. Your confidential data isn't confidential any more.

NMS for PDA Professional keeps your information safe in several ways. It prevents access to data on your Pocket PC until you've entered a password. This can be up to 25 characters in length, including letters and numbers, and is thus far more secure than a four-digit PIN. NMS can encrypt all the data held on your memory cards. Encryption and decryption happens transparently in the background, without you having to do anything

else. Just use the PDA as normal, and your files are protected. NMS for PDA also secures the ActiveSync connection to your PC. This means that only PCs with NMS for PDA will be able to connect to your Pocket PC.

In order to install the program, you'll need a PDA running Pocket PC 2002 (see the upgrade details for Pocket PC 2003 support). New Media Security's list of supported PDAs includes the Compaq iPAQ 3700, 3800 and 3900 series, HP iPAQ HP5400, HP Jornada 560 series, Dell Axim X5, Fujitsu-Siemens Pocket Loox, Toshiba E570 and Panasonic CF-P1 Toughbook.

ActiveSync must be installed on your PC (you'll find it on the NMS for PDA menu). If your PDA already has password protection, remove it before starting this installation. Once set up, NMS for PDA is maintenance-free. Just use your PDA as normal, while the program works in the background to keep your data safe. **PCP**

**UPGRADE
NOW**

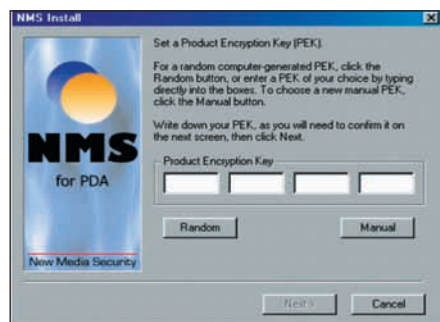
Upgrade to even tighter security

If you like NMS for PDA, just look at what else is available

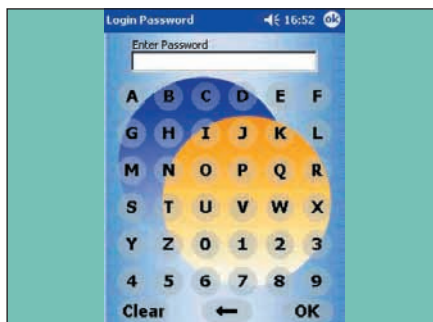
The latest version of NMS for PDA supports Pocket PC 2003 devices, and offers faster log-in and encryption (if you want any more power, check out the more powerful Enterprise Edition). Don't have a Pocket PC? Other tools in the range protect your laptop, encrypt emails, CDs and more. Prices range from £25 to £90. You can read more at the New Media Security site: www.newmediasecurity.com

www.newmediasecurity.com

Locking down your Pocket PC



1 During installation, NMS for PDA will ask you to enter a key. This isn't a registration key, but rather a 16-digit value that's used as the basis for all future encryption. Unless you want to share cards between several PDAs, we'd recommend letting the program generate a random key.



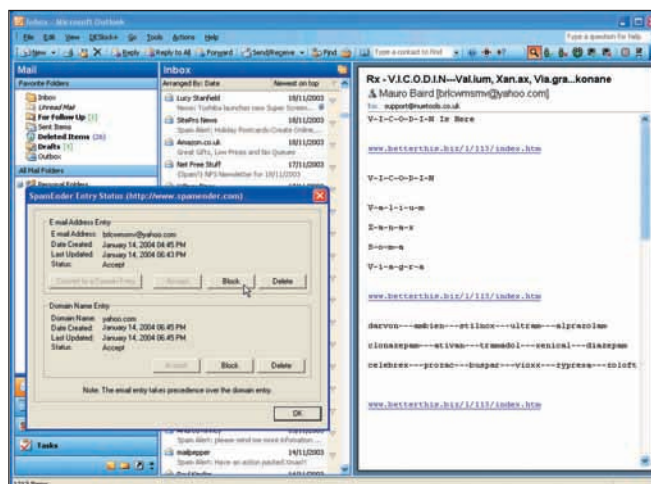
2 After installation, soft reset the Pocket PC and you'll see the NMS for PDA Log-in screen. There is no password right now, so just tap on OK and you'll be asked to change your password. Enter a new password that's between 4 and 25 characters in length, then re-enter it in the Confirm box.



3 If your Pocket PC contains a storage card, you'll be asked if you want to encrypt it. Tap 'Yes' unless you want to share the card with other devices. Select Start|Settings|System|NMS for PDA for more useful options, and browse the PC-based documentation for advice on using them.

FULL PROGRAM AS SOLD FOR £22

SpamEnd Professional 1.9 for Microsoft Outlook



Why be satisfied blocking 80, 85, or even 90 per cent of spam when you can get rid of it all? SpamEnd has all the answers

REQUIREMENTS



Windows 98 or later.
Email client: Microsoft Outlook 97, 98, 2000, 2002, XP. 4MB disk space

SKILL LEVEL



5 INTERMEDIATE
It's one of the simpler spam-blockers around

SERIAL CODE



Select Tools\SpamEnd Options\Register, enter Future Publishing as the Registration Name, and 14073502zv18-gl791F-4987 as the Registration Code

INFORMATION

SUPPLIER Evolian Software
INFO www.spamender.com

RESTRICTIONS



None

The typical spam blocker uses three or four different techniques to keep your Inbox clear. This would be impressive if they weren't so prone to failure.

You can try using black lists that block domains that are known to send spam. But the spammers keep moving, so these never work for long.

Detecting spam by looking for particular keywords helps for a while, until spammers find ways to break up the message text (via.gra, c-a-s-i-n-o).

You need to keep your Inbox clear, and still some spam gets through. If you agree that this isn't good enough, then let SpamEnd block the lot.

When you first run SpamEnd, it scans your Outlook (not Outlook Express), contacts and sent items, and adds them to a whitelist. These people will be able to send you emails without them being blocked.

This scanning process happens regularly, to keep the 'good' list up-to-

date. SpamEnd also adds anyone you email to the 'good' list, on the reasonable assumption that you'll want to get a reply.

When you receive an email from someone not on the 'good' list, they're automatically sent a challenge email, with a request that they reply. Spammers who don't have a valid return address won't see the challenge, so they'll go on the 'bad' list. Everyone else who replies to the email will automatically go on the 'good' list, and you'll get to see their messages.

Sometimes it's more complicated than that. Place an order with Amazon, for instance, and you'll want to receive the email confirmation, but automated messages like this won't reply to your challenge email. To solve this, there's also the opportunity to manually add particular addresses, or entire domains to the 'good' list. That way these trusted sources will get through, and only the spam will be blocked. **PCP**

UPGRADE NOW

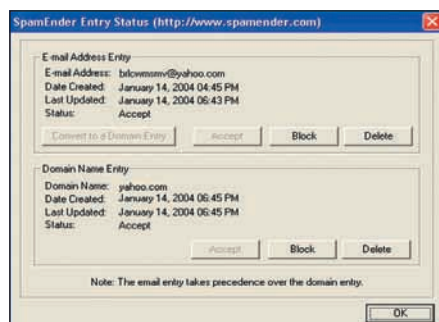
Upgrade for more spam-blocking versatility

SpamEnd Professional is just one of several Evolian spam killers

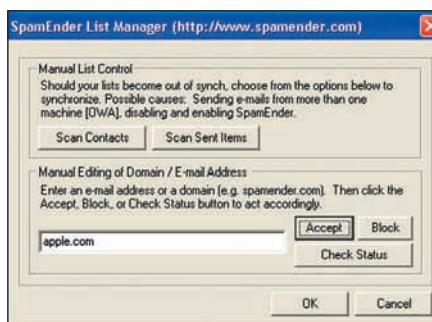
Not using Outlook? Evolian is soon to release SpamEnd UC, which works with Outlook Express, Eudora and Incredimail. There are also versions of SpamEnd for home and business use, and new features are added on a regular basis. Prices start at \$19.95 (around £11), and everything you need to know can be found at www.spamender.com.

www.spamender.com.

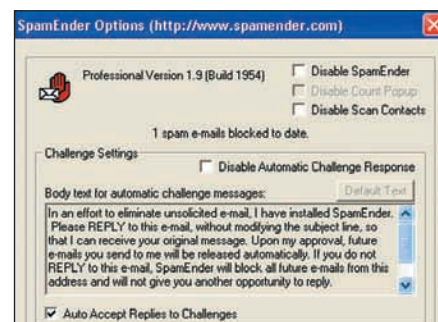
Sayonara, spammers



1 SpamEnd builds a whitelist for you, which includes contacts whose messages will always be accepted. If you prefer to make the decision yourself, highlight a message, select Tools\SpamEnd Message Tools\Check Sender Status, then either block (or accept) the address, or whole domain.



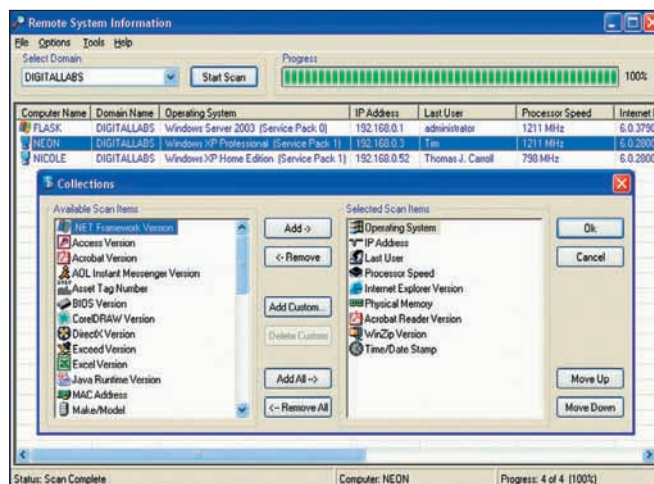
2 When you buy something online, or register at a site, they'll probably send you an email confirmation. The SpamEnd challenge email system means you may never see this, so it's wise to manually add domains (Tools\SpamEnd List Manager, type your domain and click 'Accept').



3 Click on Tools\SpamEnd Options for more useful settings. Here you can personalise the challenge email text, or disable it altogether. Turning off 'Auto Accept Replies' gives you more control of who reaches the 'good' list, and there's even a signature option for outgoing mails.

FULL PROGRAM AS SOLD FOR £27

Remote System Information 1.01



Track operating systems and application version information across your network with this simple-to-use management tool

REQUIREMENTS



Windows NT, 2000 or XP,
1MB disk space

SKILL LEVEL



5 INTERMEDIATE
Easier to use than most
tools of this type

SERIAL CODE



Not required

INFORMATION

SUPPLIER Digital Labs
INFO www.digitallabs.net

RESTRICTIONS



None

Network management is a tricky business. There's plenty of complex technologies to learn, and you need to become an expert in the parts of Windows that the rest of us never see.

No matter what you say, users will install new programs, and update key components such as Internet Explorer. Understanding what's running on each PC is the key to rolling out new software, but checking every system by hand is a tedious business.

That's why Digital Labs developed Remote System Information, a management tool that you can install simply on your PC. Run the program, and it checks every system on your network (no client applications required), recording such details as computer name, memory and processor speed. Remote System Information also records the version of Internet Explorer, Acrobat Reader and WinZIP that you have installed.

The program can scan for the .NET Framework, Access, AOL Instant Messenger, the BIOS, DirectX and a whole lot more. Curiously these aren't all used by default, but it's easy to add them later (Options/Collections/Add All).

Remote System Information collects much of this information via the Registry, but this may not always be possible. The Remote Registry service is available on Windows XP Professional, for instance, but not the Home version. If you have lots of XP Home systems, then expect to see 'Registry Unavailable' instead of most application version details.

Collecting this information is easy, but you also need to save it for reference later. Remote System Information enables you to export it in a CSV format, which can be viewed later in a spreadsheet. With all this configuration data at your fingertips, your network management tasks will become a whole lot easier. **PCP**

**UPGRADE
NOW**

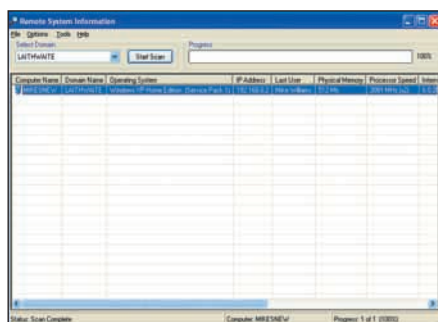
Upgrade to Remote System Information 2

Collect more system data with the latest version

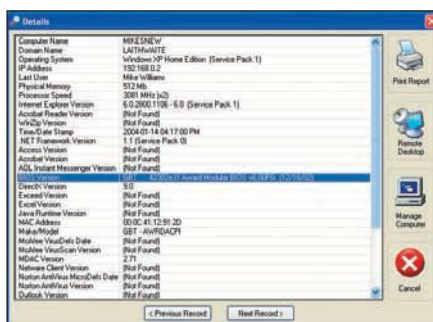
Install the latest Remote System Information and you can check version details for CorelDRAW, WordPerfect, Quattro Pro, McAfee VirusScan and more. There are new custom software and Hotfix scan items, with a new Export to Excel report option. Cost is \$49.95 (around £27), and you can order it at www.digitallabs.net.

www.digitallabs.net

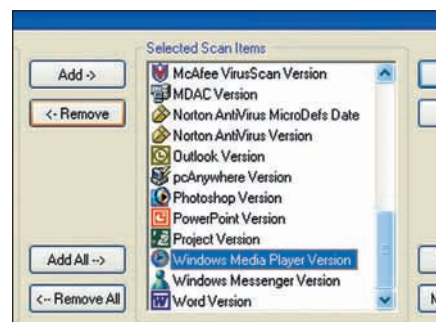
Hassle-free network inventory



1 Running an inventory of your network doesn't get any simpler than this. Install Remote System Information on a PC, launch it, choose the domain to examine (if there's more than one), and click on Start Scan. The program will check the domain and display details on any PC it finds.



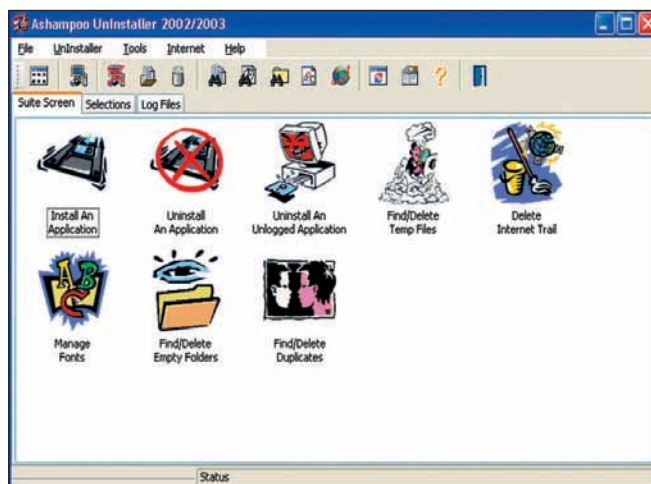
2 The spreadsheet-like display is clear enough, but it could mean lots of horizontal scrolling if you want to view the full report. Double-click on a PC to see a long list of all its details. There are also buttons here to access the PC via Remote Desktop, or open the Manage Computer applet.



3 Remote System Information checks lots of details, some of which may not be of any interest to you. Select Options/Collections, and add other scan items that may be useful, or remove any that seem to be irrelevant. If you're not sure, start by adding them all, and browse through your results.

FULL PROGRAM WORTH £14

Ashampoo Uninstaller 2002 – 2003



Get rid of all that clutter on your hard drive, speed up your PC, and improve your system's stability with Ashampoo Uninstaller

REQUIREMENTS



Windows 98 or later,
10MB disk space

SKILL LEVEL



6 INTERMEDIATE
Nothing complicated here, but be careful you don't delete anything important

SERIAL CODE



Select Internet, Get Free Full Version Key within the program

INFORMATION

SUPPLIER Ashampoo
INFO www.ashampoo.com

RESTRICTIONS



None

Software developers aren't renowned for their language skills, and it doesn't take much PC experience to see why. Who else would think that 'uninstall' means 'remove random bits of an application, but leave the rest', for instance? Or, that a 'temporary file' could last forever?

You may not think the junk left after removing an application really matters, especially if you have a large hard drive, but it does. Having lots of leftover files on your PC can slow down your PC, increase the chance of crashes or conflicts, and make defragment take much, much longer.

Ashampoo Uninstaller works by taking two snapshots of your PC, one before installing a new program, and one immediately afterwards. It then compares the two, recording all the changes in folders, the Registry, configuration files, file and file versions.

The program keeps a record of all the changes made by your new

application. Use Ashampoo Uninstaller if you want to remove it, and every byte will be wiped from your system.

This alone is enough to make Ashampoo Uninstaller a must-have tool, but it's got plenty of other useful spring-cleaning features. With a few mouse clicks you can find and delete temporary files, duplicate them, and also empty folders. It's a great way to tune your PC, but be cautious; some applications may create empty folders for use later. Deleting them may also produce problems. If in doubt, leave your files and folders as they are.

Bonuses include a 'Delete Internet Trail' option, which helps you view and delete Internet Explorer history and cookies. There's even a Font Manager, which lets you display and remove unnecessary fonts. As long as you're careful not to remove fonts that any of your programs are using, it's another good way to speed up Windows and many of your applications. **PCP**

£
UPGRADE &
SAVE
££££

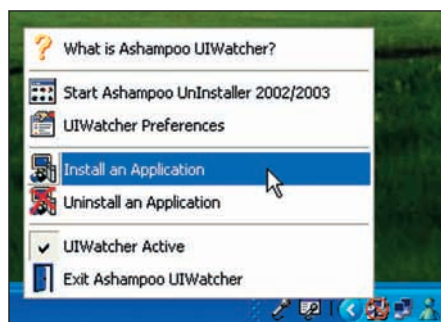
Upgrade to Ashampoo UnInstaller Suite Plus

Get the latest Uninstaller at an astonishingly low cost

Now called Uninstaller Suite Plus, the program includes extras like protection from potentially dangerous email attachments, and control over your PC's start-up programs. Normally around £27 if bought new, the upgrade is yours for 10 Euros (about £7). Point your browser at www.ashampoo.com/shop/0303/upgrade for more details.

www.ashampoo.com

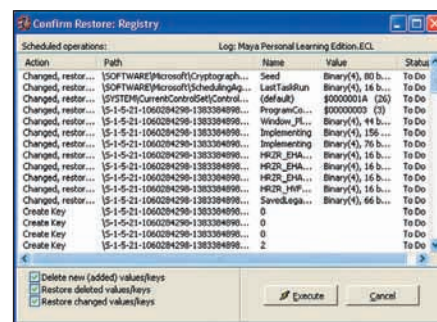
Recording your installations



1 By default, Ashampoo adds an icon to your system tray. The next time you want to install something, right-click on the icon and choose 'Install an Application'. Find your set-up program, then Ashampoo takes a snapshot of your current system set up. This takes a while, so be patient.



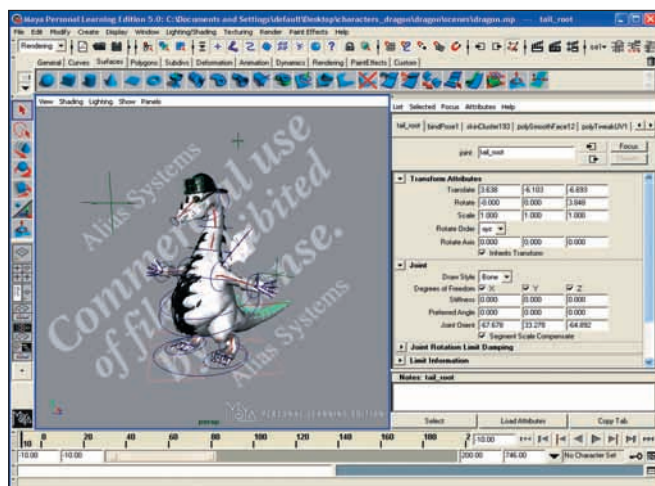
2 Once the snapshot is complete, you can continue with the set-up program. When this has finished, Ashampoo will pop up an 'Installation complete' message. Start and close your new program, give it a log name you'll remember later, and click on the 'Save Installation Log' button.



3 If you want to remove the new program later, launch Ashampoo Uninstaller, select 'Uninstall an Application', and choose the changes that you want to be restored (Registry/Files/Folders and System Files). You'll see a list of all the restorations to be made, before they're carried out.

FREE VERSION

Maya 5 Personal Learning Edition



Enhance your creative skills by experimenting with 3D models and animation with this industry-strength graphics tool

REQUIREMENTS



Windows 2000
Professional w SP2,
Windows XP
Professional, Netscape
6 or IE5 or later, 512MB
RAM, 450 MB disk space

SKILL LEVEL



8 ADVANCED
Knowledge of 3D
graphics and animation
will be a great help

SERIAL CODE



Visit www.alias.com/eng/login/enquiries/ple_unlock_m50/index.html

INFORMATION

SUPPLIER Alias Systems
INFO www.alias.com

RESTRICTIONS



None

You've probably seen 3D modelling software before, but nothing quite like this. Maya is a feature-packed program, so accomplished that it's regularly used for post-production on Hollywood movies (Gollum in Lord of the Rings being just one example). Maya Personal Learning Edition is virtually identical to its commercial cousin, so there's no better way to explore your 3D creativity.

You could start by creating 3D models. Maya supports polygon modelling, NURBS to create smooth curving surfaces, and sub-division surfaces for high-level surface editing.

Your model may look bland, but Maya also provides lots of rendering features. You can position lights to set up your scene, and add colour, shading and textures. Multiple renderers are available, and the results can be output in a variety of graphics formats.

Bored with static objects? Maya's support for Dynamics uses physics to

simulate natural forces, making it easy to create tumbling dice, or flags moving in a breeze.

There's plenty of other sophisticated animation techniques, too. Maya lets you create a skeleton to set up your character, skinning to add a modelled surface, and forward and inverse kinematics to move it around.

Although Maya is easier to use than some of its competitors, there's still an enormous number of features to explore and learn. Fortunately, the documentation is truly excellent, including several movies that make short work of explaining key points.

Maya's Help system is based on Java, which means you need to be aware of one issue when launching the program. If you have a software firewall in place, it will report that 'java.exe is listening for connections from other computers'. Your firewall must allow this for the Help documents to be displayed on your PC. **PCP**

**UPGRADE
NOW**

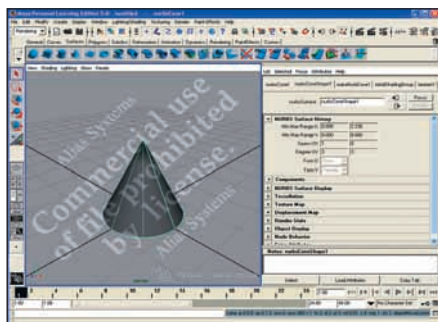
Upgrade to Maya Complete

Tired of that annoying watermark? Here's how to make it go away

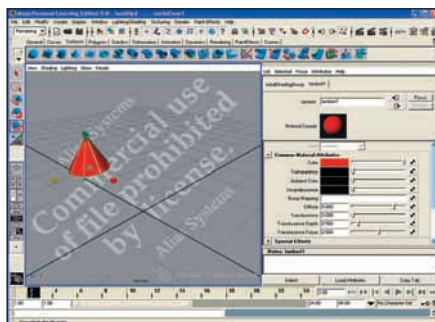
When using Maya Personal Learning Edition in anything other than wireframe mode, you'll see a large 'not for commercial use' message displayed over the screen. Upgrading gets rid of this, adds support for multiple CPUs, more rendering options, and other extras. Prices start at £1,499, and you can read more at www.alias.com.

www.alias.com

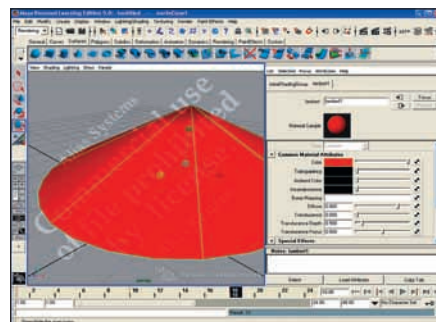
The two-minute guide to Maya animation



1 Maya is a complex program, but even keyframe animation can be set up in a few minutes. Start by clicking on the Surfaces tab, then select the blue Cone tool. A small wireframe cone appears. Select ViewFrame All to zoom in a little, then Shading/Smooth Shade All to shade your object.



2 Select Lighting/Shading/Attributes, and choose a more appealing colour. Now select the Move Tool, far left of the screen. Move the mouse cursor over the box within your object, and drag it to a new position. Repeat with the scale tool, perhaps, then press 'S' to set a key frame.



3 That's the first point in your animation, as represented by the time line at the bottom of your screen. Click on frame 8, move and scale the object again, and press 'S'. Repeat for frame 16, then click the Play button. Maya fills in the frames and creates a smooth, flowing animation.

FULL PROGRAM AS SOLD FOR £16

PAL – Computer Surveillance System 2.2



If you're always wondering exactly what's being done on your PC, you can now find out with Computer Surveillance System

REQUIREMENTS



Windows 98 or later,
5MB disk space

SKILL LEVEL



3 BEGINNER

The program does all the difficult monitoring work for you

SERIAL CODE



Not required

INFORMATION

SUPPLIER PAL Solutions
INFO www.palsol.com

RESTRICTIONS



None

Whether you want to monitor what your kids are doing on their PC, or just want to keep a closer eye on your own system, then Computer Surveillance System has the answers. Once installed, the program runs in the background, providing a host of monitoring options and tools.

Hold down the left shift key then press [F12] to see the available features. You can double-click on the 'PAL – CSS' desktop shortcut, but if you're hoping to run the program secretly, it's wise to delete this immediately.

By default the program enables a key logger, recording every key press on your system into its log files. Click on the General tab to see or change the folder where these logs will be stored (you can also use a hidden folder, making it harder for others to spot the program).

Key presses won't tell you everything, so the Computer Surveillance System also saves

regular screenshots. These are only taken every six minutes initially, but you can increase the frequency under the Screenshots tab. Don't make the grab interval too short, though, or the extra disk activity will become obvious to other PC users.

Internet monitoring features can create a list of blocked URLs. The Computer Surveillance System will prevent access to any of the sites you name (up to a maximum of 50).

You may also build a list of up to 50 'banned keywords'. The program monitors what's being typed on your system, and logs an alert whenever a particular keyword appears. You could check what your kids are entering on search engines, or whether employees are discussing company secrets.

Finally, if you're worried that someone will spot you browsing through the logs, the program periodically emails you all the information that it has collected. **PCP**

**UPGRADE
NOW**

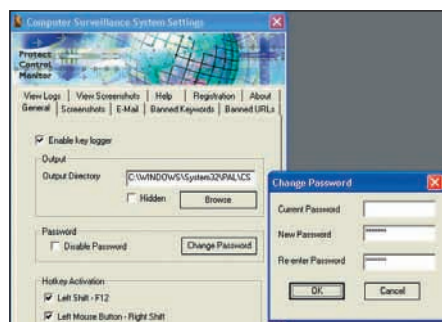
Upgrade to the latest in security software

Get even more PC protection with the full PAL range

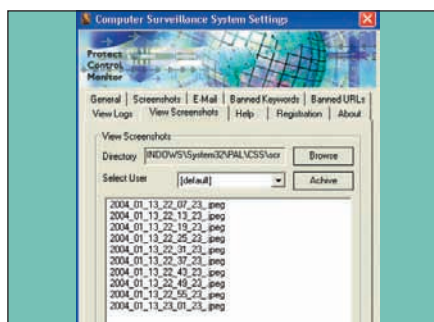
Computer Surveillance System is just one product in a range of handy security tools. Others include Spy for even more PC monitoring features, a dedicated key logger in KeyLog Pro, Evidence Eliminator to wipe away your Internet tracks, and Popup Eliminator for killing web pop-ups. Find out more on any or all of these at the PAL web site, www.palsol.com/products.html.

www.palsol.com

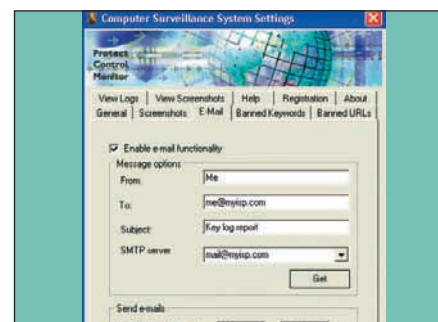
Monitoring your PCs users



1 Once installed, your copy of Computer Surveillance System will immediately begin recording PC activity. Unless someone disables its settings, of course. To prevent this, press [Left Shift]+[F12], click on General|Change Password, and protect the program with a password.



2 The data collected by the program is stored in various log files. You can view these directly in Explorer, as long as your system is configured to display hidden files and folders. Alternatively, click on the View Logs or View Screenshots tabs, select a file, then click on View to see it.



3 If frequently poking around the target PC will look suspicious, perhaps receiving reports by email would be better. Click on the 'E-Mail' tab, then check 'Enable email functionality'. Enter your email account details and server, and choose how (and how often) you want reports to be mailed.

PCPlus WAVEY'S WEB

→ Your expert guide to the most essential sites



Davey Winder

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Davey Winder is an award winning technology journalist and a founder member of the Internet Society of England

Microsoft has made itself an integral part of your office. Davey Winder has been investigating the best alternatives

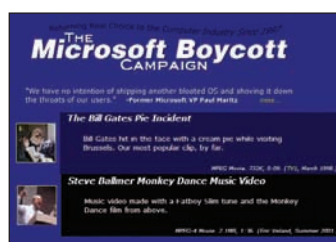
Like it or loathe it, Microsoft is here to stay. Of course, that doesn't mean that it 'has' to stay on your computer. An increasing number of individuals are discovering that they can do things differently, even in the 'Microsoft neighbourhood' that is office computing. It isn't easy, and it will change the way you work, but if you're fed up with security holes, patches, ever more complex upgrade paths, and the thought of adding your money to the Microsoft coffers, it is possible. Just make sure you know why you're doing it before you begin!



GNOME

www.gnome.org

A good desktop is one of the things that switchers from Windows complain about. Unless that is, they've been beguiled by the GNOME environment. This has smooth text rendering, great accessibility support, and an intuitive UI. But there's more to GNOME than this alone, and the web site reveals everything that the user, developer or casual bystander will ever need. GNOME Office (www.gnome.org/gnome-office) is a superb collection of free apps, and the user can choose which one they want in any particular category. PC Plus readers will be most interested in GnomeBasic (www.gnome.org/projects/gb), and should certainly check out the rich resources available in the developer's section.



Microsoft Boycott Campaign

www.msboycott.com

Don't be put off by the confrontational image that the 'boycott Microsoft' theme brings to this site. It actually remains one of the best sources of information for anyone looking to move away from the Microsoft way of doing things. There's good news feeds, links to alternatives for the office and beyond, and as you might expect, a highly active and vocal community forum. The archived lists of 'anti-Microsoft' web sites in all their guises is second to none, and a lot of help can be scavenged from them. But best of all, if you head off to the media page, they also have the video of that infamous Steve Ballmer 'monkey dance' and Bill Gates getting a custard pie in the face. Well, it amused me...



Linux Help

www.linuxhelp.net

Everything in computing costs a mere fraction of what it did 10 years ago – except the software of course, which seems to be on an ever-upward spiral. Linux is the OS of choice for the open source movement, where programming skills are shared, programme development is a community affair, and where much of the resulting software comes free. Switching to a Linux-based office isn't straightforward. There are lots of things that can go

wrong, which is why you need support and guidance. Typing linux + help into Google will give you plenty of options (over 8 million in fact), and any of the top 10 will be useful. However, the top ranking Linux Help site is one of the most useful.



mySQL

www.mysql.com

At the heart of every office, whether big or small, home or enterprise, there will almost certainly be a database. I know that, and you certainly know that. So where does moving away from Microsoft leave the SQL devotee? The answer is with mySQL, the world's most popular open source database, with more than 4 million installations and over 30,000 downloads every day. The official site is the best for downloads, tools, advice and information. Once again, all mySQL products are available under open source licenses, but you can also buy commercial licenses if your application isn't suited to the open source way of doing things. Other databases, and much more besides, can be found at the Sourceforge (sourceforge.net) depository. In addition, the Open Source Developers Network (www.osdn.com) rounds up all the development news that you might ever need. **PCP**

FILES ON SUPERDISC



Most of the programs discussed here appear on this month's cover disc in the Wavey's Web section.

Site of the month



OpenOffice

www.openoffice.org

Yes, there are plenty of alternative office suites to choose from other than the Microsoft behemoth. Think Free Office (www.thinkfree.com), Star Office (www.sun.com/software/star/staroffice) and Ability Office (www.ability.com) are the main contenders. However, conduct a random poll among Linux converts and the chances are that most will point you in the direction of OpenOffice. Downloaded by more than 16 million people, and still free, it really does compete head on with Microsoft Office in terms of real world usability and compatibility. The user interface is familiar, all the applications you'd expect are there, and you can work happily on your Microsoft Office format documents. It runs on all the major platforms, provides access to all data through open-component-based APIs and an XML-based file format, and did I mention, IT'S FREE.



Reader appeal

If you know of an essential web site, or are involved in a worthy contender for the title, please let me know at wavesweb@futurenet.co.uk