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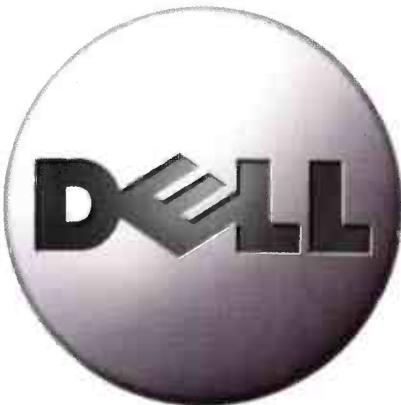
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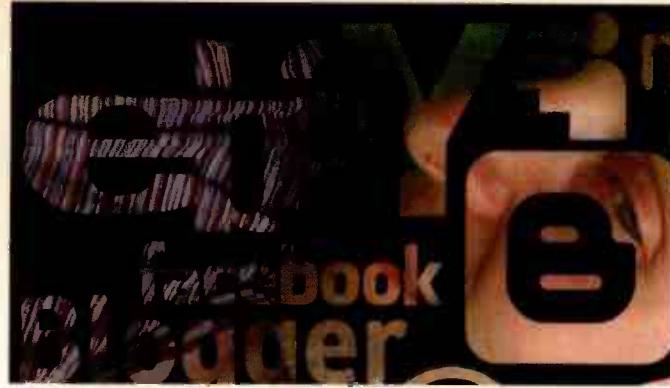
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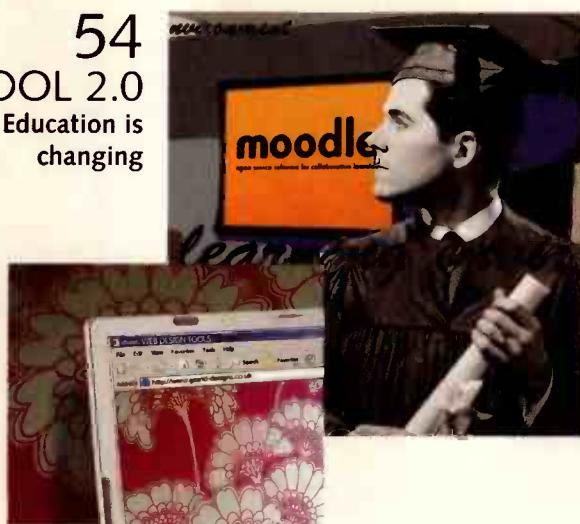
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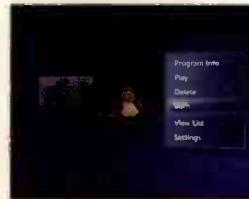
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A listing of the best products PCW has
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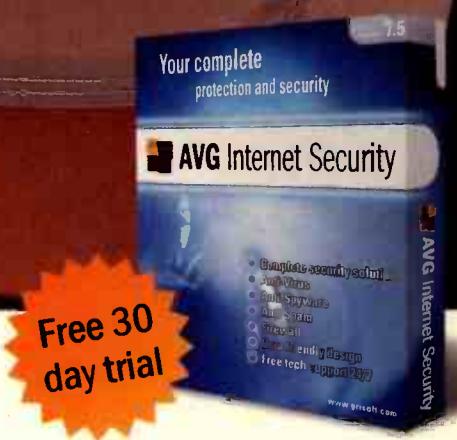
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kelvyn_taylor@vnu.co.uk

Editorial

Is technological progress being stifled by bad marketing?

Botched marketing and outrageous pricing can only slow adoption, says Kelvyn Taylor

Ever since it launched earlier this year, there has been a lot of negative press about Windows Vista. Much of that has been more to do with glitches in the 'free upgrade' scheme – a marketing scheme to stop buyers postponing PC purchases – than with any deep technical issues. PCW's Test Bed blog post (<http://labs.pcw.co.uk>) about the problems and delays with this upgrade scheme, administered by Moduslink, now has more than 250 comments from irate buyers. As was the case with Windows ME back in 2000, there's a danger that botched marketing could hamper widespread adoption of Microsoft's latest baby.

This, in my opinion, is a great shame. Vista isn't as radical as, say, Windows 3.1 was, but it's a step forward that I certainly like from a technical standpoint. However, for those wanting to upgrade an existing PC or build one from scratch, the biggest protests by far have been about Microsoft's UK pricing.

'Rip-off Britain' has been a catchphrase since the late 1990s, when cars were so much cheaper in Europe that a whole cottage industry sprang up to help drivers buy cars from dealers across the English Channel. Now it's the turn of software companies to feel the wrath of us bargain-hungry Brits.

I must say that I've never heard a really compelling economic justification for any company to charge double for a software product in the UK. Yes, I know about higher labour costs, support issues, extra marketing, exchange rate risks and what have you. And having seen first-hand the kind of problems and unforeseen bugs that language localisation of software can unearth, I appreciate that there's an awful lot of work involved even for US English to 'real' English conversions – it's not just a matter of running a spell-checker.

But even taking these things into account, there remains the feeling that we're being taken for a ride, especially when the product is a simple download (in the US you can buy Vista as a download from the Windows Marketplace website). And what's more, it's not just Microsoft – as we discovered when reviewing Adobe's Dreamweaver CS3 in this month's group test of web design packages. Adobe's UK pricing policy for this also seems to be to simply change the currency symbol from a '\$' to a '£'.

I don't think that petitions and campaigns are the answer. Money talks, so market forces should eventually kick in – when copies are collecting virtual dust on the download servers and people are moving to rival products, then it's much more likely that these companies will sit up and take notice. But that's hardly a great way to encourage the adoption of new technology, is it?

On a happier note, as PCW's new editor I'd like to give you a very warm welcome if this is the first time you've read the magazine, and if you're a regular reader I'd like to make that welcome even warmer. I'm not going to spend a lot of time introducing myself except to say that, as someone who's passionate about everything to do with technology and computing, I consider it a tremendous privilege to be entrusted with the UK's longest-running monthly computer magazine. But, ultimately, it's you, the reader, who's in control, and so I welcome any and all feedback about the magazine, website or any of the other services offered by PCW – simply email me at kelvyn_taylor@vnu.co.uk. Or, even better, take a few minutes to complete our 2007 Reader Survey. For more details, see page 81 or go straight to www.pcw.co.uk/survey. PCW

'When copies are collecting virtual dust on servers, companies will sit up and listen'

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ON THE CD & 8GB DVD

Stuffit Standard 9.5

Open, create and manage your own compressed file archives
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Create or delete hard drive partition
For workshop see page 171

Genie Backup Manager Lite 7.0

Back up and restore your important files and data
For workshop see page 172

EXCLUSIVE TO THE 8GB DVD

Handy Recovery 1.0

Recover accidentally deleted files from your computer
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Linux and open source

Mandriva 2007.1
Damn Small Linux 3.3

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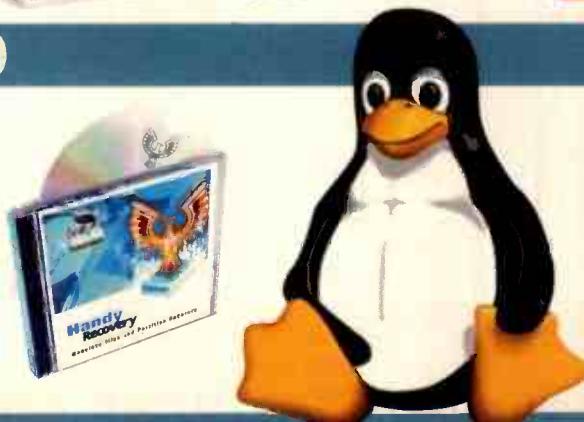
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PC-cillin Internet Security 2007

Protect your system with this complete security suite
For workshop see page 173

Facefilter Xpress

Add emotion to your digital photos
For workshop see page 174



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AMD reels as Intel hits 45nm

Intel turned the screw on AMD this month with an impressive list of launches for the coming year, as its chipmaker rival posted disastrous financial results.

AMD reported a net loss of \$611m (£311m) for the first three months of this year, compared with a \$153m (£77m) profit for the same period in 2006. A \$574m (£292m) loss in the final quarter of last year included \$551m (£280m) relating to the purchase of graphics specialist ATI.

The company unveiled a new range of graphics cards, the first since that acquisition, shortly before the results were announced (see page 15).

AMD has been hit hard by being forced to compete on price, as Intel regained the technological

edge. Lucrative sales of AMD's Opteron server chips have been hit particularly hard.

AMD's hopes now rest on a 65nm quad-core processor, codenamed Barcelona, which it claims is up to 50 per cent faster than Intel's equivalent Xeon (see page 15). The chip, due to launch this summer, will be branded Phenom, perhaps in the hope that it will be phenomenally successful.

But Intel is beating AMD on the miniaturisation front, moving faster to 65nm manufacture and going to 45nm next year. At the spring Intel Developer Forum, its annual love-in held this year in Beijing, it gave details of a range of new power-efficient ultra-mobile, notebook, desktop and server processors that will be

launched over the coming months (see pages 18 and 19).

The first of these, codenamed Santa Rosa, the latest generation of the Centrino notebook platform, will have been unveiled by the time you read this – see www.pcw.co.uk for an update.

Intel is pushing forward on the wireless front too, with WiMax wide-area communication going onto motherboards next year – to be followed, perhaps, by a single chip supporting WiMax, WiFi and ultra-wideband links (see page 12).

Meanwhile, AMD has embarked on a restructuring that it says will save \$500m (£255m) a year. Chief financial officer Robert Rivet said: "We are aggressively addressing the issues that led to our significant revenue decline."

Clive Akass

Key moves on ultra-mobiles and ultra-ultras



Manufacturers are busy trying to find ways to fit a workable keyboard to ultra-mobiles

Manufacturers are trying every which way to incorporate a keyboard into an ultra-mobile but the sliding-display design from Chinese giant HTC (above left) is the first I have seen in this class of machine.

The design is also interesting for what is under the keyboard: Intel's new McCaslin ultra-mobile platform. It is one of at least six McCaslin-based models, including Samsung's Q1 Ultra, previewed at CeBIT, to launch this summer (see

page 18 for the full story).

Medion has finally launched its ultra-mobile PC, (above centre), which we also glimpsed at CeBIT. It uses Via's low-drain C7 M770 processor and boasts a battery life of up to five hours (see www.pcw.co.uk/2188157 for the full report). I don't like its button keyboard, but our reviewer may think differently, so check for a review on our website.

Meanwhile Intel has defined a kind of 'ultra-ultra mobile'

platform called a Mobile Internet Device (MID), which sounds rather like Nokia's eccentric N800, pictured above. MIDs, such as the Nokia, are designed as a Linux platform (see page 18).

The N800 got a boost last month with the posting of a free Orb client module, which enables it to show pictures and stream music or video from your desktop computer. I'll be writing more on this in our Test Bed blog at <http://labs.pcw.co.uk>. Clive Akass

Printers to show page yields

Hewlett Packard (HP) has revamped its range of cartridges to offer at least two capacities for each model of inkjet printer – but the cartridge boxes will not carry the page yields users can expect, as measured by new ISO standards.

Instead, cases will carry a web address where the information can be obtained, which will be of little use to people trying to make an informed decision in a shop.

However, HP has confirmed that it will print the ISO yields of the new

cartridge options on the boxes of inkjet printers shipped from August.

The move could be the answer to criticism of the widespread practice of putting sample cartridges in new printers. These are sold at a reduced price but give a false impression of the true cost because buyers quickly need to buy a replacement.

Andrew Forsyth, the UK sales director in Britain, explained that ISO yields would not be printed on cartridge boxes because some printers use more ink than others.

It is not yet clear what HP's policy will be on sample cartridges, but if it prints ISO yields of replacements it would have to make clear that these did not refer to the one in the box.

The ISO standards give only a rough indication of page yields but they provide a fair comparison of different products. They were agreed after years of negotiations with manufacturers, in response to complaints of confusing prices across the industry.

www.hp.com

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One of the reasons why PCW is the UK's longest-running monthly computing magazine is that we've always listened to our readers. And now it's time for us to ask for your opinions again.

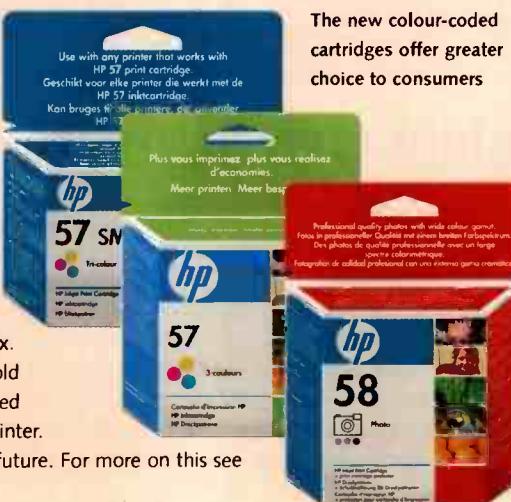
To take part in the 2007 PCW Reader Survey, go to www.pcw.co.uk/survey. All respondents will be entered into a prize draw to win one of three iPod Nanos. For more details, turn to page 81.

How cartridge colour-coding works

The new-look cartridges (pictured right) are to become available for every HP inkjet model launched within the past seven years. They are colour-coded blue for standard, and green for the 'value' size, which will be up to 55 per cent more cost effective.

A new specialty cartridge, offering higher-quality colours for photographs, will be coded red. This will not be available on all models, but will make the latest ink technology available to some older printers. Model numbers of green cartridges will have an XL suffix.

HP has had to retain the model numbers of old cartridges, so a 'value' cartridge may be numbered differently from a 'specialty' one for the same printer. However, numbering will be more consistent in future. For more on this see www.pcw.co.uk/2188507.



The new colour-coded cartridges offer greater choice to consumers

Access granted – if Biopassword approves

A new security system monitors how you type a password to prevent intruders accessing your user accounts.

The Biopassword system measures how long a user holds down keys and the time between keystrokes, building up an ID profile over several password entries. The resulting spread of timings helps to avoid false negatives, caused perhaps by a user returning from a liquid lunch.

Jared Pfost, Biopassword's vice president of product management, said the system has been used in academic circles for years.

"We are the first to develop it so that it is accurate and portable. There is a new need for portable authentication," he said.

He agreed that it would be possible for keyloggers, used by criminals to capture passwords, to be refined to capture timing information to fool Biopassword.

However, currently they collect only the keys pressed.

Pfost said: "It is not an issue today. Over time we anticipate that any authentication solution will be broken. We will enter an arms race and we will be one step ahead of [would-be intruders]."

The Biopassword system costs \$50 (around £25) per user, with discounts for orders of more than 50. You can try out the system at www.biopassword.com.

In brief



Wii mouse

Motion-sensing, like that in Nintendo's Wii console, is used in a prototype USB adapter for laptops, removing the need for a keyboard or a mouse.

The technology enables users to access menus or move the cursor by tilting the device.

Co-developer Adam Oliver, head of age and disability research at BT's Adastral Park centre, said the device, called BT Balance, could help people who have difficulty using a keyboard or mouse, or by commuters on crowded trains.

www.pcw.co.uk/2188873

TV webbed

ITV has followed the BBC's and Channel 4's lead in posting catchup TV on the web. It will also stream live programs.

www.pcw.co.uk/2188938

In brief

**Floppies live**

An odd effect of the phasing out of floppy drives in PCs may be to increase demand for the devices as standalone modules. Floppies were for years the backup and archiving medium of choice for home users and there must be petabytes of valued information still held on the 3.5in disks. Lindy obviously thinks so because it has just launched a new £29.99 USB floppy drive. The USB transfer rate is given as 12Mbit/sec, so it sounds like an older USB 1.0 link. But given the glacial transfer rate of the floppies themselves, few are likely to notice.

→ www.lindy.co.uk/uk

Paint shield

A new paint can help secure computer wireless networks by acting as an electromagnetic shield to block out eavesdroppers, according to vendor EM-SEC. It only comes in beige, but other colours can be painted over it, and it will be available in the UK soon.

→ www.pcw.co.uk/2188084

Linux music

Fervent Software has launched version 2.0 of its Studio to Go! Suite of Linux audio and midi tools, including the Rosegarden sequencer and the Ardour digital audio workstation. A bootable disk, enabling you to use it on a Windows PC, costs £79.99.

→ www.studio-to-go.com

Toy-boy hunt

Thousands of British women are seeking toy boys online, but there is a shortage of older men too, says dating agency Parship.

→ www.pcw.co.uk/2187852

Radio chips to swing three ways

Three-core wireless links could be integrated onto a single piece of silicon for use in all kinds of mobile devices, Intel believes.

The integration of WiMax neighbourhood links, WiFi home links and fast short-range Ultrawideband (UWB) links "is a long way out from our planning" but could happen as soon as 2009, said Chris

Beardsmore, Intel WiMax market development manager.

PC Cards using WiMax should be available this year, and it is due for integration with WiFi on motherboards in 2008. After that, WiMax is likely to be used in devices such as cameras, enabling them to transmit pictures directly to the internet.



Vendor Trust Eli says a PC Card slot on this router enables it to support secure 3G, WiFi or WiMax links

But UWB is targeted at similar devices because it can dump data at up to 480Mbit/sec over the space of a room. "The beauty is that WiMax, WiFi and UWB all use similar OFDM [modulation] technology. It turns out that the incremental cost of putting WiMax, say, onto a WiFi card is small because you can use the same

radio, and the same processing. So, you could put all three onto one piece of silicon," Beardsmore said.

WiMax infrastructure development in Britain is gathering pace. Intel and service provider Pipex have formed a company called Pipex Wireless (which owns radio spectrum for the purpose) to offer services. They have teamed up with Nokia and Airspan to provide equipment.

And a company called Macropolitan, which owns 8,900 mast sites in UK cities, announced a partnership with Alcatel-Lucent to offer infrastructure deals to operators. For more, go to www.pcw.co.uk/2188754.

- Test Bed comment: WiFi panic doesn't quite square – see <http://tinyurl.com/35t59p>.

Mobile web access for a fiver a month

Cellular operator 3 is offering unlimited mobile internet access for a flat £5 a month, in a move that could help kickstart mass use of web access via mobile phones.

But, as with many 'unlimited' offers, there is a sting in the tail: a "fair use policy" capping monthly use at 1GB. A 3 spokeswoman said:

"The majority of people will not hit that limit. If they do, they will get a polite note of warning."

She added: "If you accessed 1,000 mobile sites per day, every day for 30 days, you would use up just under 1GB of data for the whole month. Therefore, it is quite a sizeable allowance."

The deal, which is not tied to a particular handset, is limited to customers with a minimum £15-a-month voice contract. But 3 has not ruled out a similar offer for pay-as-you-go users.

T-Mobile offers a similar service to contract customers for £1 a day, or £7.50 a month.

French back red-laser high-definition disc player



Two major film distributors in France have given unexpected backing to the maverick HD-VMD technology, which uses red lasers instead of the more expensive blue ones used by rival HD-DVD and Blu-ray drives.

Seven 7 and Metropolitan Filmexport will each offer 20 titles in the format by September and five titles every month thereafter.

Meanwhile, London-based New Medium Enterprises (NME) plans to offer an HD-VMD player with five

LG claims the GGW-H10N Blu-ray burner can play back HD-DVD discs

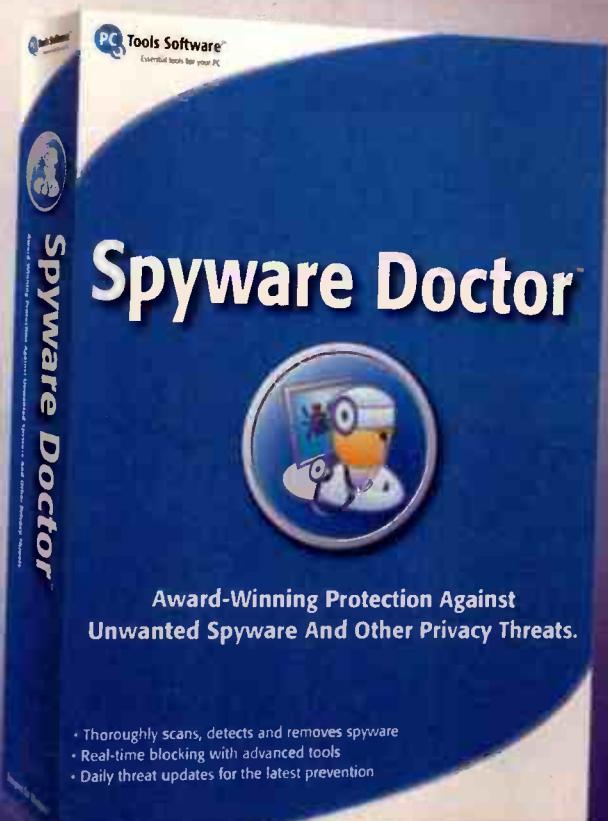
free movies for a recommended £299 (£200).

The technology is said to be capable of putting up to 48GB of 1080p true HD content onto a disc using multilayering. A sample drive seen by PCW uses only dual layers,

but we are told the launch version will support more. It supports every existing disc format.

LG says its GGW-H10N Blu-ray burner is the first to support playback of discs using the rival HD-DVD format. It can record up to 50GB onto a dual-layer BD-R or rewritable BD-RE disc. It should be available for around £1,000 by the time you read this. A PC drive version will cost between £700-800. See www.pcw.co.uk/2188068.

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Spyware Doctor 4.0
November 2006



Spyware Doctor 3.2
Issue 237, December 2005



Spyware Doctor 3.5
Issue 157, April 2006



Spyware Doctor 3.2
Issue 71, 2006



Spyware Doctor 3.8
Issue 139, July 2006



Spyware Doctor 3.8
August 2006



Spyware Doctor 3.2
September 2005

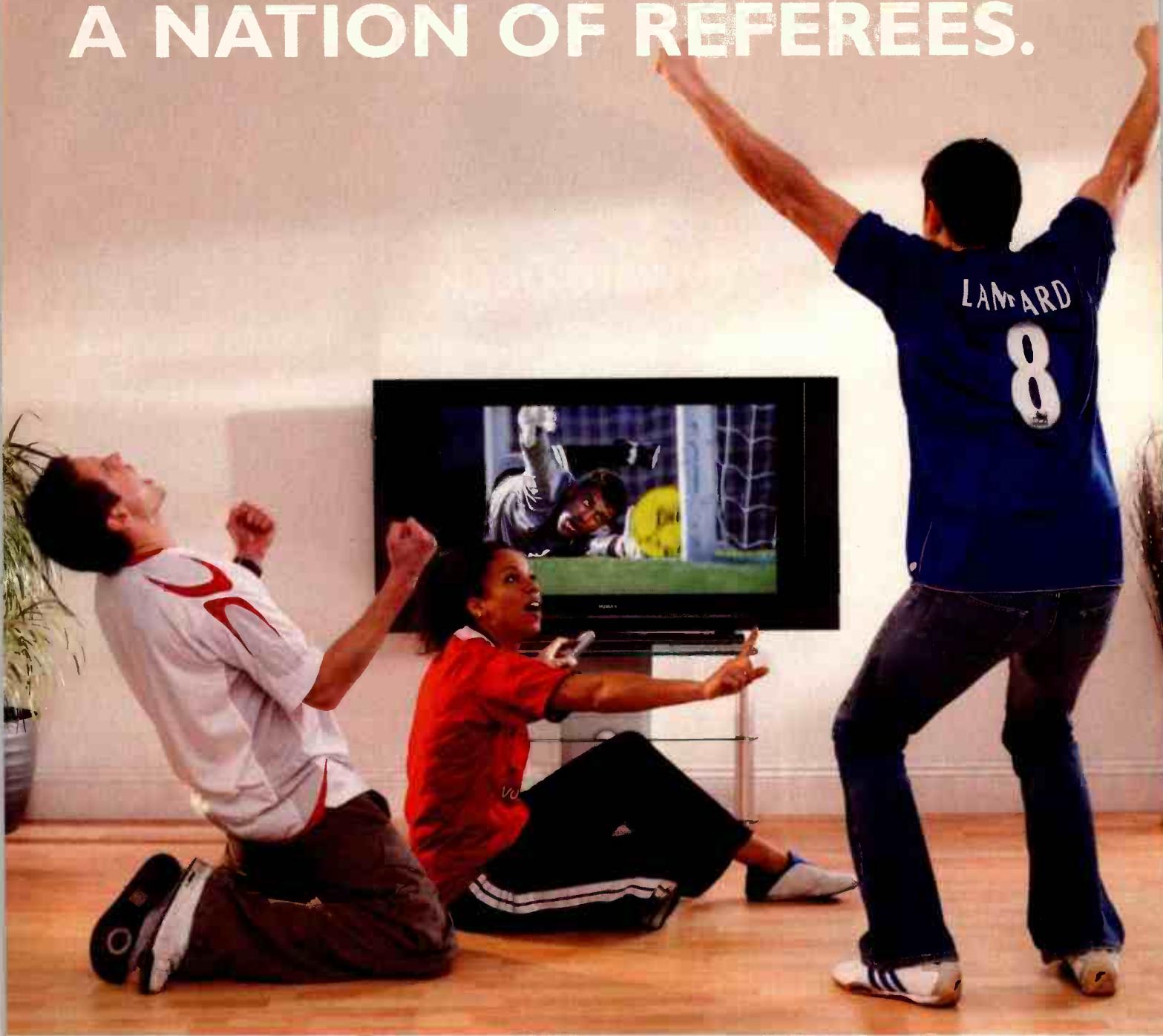


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HUMAX

AMD launches first ATI cards

AMD has launched its first range of graphics cards since it bought graphics specialist ATI last July. All cards support DirectX 10 and will compete with Nvidia's GeForce 8000 series, which has a six-month lead in that field.

AMD surprised journalists at the launch in Tunisia by announcing that its top-of-the-range 80nm-scale Radeon HD 2900XT would compete with the GeForce 8800GTS – conceding that Nvidia's 8800GTX will remain the fastest for PC graphics.

However, a faster 65nm version is rumoured to be in the final stages of development.

Our review unit came too late to feature this issue, but indications are that despite scoring 17,601 in 3Dmark05 – the highest score in our labs – the Radeon HD 2900XT sits between the GeForce 8800GTS and GTX in terms of real-game performance. For a full review, go to www.pcw.co.uk/218876.

The Radeon HD 2900XT is a 700m-transistor graphics processing unit (GPU) with 512MB



AMD's top-of-the-range HD 2900XT

GDDR3 Ram. The low-end Radeon HD 2400 and mid-range Radeon HD 2600 cards are already based on a 65nm manufacturing process. They will come in Pro and XT editions, with the XT having higher GPU and memory frequencies.

The cards are similar to ATI's Xenos chip used in the Xbox 360. Both use stream processors to perform physics operations or pixel, vertex, or geometry shader operations, the latter of which is new to DirectX 10.

The Radeon HD 2900XT has 320 stream processors running

at 740MHz each and this is directly comparable to Nvidia's GeForce 8800GTX's 128 stream processors running at 1.35GHz each.

All cards will have HDCP keys on board, allowing them to play copy-protected high-definition content, and come with an HDMI 1.2 dongle. In another surprise move, AMD announced the cards will have an integrated sound controller, which means the HDMI dongle can output 5.1 surround sound.

Other features include hardware-accelerated tessellation, which means triangles can be split into multiple triangles without a significant performance hit, enabling a greater level of perceived detail.

AMD has suggested retail prices of €99 (around £67), €199 (around £136), €399 (around £272) for the low-, mid- and high-end cards, respectively. The HD 2900XT is available now and the rest will go on sale in July.

Emil Larsen

New AMD quad core claims to outperform Xeon

AMD's much-anticipated quad-core processor, codenamed Barcelona and K10, will be called the Phenom when it goes on sale this summer.

The fastest version, the Phenom FX, will run at 2.5GHz. Each of the four cores will have 512KB of L2 cache and independent voltage and

frequency controls. They will also share 2MB of on-die L3 cache.

AMD claims its design is more efficient than its rival Intel because it couples all four cores on one die rather than spreading four processors over two dies.

Current Socket F (1207-pin) motherboards will require only a

Bios upgrade to support the Phenom. A second version of the chip will be compatible with the AM2 sockets used by most of AMD's consumer processors.

AMD claims the Phenom will be up to 50 per cent faster than Intel's quad-core Clovertown Xeon on the SPECcpu2006 benchmark.

In brief

Trillion Trips

A new general-purpose processor could clock up trillions of calculations per second, developers claim.

The prototype Tera-op Reliable Intelligent Adaptive Processing System (Trips) was designed and built by a team of computer scientists at the University of Texas, Austin.

Doug Burger, associate professor of computer sciences, said it uses a new architecture that can process large blocks of information simultaneously.

The prototype Trips chip has two cores, each of which can process 16 operations per cycle with up to 1,024 instructions in flight simultaneously.

→ www.pcw.co.uk/2188495

Wafer boost

Taiwan Semiconductor Manufacturing Co (TSMC), the world's largest independent chip maker, is considering a new production process that could double its output of processors.

Current advanced chips are made on 300mm wafers. TSMC is developing the capability to use a 450mm silicon wafer, which will potentially double its chip output.

→ www.pcw.co.uk/2188408

8-core bombs

An independent Mac benchmarking site claims Apple's latest 8-core Mac Pro models offer little performance increase where many professionals need it.

The Bare Feats site compared the performance of a Pro using two quad cores with an older model using dual twin-cores.

The 8-core was better at computation-heavy tasks, but in tests of Photoshop CS3 and Aperture, the Pro improved by just three per cent, while the older model showed an improvement of seven per cent.

→ www.pcw.co.uk/2187715

Buoyant Via launches tiny motherboard

AMD is not the only company that could feel the pressure from a resurgent Intel (see page 10). Taiwanese chipmaker Via, which has enjoyed some success recently with its low-drain C7 processors, could also face competition from Intel's new power-efficient design.

However, Via is celebrating a contract to supply its carbon-free C7-D chip to HP for use in a

Compaq dx2020 computer, which is targeted at businesses in China.

Via marketing executive Richard Brown backtracked during a recent visit to London on the carbon-free claim, which was based partly on a pledge to offset carbon use by planting trees. Some research suggests that, away from equatorial regions, this can actually increase global warming.

The 1.5GHz C7-D processor used in the new HP model draws a maximum 20 watts and has been certified by the China's energy-rating agency, the CECP.

Via also unveiled the world's smallest PC motherboard. The 2 VT6047 Pico-ITX, barely bigger than a playing card, is designed for use in ultracompact embedded PC systems and appliances.

In brief

Web 2.0 war

Microsoft and Adobe are squaring up for battle with the release of competing Web 2.0 applications. Microsoft has released the first preview version of its Silverlight tool for developing multimedia browser-based applications such as video players. It will compete with Adobe's Flash Player. Adobe issued a challenge in the form of a streaming video player to take on the Windows Media Player.

New Linux

A new desktop version of Ubuntu Linux includes a migration tool that preserves many Windows environment settings, including web favourites and desktop wallpaper. Ubuntu 7.04 also provides better mobile features such as auto-detection of printers and wireless networks. The server version supports virtualisation through Xen, VMware, and the new open source Kernel-based Virtual Machine (KVM) project. → www.pc.co.uk/2187832

Firefox gaining

Use of the Firefox browser in Europe has grown by five per cent in a year and approaches 50 per cent in some countries, according to French web analysts Xiti. Nearly a quarter of people use the open source browser across Europe. → www.pc.co.uk/2187935

Longhorn beta

Microsoft has posted a public beta of the next version of Windows Server, codenamed Longhorn. The full version is expected to be launched late this year. → www.pc.co.uk/2188653

old menus for new Office

A new utility gives Microsoft Office 2007 the menu interface that is familiar from earlier versions.

The classic interface has been replaced in the latest version of the office suite by a system of ribbon bars that are supposed to help less experienced users take advantage of advanced features.

But many people have found it difficult to get used to and prefer the old look, according to Chinese developer Addintools.

It claims its Classic Menu for Office 2007 v2.0.08 enables people "to work in their usual manner without changing their habits".

The program is said to work with Word, Excel and PowerPoint and



The new program will cheer Vista users nostalgic for old-style Office menus

provide access to new Office 2007 features, as well as old ones, via the classic menus and toolbars.

Microsoft said it did not offer a "classic look" option with Office 2007 because it would be too difficult to incorporate into the completely revamped product.

The new utility may interest companies with a mix of old and new machines that want to give

staff a consistent interface.

Classic Menu for Office 2007 v2.0.08 runs under XP or Vista and costs \$29.95 for a single-user license. A free evaluation copy is available at tinyurl.com/22n2kr

- PCW contributor Tim Nott will take a look at it in his Hands On column next month.

- Customising Office ribbons – see page 136

Rival desktop suites sharpen up their acts

Rivals to Microsoft Office are getting a facelift as organisations check out alternatives.

OpenOffice.org has just posted a new Vista-friendly version of its open source suite, which uses the ISO standard Open Document Format (ODF).

Microsoft's new OpenXML formats are thought to be on track for ISO standardisation, but they have yet to be formally endorsed.

OpenOffice.org community plans to add a new reporting tool to enhance database application Base in the next release. The suite runs on Solaris, Linux and Mac OS X.

Meanwhile, German developer Softmaker is to add a scripting language called Basicmaker, compatible with Microsoft's Visual Basic for Applications, to its Softmaker Office suite. The new feature will automate tasks within

the wordprocessing and spreadsheet modules.

It will also add a PowerPoint-compatible presentation module and one called Datamaker that can be used to query MySQL, SQL Server, DB/2, PostgreSQL, Oracle and Access databases. Softmaker has not given release dates for the new modules.

www.openoffice.org
www.softmaker.com

XP enters the afterlife

Computer makers will be unable to sell PCs using the old XP operating system next year.

They will be forced to switch to Vista because contracts allowing them to use XP will expire in January.

Mike Burk, Windows client product manager, said it was standard practice to allow machines running older versions of Windows for a limited period after a new version has been released.

Many XP machines are still being sold, especially to companies that want a standard interface on all their machines. Other companies do not want to upgrade

until possible compatibility issues are ironed out.

Dell announced in a company blog that it would continue selling Windows XP systems to businesses until "later this summer" to allow for testing. It said this would not apply to PCs in the consumer market, where demand was for the "latest and greatest" technology.

However, it was forced to do a u-turn after customers complained that several older applications would not run under Vista. Some customers also said they did not want to switch over.

Tom Sanders

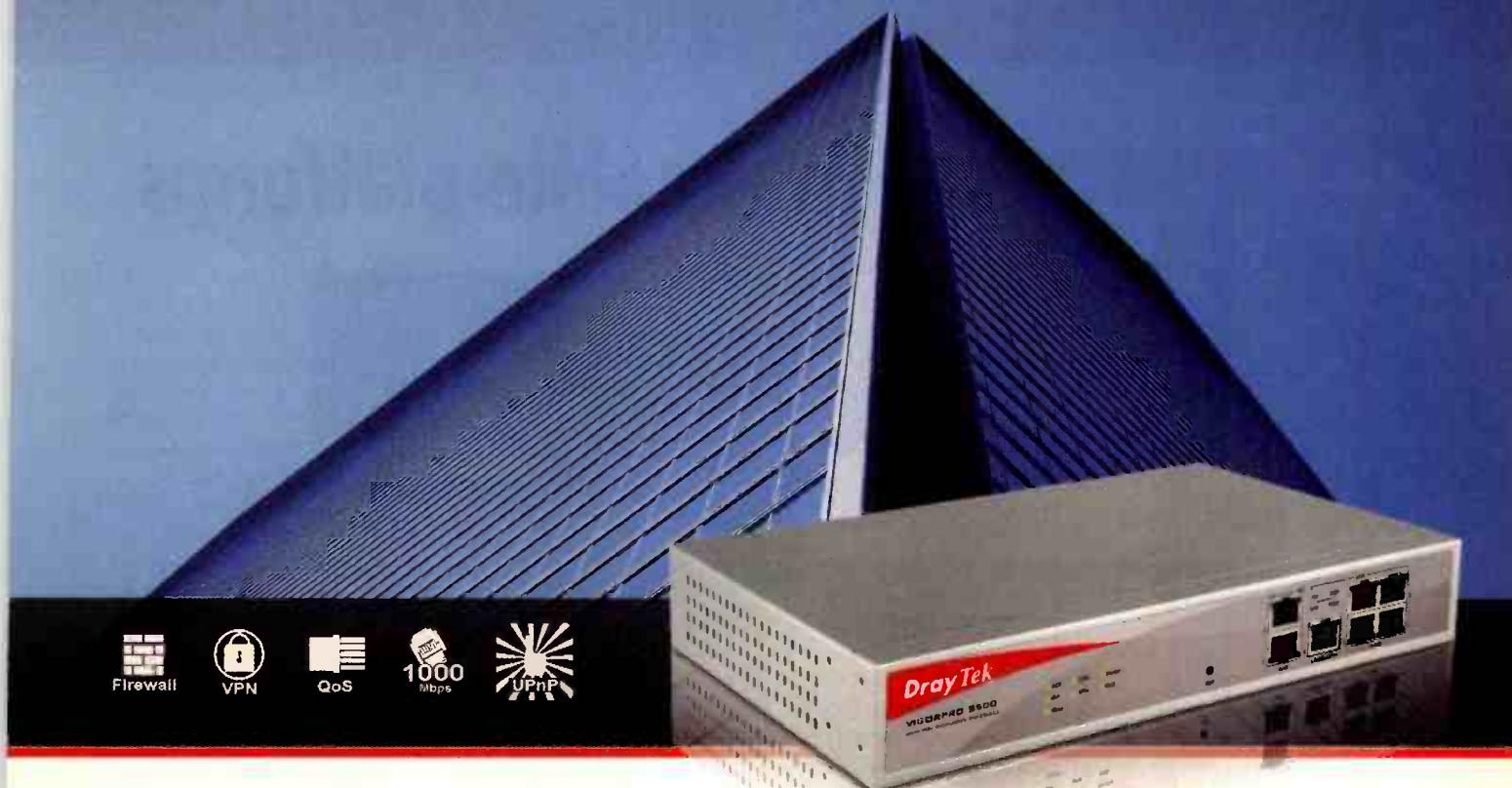
Windows and Office for \$3

Microsoft plans to offer a \$3 (£2) bundle of Windows and Office in developing countries.

Emerging nations such as Argentina, Brazil and Nigeria have been turning to free alternatives because of budget constraints. Now they will be able to distribute the discounted software to schools and individuals.

The \$3 bundle will also be available to low-income communities in the US and other developed countries.





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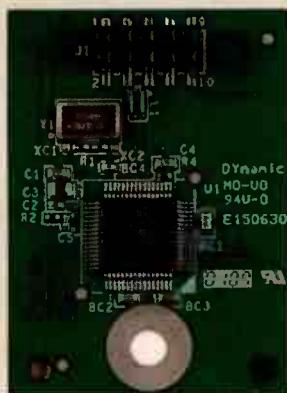
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In brief

**Solid drive**

Intel has launched its first solid-state drive, although with smaller capacities than ones recently launched by Samsung. The Z-U130 uses Nand flash memory and reads data at 28Mbytes/sec and writes at 20Mbytes/sec. It can be used in routers, servers, gaming consoles and industrial applications. The drive is available in 2GB, 4GB and 8GB versions.

→ www.pcw.co.uk/2185212

Core profits

Intel made \$1.6m (£800m) profit on revenues of \$8.9b (£4.45b) in the first quarter of this year. Chief executive Paul Otellini said the results stemmed from its Core microarchitecture.

**Crystal clear**

No, it's not a speaker system. The Home Theatre Loud Black Crystal (above) won Korean manufacturer Trigem Computer \$700,000 in an Intel competition for the best design for a Vivid entertainment PC using a Core Duo processor.

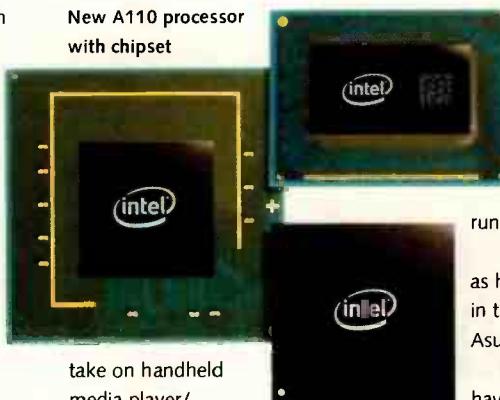
New ultra-mobile platforms

Six manufacturers will launch ultra-mobile PCs this summer using the low-drain McCaslin platform, highlighted in last month's PCW, which take power levels even lower than those of the new and emerging Intel notebook designs (see opposite page).

The McCaslin new generation, which is codenamed Menlow and uses the smallest-yet 45nm-scale miniaturisation, will launch in the first half of next year – six months earlier than planned.

Anand Chandrasekhar, senior vice president of Intel's ultra-mobility group, said the platforms will also be used in a new class of consumer product called a Mobile Internet Device, and will provide communication, web access and entertainment on the move. This sounds like an Intel

New A110 processor with chipset



take on handheld media player/webpads such as the Nokia N800 (see page right).

McCaslin will have a new choice of two low-drain processors – the 600MHz A100 and 800MHz A110 – paired with a new 945GU Express chipset and ICH7U j/o controller hub (see picture).

Chandrasekhar said the platform combined the "flexibility of a PC with the mobility of a handheld device".

The A110 is the chip used in Samsung's second-generation ultra-mobile previewed at CeBIT. The chipset has integrated graphics, which has the legs to run the Vista interface.

The other vendors named as having McCaslin products in the pipeline were Aigo, Asus, Fujitsu, Haier and HTC.

Both McCaslin processors have 512KB of Level 2 cache, a 400MHz front-side bus, and a thermal design power (the amount it would draw going flat out) of just three watts.

The power efficiency of the Menlow processor should be even greater because of its 45nm scale and use of a new High-K gate dielectric that boosts switching time while reducing leakage currents. It will come with a new chipset codenamed Poulsbo.

Linux on Menlow could launch battle of MIDs

An announcement that Menlow Mobile Internet Devices (see above), due to be launched next year, will support Linux could lead to a round of industry battles, say analysts.

It could also cause a shift of focus away from the operating system platform towards web content, says a new Gartner

research paper: "We can imagine a Nokia/Samsung/Intel battle over Linux mini-tablets optimised for the web, similar to Nokia's N800 Linux tablet, or a small cellular-enabled Linux mini-tablet with an innovative user interface, which might compete against Apple and the iPhone," the authors of the research papers wrote.



Ultra-mobile platforms chief Anand Chandrasekhar holds up a mobile internet device

Intel to support data-over-mains in PCs

Intel has plans to support data-over-mains networking using the Homeplug specification as an option on desktop platforms by 2008.

Homeplug has the most support of four competing standards that will use household wiring to distribute data around homes. The latest version is rated at 200Mbits/sec, although real throughput will be much lower.

Intel left the governing Homeplug Powerline Alliance in 2000 but rejoined last year. The

technology is capable of setting up instant network links simply by plugging a device into the mains.

Panasonic has talked of implementing its own version of the technology in suitable devices, but rivals are thought unlikely to support the plan.

Currently, Homeplug links are available only through special mains adapters, but the technology could be pulled inside devices such as PCs.

However, there are fears that if the technology becomes as

widespread as WiFi, it could cause radio pollution problems in cities, and even threaten aircraft communications.

Home wiring acts as an aerial, and industry insiders now admit that Homeplug data is a radio link in disguise. Data uses radio to jump wiring loops on different floors and even to travel down a single wire, which transmits at one end and receives at the other.

Ironically, Intel says it generally favours wireless networking technologies over Homeplug.

Scaling down for frugal speeds

Details of a series of new notebook, desktop and high-performance Intel platforms to be launched over the coming months were given to developers at IDF.

The launches begin this month with Santa Rosa, the latest Centrino notebook platform. It uses a new Core 2 Duo processor, the mobile 965 chipset, Draft 11n wireless networking and gigabit Ethernet.

It will also optionally include Turbo Flash memory, which cuts resume time from hibernation. An enterprise version of the platform, with management features bundled under the name vPro, will be branded Centrino Pro.

Notebook power efficiency will be increased next year with the introduction of the 45nm, High-K Penryn processor generation.

A new version of Penryn, codenamed Montevina and designed for subnotebooks, will follow in 2008. This will have smaller components, integrated hardware decoding for high-definition video, and optional WiMax links.

Penryn will also include dual-core and quad-core processors under the Core and Xeon brands.



Many hands make light work: dancers at the Beijing forum provide a visual metaphor for the benefits of parallelism and multicore multiprocessors

Pat Gelsinger, senior vice-president of the Digital Enterprise Group, said Penryn would boost imaging-related performance by 15 per cent, 3D rendering by 25 per cent and gaming by more than 40 per cent.

Video encoding optimised for the new SSE4 extensions would also be 40 per cent faster, he said.

High-performance computers could expect to be up to 45 per cent faster for bandwidth intensive operations, and 25 per cent faster for servers running Java, compared with today's quad-core Xeon X5255 processors. These figures drive from

the performance of pre-production 45nm High-K Xeons using a 1.6GHz front-side bus for high-performance, and 1.333GHz for servers.

Next year will also see a new power-efficient microarchitecture codenamed Nehalem, with integrated high-performance graphics and up to eight cores.

Gelsinger said Intel was working on products based on a highly-parallel programmable x8 architecture codenamed Larabee that would scale to trillions of floating-point operations per second for demanding applications.

Miniaturisation leads to all-in-one chips

Intel will ship its first x86 system-on-a-chip (SOC) next year, pulling into one processor functions that were previously spread over up to four peripheral chips.

The processor, codenamed Tolapei, will cut power consumption by 20 per cent compared with the multiprocessor designs and will reduce the total

chip size by up to 45 per cent, said Pat Gelsinger, senior vice-president of the Digital Enterprise Group.

Packing more features into a chip is another way to use the extra transistors made available by increasing miniaturisation.

Ironically, the best example is on AMD processors, which have an on-chip memory controller.

Intel now plans to do the same with its processors but Tolapei, based on a Pentium M processor, will take the process much further. The first Intel SOC designs for consumer and enterprise machines will appear next year.

They will not necessarily all be PCs. The same chips can be used in devices such as media players, thin clients and set-top boxes.

Games set for new quad core

Intel launched its fastest yet quad-core processor as a warm-up event a couple of days before the IDF, keeping the pressure on rival AMD (see pages 10 and 15).

The 65nm-scale 2.93GHz Core 2 Extreme QX6800, targeted at gamers, uses a 1GHz system bus and 8MB cache.

At the recent Game Developers Conference in San Francisco, Intel showed off 'specially threaded' games, including Crytek's Crysis, Gas Powered Games' Supreme Commander and Flagship's Hellgate London, which will take advantage of the multicore architecture.

The latest version of Microsoft Flight Simulator X – Service Pack One (SP1) – has also been adapted to play better on multicore chips.

"Flight Sim X SP1 greatly increases multicore utilisation and will scale as more threads are available, leading to reduced load times as well as frame rate improvements and greater visual complexity during flight," said Phil Taylor, Flight Sim program manager.

On the professional front, Adobe, Cakewalk, DivX, Sony Creative Software and others have developed applications that will use all four cores. Intel said the quad-core QX6800 is up to 65 per cent faster at video encoding than the dual-core X6800 processor.

'Stunning' quad sales

Intel will have shipped a million quad-core processors to customers worldwide by July this year, according to chief technology officer Justin Rattner.

He said he was stunned by the success of the quads, which Intel had expected would take the whole of 2007 to hit the million mark. Yet 130,000 were in new servers already, and 165,000 in desktops, by the end of 2006.

"Shipping a million in the first half of 2007 is an amazing accomplishment," Rattner said.

Intel chances its ARM

Systems-on-a-chip (see above) are much more common in devices using the UK-developed ARM architecture. These outnumber devices using x86 because a major application is in mobile phones.

ARM cores are designed to be surrounded by on-chip modules tailored for particular purposes; Intel has produced a number of modules built around its own take on ARM, called Xscale.

Now it has unveiled a new system-on-a-chip, built around an Xscale, and designed for consumer electronics devices such as set-top boxes and networked media players. The CE 2110 puts a 1GHz Xscale core processor, Mpeg2 and H.264 hardware video decoders, a DDR2 memory interface and 2D/3D graphics accelerators onto a single chip.

Flat-rate charges keep UK in slow lane

Two reports in the past month have warned that Britain risks falling behind as other countries install optical fibre links for home broadband.

Point Topic analyst Vince Chook warned in a report on broadband statistics that a new digital divide is opening up between slowcoach Europe and countries that have installed optical fibre links (see chart below right).

And a report from the Broadband Stakeholder Group (BSG) highlighted flat-rate charges as a key factor in this decline. These may have helped

put Britain top among the G7 nations for broadband availability, but they give operators no incentive to invest in infrastructure that would provide more capacity and faster data rates, the BSG says.

It urges the government to take urgent action to avoid potentially dire consequences for the economy.

Hong Kong and Korea already offer broadband links at speeds of 100Mbit/sec. Even in France, with its relatively sluggish economy, one firm is offering 50Mbit/sec links in selected areas for about £21 a month.

The BSG admits that future demand is hard to estimate. But it warns that Britain's need for faster services may not be met by operators, which may see insufficient return on the huge investment that is required.

The government has a window of two years at most to study the deployment of next-generation broadband elsewhere in the world to inform potential policies and regulations that would create "the right balance of investment incentives and competition", according to the report.

Broadband operators are trying to establish new revenue streams but they face an uphill struggle to change existing pricing structures. The BSG says: "Consumers still find the simplicity and predictability of flat-rate very attractive and intense competition makes it difficult for operators to unilaterally move away from this approach."

But another Point Topic report points out that average broadband speeds in Europe are higher than in South East Asia, though average charges are more than twice as high. See www.pcw.co.uk/2188559.

Japan jumps ahead with 100Mbit/sec network

China, Japan and Korea are way ahead on fibre installations, according to this chart from Point Topic's *World Broadband Statistics: Q4 2006*.

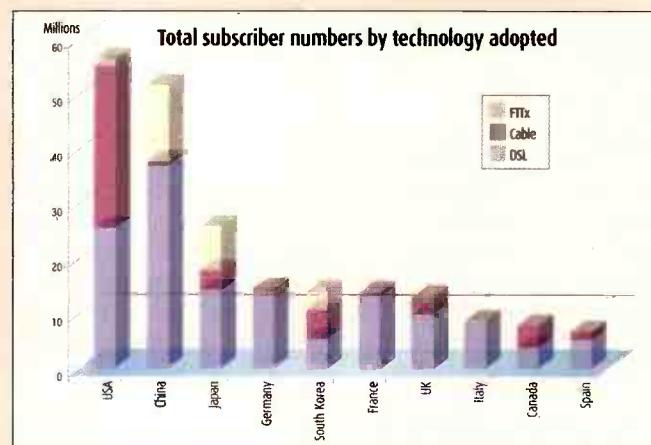
Author Vince Chook says that by the end of last year some 30 million 'FTTx' lines were installed worldwide. The acronym stands for fibre to the home, or to just outside the home. It does not include cable services, which take fibre to neighbourhood junction boxes (see story below).

"South Korea added close to two million FTTx subscribers, the US grew by more than 150 per

cent and China now has more than a third of all fibre subscriptions in the world," said Chook.

High-definition TV over broadband is driving the demand for faster networks. DSL subscriber numbers in Japan actually dropped by 0.18 per cent in the first half of 2006, while fibre subscriptions grew by 15.6 per cent.

BT's 21st Century Network project will make ADSL2+ by 2010. Meanwhile, NTT Japan will spend £27bn on a network delivering 100 Mbit/sec. Chook warns: "Without fibre, Europe will rapidly become the digital slowcoach."



The UK risks falling behind unless it invests in fibre installations

Fibre all the way home would cost Britain £10bn

Fibre to the home (FTTH), the "ultimate next-generation broadband deployment", would cost about £10bn to implement across the UK – and even then it would reach only 90 per cent of homes, the Broadband Stakeholder Group (BSG) has announced.

That works out at about £800 per home. It's a big figure, but not outrageous when set against the £24bn mobile operators pay for cellular licences.

FTTH would deliver about 80Mbit/sec per subscriber – 10 times faster than a good DSL connection today, says the BSG.



Even fibre to the home (FTTH) does not take optical links as far as they can go. Fibre in the home (Fith) is the optimum way of carrying data. This Tenevera box is designed to do that in the easiest possible way

Rather cheaper, at an estimated £250 a home, would be fibre to the cabinet (FTTC), taking optical links only as far as neighbourhood junction boxes and using VDSL (Very High Speed DSL) over the old

copper phone lines to make the final link into homes.

Data rates would be between 12Mbit/sec and 52Mbit/sec, with the top speeds available only to homes close to the cabinets.

Virgin Media, in effect, already has a next-generation FTTC network, although it uses coax cable to take TV programmes the final few hundred yards to homes, and twisted copper pairs to carry phone calls – a system misleadingly called Hybrid Fibre Coax (HFC). It is trialling a 50Mbit service but offers a maximum 10Mbit/sec to subscribers using technology based on the Data over cable service interface specification (Docsis). BSG's report points out that Docsis 3.0 technology could provide a 220Mbit downstream (120Mbit upstream) pipe for sharing.

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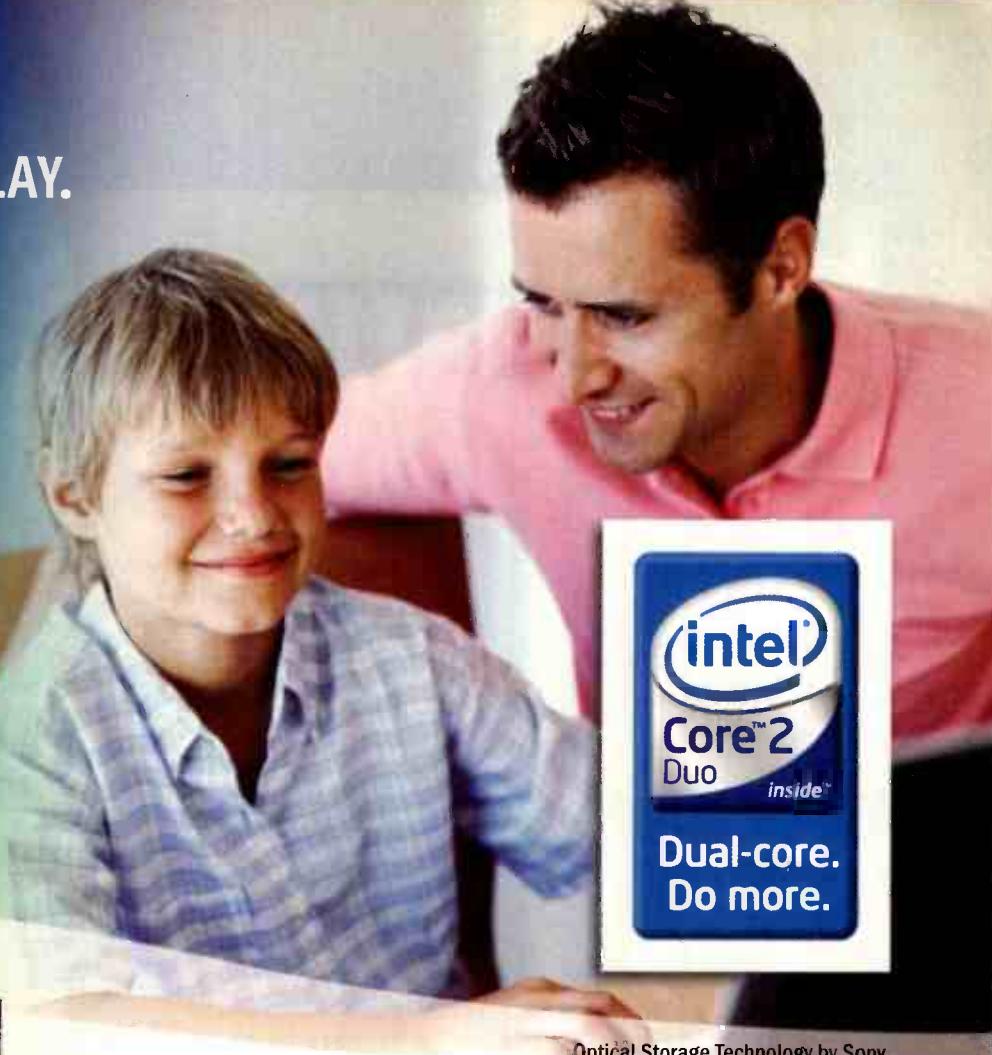
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LETTERS

LETTER OF THE MONTH

Doomed data

The subject of storage was raised in the editorial of PCW's May issue. The long-term reliability of digital media is not a new topic. We are seduced into believing that things are constantly improving. Yet, as DVD speeds increase, dependability does not.

Corporations are used to recycling data continuously so that it is accessible when they need it. They have no choice. Their business depends on secure data.

Consumers, on the other hand, live in a state of blissful ignorance, from which suppliers are happy to profit. There is no discussion about the stability of recorded media. In the press, we read about ever-increasing burn speeds as the measure of significance. This is short-sighted in the extreme.

Personally, I would prefer a burn time that took five minutes longer and secured data for longer, but there is no reliable information on the subject. We work in the dark about the future



accessibility of precious material.

It is the fault of consumers and the media for failing to ask the right questions of manufacturers. It is wrong to say that the makers are not able to find out how long media will remain stable.

Testing to destruction has long been part of the R&D process. Variable conditions are no excuse for not providing guidelines.

In this day and age, we should expect minimum performance figures to be stamped on every piece of recordable media. What are we buying storage for, if not to keep it?

Until we make it clear to manufacturers that long-term dependability is more important to us than short-term convenience, we will never find out which storage medium is the safest for our most treasured items. Until then, they will continue to provide throwaway products for our throwaway society.

Mike Robinson

VIRTUAL RETRO

I empathise with your readers who are looking to upgrade to a new operating system and/or a new computer, but are beset with the problems associated with a lack of drivers, program compatibility and so on.

This is a situation I found myself in. I had been using a system running Windows 98, which was an upgrade on a CD. This meant that I needed to load Dos 6.2, followed by Windows 3.1 for the upgrade to recognise that it was valid to run. Both Dos and Windows 3.1 were loaded using floppy discs. As well as not wanting to lose the use of

software that would only run under Windows 98, I had an Agfa scanner for which there were no drivers later than Windows 98. I also had a handheld oscilloscope that only ran under Windows 3.1 and Dos. I managed these quite well by using multibooting.

I had read about virtualisation in PCW, so I looked it up on the Microsoft website. The solution

involved buying a computer that would run Windows XP and the free Virtual PC 2004.

I created virtual computers for Dos, Windows 3.1 and Windows 98. I had to use my floppy discs to install the operating systems and copied the virtual machines to CD/DVD. Windows 3.1 isn't listed as supported by Virtual PC, but my copy runs my oscilloscope perfectly fine.

Finally, this solution seems

Virtual PC 2007 will run Dos as a guest OS



Unless otherwise stated, letters sent to the Editor, PCW team or contributors will be considered for publication. Letters may be edited for clarity or length.

to be future-proofed. The Virtual PC 2007 runs on Vista and supports Windows XP. So you can run an XP virtual machine under Vista and use this with Virtual PC 2004 to run the older systems.

Alan Ellis

Kelvyn Taylor replies: Unfortunately you can't run Virtual PC 2004 on a virtual PC. However, Virtual PC 2007 will run Dos (and hence Windows 3.x) as a guest OS, but it's not supported by Microsoft.

MISSING MEGAHERTZ

I recently bought an Intel E6400 dual core processor rated at 2.13GHz. However, various CPU identifier programs told me that the processor was running at only 2.05GHz. Crystal CpuID4 said it was underclocked by 3.91 per cent and that the core was codenamed Allendale. CpuZ confirmed the speed but said the core was Conroe. Intel's own identifier program told me 2.04GHz, but added: "Small variations in clock frequencies are common. If there

Processor clock frequencies can vary slightly



CLARIFICATIONS & AMPLIFICATIONS

• The review of Roxio Easy Media Creator 9 Deluxe in the June 2007 issue did not contain PCW's Recommended award, which the product won. We're happy to rectify this and you can read the full review online at www.pcw.co.uk/2185876.

appears to be a significant variation, contact the PC system manufacturer or microprocessor place of purchase."

Surely we should be warned about this before purchase. If the supermarkets sold goods at nearly four per cent underweight, there would be an outcry that we were being cheated.

I then looked to overclock and get my missing MHz back. No problem there. So I checked to see how far it would go and retain stability. The highest amount that the Prime95 stress test sustained without error was 10 per cent overclock, with failure at 12 per cent. So much for the overclockability of the Core Duo chips at standard voltage. Having done this I settled on a five per cent overclock to get back my missing 3.91 per cent with a small amount extra.

D Watts

SLOW SAT NAV

I have just read through your sat-nav group test in the Winter 2006/2007 issue. You made no mention of the time each unit takes to lock onto a satellite signal. I have a sat-nav unit, and it drives me mad waiting for the thing to initialise.

Peter Robson

Kelvyn Taylor replies: Time-to-first-fix (TTFF) for sat nav (GPS) receivers is, we believe, of limited use. All published TTFF values from the chip manufacturers are in the range of one to two minutes. Actual TTFF values from a 'cold' start (that is, when the GPS chip has out-of-date satellite data) are affected much more by the local conditions – how many satellites are visible, signal strength and whether the GPS device is moving. To download new ephemeris data (which is valid for about five hours for each satellite), a GPS receiver needs to have an uninterrupted data connection from the same four or five satellites for about a minute. If a satellite disappears, the process restarts.

To get the lowest possible TTFF times, you should try to turn on the receiver only when stationary and in



TTFF values on sat-nav devices can be misleading

an area free of obstructions. Also turn off the receiver before taking it indoors to stop the unit going back into cold start mode. If you turn it on and off only when you're outside then it will normally do a quicker 'warm' or 'hot' start by using the last location data it recorded.

BAD SERVICE

In the review of the Belkin Wireless 802.11g All-in-One print server in the June edition, Mark Wilson said that any computer on the network can print, scan and fax using the same device.

Earlier this year I tried to use a Netgear PS121USB print server to add my HP Officejet 6110 All-in-One to a network of two computers with a Belkin modem/wireless router. Unfortunately, there seemed to be a clash between two wizards. The Netgear 'Add printer port wizard' required the selection of the driver for the printer, but this was hidden in HP's installation wizard.

I tried to find the bare driver on HP's web pages, but it was clear that the 6110 was not meant for networking in this way.

I managed to install the software on the computer that had been connected to the 6110, but was unable to do this on the other. Instead, I installed software for the Deskjet 990c as the web pages suggested as a cut-down version. Both computers can print over the network, however if I install print server software before printer drivers



want to scan I have to reconnect the 6110 direct to the computer. Would the reviewed product solve this problem or would the 6110 still be impossible to network?

Philip Giddings

Kelvyn Taylor replies: Print servers are normally easiest to install if you first install the print server software, then the printer software and drivers, not the other way round. The print server simply creates a new IP printing port that the printer commands will be redirected to.

WIN
 Next month's prize for the letter of the month is HAUPPAUGE WINTV



The new Hauppauge WinTV Nova-TD USB key tuner uses 'Antenna Diversity' technology to give the best reception for digital Freeview TV on a PC. This tiny USB2 bus-powered key boasts two digital tuners that can be combined in weaker reception areas. In better reception areas or with a roof aerial, the tuners work independently, enabling you to record one programme while watching another, or record two different programmes simultaneously. It comes with twin portable aerials, software and an infra-red remote control.

Fully compatible with Windows XP, Media Center and Vista, Hauppauge's WinTV Nova-TD adds a new dimension to your media experience.

The winner can opt instead for the Hauppauge WinTV HVR-900, a hybrid analogue/digital USB stick tuner if they live outside a Freeview reception area.

For more information, visit www.hauppauge.co.uk.

Gordon Laing



gordonl@pcw.co.uk

Multimedia model

It's understandable you'd want to keep up with the latest media technologies, but before you buy, reconsider your humble PC

Isn't it nice when something works really well? I've just watched the latest Bond film *Casino Royale* on Blu-ray using my home-made media PC, and while both the movie and actor Daniel Craig were great, what really impressed me was the way the PC handled the high-definition presentation. As one of the most technically demanding titles yet, I'd expected hiccups.

Times like these are what owning a media PC is all about. I've long held the belief that a well-configured PC can make the ultimate home entertainment system, and it was with great relief that my existing system scaled with relative ease to accommodate the requirements of HD. Of course if you have the right parts, there shouldn't be any problem, but things don't always run to plan.

The big problem with PCs for entertainment purposes is that they're, well, PCs. As such they

'A well-configured PC can make the ultimate home entertainment system'

inevitably don't run as smoothly as dedicated consumer appliances and there's nothing like a mysterious memory error to spoil a good evening's entertainment.

The biggest lesson I've learnt is 'if it ain't broke, don't fix it'. There's a huge temptation for any enthusiast to tweak, but it's best to leave the one your family relies on for entertainment well alone. Once it's running smoothly, don't touch it.

Which brings us back to Bond, James Bond. My own media PC had been running pretty smoothly for TV recording and playback since I upgraded it to a Core Duo mobile processor about a year ago, but I wanted to see how easily – and affordably – it could be equipped to also handle HD content from HD-DVD and Blu-ray.

In terms of decoding muscle, my Core Duo met half the requirements, but as with DVD when it first arrived, I'd also need a boost from a suitable graphics card. I got hold of a Sapphire X1600PRO that supported H.264 acceleration while fitting into my low-profile case and sporting an HDMI port for future connectivity.

I wired up the VGA port to my analogue projector and used the ATI Catalyst Control panel

to force a desktop resolution of 1,920x1,080 at 30Hz, equivalent to the 1080i format. My projector recognised it as 1080i and down-sampled to match its 1,366x768 resolution.

For software I upgraded Power DVD to the latest Ultra version, which supports both Blu-ray and HD-DVD playback while retaining compatibility with earlier formats, including recorded TV shows.

The final link in the equation was a drive to play the discs. As readers of this column know, I'm still on the fence as to whether Blu-ray or HD-DVD will win the HD format war, but a media PC at least allows early adopters to support both in one box if desired.

HD-DVD playback is a relatively affordable option if you use the external drive designed for the Xbox 360 console. Blu-ray drives currently cost more due to their rewritable capabilities, but prices are sure to fall over time. I used Sony's BWU-100A, although I'd keep an eye open for forthcoming dual-format drives.

I'd expected some fine-tuning, but was relieved to find my system happily played *Casino Royale* and a variety of HD-DVD titles without complaint. The movies looked and sounded terrific, but, unlike most consumer HD players my media PC started playing after a relatively-short pause, ran virtually silently and could accommodate both rival HD formats with only a single set of cables going to the display.

As will be revealed in next month's Hands On Hardware, my particular configuration was operating close to capacity and tougher titles could be beyond its capabilities. This was mostly down to the limitations of components designed for low-profile cases though, and if you have a larger system based on a Core 2 Duo with a decent graphics card, you'll be fine.

The crucial point is that a relatively small and easy upgrade allowed my existing media PC to handle the latest HD content, while still performing its normal TV recording duties. In my book, this reconfirms the media PC's position as the ultimate entertainment appliance. They may still require a bit of legwork to get them working, but once running smoothly, there's nothing to beat them in terms of flexibility and upgradability. **PCW**

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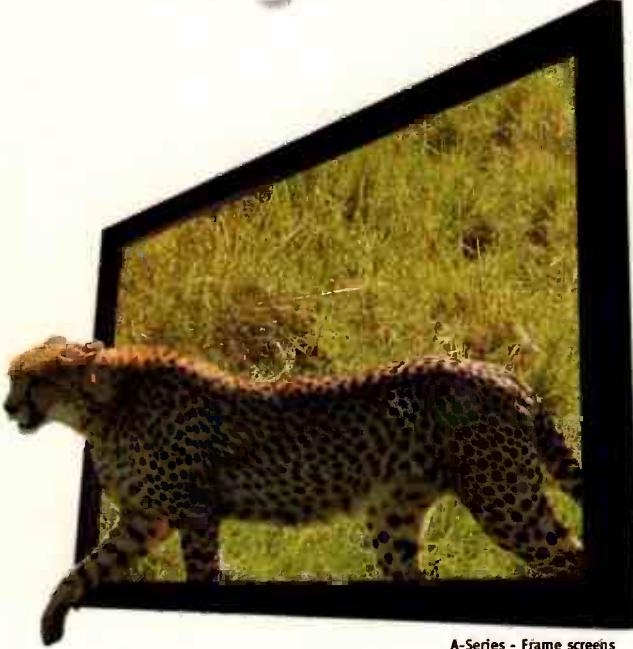
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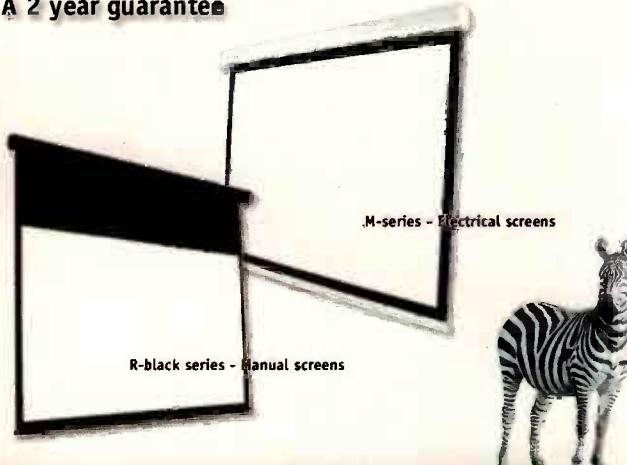
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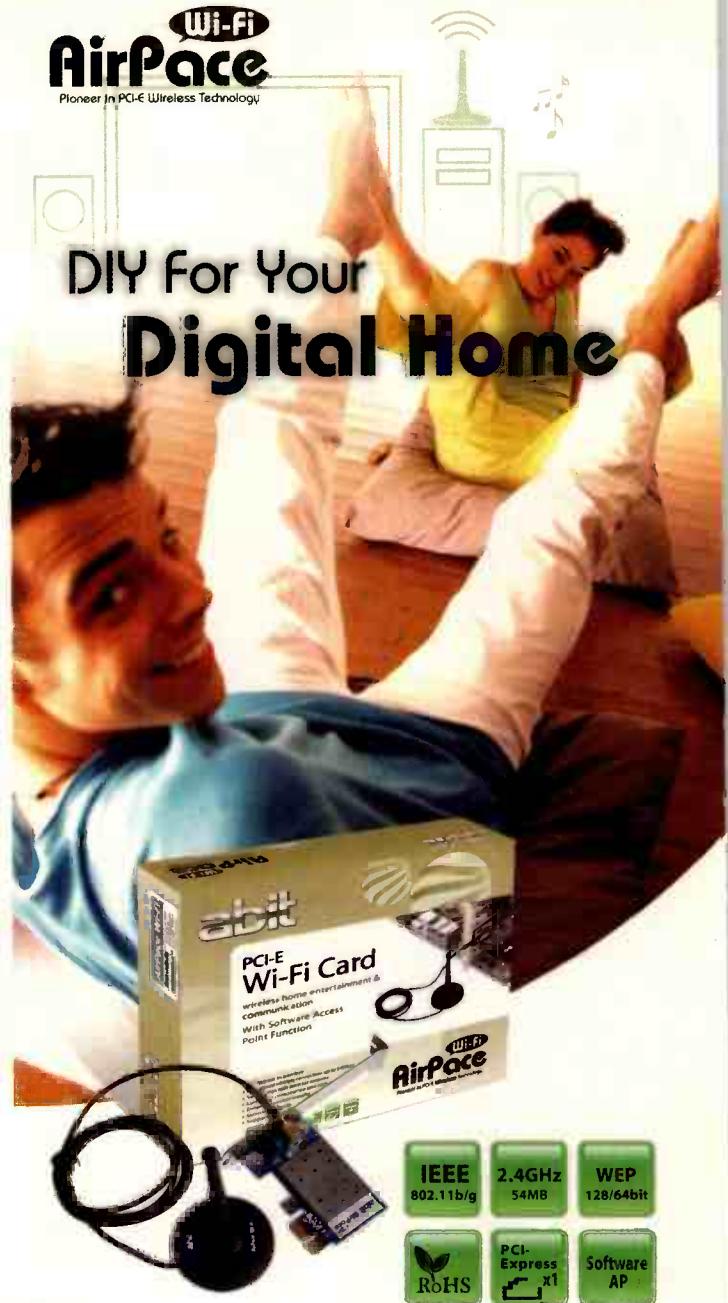


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The Indian connection

Despite the high-speed claims from ISPs, many UK broadband users are finding it hard to get connected, says Barry Fox

More than half of people in the UK have broadband – with some 13 million homes and small businesses now hooked up. Regulator Ofcom boasts that speeds “continue to rise” with “headline connection speeds” now averaging 3.8Mbit/sec, but warns that “almost half of residential consumers are unaware of the headline connection speed”.

I am not surprised. Ofcom’s puff does not explain what headline speed is. You have to download and read the whole 56-page Ofcom report to find out.

Headline speed is the maximum data speed you can get for your subscription money. In practice, the real IP line or data rate will be at least 10 or 15 per cent less than the headline speed. It depends on the thickness of the wires.

‘If you are suffering poor broadband service, maybe the answer is to move to India’

whether they are copper or aluminum and any corrosion on joints. The IP throughput is the rate at which data moves across the network. This varies with time of day and congestion.

This is quite separate from how individual websites handle data and clutter them with redundant graphics – try the Barbican site for a good example of how to slow ticket sales with pretty pictures. Foreign sites will often be slower because the traffic has to negotiate more network bottlenecks.

The service provider also sets a contention ratio. With a 50:1 ratio you are sharing broadband access with 49 other local users. If everyone is using it at the same time, the line rate is divided by 50. BT says you can try checking your local conditions by going to the BT Wholesale website www.btwholesale.com/getbroadband. Good luck – the site requires registration, is horrid to use and bristles with legal warnings.

I was recently at two technology conferences – one at a posh venue near upmarket Staines in the UK, and the other in India. At each event, 30 high-flyers from around the world had been promised Wifi access to the internet.

At the Staines venue our laptops showed ‘excellent strength’ connections, but either no internet access or slow and flakey connections.

The venue management said two 8Mbit/sec broadband pipes were feeding the Wifi routers, but BT’s contention ratio for the area was 120:1. We are at our wits’ end, they said. All we can do is turn off all the Wifi nodes except those in the conference hall, and concentrate all the data access to that one room. Some laptops connected, sometimes, but the connections often dropped.

I had the network analysis program Network Magic on my laptop. It quickly showed why connections were failing.

Remember that the A in ADSL broadband stands for Asymmetric. Faster speeds are available for downloading than uploading. For a 1Mbit/sec connection the download speed should be around 1Mbit/sec and the upload around 256Kbit/sec. This is more than adequate unless you are sending movies or suchlike.

With four people in the conference room the download speed was an acceptable 702Kbit/sec, but the upload speed was a pathetic 52Kbit/sec – less than you get from a dial-up modem.

When a few more people logged on, the download speed dropped to 357Kbit/sec and the upload to 30Kbit/sec. Download then sank to 220Kbit/sec with 28Kbit/sec upload. At these speeds vital IP handshakes are lost and services shut down. When I tried another speed test, Network Magic tried for 10 minutes and gave up.

After the event I asked BT about the venue’s claim that the local exchange could only deliver a 120:1 contention ratio. So far I’ve had no useful response. Instead, BT has sent me a press release that boasts of “the highest stable speeds for broadband over the widest national footprint in the world” with “speeds of up to 24Mbit/sec early next year”.

The sting in the tale is that I used the same laptop with Network Magic a few weeks later in India. Broadband access was 100 per cent reliable, with speeds rock solid at around 1,380Kbit/sec download and 400Kbit/sec upload.

If you are living near Staines and suffering poor broadband service, maybe the answer is to move to India. **PCW**

Guy Kewney



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In the public servers

It's not cheap, but if you've got a good firewall and can ignore nay-sayers, it's possible to run a public-facing server from home

Placing my empty glass on the pub bar in a meaningful way the other night, I rounded off my anecdote with the observation that "the users never discovered the ADSL link was down".

I was hoping to get my glass enthusiastically filled by an admiring audience, but instead I got: "You run a public-facing server on a home machine, using broadband? Don't you know how STUPID that is?"

Well, I do. I run three servers. I run an Internet Relay Chat (IRC) server based on BIRCD, which just works. I run a private web server with a password, onto which I can upload photographs and stuff when I'm out and about. It just works. And I run a remote terminal server, which means I can pick up a web browser anywhere in the world, log in, and then use RDP (remote display

premises, and the traffic goes from there out into the internet, where it gets routed back to a single Firebrick at the premises of my ISP, Watchfront. I don't need four lines, but I know small businesses that do; four fast DSL lines means they have over 20Mbits/sec of download capacity, and a couple of megabits per second for uploads.

Is there a drawback? Apart from the cost, there are latency issues. For a serious online multiplayer gamer, the extra hundred-odd milliseconds it takes to pull all the packets together, and persuade your home network that it has a single feed, will spoil your enjoyment.

The main benefit is reliability and security. I can remote control my home desktop from any Windows machine in the world, but I promise you, you can't even prove that the machine exists if you try hacking in. You'd need to log into my firewall first, but it's very unlikely that anybody would think it worth the effort to do for an ordinary home or small business network.

The statistics are surprising. A broadband line should not go down very often, but 'go down' is a loose term. BT probably doesn't regard a two-minute gap in service as loggable because it is probably caused by a 'retraining' session in your DSL modem. But if you're running a server, a two- to five-minute gap in service can be embarrassing, not to mention infuriating. And statistically, I'd estimate you might see a couple of these a week.

So having two ADSL bonded lines, which means you have to have both lines down simultaneously to see an interruption in service, should mean that instead of dozens in the year, you may see only two or three.

In theory, if you are running an online shop, you'll certainly want a proper, professionally hosted service. I certainly wouldn't suggest that if you have such a service, you abandon it and set up a server at home. Apart from anything else, you have to cope with hardware failures in the network and the servers themselves, not to mention the backup and restore skills, without which you may as well shut up shop right away.

But if you were thinking of testing out a business server, my experience suggests that it would be a useful way to start. **PCW**

'Quite what was so anti-social about this, I don't know. They regarded me as corrupt'

protocol) to access my main desktop for remote control. It just works, too.

Quite what was so anti-social about this, I still don't know, but it was derided as more than just idiocy by a lot of people who you'd expect would know what they are talking about – experienced system admin and hardware repair operators. They regarded me as sinful and corrupt.

And yet, my experience of running servers at home is that in a year of operation, total downtime has been about five minutes. Not many commercial servers can boast better.

The breakthrough for me was the acquisition of a Firebrick firewall, and two ADSL lines. And, yes, this costs real money. So, if you're looking for one of those "How to save five hundred pounds and still have a foolproof web link" articles, this isn't what you're after.

What I have, however, works. Two ADSL lines connected to the same Ethernet cable means that I get twice the connection speed, and hundreds of times the reliability.

The trick is tunnelling. Up to four DSL lines can be fed (bonded) into the Firebrick. The DSL lines are connected to remote DSLAMs in BT's

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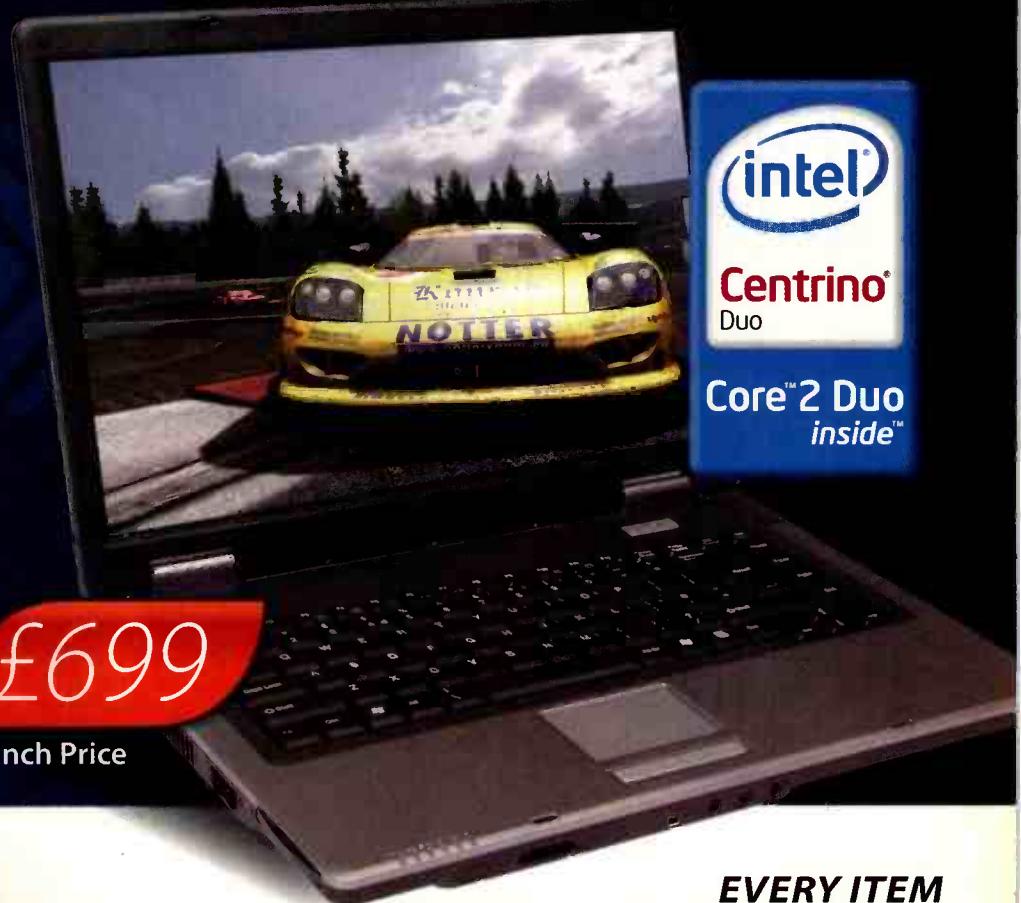
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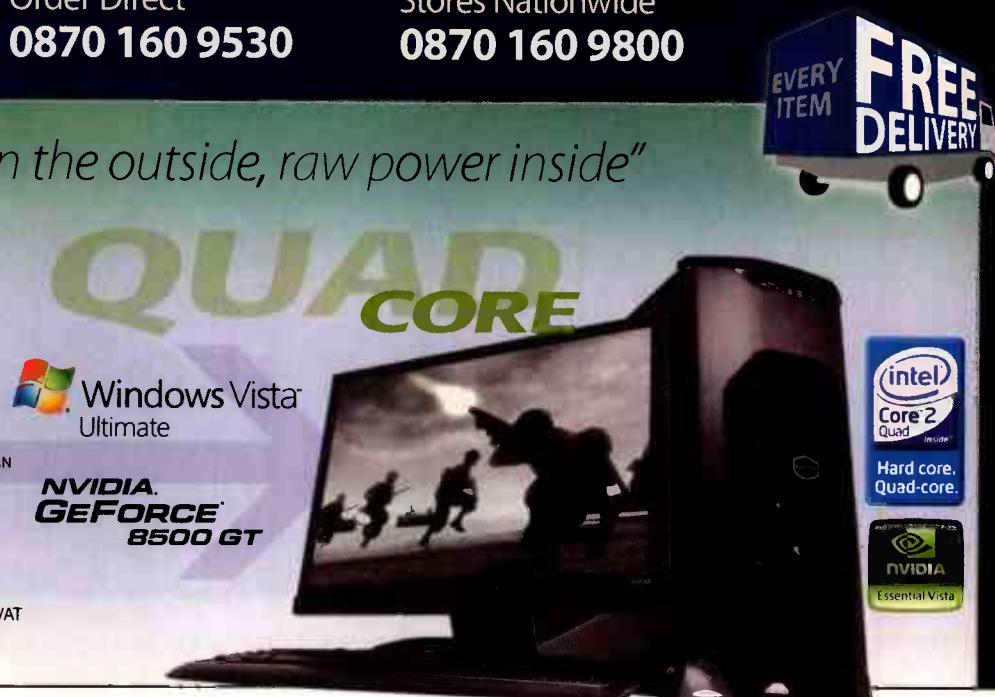
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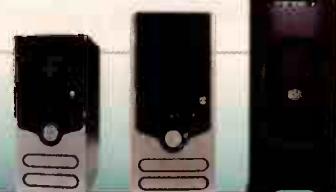
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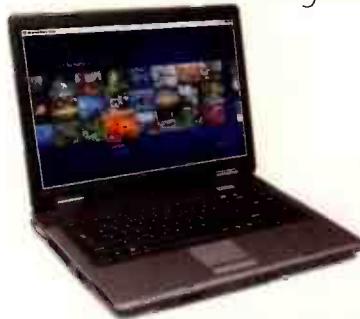
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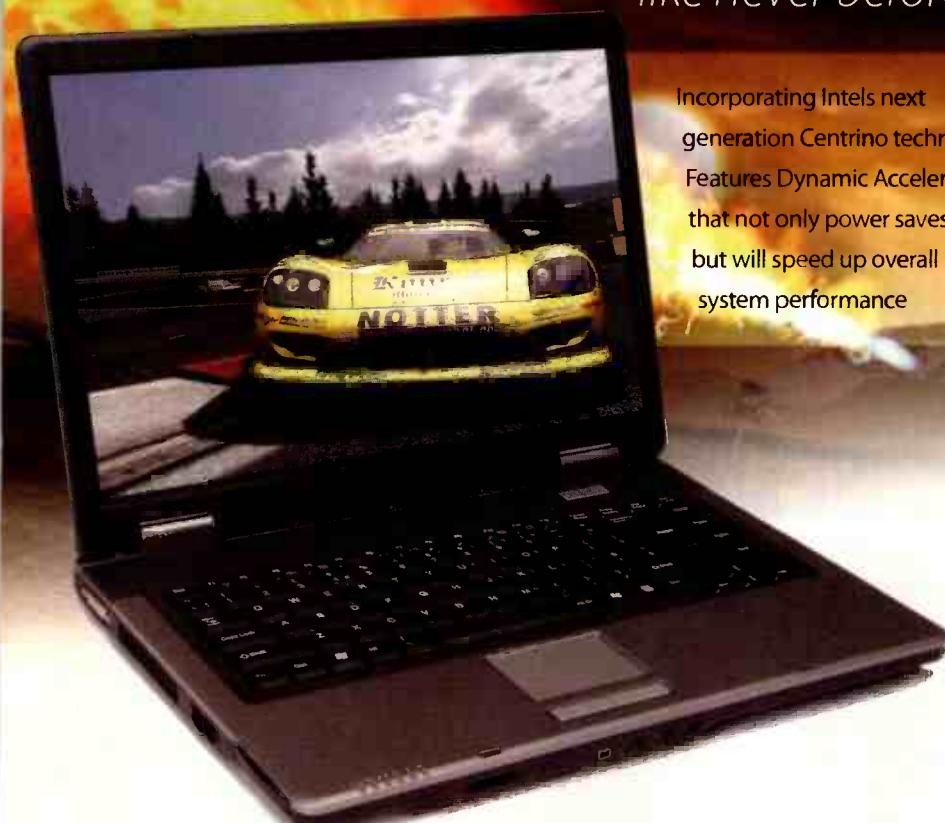
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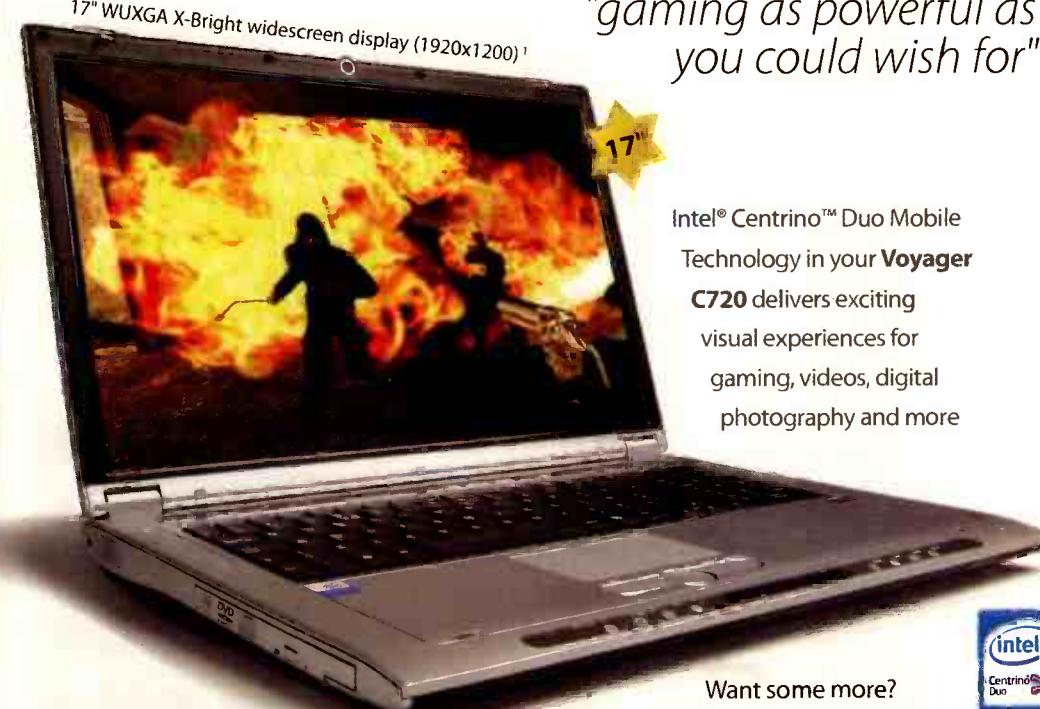


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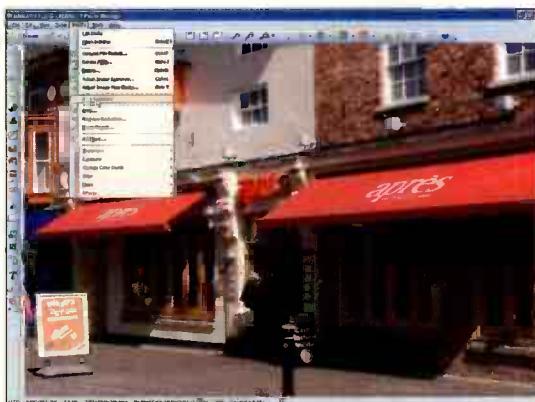
Acquire a versatile photo management and editing suite without spending a fortune. Karl Foster recommends 50 low-cost or no-cost imaging tools

There's no shortage of software to help you organise and edit digital photos. Photoshop, now in its CS3 version, rates as the ultimate image-manipulation workshop, but we're not all sufficiently well-heeled to afford it – £570 is a substantial sum after all. So alternatives must be found, which could take you an age to track down among the thousands of programs available.

To make life easier, we've done the hard work, sifting through hundreds of titles to present 50 excellent, low-cost, photo-related software tools. Naturally, there's some cross-over of functionality between a number of our suggestions, and you probably won't need (or want) to install every item listed. However, rest assured you'll find more than a few useful (and in some cases intriguing) programs to populate your personal photography toolkit. This list isn't exhaustive, rather it is our pick of the best.

The emphasis here is squarely on saving you money, so more than half of our recommendations are freeware. However, even the shareware and commercial inclusions don't cost much (the total cost to buy every product featured here is still less than the price of Photoshop CS3) and they do offer an awful lot. We've also highlighted the top 12 applications and given them more detailed coverage.

If you've bought the DVD edition of PCW, you'll find most of these programs included in the 'From the magazine' section on the cover disc. A small selection is included on the CD edition. There's some expert advice to help you add that professional touch to your photos, plus a couple of indispensable hardware suggestions. So dive in and get ready to transform your digital photo library.



Inexpensive, but effective – ACDSee 9 has a wealth of tools that enable you to quickly knock a photo collection into shape

ACDSee 9 Photo Manager

Price £24.99 www.acdsee.com

ACDSee 9 is targeted at those who want to sort their photos with minimal fuss. It's an image organiser, tweaker and file-sharing suite that, while beginner-friendly, does have some powerful media management tools. Imported images can be categorised by embedded metadata – the info that the camera stores when a picture is taken. So, you can organise files by the date of the image, its size or even your own keywords.

There's a number of optimisation gadgets to hand, including Shadow/Highlight, which is designed to optimise exposure, as well as a one-click red-eye function – always useful when dealing with flashlit portraits. This Vista-certified package incorporates a widget that will display sequences of images on the Desktop for relaxed review, while its Print Layout facilities take the pain out of producing multiple prints on A4 stock ready for sharing.

It's not the most flexible photo asset management device, but it does allow for rapid organisation, optimisation and output. Also, investigate the Pro product, which totes many high-end features, such as Raw file conversion and colour profile support.

Arcsoft Photo Impression 6.5 Gold

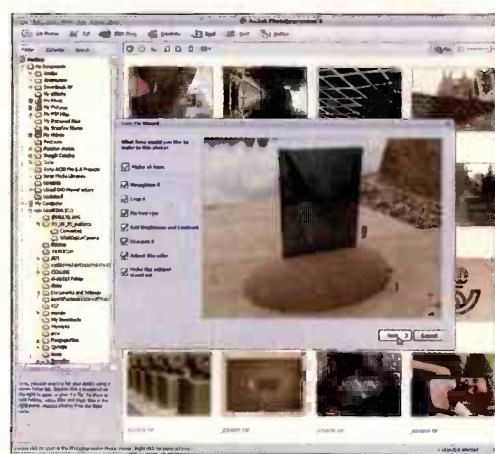
Price \$49.99 (£25.39)

www.arcsoft.com/products/photoimpression

Photo Impression does impress with its feature set, especially given the price. The program has been updated recently and now includes intriguing colour-tinting tools to spice up mono images, color tone for further application of sepia and mono effects, as well as Picture Book, by which you can create electronic photo books with page-turning effects. Extensive Raw support remains, as does a bunch of wizards that give you effective photo optimisation with just a few clicks, as well as manual devices for finer tuning.

Batch-processing functions are abundant, with the tedium of rotating multiple images reduced to one click, and Photo Impression supplies the option to rate images so you can quickly find your favourites. Photoshop snobs will doubtless turn up their noses, but you can't argue with 48-bit image support (16 bits per colour channel), and you'll also find the means to open other media files, such as video and audio, from within the application.

At the price, Arcsoft has a very capable and cost-effective tool for photo



For quick and easy photo-preening results, Arcsoft makes a good impression with its image-massaging suite

management. It's a shame, as is so often the case, that there's no Mac OSX support, but the software does feature many facilities that will make the life of the casual photographer so much easier.

Ashampoo Photo Commander 5.2

Price £34.99 www.ashampoo.com

Frames, collages and calendars – they're just some of the creative tools available within Photo Commander, a multi-skinnable program that could form the bedrock of your imaging endeavours. It features extensive support for Canon Raw capture – a system that bypasses the camera's processor so that you get what comes directly from the sensor. And, when the photos are imported, you can

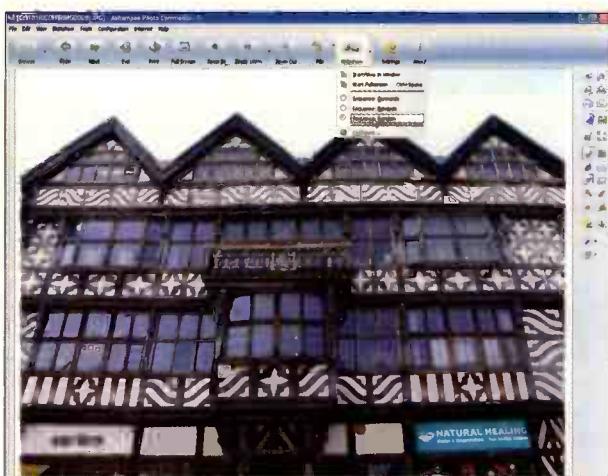
shove them through a host of image improvement gadgets, including a full-screen editing mode so you don't miss a pixel.

The brand has an odd name, but Ashampoo's package delivers credible results. There are built-in collage tools, CD/DVD-burning simplification processes, and the means to create greetings cards, calendars and slideshows. It's not the most sophisticated image editor and manager, but it is cheap and effective. With support for 6.1 surround video, enhanced support for Jpeg and Tiff

and stills, plus speedier caching, it's a sincerely superior product for little outlay.



Brush Strokes Image Editor may not be the slickest-looking program, but it's certainly user-friendly and versatile



Take command of your photo collection with Ashampoo's low-cost image management suite

Quick exposure fix

Digital camera light-metering systems do a good job of setting shutter speed and aperture to get the ideal exposure, but they don't always get it right. High-contrast scenes, large areas of white in the frame and many other factors can confuse the camera. Thankfully, there are plenty of image editors with gadgets for maximising an image's dynamic range, the usual fix being a levels adjustment.

An image editor's levels dialogue will present a histogram that represents the density of a photo's pixels, displayed from dark to light. If there's a fall-off at either end of the histogram, we're looking at poor exposure. Correcting it is a case of clicking on the handles at either end of the histogram and moving them inwards. If you have a lot of photos that need tweaking, opt for an editing program that offers 'auto levels'. This makes optimising exposure a one-click affair.

There is a downside to this, however. When optimising the three colour channels

(red, green and blue) that make up a digital photo, the software may create a shift in the colour balance of the image. In this case, and if the program supports it, try tweaking the levels of each channel individually. It does take a while to do this, but you should get better results.



To check the exposure of a photo, access the image editor's Levels dialogue. An even spread of pixels in the histogram is good news

(red, green and blue) that make up a digital photo, the software may create a shift in the colour balance of the image. In this case, and if the program supports it, try tweaking the levels of each channel individually. It does take a while to do this, but you should get better results.

Brush Strokes Image Editor 1.0

Price Free

www.pabird.supanet.com/~pabird/freesoftware/brushstrokes

If you can use Windows Paint, then you can use this rather more capable image editor. It's a freebie that can handle all the major photo file types, including Jpeg and Tiff, and offers colour adjustment, filters, sharpening and more.

While the interface is rather lumpy, it includes numerous tools to let you rotate, transform and perfect photos, as well as stills from video footage. It's only a 620KB download and you'll not need to mug up on the instructions, such is its ease of use. So for a quick spot of freeware photo fun, give it a whirl.

Google Picasa 2.6

Price Free <http://picasa.google.com>

Google generously offers a basic, but elegant photo organiser and optimiser for free. Picasa, tucked away under the More link of the popular search engine's homepage, is a well-designed piece of software that enables you to perform basic image tweaks and manage a photo archive with ease. When first installed, the program searches the entire system for photo files and organises them by date. You can then reorganise the archive from within Picasa, perhaps editing filenames and placing related photos into virtual albums. And if the images are of a 'sensitive' nature, collections can be protected with a password, to keep prying eyes at bay.

There's a bunch of basic fixes available for common tasks such as colour correction, optimising exposure and removing red-eye, and there are some interesting effects, such as one-click monochrome, sepia and warming filters. Picasa also features



Google's Picasa is a good looking and powerful image management tool that will scan for and sort all photos on the system

backup facilities and supports the IPTC standard for caption information, as used by imaging professionals. Buttons along the base of the interface also give access to a host of publishing tools, including devices for website creation and posting images to a blog.

Even though Picasa is free, it's well crafted and performs sophisticated file-management functions admirably. Sadly, however, it's Windows-only.

Irfanview 3.99

Price Free www.irfanview.com

If you need a fast, efficient image viewer that has a lot of professional features, and plan on non-commercial use, then Irfanview could be the freeware for you. It's a Windows-only graphics viewer that handles pretty well every file type you could think of. There are options for optimising photographs, as well as powerful batch-conversion functions, and the program can be further enhanced with 8BF plug-ins, of which many are available for download from the developer's website.

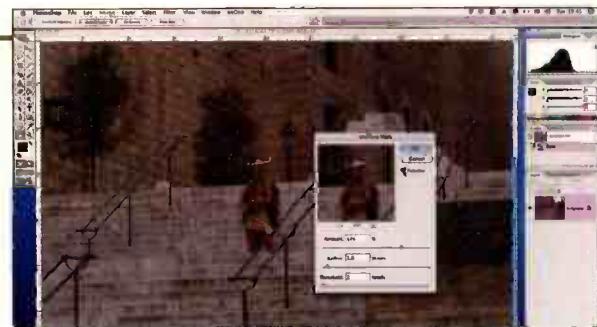
Irfanview is light on system resources – in fact, the core program is just one .exe file – but it's nonetheless very powerful and



Sharpen up

Sharpness is an important part of the photo quality equation. If the lens was slightly out of focus during capture, or if there was a hint of camera-shake, you've an unusable picture. But even when the camera is rock solid and focus is perfect, you may still suffer from softness. Zooming into 100 per cent with an image viewer reveals slight blurriness along what should be crisp edges. It's not too much of a problem, but if you're working with marginally soft photos and need ultra-crisp images for print, here's a handy tip.

Don't go for the Sharpen function in the image editor. Instead, and counter-intuitively, access Unsharp Mask, if your software has it. Provided the image is of a reasonable size and resolution, such as might be output by a 5-megapixel, or more,



Sharpening a high-resolution image is best done with Unsharp Mask and some subtle settings

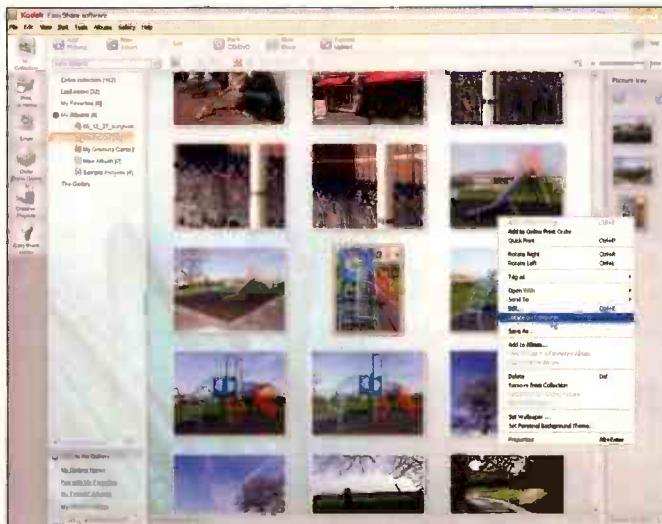
digital camera, the following values always seem to work:

Amount: 170 per cent

Radius: 1 pixel

Threshold: 2 levels

Those are the values and terms for Photoshop. If you end up with excessive artefacts, reduce the Amount value. You'll see, by toggling the Preview on and off, that everything sharpens up while areas of flat colour are left unaffected.



If you're after ease of use in an image manager, along with creative printing options, Easyshare fits the bill nicely

use to sort files by their creation date, and it'll keep track of any filename and location changes. The usual assortment of photo optimisation options is included, as are templates for creative projects, such as greetings cards, posters and calendars.

You can, of course, print to any device, but the suite is designed to integrate with Kodak's home printers for one-click output. Available for PC,

Mac and even Unix, Easyshare is a free download from the Kodak website, as is a collection of photo greeting card templates to further expand options. Be warned, however, that it's a download in excess of 75MB.

Kodak Easyshare 6

Price Free www.kodak.co.uk

While Easyshare serves as a promotion for Kodak's online printing service, it does have many useful, beginner-friendly features for the improving photographer, as well as extensive online tips for taking better shots. As with certain other viewers, it has a Calendar view that you can

Free for non-commercial use, Irfanview is a feature-rich image viewer that can be expanded with plug-ins

Lemkesoft Graphic Converter

Price \$30 (£15.23) www.lemkesoft.com

Although it's a Mac-only program, Graphic Converter is worthy of inclusion here for those readers who dabble in both worlds. It seems to have been around forever and is used by Mac-wielding graphics professionals worldwide, sometimes for little more than file conversion. However, there's a lot more to it than that. Import and export options are extensive, with the means to open more than 200 file types, but photographers will appreciate its Raw file handling and excellent browser. It's quick to update thumbnail previews and displays embedded

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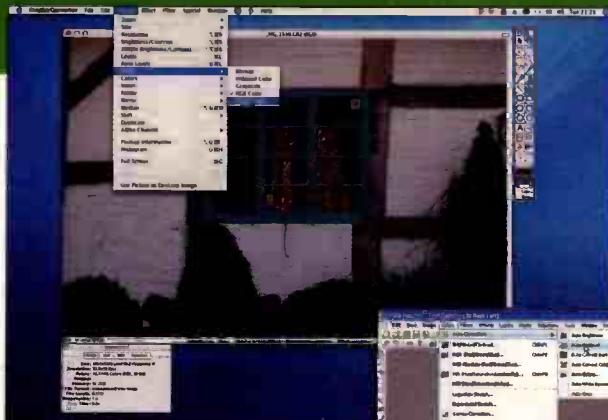
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Graphic converter, now available for Intel-based Macs and with all the facilities a photographer could need

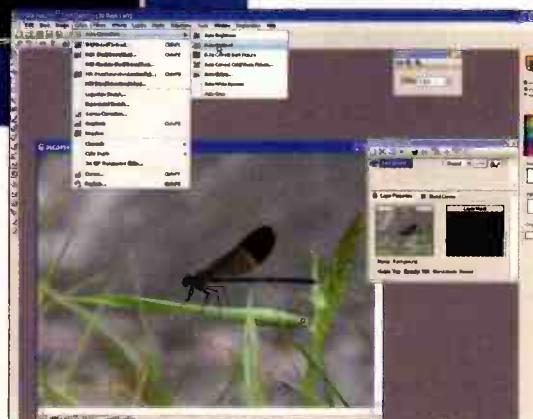
metadata, as well as any comments or additional data you wish to add.

Many photo-editing tools are included, but for those working at speed, the picture enhancement function saves a lot of clicking. If the built-in feature set isn't sufficient, which seems unlikely, Graphic Converter also supports Photoshop plug-ins (track them down via www.versiontracker.com/macosx), although only the PowerPC version of the program will run them. There's also support for scripts created by fans of the software. The killer feature of more recent versions of the software is CMYK handling, which makes it an excellent program for publishing professionals who need colour-separated photos. But even adventurous home users will find Graphic Converter worth the low asking price.

Photo Pos Pro 1.33

Price £24.08 www.photopos.com

Despite the 'Pro' tag, Photo Pos Pro is aimed at both novice and advanced users and, for the price, is remarkably powerful. As well as



extensive enhancement and editing tools, it offers selection tools that support transparency, feathering and the like, for those who enjoy creating photo montages. Naturally, if selections are possible, then you need layers, and Photo Pos Pro's layer handling is versatile. It's possible to manipulate the transparency of layers, apply curves and use blend modes to create photo-based compositions, while designers will appreciate the software's masks, gradients, patterns and textures. Text handling is also good and there's the means to place text along paths.

As with any capable photo manipulation and design package, a file browser is included for archive management and it's possible to set up batch operations when

Windows only (but not 2000), Photo Pos Pro provides a lot of editing power for a very low price

Pro choice: DxO Optics Pro 4.2

When you've spent hundreds of pounds on a quality digital SLR and lenses, it's disconcerting to think that its output could be better. It could, however. The folks at DxO have devised a suite that corrects such lens-induced aberrations as distortion, softness and vignetting, while optimising exposure and colour. Optics Pro is easy to use and can make a huge difference to your photos. www.dxo.com

Overcome the shortcomings of your digital SLR with DxO's powerful image-fixing tools



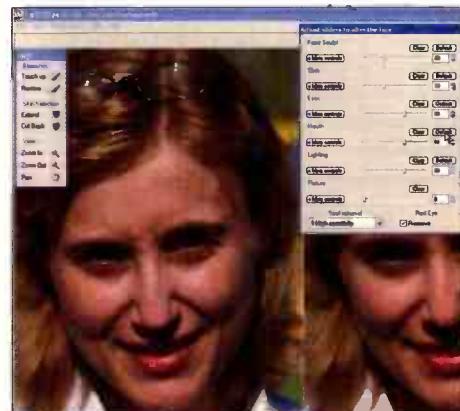
working with large collections of images. A step-by-step help system encourages beginners to explore the software, while more advanced image manipulators have access to some very sophisticated tools. It's a true commercial product, but comes at a very reasonable price, and there are discounts for multiple licences should you want to use it in a work environment.

Portrait Professional 4.1

Price £19.95

www.portraitprofessional.com

These days, it's rare you'll see a printed portrait that hasn't been massaged to some extent. Moles are removed, wrinkles reduced and skin texture smoothed to flatter the subject. Retouching occupies the time of many publishing professionals and is a skill that takes time to acquire. However, you can speed things along with Portrait Professional, a program that automates retouching and even makes it possible to change a subject's expression.



Transform portraits in a few easy steps – Portrait Professional does the retouching for you

Cheat saturation

Before digital, photographers would be picky about their film stock, for all film is not the same. Kodachrome was a favourite because it rendered colour superbly. Then came Velvia, from Fujifilm, a film capable of super realistic (or over the top, according to some) colour rendition, sharpness and contrast. Purple, in particular, renders very well with this relatively slow, but wonderfully rich stock.

Even when switched to Vivid mode, if the camera supports it, digicams don't produce photos with the

impact offered by exotic film stock. So we cheat. The simple ruse is to access your image editor's saturation function and crank it up a bit, but not so much that the colours 'posterise'. However, if you have the option to use layers, try copying and pasting the background image to a new layer, then multiply the background with the layer using blending modes, adjusting the top layer's opacity as necessary. Suddenly, a drab digital photo becomes incredibly vibrant.

There'll inevitably be some noise introduced by this process, so care should be taken with settings, but the bonus is that an image will zing with colour. Just remember to Save as, rather than overwrite the original file, in case you want to tone things down later.



Boost colour in a photo by simply upping the saturation, or resort to layer manipulation if your image editor supports it

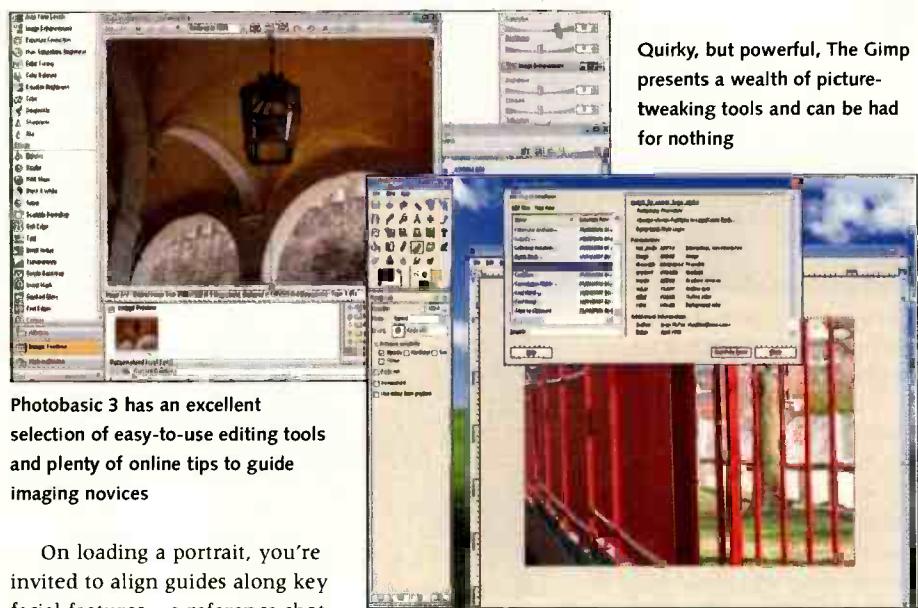
Indispensable hardware

You won't progress far towards imaging excellence without a calibrated monitor. As sold, a computer monitor is quite adequate for normal office or home use, but it's not up to the demands of the digital photographer. Accurate colour rendition is a must, so the monitor should be calibrated with a device such as the Lacie Blue Eye 2 (£169, www.lacie.com/uk). Mac and PC compatible, the Blue Eye enables you to perform manual calibration of gamma, white point and brightness, so what you see on screen is what actually exists. See also the Spyder 2 Suite from Colorvision (£129.99, <http://shop.colourconfidence.com>).

Also, while you're shopping, get a card reader (from around £10). Plugging a digital camera into the computer is all very well, but when transferring images, it's far more convenient to whip out the memory card, plug it into a USB2 or Cardbus reader and drag the card's content to your media drive. That's right, a media drive. For safety, you shouldn't keep photos on your main hard disk, nor should they be kept on any physical drive assigned to the image editor as scratch space, so pop a dedicated media drive, internal or external, on your shopping list, too – or you can make your own with a spare hard drive and a USB2 enclosure such as Octigen's 3.5in Slim model (£17.99, www.octigen.com). And finally, don't forget to implement a suitable backup regime for your files.



Ensure what you see is really what you get by calibrating your monitor with a hardware device, such as the Lacie Blue Eye 2



Photobasic 3 has an excellent selection of easy-to-use editing tools and plenty of online tips to guide imaging novices

On loading a portrait, you're invited to align guides along key facial features – a reference shot helps you place the handles correctly. Once the relative positions of mouth, eyes, nose, hairline and more have been established, the software will work out which areas to retouch. Skin becomes smoother, teeth and eyes brighter and the face subtly changes shape to become more attractive. Professional retouchers will doubtless complain that it has too great an effect on pore detail, rendering skin a little too smooth. But for those of us who haven't time to spend hours labouring over photos, Portrait Professional does offer a speedy way to perk up pictures with little skill. It's a well-priced product, fun to use and is also available as a Mac version, which supports 16 bit per channel colour processing.

Studioline Photobasic 3

Price Free www.studioline.biz

Photobasic, the freeware edition of Studioline Photo classic, is a very capable, albeit simple, image management suite. The emphasis is on organising and sharing photos, hence there's the expected browser with thumbnail previews and caption information. There are options to optimise shots for email quickly, access to printing tools, a slideshow creator and the means to back up the archive to optical media.

The number and flexibility of tools is impressive, with all the regular optimisers and adjusters on show, plus a fair few special effects filters. They're beginner-friendly and encourage experimentation, with a split preview window giving a large view of any changes that have been made.

To install and use the software you must request an activation key, so prepare to face regular reminders on the splash screen. Otherwise you can invest in the commercial product, which is not all that expensive. As an introduction to digital photo management and editing, Photobasic 3 is a very effective, Windows-only product.

Quirky, but powerful, The Gimp presents a wealth of picture-tweaking tools and can be had for nothing

The Gimp

Price Free www.gimp.org

Despite the odd monicker (which stands for GNU image manipulation program), The Gimp is a quirky but powerful piece of software and is aimed squarely at the advanced image hacker. Available for pretty well every computing platform, The Gimp offers an impressive range of graphics creation and photo retouching gadgets. Channel, layer and mask manipulation are all supported and there are tools for tweaking levels and curves, alongside sophisticated selection options.

It's not a program well suited to the beginner – in fact, the help files are a separate download – but if you know what you're doing, Photoshop-style pixel mangling can be brought to bear on many image file types. There's a host of plug-ins supplied, authored by a small army of enthusiasts, including such delights as Cartoon, Photocopy and Dog, so you'll not be stuck for photo-warping options. If you're looking for a worthwhile alternative to Photoshop, are prepared to deal with the software's quirks and don't wish to pay a penny, The Gimp comes highly recommended. PCW

Pro tools: Adobe Photoshop CS3

Adobe's Photoshop has been with us for more than 16 years and, in its new CS3 incarnation, remains the ultimate image editor for graphics professionals. Packed with every photo-editing tool you could dream of, it's well worth the investment if photography is more than just a hobby to you.

Price £570 www.adobe.co.uk

| NAME | URL | PRICE | DESCRIPTION | WINDOWS/MAC OS |
|---|--|------------------|---|-------------------------------------|
| ACDSee 9 Photo Manager | www.acdsee.com | £24.99 | Suite with image enhancement tools | 98/NT/2000/XP/Vista |
| Adobe Photoshop Album Starter Edition 3 | www.adobe.com/products/photoshopalbum/starter.html | Free | Master the basics of digital imaging with this photo fixer and manager | Me/2000/XP |
| Arcsoft Panorama Maker | www.arcsoft.com/products/panoramamaker | \$39.99 (£20.31) | Transform overlapping photos into seamless panoramas with one click | 2000/XP/Vista/Mac OSX |
| Arcsoft Photo Impression 6.5 Gold | www.arcsoft.com/products/photoimpression | \$49.99 (£25.38) | Manage all manner of media and view photos by date with the Calendar | 2000/XP/Vista |
| Arcsoft Raw Thumbnail Viewer | www.arcsoft.com/products/rawviewer | Free | Preview Raw images from Explorer | 2000/XP/Vista |
| Artplus Digital Photo Recovery | www.artplus.hr/adapps/eng/dpr.htm | Free | Recover deleted images from accidentally formatted memory cards | 95/98/Me/NT/2000/XP/Vista |
| Ashampoo Photo Commander 5.2 | www.ashampoo.com | £34.99 | Organise, edit and share photos | 2000/XP/Vista |
| Brush Strokes Image Editor 1.0 | www.pabird.supanet.com/~pabird/freesoftware/brushstrokes | Free | A basic, easy-to-use bitmap editing package | 95/98/Me/XP |
| Corel Snapfire | www.corel.com | Free | Easy photo management and enhancement | 2000/XP |
| Face On Body Standard | www.faceonbody.com | \$24.95 (£12.67) | A fun and easy means of swapping people's heads | 98/Me/2000/XP/Vista |
| Faststone Image Viewer 3 | www.faststone.org | Free | Support for all major photo file types | 95/98/Me/NT/2000/XP |
| Faststone Maxview | www.faststone.org/fsmaxviewdetail.htm | Free | A tiny, fast image viewer | 98/Me/2000/XP/Vista |
| Faststone Photo Resizer | www.faststone.org/fsresizerdetail.htm | Free | Batch convert image sizes and filenames | 98/Me/2000/XP/Vista |
| Galleria Framemaster | www.galleriasoftware.com | \$24.95 (£12.67) | Spice up images with this frame-creation tool | 95/98/2000/NT/Me/XP |
| Galleria Collagemaker | www.galleriasoftware.com | \$27.95 (£14.19) | Turn your photo collection into stunning collages in a trice | 95/98/2000/NT/Me/XP |
| Google Picasa 2.6 | http://picasa.google.co.uk | Free | Prep images for the web and email | 2000/XP |
| HP Photosmart Essential 2.0 | www.hp.com | Free | Tweak and print photos with ease | 2000/XP/Vista |
| Irfanview 3.99 | www.irfanview.com | Free | Easy-to-use image viewer, editor and file converter | 95/98/Me/NT/2000/XP/Vista |
| Kiwi Photomerge | www.kiwiczech.net/index.php?menu=354&sub=5 | Free | Swiftly add text to images | 98/Me/2000/NT/XP |
| Kodak Easyshare 6.0 | www.kodak.co.uk | Free | Simple, but powerful image manager and enhancement suite | 95/98/Me/2000/XP/Vista/Mac OSX/Unix |
| Lemkesoft Graphic Converter X Classic | www.lemkesoft.com | \$30 (£15.23) | The essential graphics manipulation and conversion package for the Mac | Mac OSX/OSX |
| Lemkesoft Snaps Cleaner | www.lemkesoft.com | \$30 (£15.23) | Remove potentially troublesome metadata from Jpegs automatically | Mac OSX/Windows 2000/XP |
| Lexar Image Rescue 3 | www.lexar.com/software/image_rescue.html | £24.99 | Recover data from any memory card | 2000/XP/Vista/Mac OSX |
| Memories On TV 3.1.8 | www.codejam.com | \$49.99 (£25.38) | Create slideshows of your photos quickly and easily | 98/Me/2000/XP/Vista |
| Microsoft Photo Info | www.microsoft.com | Free | Handy for viewing and editing metadata | XP/Vista |
| Microsoft Photo Story 3 | www.microsoft.com/downloads | Free | Popular for creating photo slideshows | XP |
| Moor 2 Pic | http://2pic.moor-software.com | Free | Merge and apply effects to photos | 95/98/Me/NT/2000/XP |
| Naturpic High Quality Photo Resizer | www.naturpic.com/resizer | Free | Rapid resizing and up to 37 effects from this freeware | 95/98/Me/NT/2000/XP/Vista |
| Nero Photoshop Deluxe 4 | www.nero.com/eng/nero_photoshop_deluxe.html | £14.99 | Low-cost photo management | 98Se/Me/2000/XP |
| Opanda Digital Film | www.opanda.com/en/df | \$29.99 (£15.23) | Simulate the richness of Velvia and other classic film stock | 98/Me/2000/XP |
| Opanda IEXIF 2 | www.opanda.com/en/iexif | Free | A professional metadata-viewing utility | 98/Me/2000/XP |
| Opanda Photofilter | www.opanda.com/en/pf | Free | Apply filter effects to your photos | 98/Me/2000/XP |
| Photo Pos Pro 1.33 | www.photopos.com/photoposfreetrail.asp | £24.08 | Photo editor and graphics tool | 98/Me/XP |
| Photofiltre Studio 8.1.1 | www.photofiltre.com | £25 (£17.03) | Apply numerous effects to your photos, including 3D renders | 95/98/Me/NT/2000/XP |
| Picget Magic Photo Editor 3.72 | www.picget.net/magicphoto/what.html | \$29.95 (£15.21) | Blend photos together, adding text, frames and other decoration | 95/98/Me/NT/2000/XP/Vista |
| Pixarra Twisted Brush 3.5 | www.pixarra.com | Free | Ideal for artwork photos | 95/98/Me/NT/2000/XP |
| Portrait Professional 4.1 | www.portraitprofessional.com | £19.95 | Perfect images with this enhancement tool | 2000/XP/Vista |
| Reallusion Facefilter Studio 2 | www.reallusion.com/facefilter | £29.99 | Apply enhancements to portraits | 2000/XP/Vista |
| Saint Paint Studio | www.saintpaint.com | £21.60 | Edit stills and AVIs with this flexible design tool | 95/98/Me/NT/2000/XP/Vista |
| Serif Montageplus | www.serif.com/creativity/montageplus1 | £9.99 | Turn a collection of images into stunning montages in moments | 95/98/Me/NT/2000/XP |
| Studioline Photobasic 3 | www.studioline.biz | Free | Manage, share and print images | 2000/XP |
| The Gimp | http://gimp.org | Free | Retouch photos and use batch processing | NT/2000/XP |
| The Little Calorie Picture2icon 2.1 | www.picture2icon.com | Free | Convert photos to Windows icons | 98/Me/2000/XP |
| Triscape Fxfoto Deluxe | www.fxfoto.com/fxhome.htm | \$39.96 (£20.30) | Automate various image management tasks and apply quick fixes | 98/Me/2000/XP/Vista |
| Ulead Photo Express | www.ulead.co.uk/pe/runme.html | £19.99 | Manage images and apply special effects | 2000/XP |
| Vicman Photo Toolkit 1.6 | www.photo-toolkit.com | Free | Extend use of image-viewing software | 95/98/Me/NT/2000/XP |
| Webshots Desktop 2.5 | www.webshots.com | Free | Easily create wallpaper and screensavers | Me/NT/2000/XP |
| Xemi Computers Photo Gadget Pro 2.3 | www.xemico.com/photogadget | \$14.95 (£7.59) | Add image-editing options to Windows Explorer with this shell extension | 98/2000/XP/Vista |
| Xnview | http://perso.orange.fr/pierre.g/xnview/exnview.html | Free | View and convert more than 400 different graphics file types | 95/98/Me/NT/2000/XP/Mac OSX/Linux |
| Xnview Pocket 1.35 | www.xnviewpocket.org | Free | Sort and edit images on your Pocket PC | Pocket PC |
| | | | | 2000/2002/2003/2005 |

Avoiding the cybersnoops

Jon Thomson explains how the traces you leave on the internet can form an alarmingly comprehensive picture, for anyone dedicated enough to follow them



The old saying that if you've nothing to hide, you've nothing to fear no longer holds true – at least in cyberspace. Where's the problem in letting the world know you exist and what you do with your time on the web? After all, it's not as though you're disclosing your bank or credit card details, is it?

But innocent pieces of personal information and opinions posted on the web can help to profile you, your family and friends – possibly even helping someone to chart your whereabouts, take your identity or steal from you. But it's not just potential stalkers, fraudsters and burglars who pose a threat. If your employers were to Google your name and discover what you think about the world, would they accept your forthright and considered views or label you a malcontent? And as governments begin to realise the potential for legal data gathering that the web presents, many law-abiding citizens have decided that enough is enough.

The lights are going out all over cyberspace as worried individuals try to remove personal details from public view. But is it possible to return to a state of true online anonymity?

Vast sources of personal information exist on the web. Being public, they're all free, and access is legal. Best of all, they're usually self-correcting too. And they're just waiting to be exploited by criminals, scam merchants or even nosy neighbours. But what are these sources, and how can you ensure you're not at risk?

Meet the family

Even something as innocuous as a family homepage can be the start of identity theft. Homepages with your own domain name are a cheap and effective way to tell friends and

family what you're up to, but they're also accessible to everybody else. Type 'family homepage' into a search engine, and you can sift through page after page of the most intimate details of the lives of others. There are pictures, interests, and in some cases even dates of birth. At first sight, such information may seem innocuous enough, but to a fraudster, details such as birthdays can be very useful indeed.

One reason is that many family homepages also carry extensively researched genealogical information. By including the maiden names of female family members, you could inadvertently be giving away the answer to an age-old security question. Coupled with a date of birth, an address and a suitable approach, the fraud potential quickly becomes clear. The only question is how to get a street address when all you have is the URL of a homepage. But for a fraudster, this is sometimes a small matter.

Sites such as www.who.is can provide details of who has registered a domain name. For billing purposes, the address and contact details returned should be real. Sometimes, domain registration happens through the

company hosting your web space, meaning that the address becomes the company's address. In the main, however, the names and addresses (and even the telephone number) of the person who registered the domain are there for all to see. A quick phone call from a phisher asking you to confirm your bank details might be all it takes to empty your account.

Because of this, it's a very good idea to limit the information you supply when

'An increasing number of companies search for their employees online'

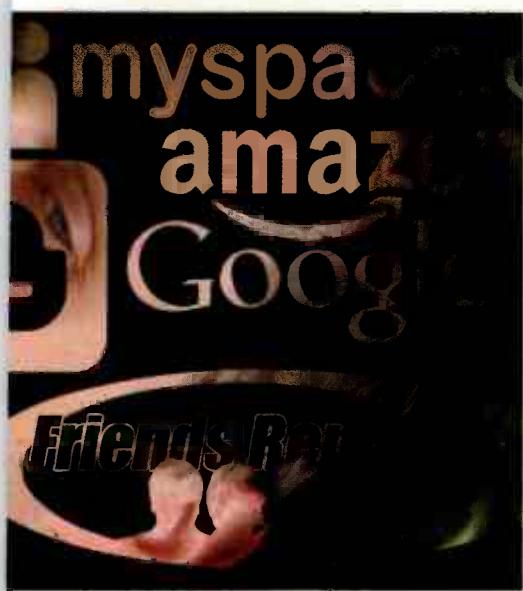
registering a domain (for non-commercial personal sites you can opt for your details to be hidden from Whois searches), and to rent a PO box from the Royal Mail so that the trail ends there. But there are plenty of other places in cyberspace where people willingly give out too much personal information.

Dear diary

The so-called 'blogosphere' is where people post their most intimate thoughts about the world and its ways. Most blogs are left unread and abandoned, but they can give an interesting insight into the minds of others. Some even document the unease felt at being tracked down via the trails their unwitting writers have left for others to follow at social networking sites.

An entry in the anonymous 'Memoirs of an Evil Genius' blog hosted by Typepad details the increasing unease of its author: "Then today I got a message from another

Turning a URL into a street address is as simple as visiting a 'Whois' service



girl I knew in high school," he writes. "I'm starting to shake in my boots at the thought of what else is coming down the pike. I really need to commit Friendstericide. Wearing a homing beacon on the internet is proving bad for my constitution."

The thoughts and feelings expressed in blogs can bite the writer back directly, too. Most blogs aren't anonymous, and it's becoming apparent that employers are realising this when it comes to hiring – or even firing. An increasing number of companies search for their employees and interviewees online, and blogs detailing youthful exploits or expressing current dissatisfaction with management have already led to the dole queue.

This problem was first documented in 2002, when web designer Heather Armstrong was fired for comments she'd posted on her blog about management and colleagues. A new word entered geek-speak, 'dooced', meaning to lose one's job as a result of online activities.

It doesn't take long to find blogs that might come back to haunt their writers later in life; one university student talks about sharing drugs with her brother, so he can try them without being pressured. But would a potential employer see it as an expression of liberal pragmatism or grounds for denying employment?

It also pays to display only the positive aspects of your personality when using online forums. While the bitter and prolonged 'flame wars' found on Usenet and in forums may seem a safe way to let off steam, to an outsider, such as an employer, they can seem pathologically obsessive and malicious. Many posters also use avatar images when they send messages that are pictures of themselves, making positive identification very simple indeed.

Social networking sites such as MySpace, Friendster or Facebook are also prime hunting grounds for those looking for backgrounds to the lives of individuals. By displaying personal details and the hometown of each page owner, along with links to real-world friends, it's possible for anyone to build a comprehensive network of acquaintances. You might be whiter than snow, but what about your friend's friends?

But while all these sources of information help build a detailed picture of an individual's life, there's one resource that can give deeper insight, this time into the ambitions, interests and even fears of the individual.

On the list

Amazon's usefulness to the budding cybersnoop isn't at first apparent, but tucked away at the top of the welcome screen is the Wish List facility. This enables you to create a list of books, CDs, DVDs and other items you'd like your friends and family to consider buying for your birthday, Christmas or anniversary. Interestingly, however, these lists are viewable by anyone, which makes them very useful indeed.

If you click on the Wish List, you'll see that you can enter the name or email address of someone whose list you'd like to view. This can be anyone. Enter any name (even just a surname) and you'll be presented with a list of Amazon customers along with their full names, locations and any other information they've entered for public consumption.

Most usefully, the results screen adds a second box to the original search box, enabling you to enter a location. Typing in your hometown will narrow the search to just those people who live locally. Using your browser's search facility, you can then step through the results to find just the ones that interest you.

Owners of wish lists can optionally enter their birthday and some other unique facts about themselves. If the people who've started wish lists have been good enough to supply such information, the search will return it, enabling you to pinpoint an individual very accurately indeed. Discovering that someone is a Spurs supporter, for instance, might give clues as to the secret question he uses for telephone banking. The advice, as usual, is to be careful about how much you give away about yourself.

Do it yourself

Amazon wish lists are such a revealing public resource that one independent researcher decided to show how easy it would be to automate mining them in a way more akin to CSI than Google. In January 2006, Tom Oward described how he started with a six-line script and gradually added to it to produce a tool capable of starting with a list of search terms and ending in some cases with addresses, a street map, and even phone numbers.

Beginning by searching for all users with 'Edgar' in their names, after J Edgar Hoover,

Spies like us

To demonstrate how easy it is to profile someone using publicly accessible information, Terry and Rebecca (not their real names) volunteered to help PCW.

Rebecca's MySpace page reveals that she's older than she says she is, and that she's on the lookout for a new man, both facts that might come as a shock to her current partner. An accompanying photograph shows her in a club, while her best friend's page shows the same picture and claims they had taken class A drugs.

A visit to Friends Reunited shone more light on her life. Now divorced from a violent husband, she reveals that she contemplated suicide.

"Thinking about it, none of this is really

Be careful what you admit to, even in jest. After all, it's not just your friends who browse social networking sites

for public consumption," she agreed.

Terry's homepage details his family's preparations for an extended trip to Australia to see his brother. A search on www.who.is revealed Terry's home address, used to register the domain. Unwittingly, he'd potentially told the world when it would be safe to burgle his house. "I'm gobsmacked," he said when we told him.

Terry's Amazon wish list also reveals what superficially looks like an unhealthy interest in the political far right. "I'm actually quite left-wing," he says. "But how dictators like Hitler can happen has always fascinated me."

In the past month have you Drank alcohol: **yea course**

In the past month have you Smoked: **yea not cigs tho**

In the past month have you been on Drugs: **yea**

In the past month have you gone on a Date: **now**

In the past month have you gone to

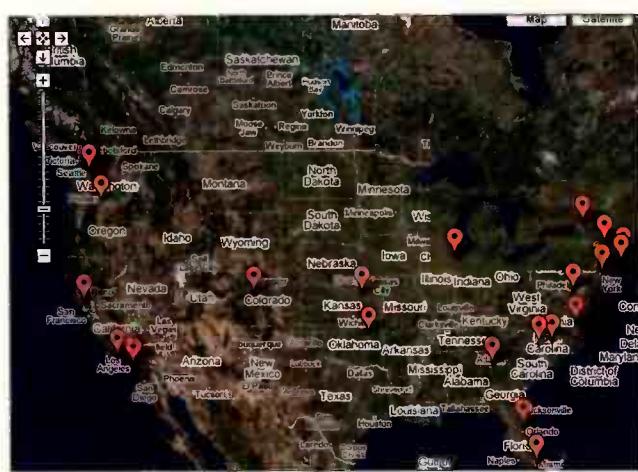
his script downloaded all relevant wish lists. Next, he expanded the script to search the lists for book titles, ISBNs and authors that might be deemed, in today's security-conscious times, subversive or at least suspicious to own.

Next, he improved the script so that he could place his search terms in a file, and have the script download and automatically search wish lists containing them. After having some fun finding titles such as *Brave New World* and *1984*, Oward added to his script again, this time to use the location information returned as part of the lists.

By using Yahoo's People Finder functionality, Oward discovered street addresses and even the telephone numbers of wish list owners, where People Finder returned just one hit in a town. Thanks to Google Maps, the script could then display a satellite image of the area in which the list's owner lived.

Other ecommerce sites are just as forthcoming about their members. The seller's history on Ebay only requires that you know the user's ID and you can uncover some interesting or even embarrassing recent purchases.

It should come as no surprise then that to the security community, the web is seen as the perfect way to bypass public distaste for domestic snooping and bugging.



Myspace alone currently has more than 80 million users, all busily placing their lives in public view. Sites such as Friendster, Friends Reunited and Facebook aren't far behind either.

Official inquiries

University researchers have also been developing ways of mining the web for complex personal information. A paper presented at the WWW2006 conference in Edinburgh in May 2006, by Amit Seth of the University of Georgia in Athens and Anupam Joshi of the University of Maryland, discusses ways in which this can be achieved. What's particularly interesting

Tom Oward wrote a script that can download Amazon wish lists and plot the locations of people wanting certain books. This map shows everyone in the continental US who wants to read George Orwell's book, '1984'

about their paper *Semantic Analytics on Social Networks* is that, according to a footnote, it was partly funded by a US government body

called Arda, the Advanced Research Development Activity – now called the Disruptive Technology Office, or DTO.

According to the report to Congress, *Data Mining and Homeland Security* (www.fas.org/sgp/crs/intel/RL31798.pdf), written by the Congressional Research Service, the role of the DTO is to fund work into making sense of the massive amounts of data collected by the National Security Agency (NSA). It is thought that some NSA sources grow by as much as four million gigabytes per month.

If so much can be extracted from publicly available information, imagine how much more is possible using privately held databases. Over the past year or so, it's emerged that Google has battled against handing over details of search terms, even when not accompanied by IP addresses, and Amazon's sales database stretches back to 1999.

Having unknowingly handed so much information to companies that are now coming under pressure to release it on grounds of national security, it's no wonder a new word has started to enter the vocabulary: 'ungoogleable'. But is it ever possible to cover your tracks completely?

Not according to a spokesperson from the Cyber Security Industry Alliance: "Police, college admissions personnel, employers, stalkers, con artists, nosy neighbours – anyone can see what you post. Don't disclose anything about yourself, your friends, or family members that you wouldn't want to be made public. And remember that once information appears on a website, it can never be completely erased. Even if it's modified or deleted, older versions may exist on others' computers."

It's very easy to get too paranoid, but in these days of headline-grabbing security breaches, it's always sensible to adopt an initial 'why do you need to know this information?' approach. And to put your mind at rest – or otherwise – you could simply try snooping your own details and see how far you can get. **PCW**

The real thing

In October 2006, the US-based Cyber Security Industry Alliance published its first report into the amount of information given by users of social networking sites. Published to highlight National Cyber Security Awareness Month, it makes for uncomfortable reading.

Though 57 per cent of those polled said they worry about cyber crime, 74 per cent of those respondents also admitted to having given out their email address, date of birth and full name. More than 80 per cent admitted to downloading unknown files shared with them by strangers. After a spate of worm and phishing attacks aimed

at social networking sites, this might indicate that the security message isn't getting through.

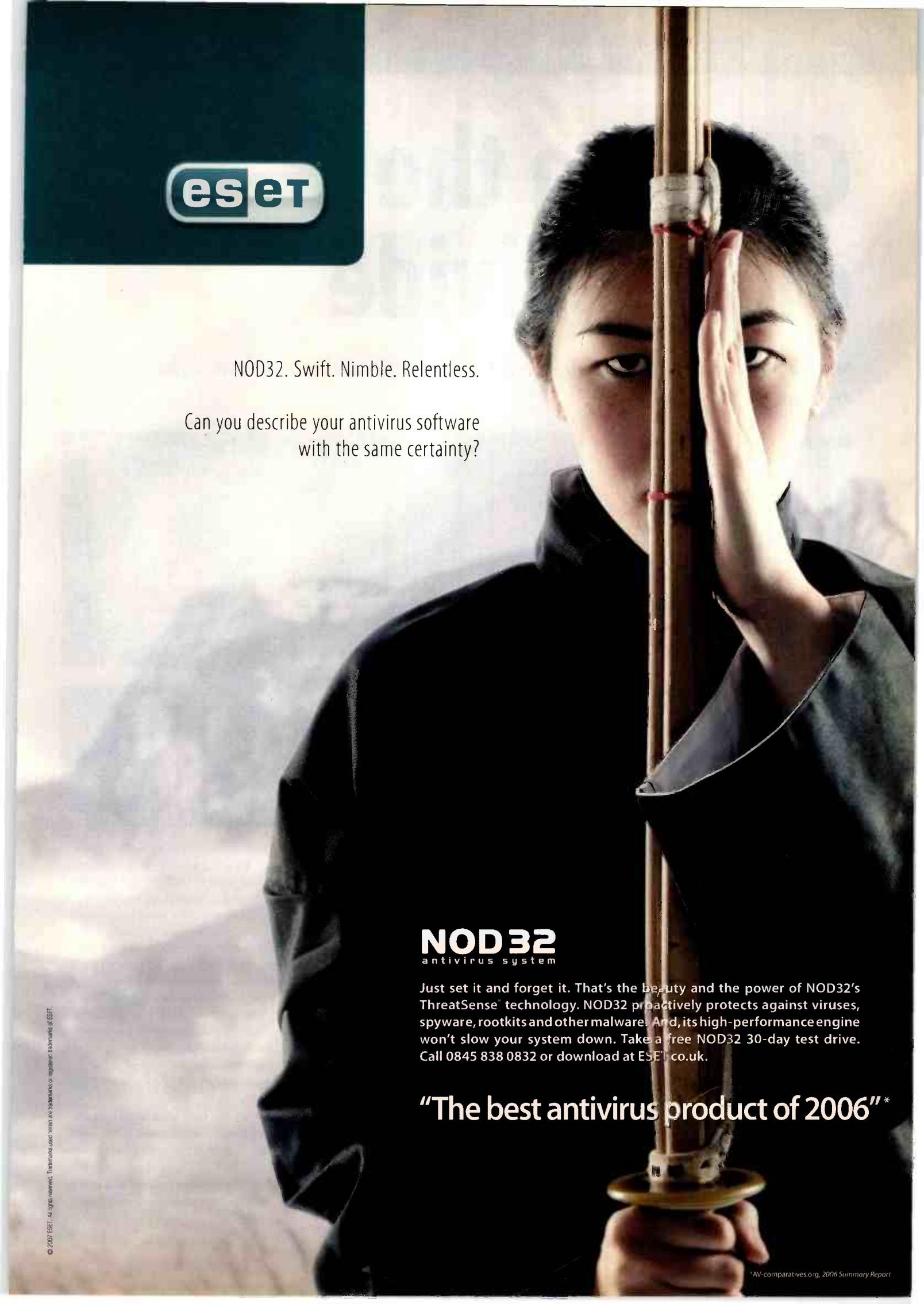
Alarmingly, 51 per cent of parents don't restrict their children's social networking site profiles to just their registered friends. Perhaps even more worryingly, 36 per cent said they don't bother monitoring their children's online activities at all.

The report's recommendations are unequivocal. Don't give out sensitive information, be cautious about meeting 'cyber friends', think twice about clicking on links or opening unsolicited files, and remember that social networking sites act as giant billboards in cyberspace.

You can find the full text of the study and a summary of its findings at www.csialliance.org/news/newsletters/oct2006/oct_ncsa Awareness_mo_study.html.

The Cyber Security Industry Alliance report showed that even though more than half of all social networking site users worry about security, most have given personal details to strangers

The screenshot shows the homepage of the Cyber Security Industry Alliance (CSIA) website. The main navigation menu includes 'HOME', 'ABOUT CYBER SECURITY', 'CYBER SECURITY ISSUES', 'LEGISLATION', 'PUBLICATIONS', 'MEMBERS', and 'CONTACT'. A sidebar on the left lists 'Events' and 'Publications'. The main content area features a large image of a computer screen with a survey question: 'What percent of users who believe they need additional ways to protect their personal information?'. Below the image is a summary of the report's findings, including statistics on giving out personal information and monitoring children's online activities. A sidebar on the right lists 'CSIA News' and 'Members'.



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Crossing the digital divide

Moving data between Openoffice.org and Microsoft Office doesn't have to be a hassle, as Klaus Manhart explains

The Openoffice.org productivity suite, whose main modules are the Writer word processor, Calc spreadsheet and Impress presentation package, has extremely good filters for exchanging files. You can use these to open and edit Microsoft Office format documents in Openoffice.org and vice versa. You can save Openoffice.org files as Word documents, Excel tables or Powerpoint presentations, in a range of Microsoft Office formats, such as Office 97, 2000 or XP. In this feature we'll give you some practical tips on how to share documents between these two suites with the minimum of fuss, plus we'll show you where problems are likely to arise and how to avoid compatibility issues.

The exchange of text documents between Microsoft Word and Writer works very well. Even long documents retain their text formatting intact, although version 2.x of the open source suite is much improved compared with version 1.x. Even so, transfer works better from Openoffice.org to Office than the other way round.

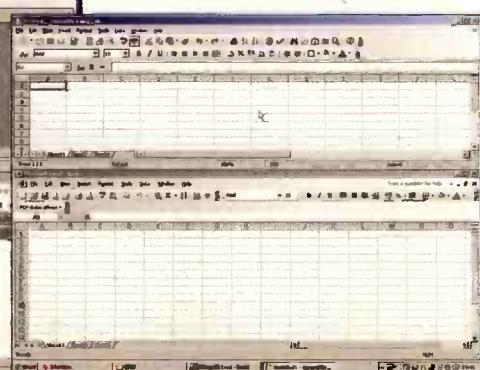
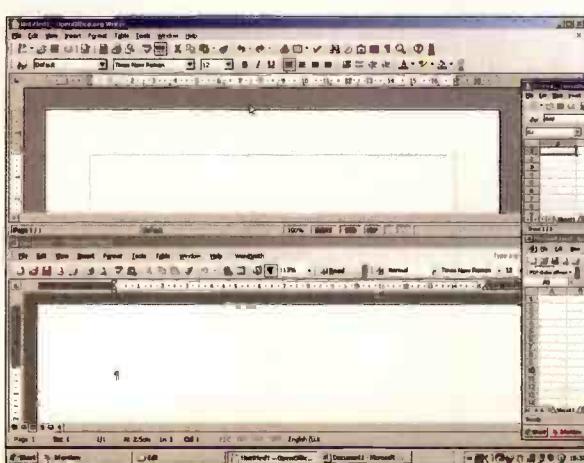
To read or edit an Office file in Openoffice.org, all you have to do is to select the file in the Open dialogue and click on Open – conversion is automatic. To export an Openoffice.org file in a Microsoft format,



choose 'Save as' from the File menu and click on the down arrow by the file type to show a list of alternatives. Simply select the relevant Microsoft file format. When you click on Save, the program will convert the Openoffice.org document data into the selected Microsoft format.

Instead of converting one file at a time, you can

convert several Microsoft Office documents and templates using a batch process. To do this, first you need to copy all the Microsoft format documents or template files into a dedicated folder. Start the batch conversion process from the File menu, choosing Wizards, Document Converter and tick the Microsoft Office checkbox. Tick the types of documents you want to convert, hit Next and specify the source and target folders. After confirming the settings, all the documents in the source folder will be converted and saved as Openoffice.org documents in the target folder. If you select a template



Far left: The OpenOffice Writer toolbars and menus (top) are similar to Microsoft Word's (bottom), so getting started is easy

Left: The spreadsheet Calc (top) is similar to Excel (bottom) in almost every detail

Maximise Word compatibility in Openoffice.org

You can configure the Openoffice.org 2.x word processing module, Writer, for maximum Word compatibility. Just make these changes to the Writer Compatibility section of the Options dialogue, via the Tools menu:

- Enable Use printer settings for document formatting
- Enable Add spacing between paragraphs and tables
- Enable Do not add leading (extra space) between lines of text

• Enable Consider wrapping style when placing objects

If you want to ensure that the formatting you've applied in Writer is intact after exporting to Microsoft Word, you shouldn't use styles to format Frames, lists or pages, since Word can't apply styles to these items. In addition, don't use special characters in numbered lists, as Word uses Ansi characters for this, but Writer uses Unicode characters.

pressing the Return key. Instead, you should define the spacing in the corresponding paragraph style. Indents, too, should be defined in the paragraph style, rather than by repeated use of the spacebar or of the tab key.

Large and complex spreadsheets need to be checked for particular formatting techniques and any logical functions, such as formulas or application-specific add-ins. A major cause of problems is formulas that contain optional arguments, as they are often not translated correctly. For example, some of Excel's finance functions accept dates as a character sequence, whereas Calc expects a date serial number. Openoffice.org doesn't recognise formulas such as Hyperlink; if you insert hyperlinks, Calc will display them correctly but won't make them available as formulas.

And the functionality of Calc's 'Data Pilot' is noticeably weaker than that of Excel's Pivot Table Wizard.

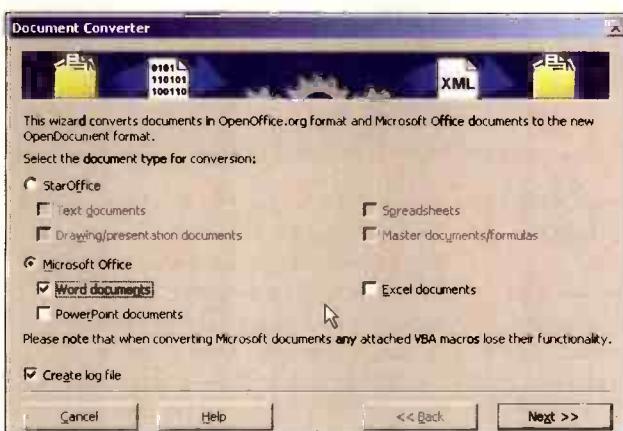
Additionally, the lack of VBA support means that user-defined formulas don't get transferred. Diagrams are generally transferred satisfactorily.

Openoffice.org to Microsoft Office

The conversion of Openoffice.org documents to Microsoft's formats tends to go much more smoothly than in the other direction.

Openoffice.org's numerous export filters make it possible to save documents in almost any format that you can think of. That said, not all the filters are of the same quality. The best results are usually achieved with the filters for Microsoft Office 97, 2000 or XP.

Even if your target system is Office 2003 or 2007, it's best to leave the XML export filter alone, as our tests show that it doesn't always export documents correctly.



You can convert multiple MS Office format documents to OpenOffice format in one go using the document converter

instead of a document, then the resulting file will be an Openoffice.org template.

File exchange problems

On the whole, files can be converted between Office and Openoffice.org without any substantial loss of formatting. However, this only goes for comparatively simple documents, by which we mean those that don't contain macros, proprietary graphics, complicated formatting or elements such as footnotes, tables or indices.

If your documents do contain one or more of these elements, then some loss of data and other problems can occur. This is particularly the case when the documents to be converted contain elements that are not available in Openoffice.org. When that's the

Openoffice.org's filters enables you to save documents in most formats

case, the imported document will lose parts of its function or its content.

For example, Excel tables that have been embedded as OLE (Object Linking and Embedding) objects will be missing altogether – not entirely surprising, since if the data server (Excel) is no longer present, it can't pass the contents of the XLS file to the Openoffice.org converter.

Many problems have their root in the conceptual differences between the programs. One example is the treatment of mailmerge documents for which another Word document serves as the data source; as Writer can only work with Openoffice.org data sources, when it imports the template it deletes all of the fields that refer to external data sources.

This applies to Microsoft Office documents using buttons and other objects from the Controls Toolbox. Openoffice.org displays the controls, but because of incompatibilities with macros, it deletes the underlying VBA (Visual Basic for Applications) code.

Preparing your documents

Most of the problems that arise when exchanging data between Microsoft Office and Openoffice.org have their roots in the details of the individual applications. You can usually avoid minor issues by preparing your Microsoft Office documents first.

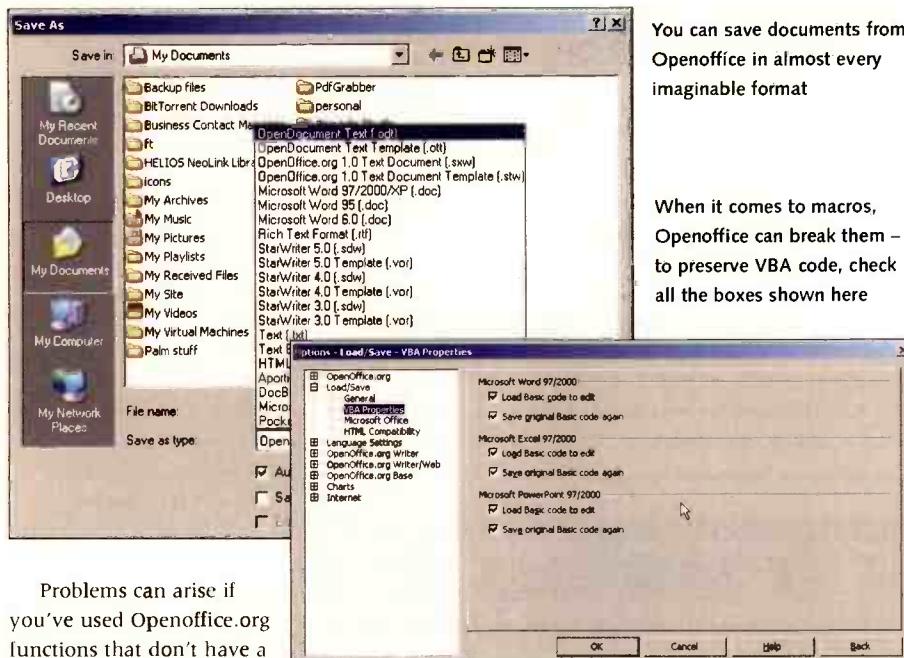
Above all, this means making sure that the original text is cleanly formatted; or, in other words, that formatting in Word or Openoffice.org is done using paragraph and character styles.

For example, you should never create blank lines between paragraphs simply by

Basic rules for successful data exchange

1. If you know that a Microsoft Office document will be opened in Openoffice.org later, don't use complicated formatting and functions.
2. Agree on the exact Microsoft Office file format to be used. If someone generates a document that's going to be exchanged and uses a newer version of Microsoft Office, then RTF or another format up to and including Office 97 should be used, rather than anything more recent.
3. Try to avoid round-trip conversion, where documents are edited alternately with Openoffice.org and Office. It's not realistic to have a file that's sometimes edited with Microsoft Word and sometimes with Open Office.
4. If you're going to send an Openoffice.org document to someone who just needs to read and print it, it's probably simpler to export it to a Pdf file first.

OFFICE FILE COMPATIBILITY



Problems can arise if you've used OpenOffice.org functions that don't have a counterpart in Office. For example, documents created under Windows will normally use different fonts to those created under Linux. Although OpenOffice.org displays Windows fonts in converted documents, substitute fonts are used for printing. The upshot is that if you use OpenOffice.org and want maximum compatibility you should restrict yourself to using fonts that Microsoft Office recognises.

Sometimes, using objects causes problems. Hyperlinks, notes and edits can be exported to Word, however they may not be placed in a frame. Also, the export filter doesn't work at all for transferring animations and embedded OpenOffice.org documents.

Warning, VBA code

Swapping files becomes more difficult if you receive Microsoft Office documents that contain VBA code, then edit them in OpenOffice.org and resave them as Word or Excel files to send back. There is a danger when you do that, VBA solutions won't work properly. What you need to do is tell OpenOffice.org to keep VBA macros intact when opening and saving documents. Fortunately, that's not difficult. In OpenOffice.org, open the Tools/Options

dialogue, then expand the Load/Save options branch. Select the VBA Properties entry and make sure all the six checkboxes are ticked.

If you have a spreadsheet in Calc that can't be transferred successfully to Excel format, it's probably down to the use of formulas that Excel does not recognise. Calc has a far greater range of formulas than Excel – particularly in the areas of time and date or financial calculations, where it offers much more than Microsoft's spreadsheet.

Unfortunately, there's no useful comparative list in the documentation, so to some extent it's a case of trial and error, finding the things that you need to avoid because Excel does not support them. Nonetheless, if the Calc export filter finds an unsupported formula it will replace it with the calculated cell value. The converter simply ignores page and cell format styles as they do not have an equivalent in Excel.

The golden rule: do without

If you're preparing documents that need to be moved between the two office suites frequently, you'll have to practise restraint. If you don't want to worry about what will work and what won't each time a document

Office compatibility

Office 2007 uses an XML-based format, Office OpenXML (OOXML). Unfortunately, it's not compatible with the Open Document Format (ODF). ODF is now an international standard for office document interchange, based on recognised existing standards and conventions. Under pressure, Microsoft opened up its format. However, this seems to be an attempt to create an XML version of their closed existing formats, so documents can be converted, rather than an attempt to achieve full interoperability with other suites. Earlier versions of Microsoft Office require you to download the Microsoft Office Compatibility Pack (<http://tinyurl.com/y5w78r>) that lets you open, edit and save Office 2007 files.

To convert OpenOffice.org word processor documents to and from Microsoft's OpenXML format, there are at least two choices: a utility from Novell that works as an OpenOffice.org extension, and the Open XML/ODF Translator Add-in for Office (<http://sourceforge.net/projects/odf-converter>), an OpenSource project that adds an ODF menu item, containing Open ODF and Save ODF commands, to Word XP, 2003, and 2007.

In theory, Novell's OpenXML Translator (<http://tinyurl.com/3yc47j>) is good news for OpenOffice.org users who want their files to be compatible with those who've switched to Microsoft Office 2007. However, it seems to have been optimised for Novell's own version of OpenOffice.org and is reported to cause problems during installation and use on the standard OpenOffice.org version.

is converted, then the easiest thing to do is to choose a compromise between the two office suites. See the box above and page 51 for some more advanced tips.

In practice, here's a basic procedure to give reasonable compatibility. In Microsoft Office, set the default 'Save as' file type to one of the earlier Office versions, such as Office 97. This means you might have to do without some of the more advanced features of your particular Office version, but it will ensure maximum file compatibility for data exchange with OpenOffice.org.

In OpenOffice.org you can alter the default file type: in the Tools/Options dialogue go to the Load/Save section and in the General subsection change the Default file type under 'Always Save As' to a Microsoft Office file format. By using this setting, you won't have to remember to select the right format every time you save in OpenOffice.org. **PCW**

File formats in OpenOffice.org and Microsoft Office

| Document type | Open Office application | Open Office format | Equivalent MS Office format |
|----------------------|-------------------------|--------------------|-----------------------------|
| Text | Writer | odt (sxw) | doc |
| Text template | Writer | ott (stw) | dot |
| Master document | Writer | odm (sxd) | doc |
| HTML document | Writer | html | html |
| Spreadsheet | Calc | ods (sxc) | xls |
| Spreadsheet template | Calc | ots (stc) | xlt |
| Drawing | Draw | odg (sxd) | n/a |
| Drawing template | Draw | otg (std) | n/a |

OpenOffice.org 1.1 extensions are shown in brackets



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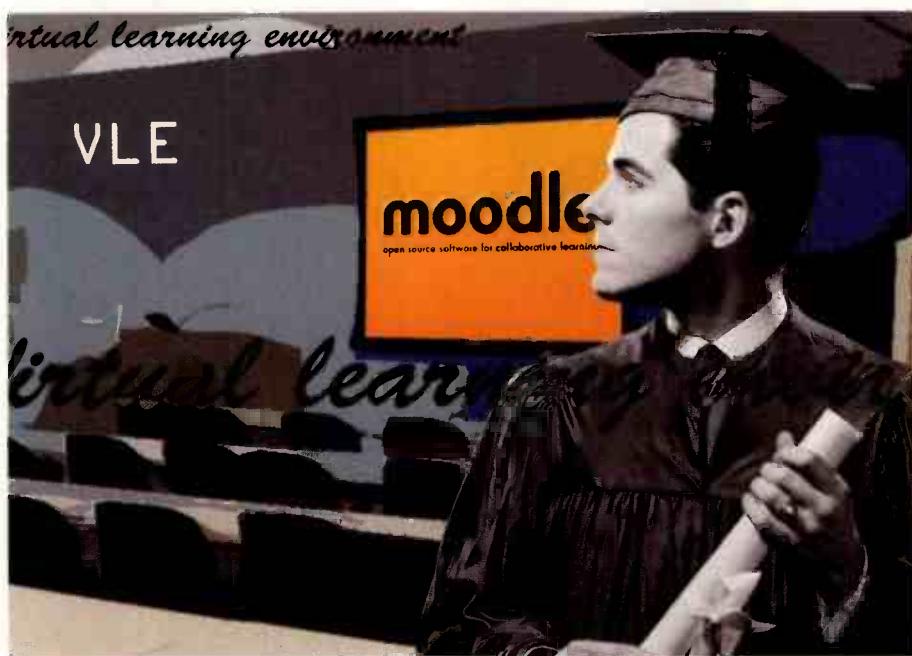
Expanding education

Ex-teacher Phil Thane takes a look at how education is changing, thanks to the latest Virtual Learning Environments

Schools have been using computers since the mid-1980s, and distance learning – via radio or TV, by post, using books, disks or tapes – isn't new either. In the Australian outback, for example, they've had 'virtual schools' via shortwave radio since the 1950s. Recently, learning systems that bring together many existing web-based technology strands, including email, chat, blogs and wikis, have started to come together and VLE (virtual learning environment) is now the abbreviation *du jour* in school staff meetings. If you're a parent, you're going to see it in newsletters, at parents' evenings and you might hear the children mention it. Pupils are unlikely to refer to a VLE though – you're far more likely to hear about Moodle or Learnwise, Blackboard or Studywiz. We're going to look at the basics of VLEs and how they're changing modern education.

Under the hood

At the heart of any VLE is a database and storage space to which teachers can upload lessons, notes, quizzes, exercises and media files, and students can search for what they need. Much of the work is designed so that students can complete the tasks on any browser-equipped computer, at school, home or elsewhere, and return the answers to the teacher via the VLE. To make sure work gets to the right groups of children, and the right marking appears in the teacher's inbox, a VLE is normally linked to the school's information management system, and in some cases is provided by the same company or a partner.



Communication systems are built in, so that each teacher and student has an email address, and group mail lists enable teachers to send messages to a whole class or year group. VLEs can also include chat and forum facilities, although the need to moderate discussions, and the associated resource problems, sometimes mean that schools disable them.

VLEs often have a facility for parents, so you can see which courses your child is taking, which teachers they have, what homework has been set, and when it's due. You can usually see a school calendar, and check details of trips and other special events.

students who miss a presentation or don't take it all in can watch it after school, during lunch, at home or whenever is convenient.

After a presentation, teachers will often want to discuss things with a small group or the whole class and any impromptu notes and sketches can then be added to the VLE. Again, this means students can revisit the material if they need to. A student needing extra help can email their teacher, and if several students mail in similar problems, the teacher can respond with a group mailshot.

Teachers use textbooks to back up what they have said and to provide exercises for the students. However, quite often a book shortage means resorting to photocopies from the few books they do have. VLEs can change this. Schools can either buy content from publishers or create their own. Content providers are often offshoots of traditional publishing houses that have migrated their book or educational software content to VLE format. Buying content packs isn't cheap, but neither is buying sets of textbooks; VLE content will last longer and can be used by many classes simultaneously.

In the classroom

Teaching methods are gradually evolving. Nowadays, teachers often use a Powerpoint-style presentation or video in place of a 'lecture'. Until recently, each teacher created their own, but a VLE can make sharing much easier. It also means that

Homework 2.0 – cross-platform compatibility is just one attraction of web-based VLEs



What about the students?

One of the most important things that students get out of VLEs is improved access to learning. With a VLE in the classroom,

those that want to get on with their work can do so, while the teacher deals with the others. With access to a VLE outside school, students can go over things they didn't grasp first time, repeat exercises and, using the communication systems, they can have conversations with other students about the work they are doing. This enables students to become autonomous learners, which is how adults behave at work or in higher education.

Adding resources to a VLE is a challenge for many teachers, and in some schools students are being recruited to help. This is a win-win situation; the teacher's immediate problem ("Can I get this Year Seven homework uploaded for tonight?") is solved, and students have the chance to develop their IT skills. One school we know of has no official VLE, but two students have set up one using the free open source Moodle (<http://moodle.org>), hosted on a friend's server.

The VLE boom

Research carried out on behalf of Becta (see 'Resources' on page 56) and published in March 2006 found that 32 per cent of primary schools and 62 per cent of secondary

'Interactive content that grabs students' attention is where VLEs score points'

schools in England had a VLE already. Of those without, 44 per cent of primaries and 52 per cent of secondary schools said that they were planning to set up a VLE in the next 12 months. VLEs are much more common in further and higher education, where 56 per cent of UK Further Education (FE) colleges use Moodle, and the rest a selection of commercial offerings, particularly Blackboard, WebCT and Firstclass.

Moodle is the most popular VLE system; it's used by more than 20,000 establishments from primary school to university level across the world, but Becta doesn't approve it – not because there's anything wrong with it but because Becta's procedures favour large companies with the time to jump through certification hoops. Open source projects just don't have the staff, time or money.

Content standards

The content available for a VLE is crucial – but thankfully there are standards that mean you're not tied to proprietary systems. There's a standard for VLE content called Scorm (Shareable Content Object Reference Model). It was created by ADL (Advanced Distributed Learning, www.adlnet.org), which is a US government agency. Thanks to Scorm, commercial content providers don't have to tailor their products to different platforms,

Maths lesson: how much is a VLE?

Setting up a VLE system is an expensive business for a school – there's no good way to do it on the cheap. Some schools prefer to spend the money on staff, use free Moodle software and create all their own content, while others pay for a turnkey system. Local employment conditions are a big factor too – in some areas, good IT staff are hard to find.

First of all you need a web server. A small one for a primary school might cost around £1,000 if you have the staff to administer it, but most schools will either rent space from a commercial provider, share a city or county system, or do a deal with a local college or university. A large comprehensive school may need to pay around £500 per year for reliable hosting.

Then there is the software. Moodle is free, but you will need a network manager capable of setting up and running a MySQL database, Apache web server and Moodle

itself. Alternatively, you can buy a complete system. Learnwise, which is suitable for secondary schools, costs £3,300 annually including installation, hosting and some basic training. A primary school site licence for RM's Kaleidos is just £995, but in addition there is £300 per year for support, maintenance and remote access, and £3,500 for four days of educational consultancy and training.

At that point you have an elaborate website with no content. Moodle provides free tools for creating Scorm-compliant content, while commercial operations sell their own packages. Learnwise's Coursebuilder is £95 for a single user, or £2,000 for a school site licence. Ready-made packages from companies such as Birchfield (www.birchfield.co.uk) cost from £200 upwards, with a typical pack for a single secondary school subject costing around £1,000 and the complete school pack £10,000.

and teachers who create their own content can take it with them when they move to a different school.

VLEs in action

From the student's point of view, a VLE is just a website accessible via any browser. The school gives them a username and password, granting them access to the courses they are studying. Behind the scenes, this needs organising. Schools administration has been computer based for years, and information from the general management system can be imported into the VLE. The market leader in schools management is Sims (Schools Information Management System), produced by Capita, which also produces the Learnwise

VLE. Schools with not much in-house technical support find buying a system from a single supplier makes sense, but some other VLE providers have arrangements to simplify the import of Sims data. Schools going it alone with Moodle need to set up a link to their management system, which is where a network manager comes in useful.

A teacher's involvement with the VLE can vary enormously. They have a login giving access to all the courses they teach, class lists, mark lists, reports and so on. Any curriculum planning, lesson notes, handouts and worksheets that exist in electronic format can be uploaded easily, but it makes sense to have the basic format standardised first.

Simply putting text on a VLE is not really what it's about; interactive content that grabs students' attention and requires them to do something is where VLEs score points. It is also the area that teachers find most worrying. There's new technology to learn, which doesn't always come naturally. Some schools have had their VLEs running for a year or more and still have very little content.

Above and right: Example VLE interfaces from Church Ashton Infant School and King Edward VI Grammar School

You are logged in as Phil (Name: (Logout))

Clock Design

7 entries - **CLAY**

People

Participants

Activities 7

Forum

Resources

Search Person Advanced search 

Event Information

Grades

Edit profile

Change password

Clock Design

All 7 entries...

Weekly outline

 News forum

 clock hand 1

 clock hand 2

 clock hand 3

 Clock Parts

 clock base

Link to news
(No news has been posted yet)

Upcoming events
There are no upcoming events

Upcoming events
No events are scheduled...
New Street...

Links

 Activity class yesterday 21 March 2007, 08:17 PM
1 report of recent activity

 New events:

 Phil there

Adding content

Some VLE systems, such as Moodle, have a 'Switch Editing On' button visible to teachers navigating their own pages, while other systems have a separate piece of software for creating content before it's uploaded to the VLE. Both systems are quite intuitive and require no web design or coding skills. In the screenshots here we're using Moodle, but

Resources

If you're looking for a VLE, or just want to find out more about them, check out some of these:

Azzurri (Talmos VLE)
www.azzurrieducation.com
Birchfield www.birchfield.co.uk
Connetix VLE www.connetix.co.uk
Etech (Studywiz VLE) www.etechgroup.co.uk
Fronter Open Learning Platform
www.fronter.co.uk
It's Learning VLE www.itsolutions.no
Learnwise VLE www.learnwise.co.uk
Moodle open source VLE <http://moodle.org>
Netmedia (Mygrid4learning suite)
www.netmedia-ed.co.uk
Ramesys (Assimilate VLE) www.ramesys.com
RM (Kaleidos VLE) www.rm.com
Sercos (Facility Learning Platform)
www.sercos.com
Viglen (PC hardware and VLE reseller)
www.viglen.co.uk

For more advice, Becta and Besa are the places to go:

Becta, British Educational Computing Technology Agency (a government agency) www.becta.org.uk
BESA, British Educational Supplier Association (a trade association) www.besa.org.uk

To see a good, well-'populated' Moodle secondary school site, try

For an example of a primary school site,
see <http://chalk.churchastoninfantschool.co.uk>

Students' view of Moodle

other content tools such as Lesson Builder and Course Builder can do the same.

The first step is to log in as a teacher; for obvious reasons students are not normally allowed to edit courses. Under 'Administration' click 'Courses' to see a list of what's already there, and 'Add a New Course' to create a new one. Underpinning

any VLE is a database, so what you get now is a data entry form, which will fit your new course into the relevant place in the overall school curriculum. You can add an enrolment key at this stage too, if you want to restrict access to course content.

Once you've completed the form, click 'Save' and the new courses page will open. Click 'Turn Editing On'. One of the options is 'Blocks' and beneath it 'Add'. The options here are information frames, which will display on each page associated with this course. Next, the top frame is where you outline the course. Click 'Add a resource' and choose from the menu; the simplest thing is to select 'Compose a Text Page' and simply type (or copy and paste) a course description.

The frames that follow are for lessons, weeks or topics, and each is edited in the same way, using 'Add a Resource' for information you want to give the students and 'Add an activity' for things you want them to do. Each activity is quite simple to set up and the onscreen help is excellent. One activity option, 'SCORM/AICC' enables you to import resources from a commercial supplier or exported from another VLE system.

Multiple choice quizzes are common and easy to create (see right). For older children, it's a good idea to create quizzes that require them to enter an answer, not just tick a box. Marking is automatic, and short answers can be marked automatically against a list of keywords and alternative answers.

Top: Creating a new quiz

Right: The quiz results can easily be stored and analysed.

Copyright warning

Teachers need to be aware that their school will have copyright on any work they put on the school's VLE. Schools are unlikely to object if you retain copies and take them if you move, but publishing them for gain is out of the question. If you want to develop content for sale, you will need your own VLE to work on or a copy of a Scorm-compliant content development package.

Longer pieces of work can be done offline and then submitted via the VLE. These need to be marked by the teacher in exactly the same way as any other work, but if the VLE and management systems are properly integrated, the marks will be automatically added to the student's record.

Security and safety

VLE sites are password protected, but schools can be quite lax about security, so problems do arise. Students forget passwords and friends often borrow each other's logins, then work gets filed in the wrong place or something is deleted. Shoulder-surfing teachers as they login is a favourite sport too, and can lead to more serious problems. Fortunately, editing the recording and reporting areas requires an administrative login, and admin staff tend to work away from students. Backups are vital, but important data such as exam coursework should be securely backed up off-site too.

VLE's aren't a solution to every problem in education – but they certainly do offer many benefits for teachers, pupils and parents, especially when carefully

planned and well managed. VLEs are a fascinating implementation of technologies that, when done well, can add an extra dimension to the learning process. **PCW**

Adding a new Hot Potatoes Quiz to week 2

Test Quiz

Test Quiz added by Phil Thuma, please delete after April 1st 2007.

Course Net [Create or upload a file](#)

Show All, search Show All, sort [Jump to...](#)

Module navigation bar

Jump to... Edit lesson settings

resistor quiz (password = PIC) lesson

Overview [Detailed statistics](#)

| Student Name | Attempts | High score |
|--------------|--|------------|
| ██████████ | 90% Tuesday, 30 January 2007, 08:49 PM, (now) 60% Tuesday, 13 February 2007, 12:54 PM, (3 mins 30 secs) 30% Tuesday, 13 February 2007, 12:58 PM, (1 min 56 secs) 90% Tuesday, 13 February 2007, 01:01 PM, (3 mins) | 90% 90% |
| ██████████ | 80% Thursday, 1 February 2007, 08:17 PM, (17 mins 4 secs) 50% Wednesday, 31 January 2007, 12:42 PM, (4 mins 14 secs) 70% Wednesday, 31 January 2007, 12:47 PM, (8 mins 17 secs) 50% Wednesday, 31 January 2007, 12:55 PM, (6 mins 9 secs) Not completed Wednesday, 31 January 2007, 01:02 PM | 80% 70% |
| ██████████ | 50% Wednesday, 31 January 2007, 12:48 PM, (15 mins) 90% Wednesday, 31 January 2007, 01:04 PM, (4 mins 48 secs) | 90% |
| ██████████ | 33.33% Wednesday, 24 January 2007, 06:25 PM, (2 mins 31 secs) 0% Wednesday, 24 January 2007, 06:33 PM, (1 min) 20% Wednesday, 24 January 2007, 06:42 PM, (30 secs) 100% Wednesday, 24 January 2007, 06:44 PM, (15 mins) | 100% |

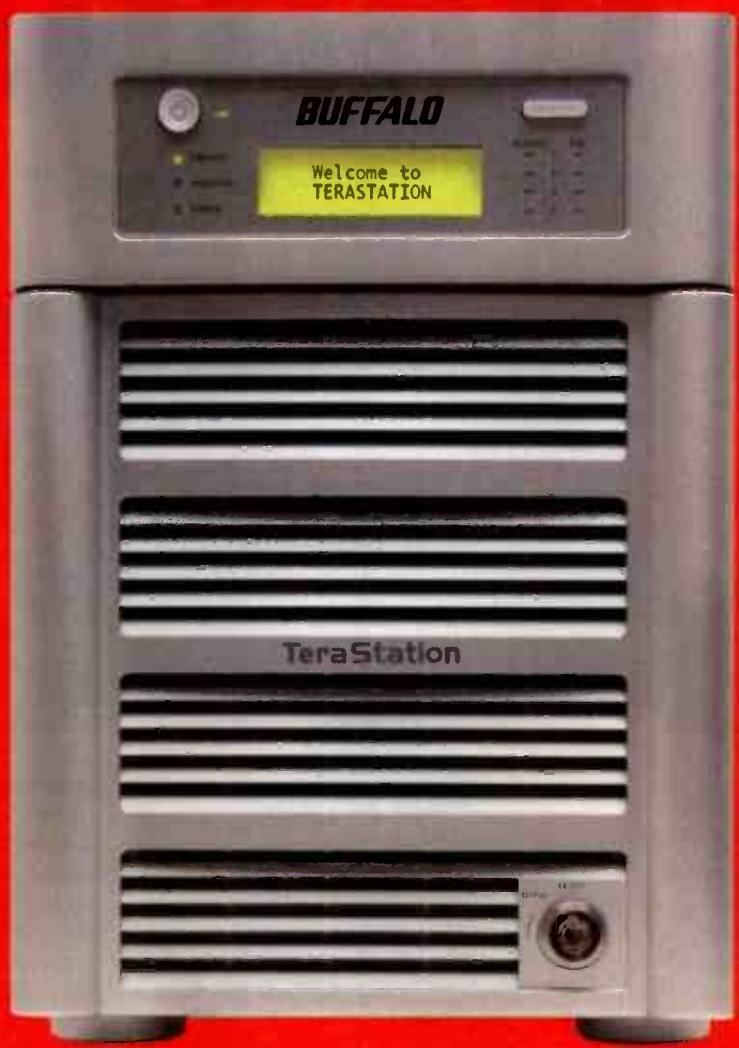
Multimedia Servers

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LinkStation Live & TeraStation Live

- FTP server
- iTunes 7 support
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Take control

Paul Monckton provides some expert tips on setting up and using Windows Vista's revamped Media Center

More and more of us are using our PCs for watching TV and video on the desktop. With large monitors dropping in price and widescreen displays becoming more common – especially in high-end laptops – using a PC as a home media centre is ever more appealing.

If the PC is really going to take the place of your TV, it has to be just as easy to use. It shouldn't feel as though you're using a computer, and you should be able to do everything you want from the other side of the room with a remote control.

Before the release of Windows Vista, Windows XP Media Center Edition 2005 (MCE 2005) was Microsoft's solution for the home but it has, until now, been available only in pre-built Media Center PCs, or as unsupported OEM software for DIY installations.

What's new in Vista Media Center
Windows Vista's Media Center offers major improvements on the XP-based version – although many people would say that its feature set is still incomplete, and it's not the only option (see boxout 'Alternatives to Windows Media Center' on page 59).

Many visual and usability advances have been made, including optimisation for widescreen displays, use of Vista's new hardware-accelerated graphical interface, and faster and easier library browsing. Greater use of thumbnails makes navigation much easier. Some new functionality that was previously only available as third-party additions has also been included. One of the most notable of those is that Media Center now comes with its own Mpeg2 codec – something you had to purchase and install



Vista's Media Centre includes enhancements for widescreen and better usability

separately to be able to play DVDs on previous versions.

A simple point-and-click DVD burning system enables you to turn videos and recordings into DVDs from within the Media Center interface. These can be in either data backup or DVD-Video format.

Also significant is that 64-bit editions of Windows Vista are the first of their kind to support any Media Center, making it an option for those with the latest processors.

Finally, a large amount of online content is now set up automatically within Vista Media Center. You can add more by installing free applications such as TVTonic, which will give you access to RSS-based video podcasts from the Media Center interface.

Media Center now includes DVD burning as standard

Configuring Media Center

Windows Vista Home Premium and Ultimate editions both come with Media Center built in. This means that for the first time anyone can set up their PC as an entertainment system, without the need to install any additional software. However, installing Vista and simply double-clicking on the Media Center icon won't transform all PCs into a usable media PC – you'll need sufficiently powerful hardware and know-how to configure it before you can enjoy the Media Center experience.

Choosing your hardware

If you're setting up a media PC in the living room, you won't want noisy fans and drives drowning out your music. Custom-designed cases and power supplies use larger, quieter fans or avoid them altogether.

Even if you can't afford a custom-designed case, there's plenty you can do to make your PC quieter; sites such as www.quietpc.com and www.kustompcs.co.uk will give you plenty of sound-proofing ideas, as will our online 'Silence your PC' feature at www.pcw.co.uk/2160212.

Modern motherboards with integrated graphics often have enough power to run Media Center without the need for a graphics





would be a motherboard based on the AMD 690G chipset, such as MSI's K9AGM2, which is AMD Live compatible and has built-in 3D graphics with an HDMI connector ready to plug straight into your TV.

Remote controls and keyboards

If you're building a media PC, then you'll need to buy a remote control or wireless keyboard. New remotes from Microsoft are promised, including models with built-in Sideshow LCD panels. However, for the moment we have to make do with the MCE 2005 remote, which works fine with Vista, or with a programmable remote such as Logitech's Harmony range (www.harmonyremote.com). These vary from £70 for a basic model, up to £280 for a 3.5in touchscreen device. A wireless keyboard with a built-in mouse pointer is also excellent for use with Media Center and several models are available, including specific Media Center models from Microsoft, at www.microsoft.com/hardware. Many new TV tuner cards come with a Media Center-compatible remote control and USB infra-red dongle.

Which tuner?

Choosing a tuner is an important part of your system configuration. Ultimately, your selection will depend on the type of TV signal you receive. Analogue and digital terrestrial (DVB-T) are available, as are hybrid tuners

card fan, and if you want to play games, more powerful fanless cards are also available. A good rule of thumb is to look for components certified with Windows Vista Premium, Intel Viiv (www.intel.com/products/viiv) or AMD Live (www.amdlive.com) logos. A good example



Online content has been enhanced in the new version, including access to video podcasts via TVTonic

that support both systems. You also have the choice of internal PCI and PCI Express tuners or external USB tuners, which can be moved easily from one PC to another. Microsoft's logo certification programme enables you to see which products will also work with Windows Vista, although there are many products that will work but don't carry the logo.

Sadly, in Europe Vista Media Center isn't a good match for the services that are available. Analogue signals work fine, but at the moment DVB-T support lacks digital teletext and interactive 'red-button' functionality.

The situation with DVB-S digital satellite television is even worse, with no native support for digital satellite broadcasts at all. Some satellite solutions do exist, but they involve infra-red control of external devices and analogue video capture. For the average user, though, if you watch a lot of digital satellite broadcasts, you're better off waiting for Microsoft to add DVB-S or using separate viewer software.

If you have a tuner and you're upgrading from a non-Media Center system running on XP, check to see if it has Broadcast Driver Architecture (BDA) drivers that work with Vista – sometimes XP BDA drivers will work, but there are no guarantees.

How many tuners?

It's not strictly true that each TV channel, whether you're watching it or recording it, requires its own tuner; single DVB-T tuners, for example, are often capable of receiving more than one channel at a time. However, while some applications, such as DVViewer support this, Windows Media Center does not, and needs one tuner per channel.

To watch live TV and record at the same time in Media Center, you'll need either a pair of tuners or a single dual-tuner card. In the UK, a maximum of two cards is officially supported, but with a bit of tweaking you can install more – see our 'Expert tricks and tips' section on page 60.

Audio

Surround sound can make a big difference to the Media Center experience, and modern PCs tend to come with good onboard multichannel sound capabilities. For most, this built-in audio is fine, but for the best

Alternatives to Media Center

Vista Media Center offers improved ease of use and access to Vista's hardware-accelerated interface and graphical effects. It's also an entirely self-contained solution, including location and tuner setup and an electronic programme guide (EPG).

However, it's not without its limitations, and those of you who are more adventurous will miss several features that Microsoft has not implemented. These include Teletext support, picture-in-picture display and FM radio recording. There's no easy way to customise the user interface, so you'd better love blue. Many TV tuners come with their own software, which you can use instead of Media Center, and some offer greater access to specialised tuner functions, together with a great degree of interface customisation.

Terratec's Cinergy DT USB XS Diversity ships with the company's own Home Cinema software. It uses TVTV for its program guide and offers easy access to codec selections, including HDTV decoding. You can also use the tuner in diversity mode, something you can't do from Media Center.

Standalone applications such as DVViewer, Orb and GB-PVR work with

BDA-compatible tuners and provide various types of Media Center-like experience. Many have additional features such as Teletext or multi-channel mosaic views.

If you're building a standalone media system and you're not tied to running Windows, then MythTV is a fully featured system that runs on Linux. There's no need to be a Linux expert either, as distributions such as Knopp Myth (<http://mysettopbox.tv>) and packages such as LinuxMCE (<http://linuxmce.com>) make installation and setup easy, without having to delve into the intricacies of the operating system.

Links

- TVTV (free or paid subscription), www.tvtv.co.uk
- DVViewer (€15, approx £10), www.dvviewer.com
- MythTV (free), www.mythtv.org
- TVedia (\$34.95, approx £18), www.8dim.com
- Showshifter (£29.99), <http://showshifter.showshiftergroup.com>
- Orb (free), www.orb.com
- GB-PVR (free), www.gbpvr.com
- Mediportal (free), www.team-mediaportal.com

possible quality a digital connection to an external surround receiver is the way to go. The good news is that provided your onboard audio system supports S/PDIF output and you have up-to-date Vista drivers, you won't need an additional sound card.

Multi-room media

Windows Media Center can share its content via other networked devices called Media Center extenders. These duplicate the functionality and user-interface of your Media Center PC on a remote device, which could be located anywhere on your home network.

With XP-based versions of Media Center you could choose from a small selection of extenders, but with Windows Vista you're currently limited to a choice of only one – the

Xbox 360. While Media Center functionality is a welcome bonus to existing owners of the Xbox 360, it certainly wouldn't look great in a kitchen, and they're really much too noisy for playing back music at normal levels.

Installing additional software

Media Center records TV shows in Mpeg2 format (although the files have an extension of dvr-ms), and DVDs are also encoded in this way. But Mpeg2 takes up a lot of space and is only one of a number of popular encoding formats. To play back other formats within Media Center you need to install the right codecs. Most formats can be covered by downloading Ffdshow and AC3Filter, both of which are available for download free of charge at <http://ffdshow-tryout.sourceforge.net>.

TV tuner manufacturers

| Company | URL |
|-----------|--|
| Avermedia | www.avermedia.com |
| Freecom | www.freecom.com |
| Hauppauge | www.hauppauge.co.uk |
| Pinnacle | www.pinnaclesys.com |
| Terratec | http://uk.terratec.net |

Ffdshow is an open source Directshow filter, which enables Windows to play back formats including Mpeg4, DivX, Xvid and H.264 for HD and iPod formats, as well as those used by online video sites such as YouTube.

The filter is packed with post-processing options that help you get the best quality out of your audio and video. See our 'Expert tips and tricks' section below for how to integrate these features into Media Center. **PCW**

Expert tips and tricks

Here are some of our favourite top tips for Media Center; you can find more tips, advice and community-based support at the Vista & XP Media Center Support Community (www.xpmmediacentre.com.au) or The Green Button (<http://thegreenbutton.com>).

Playing DVD files from hard disk

Vista Media Center has a hidden DVD library, which you can enable by editing the registry. Run Regedit.exe as Administrator and go to Hkey_Current_User\Software\Microsoft\Windows\CurrentVersion\Media Center\Settings\DVDSettings. Find the Showgallery entry and change the value from Play to Gallery. Now when you run Media Center, the DVD library will replace 'Play DVD'.

Install My Movies to manage your DVDs

An easy way to manage your video collection is to install My Movies, which also adds easy ripping of your non-copy protected discs. It can also download commercial movie information and cover photos automatically from imbd.com and Amazon for use with movies you've recorded. My Movies requires the Microsoft .Net Framework 1.1 (later versions are no use), which you can download from www.microsoft.com/downloads; My Movies is available free at www.mymovies.name.

Configure your PC to go to sleep

It's a good idea to have your PC go to sleep when not in use and wake up automatically when it needs to record scheduled TV programmes. An off-the-shelf Media Center system should be configured to do this automatically, but incorrect Bios and power management settings can keep your PC out of the deeper sleep modes which allow the fans to stop turning. They can also result in a

system that wakes up for no apparent reason. Make sure you've enabled S3 (suspend-to-Ram) standby mode in the Bios. This uses minimal power until it is required to wake up. Your Bios will also let you select which devices are permitted to wake the system from sleep. Windows Vista (and XP, for that matter) has a command-line program, which enables you to configure many power management options. To run this tool, open a command window as Administrator and run POWERCFG /? for a full list of options. Type **POWERCFG -DEVICEQUERY wake_from_S3_supported** to see which devices have the ability to wake the system from sleep. You can change these with the **'-DEVICEENABLEWAKE'** and **'-DEVICEDISABLEWAKE'** flags

Integrating Ffdshow with Media Center

Ffdshow has many processing options to improve the appearance and the sound of video files. Options for de-interlacing, noise reduction and sharpening, for example, are available in the Ffdshow configuration utilities, but these can't usually be accessed from within Media Center. A plugin has been created specifically for Vista that enables you to access these options with your remote control via the Media Center interface. The plugin is free and can be downloaded from <http://damienbt.free.fr>.

Changing your Mpeg2 codec

If you'd rather use your favourite decoder in place of the default Microsoft one, then Gary Whittaker's Vcmd.exe utility will enable you to select the one you want to use. It's available for free to download at www.whittakermoore.com/vcmd.exe, and you can read about the utility on Gary's blog at <http://mediacenterexpert.blogspot.com>

Use more than two TV tuners

In the UK, Vista limits you to a maximum of two TV tuners. This limit can be circumvented with a few registry hacks or by using a handy utility. Ramon Van Bruggen's MCE Tuner Extender is a simple applet that needs no installation; just run it and enable all your installed tuners. It's in beta, so the usual caveats apply. Before you start, make sure you've configured at least one tuner from within Media Center and that you have Microsoft .Net 2 installed. You can download MCE Tuner Extender from <http://mce.ramonvanbruggen.nl>.



Ffdshow can improve video clips with a range of processing options

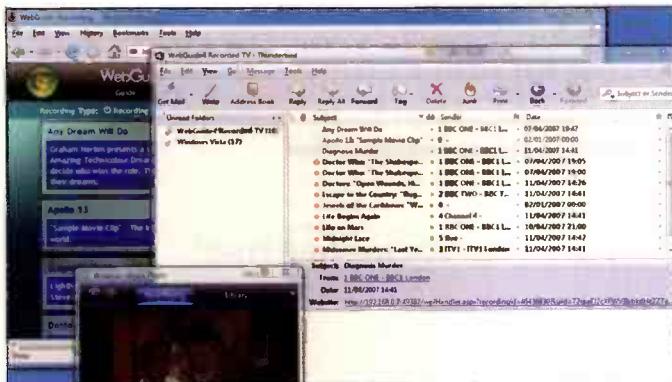
Remote control with Webguide 4



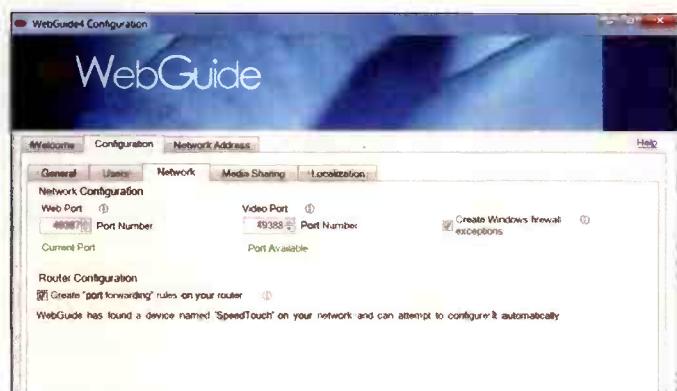
1 Webguide enables you to control your Media Center remotely over the web or a network. It lets you schedule programmes to record, browse TV listings and watch live TV and listen to music over the internet, streamed directly to your PC or browser-equipped mobile phone from your home Media Center. Advanced features include RSS feeds and access to your recorded TV, pictures, music and videos.



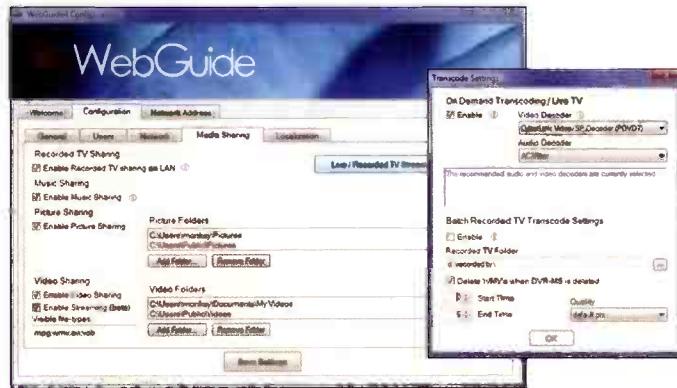
3 Scheduling recordings is just a matter of selecting a programme from the onscreen guide. Remote scheduling is the core of Webguide. Log in to Webguide using the IP address provided during setup, then select the guide option. You're presented with a view that's similar to sitting in front of a real Media Center. Select the program you want to record and Webguide programs the Media Center for you.



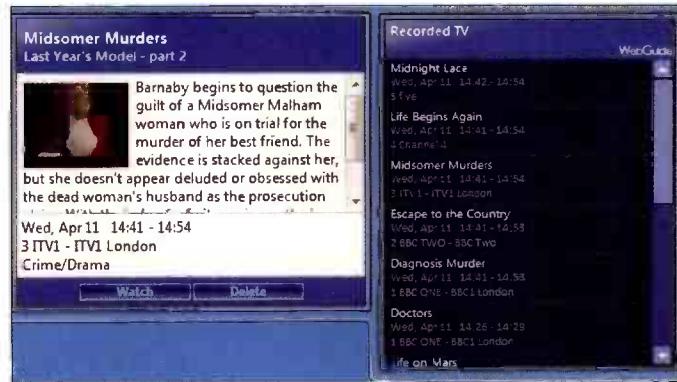
5 Thanks to RSS, you can see which programmes have been recorded. Webguide's Recordings page provides two RSS icons that enable you to keep track of your recordings and scheduled recordings in your favourite RSS reader. Subscribe to the feeds in the usual way and you'll be alerted when any recordings are ready, without having to use the Webguide interface.



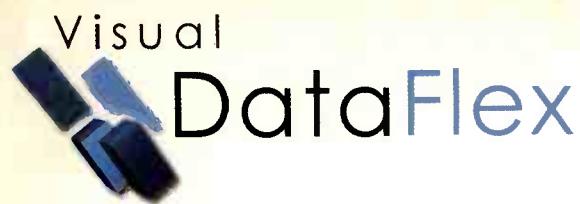
2 Webguide is easy to install. Previous versions required you to set up and configure Windows' Internet Information Services (IIS) web server, but version 4 is entirely self-contained and comes with the Cassini web server built in. If you have a universal plug and play (UPnP) firewall, configuration of the ports happens automatically and Webguide then provides you with the URL you will use to access your Media.



4 By transcoding your media files, you can save space, and make them available remotely. Batch transcoding of your Mpeg4 recorded TV files enables you to store more highly compressed WMV versions on your hard drive. Using the Live / Recorded TV Streaming settings button you can select video and audio decoders and configure scheduled batch conversion of your saved DVR-MS files.



6 The Webguide Gadget provides quick access from Vista's Sidebar. It helps you keep tabs on your recordings from another PC, without having to start up your browser. The gadget is a separate download, which you can open with Windows Sidebar. Webguide 4 is available in free, trial or full versions from www.asciiexpress.com/webguide. It costs about £9 for the full version.



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APPLE PLAYS CATCH-UP

Once again Apple has been causing a stir in a traditionally PC-only market – this time it's media streaming. The new AppleTV sends video stored on your Mac direct to your TV. Despite what Apple's PR machine might have you believe, it's certainly nothing new. Seasoned PCW readers will be well aware of the plethora of PC media streamers on the market.

What Apple is good at is creating easy-to-use products, and AppleTV certainly follows this trend. A big problem at present is its dependence on iTunes and its inability to play non-Apple approved formats. It's not possible to download movies or TV shows over iTunes, which severely limits AppleTV's appeal. If Apple resolves these issues sooner rather than later, it will be a very tempting product.

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OUR SCORING

Excellent ★★★★★ Very good ★★★★☆ Good ★★★☆☆ Below average ★★★☆☆ Poor ★★☆☆☆

OUR AWARDS

Editor's Choice: The best product in a comparative group test. Anything that wins this award is of better quality than its competitors.

Recommended: A product that combines great features, usability and value for money.

Great Value: Not the best in class, but a product that has superior features and performance for the price.



'The Ricoh Caplio R6 not only features face recognition technology, but is also claimed to be "the world's thinnest camera"'

Read the review on page 70

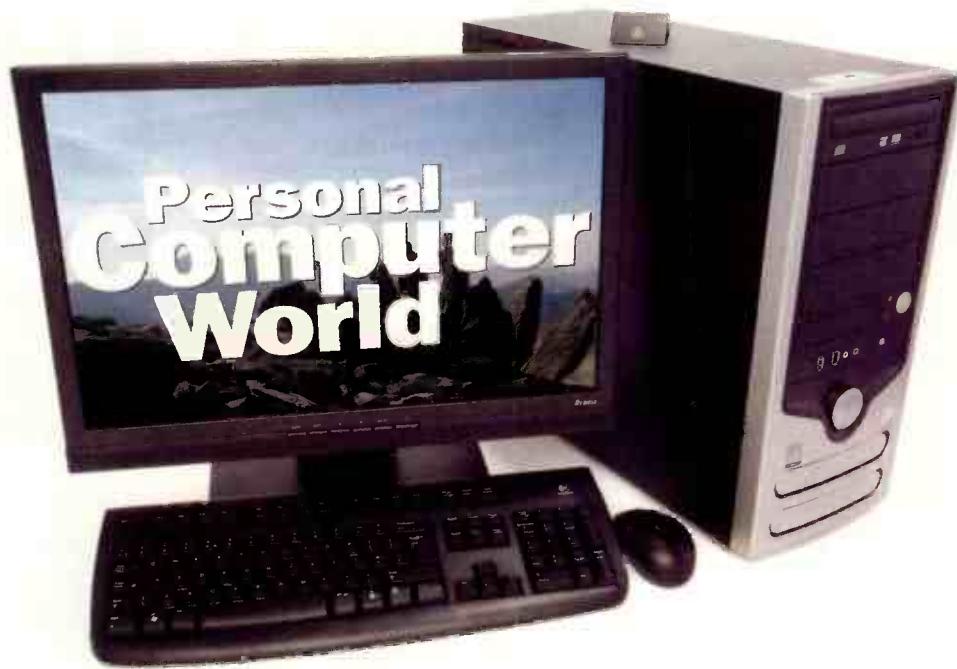
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DESKTOP PC

Evesham Solar 8600GTS

A DirectX 10 machine with a 22in widescreen display – all for less than £900



Evesham's Solar 8600GTS desktop PC contains Nvidia's new midrange Geforce 8600GTS card, which costs a shade more than £100 when bought separately. Like the rest of Nvidia's 8000 series cards, it supports Microsoft's DirectX 10 graphics specification, which should eventually result in glossier and more detailed-looking games than DirectX 9 software.

Windows Vista Home Premium comes pre-installed, which is essential to take advantage of this card since DirectX 10 is a Vista-exclusive standard.

Evesham has chosen the Geforce 8600GTS, with 256MB of Ram to power the Solar. It is the fastest of Nvidia's new mid-range cards and runs at the standard reference settings of 675MHz for the core and 1GHz (2GHz effective) for the DDR3 memory. The 8600GTS is a good overclocker, so there's room to tinker.

Combined with an Intel Core 2 Duo E6400 processor ticking along at 2.13GHz and 2GB DDR2 Ram, the system scored an impressive 10,560 in 3Dmark05.

In our real-world gaming test, Fear scored 105fps, which highlights that this system will handle any game at high resolutions with ease. Although it's no slouch, a score of 5,594 in PCmark05 represents average overall system performance from a £900 machine.

The system is based around a Foxconn-branded motherboard using Intel's P965 chipset. This provides 7.1 audio outputs (should you want to upgrade to a surround-sound system) and gigabit Lan, while six USB2 and two Firewire ports are split between the front and rear of the chassis. There's also an E-Sata port for high-speed external hard disks at the rear.

The motherboard has only one PCI Express slot, so adding another graphics card to get an SLI arrangement is out of the question.

Evesham provides a 22in widescreen from Iiyama, with a black bezel and built-in speakers. Its 1,680x1,050 resolution provides lots of desktop real estate. Response time is quoted at 5ms and contrast ratio is equally impressive at 1,000:1. The styling is simple, if a bit bland, and disappointingly there's only an analogue (VGA) connection.

The black levels aren't particularly good and there was a hint of backlight bleed from the sides during testing. However, picture quality was good and we're impressed Evesham squeezed it into the £900 budget.

The case is made from a mixture of black metal and silver plastic, with a large fan on the rear and vents on one side. The system is a bit noisy during startup, but once into Windows it remains cool and quiet – the 350-watt power supply is particularly hushed.

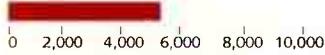
Roxio DVD Media Creator and Microsoft Works 8.5 are included on the software front. The Solar also packs a 320GB hard disk and Sony 18x DVD dual-layer rewriter. A simple, cordless Logitech keyboard and mouse are basic and 2.1 Creative Labs Inspire T3100 speakers complete an uninspiring array of peripherals.

Should anything go wrong, Evesham's generous three-year warranty (two year on-site, third year return to base) is on hand.

Nit-picking for flaws at this price is difficult, but Evesham could have supplied a TV tuner, although adding one yourself won't cost much. Ultimately, Nvidia's 8600GTS provides great performance for the price and Evesham has used the right balance of components that won't disappoint the home user. What's more, it's the cheapest DirectX 10 machine we've tested and is ready for the rest of the year's games using the new technology. *Emil Larsen*

Performance

PCmark 2005 5,594



3Dmark05* 10,560



*Tested at 1,024x768 in 32-bit colour

Details

Price £899

Best price www.pcw.co.uk/bestprices

Contact www.evesham.com

Specifications Intel Core 2 Duo E6400 2.13GHz • 2GB DDR2 667MHz (2 x 1GB) • Nvidia 8600GTS 256MB • Foxconn P965 motherboard • 22in Iiyama E2200WS-S • Sony dual-layer DVD rewriter • Creative Labs Inspire T3100 • Microsoft Vista Home Premium • Three-year warranty

Verdict

Pros Excellent gaming performance; large monitor; great value

Cons No TV tuner; bland peripherals

Features

Performance

Value for money

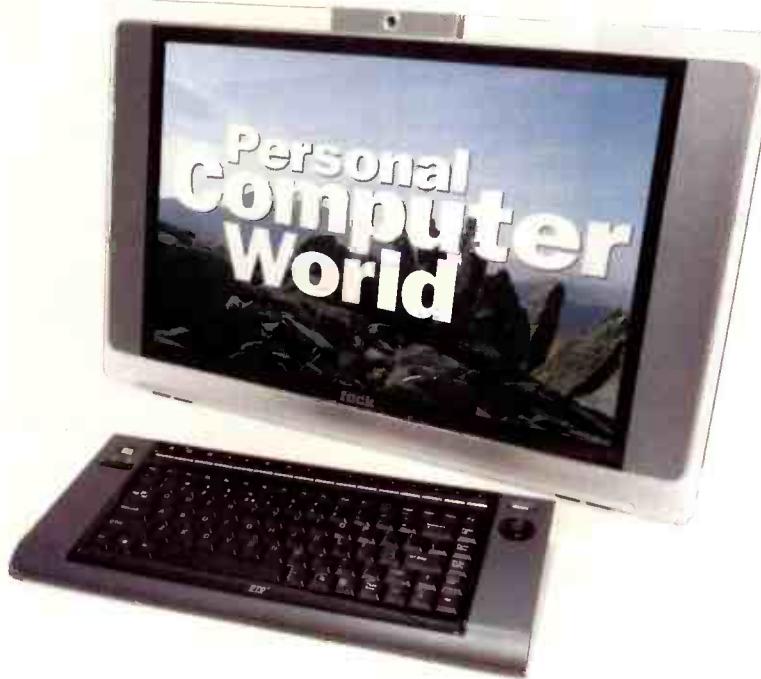
Overall At £899, the Solar

8600GTS contains the right balance of components

MEDIA PC

Rock Meivo

Stylish, all-in-one PC with a 22in display to hang on your wall



The Meivo – pronounced 'my-vo', according to notebook specialist Rock's advertising campaign – is touted as an LCD TV rather than a PC.

Its centrepiece is a 22in widescreen display. A regular set of PC components is hidden behind the screen, resulting in an iMac-style, all-in-one unit that can be sat on a desk or hung on a wall.

Stereo speakers sit either side of the display, while the entire device is framed by an attractive acrylic rim. Wifi and power symbols glow either orange or green, depending on usage.

The monitor has a resolution of 1,680x1,050 and produces an excellent, deep-black level that's on a par with dedicated TVs rather than PC monitors. This is spoilt, however, by backlight bleed from the top and bottom of the display, creating an inconsistent picture.

An Intel Core 2 Duo E6300 (1.86GHz) powers the system and is accompanied by 2GB of DDR2 Ram.

In PCmark05, the system scored 4,301, which indicates good basic office performance. But the integrated Intel graphics mean it can't be used for gaming, as the score of 721 in 3Dmark05 shows.

Rock mentions a 720p figure in its advertising. However, while the monitor is technically capable of such a resolution, the Intel G965 graphics aren't ideal for decoding high-definition content. Both Blu-ray and HD-DVD playback (should you add such a drive) require a dedicated ATI or Nvidia graphics card, and Microsoft recommends at least a 4x AGP card for its WMV HD videos. Ultimately, we don't think it's fair to dub this a high-definition-capable machine.

Rock claims the graphics card can be upgraded using a Mobile PCI-Express Module card for notebooks, but these cards are costly and tricky to fit.

A single hybrid TV tuner capable of receiving both digital Freeview and analogue TV signals sits at the rear. Composite inputs are also provided, enabling you to connect devices such as games consoles to the screen.

Rock has hinted, but made no promises, that an on-demand service providing TV content to the Meivo will be provided by BT in future, so watch this space.

Vista Home Premium is installed, and when the system starts up Media Center loads by default: the remote control and wireless keyboard included make Media Center a cinch to navigate. The mouse is replaced by a joystick in the top right-hand corner of the keyboard. It takes a little getting used to, but is fine for controlling the system from the sofa.

Sound quality is quite good, but while the two 3W speakers and 6W sub are adequate for small-to-medium-size rooms, they aren't as loud as those found on most standard TV sets.

A 250GB hard disk is supplied and there's an easy-to-access spare bay should you want to add another one. Integrated Bluetooth, 802.11g Wifi, a selection of USB2 ports (both on the side and rear), Firewire and a 4-in-1 memory card reader are also provided. Rock has fitted a 1.3-megapixel webcam into the hood of the screen, but we were disappointed that video quality stuttered regularly.

Much more powerful systems with separate 22in LCD screens and capable of high-definition content can be bought for about £900, so there's definitely a premium involved in making this PC fit into such a small space. If money is no object, it would serve as an impressive wall-hung entertainment system, but its low-end components make it a poor alternative to a desktop PC.

Emil Larsen

Performance

PCmark05 4,301



3Dmark05* 721



*Tested at 1,024x768 in 32-bit colour

Details

Price £1,149

Best price www.pcw.co.uk/bestprices

Contact www.meivo.tv

Specifications Intel Core 2 Duo E6300 (1.86GHz) • 2GB DDR2 667MHz Ram • 250GB hard disk • 22in display (1,680x1,050) • Digital/analogue hybrid TV tuner • 3 USB2 • 1 Firewire • DVD writer • Bluetooth • 1.3-megapixel webcam • 802.11g wireless • Vista Home Premium • Two-year collect and return warranty

Verdict

Pros Great style; simple to use

Cons Poor graphics; average system performance

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

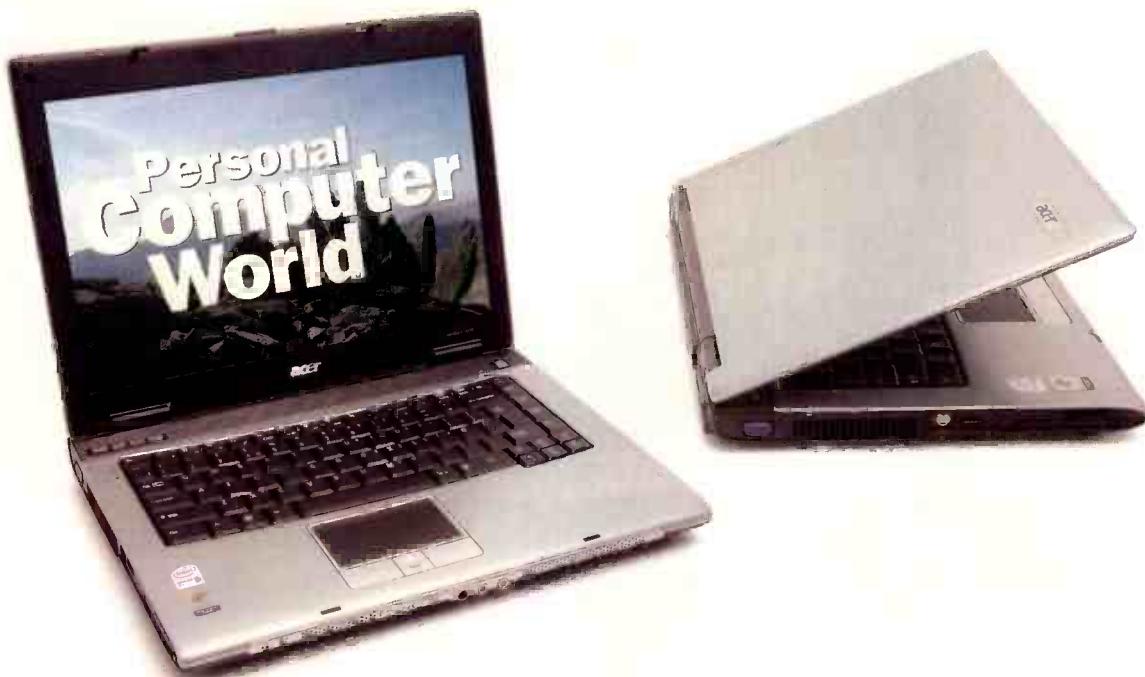
Overall An excellent all-in-one entertainment system, but as a PC it's overpriced and average

★★★★★

CORE 2 DUO NOTEBOOK

Acer Travelmate 3273WXMi

An uninspiring chassis masks good value for money



The Travelmate 3273WXMi is the latest entry in Acer's range of notebooks aimed primarily at business users. Its robust chassis gives a good first impression, but open it up and things start to look slightly less spectacular. The unattractive, dark grey plastic bezel surrounding the 14.1in screen serves as an instant reminder to the notebook's budget nature.

Four customisable shortcut buttons sit at the top left of the keyboard. At the front you'll find audio ports and switches to quickly turn off Bluetooth and WiFi. A DVD writer is located on the right.

The left side of the chassis is home to a PC Card slot and a reader that caters for SD, MMC, XD Picturecard and Sony Memory Sticks. A large vent is also situated here and the fan whirred continuously during testing. The noise emitted will usually be audible only in a quiet room, but when the notebook gets hotter under the collar you'll certainly notice it.

The keyboard has a slight curve to it, to make it more ergonomic. It flexes a little too much for our liking and a firmer keyboard would make for a more comfortable typing experience. The widescreen design of the touchpad matches the screen, but it could do with a textured surface to aid accuracy.

Despite the relatively low £616 price tag, Acer has managed to fit the Travelmate 3273WXMi with an Intel Core 2 Duo processor. The T5500 CPU runs at 1.66GHz, which is the slowest in the standard notebook Core 2 Duo line-up, but it's supplied with 1GB of Ram and provides enough grunt for most tasks. In our performance tests, it clocked up 224 in Sysmark 2004 SE, which is about what we expected.

Weighing in at 2.4kg and with its 14.1in screen, the Travelmate 3273WXMi was never going to be the

most portable of computers. The battery struggles to reach much over two hours during normal use.

If you crank the screen brightness down and turn off both WiFi and Bluetooth, you'll be able to squeeze more out of the six-cell battery, but anything more than three hours is optimistic. A nice touch is the Epower Management application; part Acer's Empowering Technology software, it indicates how long the notebook will last switched on, in standby mode or when hibernated.

Graphics are catered for by Intel's 945GM integrated chipset, which dynamically steals memory from the 1GB of system Ram. Solitaire and Minesweeper won't cause any problems, but don't expect to play 3D games.

The display has a 1,280x800 resolution, which offers a decent amount of desktop space. In an effort to keep the price down, Acer has decided against giving it the glossy Crystalbrite treatment. This is fine for everyday use and keeps reflections to a minimum, but when playing DVDs it doesn't look so hot and the display appears a little washed out.

Although it would have no problems running Windows Vista, XP Professional is the chosen operating system – considering the notebook is designed for businesses, this is no huge surprise. Cyberlink Power DVD, NTI CD-Maker, a 90-day trial of Norton Antivirus and a host of Acer tools make up the rest of the software collection.

Its performance won't knock your socks off, but the Travelmate 3273WXMi is a solid notebook at a good price. Acer could have done a better job with the warranty though – a one-year collect and return deal isn't great.

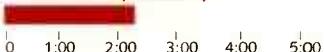
Will Stapley

Performance

Sysmark 2004 SE: 224



Mobilemark 2:14 (hours:mins)



Details

Price £616.97

Best price www.pcw.co.uk/bestprices

Contact www.laptopsdirect.co.uk

Specifications Intel Core 2 Duo T5500 (1.66GHz) • 1GB Ram • 80GB hard drive • 14.1in widescreen display (1,280x800) • Intel 945GM integrated graphics (sharing up to 128MB of system Ram) • DVD writer • PC Card slot • Card reader • Windows XP Pro

Verdict

Pros Good value; reasonable spec

Cons Uninspiring chassis; short warranty

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall Not the most portable of notebooks, but a good value effort from Acer nevertheless

★★★★★

SMARTPHONE

Nokia N95



With built-in GPS and Wifi, the latest N-Series looks set to take the market by storm



Since establishing itself as a major mobile phone maker in the 1990s, Nokia has been through some turbulent times and released its fair share of duff handsets. Its feature-rich N-Series, however, has gained a loyal following, and this latest model ticks more boxes than ever before with the likes of Wifi, GPS, HSDPA and a 5-megapixel camera.

Highlighting the phone's multimedia capabilities, if you slide the display down, four music/video navigation buttons are revealed. The sliding mechanism isn't spring-loaded, but it has a solid feel.

If you're within range of a wireless network you can switch to the N95's Wifi mode. Once connected to a network you can bypass your Sim card when browsing, as well as share files with other computers on the network. Impressively, the N95 is UPnP compatible, allowing you to use it as a network remote control; you can hunt down media on a local UPnP drive and instruct it to be played on a nearby media streamer.

The GPS feature on the N95 is going to be a big draw and there aren't many smartphones with built-in receivers on the market. However, it doesn't act in the same way as dedicated sat-nav kit – map chunks are downloaded as you need them and cached. Furthermore, voice navigation commands cost extra – about £5 per month or £50 for a three-year subscription.

During testing, the time to first fix (the time it takes to lock its current location) took about five minutes. It's also fiddly to use in-car and we would recommend opting for a dedicated sat nav for this purpose. However, the GPS feature can be useful when on foot.

The inclusion of a 5-megapixel digital camera seems more a marketing ploy than anything else. When viewed on the N95's screen, images look great, but

send them to your PC to view at 100 per cent and you'll immediately notice quality issues; excessive sharpening and image noise obliterate fine detail.

With the fairly large 2.6in screen, many may want to use the N95 as a portable video player. And with the 3.5mm headphone jack, it's easy to hook up a set of phones. Nokia also includes a wired remote to allow for track navigation while the phone is in your pocket.

The N95 does an excellent job of playing back Mpeg4, 3gp and Real Video formats. If you want to watch Avi or Wmv files you'll have to convert them first. Meanwhile, the audio player caters for mp3, AAC and Wma files. You can also capture video at 640x480 resolution and 30fps, ready for playback on a TV. The image stabilisation feature works well and the audio is pretty clear, but you should avoid the digital zoom.

With power-hungry features such as Wifi and GPS, we never expected battery life to be one of the N95's strong points. Sure enough, with reasonably intense usage the phone was crying out for the mains after 24 hours. If you're more restrained, the N95 will keep going for a couple of days.

With so many features on offer, it's hard not to be impressed by the N95. It's well designed, intuitive and surprisingly light. Poor battery life is to be expected considering everything the phone has to offer, but some may find the price tag simply too high to justify.

Our review model was supplied by The Carphone Warehouse (www.carphonewarehouse.com) and, at the time of writing, prospective buyers will be looking at a £30-35/month contract (18-month minimum), plus a handset charge of about £129.99. Considering most phones are free with such expensive contracts, the N95 sits in the premium section of the market. *Will Stapley*

Details

Price Approximately £129.99 (depending on contract)

Best price www.pcw.co.uk/bestprices

Contact Nokia www.nokia.co.uk

Specifications HSDPA • 3G • Edge GSM • Symbian S60 OS • 2.6in screen (240x320) • GPS • Wifi • Bluetooth • Infrared • 5-megapixel camera • 160MB internal memory • microSD card slot • Up to 160 min talk time, 215 hours standby • 53x21x99mm (wxhxd) • 120g

Verdict

Pros GPS; Wifi; excellent design; multimedia features

Cons Battery life; GPS time to first fix

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

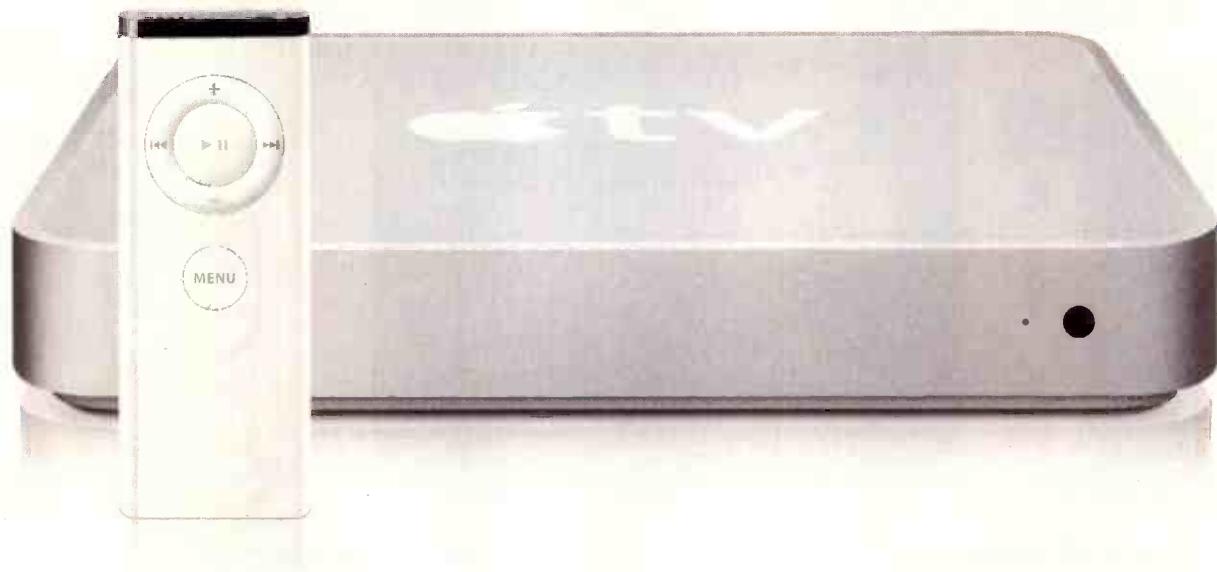
Overall It's an expensive piece of kit, but as far as smartphones go this is most definitely the current king of the hill

★★★★★

MEDIA STREAMER

AppleTV

A media player with typically elegant Apple design – but where's the content?



Apple boss Steve Jobs has described the AppleTV as being like a 'DVD player for the 21st century'. He believes – probably correctly – that in the future we will be downloading most of our music and video from the internet rather than buying quaint old physical media, such as CDs and DVD.

The AppleTV is therefore designed to act as the missing link between your computer and your TV, allowing you to download music and video onto your computer and then transmit it straight to your oh-so-modern high-definition TV set.

It's a nice idea, and in some ways the AppleTV fits the bill perfectly. However, it does have some worrying limitations.

Where the AppleTV scores highly is in its impressive ease of use. Like all the best Apple products, 'it just works'. Or, at least, it does if you've got a high-definition TV set and a copy of iTunes running on your computer.

On the back of the unit there are HDMI and component video connectors, which you can use to connect it to a high-definition (HD-Ready) TV. You may be able to get it to work with older sets that have component video input, but there's no guarantee this will work and Apple won't provide technical support for non-high-definition sets.

If you've got an iPod, you'll already have iTunes installed on your computer. If not, you can download it free of charge from the Apple website. It's this use of iTunes that is simultaneously the AppleTV's greatest strength and its greatest weakness. Once you've connected the device to your television set, you can then hook it up to your home network using either its Ethernet interface or its built-in wireless capabilities.

The AppleTV will then automatically sniff around on your network and locate any PC or Mac that has iTunes running on it. You'll need to enter a Pin number into iTunes (and, if applicable, your wireless security key), but once that's done you can transmit any music or video that is stored in your iTunes library straight to the AppleTV.

Look at your TV screen and you'll see a slick graphical interface that looks very similar to that of the iPod. A simple little remote control unit enables you to browse your music collection, play photo slideshows, home videos, and any music videos, films or TV programs you have in your iTunes library. Alternatively, you can store content on the 40GB hard drive.

It really is as easy as that. The big problem, though, is the AppleTV's dependence on iTunes. If you've got an iPod then you'll probably be happy to buy your music from the iTunes Store or rip it into iTunes straight from CD.

Unfortunately, the iTunes Store here in the UK is not currently allowed to sell any of the films or TV programs that are on sale in the US store. Admittedly, this is the fault of the film companies rather than Apple itself, but it's still a big problem for Apple as it means there's no video content available to use with AppleTV, other than the music videos that are on sale in the UK store.

Even worse is that iTunes can't play videos sold through rival internet video services such as Sky By Broadband or Channel 4 OD. From a technical point of view, we can hardly fault the AppleTV. But if Apple can't get some decent films and TV programs onto the UK iTunes Store in the next few months, there won't be much reason to buy it.

Cliff Joseph

Details

Price £199

Best price www.pcw.co.uk/bestprices

Contact Apple www.apple.com/uk

Specifications HDMI/component video output • Stereo/optical digital audio output • AAC • Mpeg4 • 40GB hard drive • H.264 • 197x197x28mm (wxhxh) • 1.1kg

Verdict

Pros Well designed; easy to use

Cons Little video content currently available

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

Overall Technically impressive, but the lack of video content in the UK leaves a question mark over the AppleTV's future

★★★★★

PORTABLE MEDIA PLAYER

Sony Video Walkman NW-A805

Sony's first Flash Video Walkman tries to outdo the iPod Nano with a widescreen display



The Sony Video Walkman NW-A805 can play back videos at up to 30 frames per second



Video Walkmans are back. Sony launched the brand in the 1980s when 8mm tapes were used to play back content and now, two decades later, it's using the moniker for its latest mp3 players.

The three new devices to carry the name have 8GB, 4GB and 2GB of flash memory, of which we have the latter to test. All are metal clad and come in a range of matt-textured colours.

Although 50 per cent bigger than the iPod Nano, it's still a slender design. To justify the extra size, Sony has squeezed in a 2in widescreen LCD that outclasses every other Flash-based player on the market. The display is bright and detailed thanks to a QVGA (240x320) resolution and can display videos and picture slideshows horizontally or vertically. Much of the styling is reminiscent of the Sony A1200. The button layout is similar and the silver border along the sides remains. It's easy to navigate and a search function is included.

Sony has stubbornly stuck to its Sonicstage software for music transfer. Audio support is better than with older Sony audio players; the NW-A805 will playback mp3, aac and wma files natively. Sony's Atrac files are, of course, still supported and used for ripping CDs and converting unsupported files into.

Having let up a bit on audio formats, Sony's politics have moved onto the video arena. Playback is limited to custom AVC H.264 and Mpeg4 files. The supplied program Image Converter 3 must be used to transfer videos, for example DivX or wmv, to the device in either 'high' or 'low' quality, which corresponds to bitrates of 768Kbits/sec or 384Kbits/sec.

We found the tool was buggy, sometimes spending half an hour transcoding a video only to throw up an error message at the end of the process. Infuriatingly,

even AVC H.264 files that only vary slightly from the required bitrate (for example 634Kbits/sec instead of 768Kbits/sec) must be transcoded before they'll play.

Sony says the device can playback files at up to 30fps (frames per second), which is impressive. Indeed, videos played back smoothly and had vibrant colours. You wouldn't want to watch a whole film on a screen this size, but for shorter train or car journeys, it is comfortable to watch TV shows.

The Walkman can be used as an external hard disk, but any files you drag and drop onto it can't be accessed by the player itself – Sony's software must be used.

The non-removable battery has impressive stamina. The NW-A800 series is rated at 30 hours playing back music or up to eight hours playback low-quality video files. In testing we found battery life went on and on and we have no reason to doubt Sony's claims.

Sony's EX-style headphones are provided; in-ear models that block out some outside noise. They're comfortable to use for prolonged periods of time and certainly better than Apple Nano buds. Although there is a hint of static when the headphones are plugged in, audio quality is very good.

We think £120 is a steep price for a 2GB player, especially when the corresponding iPod Nano costs £99 and Sandisk's excellent Sansa C250 only costs £65. With the other players though, you may have to shell out for better headphones – something you're less likely to do with the NW-A805.

Ultimately the Sony NW-A805 is a classy device, well manufactured and easy to use. But getting video onto the device is another matter entirely, and we can't understand why Sony persists with the stubborn and unintuitive Sonicstage software.

Emil Larsen

Details

Price £120

Best price www.pcw.co.uk/bestprices

Contact Sony www.sony.co.uk

Specifications 2GB Flash memory • 2in 240x320 LCD screen • 3.5mm headphone jack • USB2 cable • 44x9x88mm (wxhxd) • 53g

Verdict

Pros Excellent build quality, superb display, long battery life

Cons Expensive, poor software



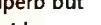
Features



Performance



Value for money



Overall Technically superb but it's a real chore to get videos onto the device



DIGITAL CAMERA

Ricoh Caplio R6

Portrait recognition and a huge zoom bring a new face to the Caplio range



It was only last September that Ricoh announced the 7.1x optical zoom, vibration reduction-equipped R5 compact. But already it's usurped by the R6, which not only features trendy face recognition technology, but is claimed to be "the world's thinnest camera, with wide-angle 7.1x optical zoom at its thinnest point".

Riders aside, the R6 appears a svelte and sprightly beast, the zoom barreling out of a reassuringly solid housing in less than a second.

The 2.7in LCD at the rear is ghosting-free, although it suffers under bright sunlight, but there's no complaint about the rapidity of the autofocus. There is a slight pause when an image is captured,

but the camera's ready for the next frame in less than a second.

As is common with compact digicams, there's a host of scene modes, one of the more intriguing being Skew Correction. Take a shot of a scene with converging verticals, or horizontals, and have the camera straighten them up – no recourse to Photoshop's perspective transform necessary.

Because of the LCD's tiny size, the on-body controls are minuscule. And the flash is situated right below the over-feisty zoom lever surrounding the shutter button. That said, the layout is logical, even if the selector switch between standard, scene and custom-configurable My Modes is tricky to use accurately.

Image quality is commendable, with a moderate amount of digital noise appearing at higher Iso values. However, the small but powerful zoom induces a little distortion, but such aberrations as purple fringing along high-contrast edges are mercifully absent – perhaps a nod to the in-camera processing – and face recognition is a welcome and effective bonus.

The Ricoh R6 is one of the more capable compacts available and its lens range makes it more flexible than most, but photographers with big fingers will struggle with the controls.

Karl Foster

**Details**

Price £229.99

Best price www.pcw.co.uk/bestprices

Contact Ricoh

Specifications 7.24-megapixels •

7.1x optical zoom (35mm equivalent of 28-200mm) • f3.3-5.1 • 2.7in LCD • ISO equivalent 64-1600

• CCD-shift stabilisation • 11 scene modes • Face recognition mode

• 54MB internal storage • USB2 • SD/SDHC/MMC card support

Verdict

Pros Solid build; good zoom range; rapid operation; face recognition

Cons Small buttons; no storage card bundled

Features



Performance



Value for money



Overall A respectable point-and-shoot digicam with wide lens, novel shooting features and clean output, although you'll need slender digits



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SATELLITE NAVIGATION

Mio Digiwalker H610

A GPS, multimedia player and travel companion in one



Mio's Digiwalker range is part of a new wave of GPS solutions that combine traditional in-car navigation, multimedia playback and a collection of utilities for frequent travellers.

Based around the Miomap v3, software navigation is pretty straightforward once you get used to the menu structure, but like the Mio C210 it suffers as an in-car solution due to the small screen and often fiddly controls.

You do, however, get free speed camera alerts and a full range of POIs (points of interest) across Europe, and can buy a TMC module separately to provide traffic updates so it's well in line with modern advances in navigation.

A look at the feature set and design of the Digiwalker suggests that in-car use is more of a secondary purpose. In reality, the product is more likely to be used by those travelling on foot and provides a range of features to help you get by in and around Europe.

You'll find seamless navigation through full European maps and a wide range of travel tools that include an electronic compass, alarm and world map. There's also currency conversion, world clock, weather updates, area codes and even conversion standards for clothing, the majority of which are configurable to one of over 250 countries from the database.

As if this weren't enough, the Digiwalker offers impressive support for multimedia, featuring an MP3 player, video player and photo viewer alongside 2GB of built-in memory on which to store additional files.

There's an SD card slot on the side to up the capacity, and you're provided with a leather carry case, headphones and a couple of lanyards in the box.

A selection of games will help stave off the boredom on long journeys – they're all quite fun to play and look swish on the high-res screen. You can also synchronise the device with Outlook and upload your contacts.

Portability is paramount in such a product, and Mio has made the H610 pretty light and pocket-sized, although the styling may not appeal to all tastes.

Despite coming with a range of interchangeable covers, we weren't particularly impressed on this front; it has quite a plastic feel and doesn't give the impression it could take much punishment before breaking.

Just 4.5 hours of battery life with an active GPS antenna may be an issue for some. We're also surprised there is no stylus, either in the box or on the device itself. Considering the small screen size and resulting miniature controls, we expected one to be included.

Many of the buttons, particularly on the Miomap software, are too small to accurately press with your finger. You'll probably find yourself digging around for a substitute stylus to make it more usable on the move.

Despite these drawbacks, you get a wide range of features with the H610, but are paying quite a bit for all of this portable functionality. Compared to traditional in-car solutions, the Digiwalker isn't the most user-friendly, but its strengths lie in the additional features and travel-kit you won't find anywhere else.

There's no doubt the Digiwalker has the potential to be an essential companion for the modern jetsetter, and if you think you'll get enough use out of the toolset and multimedia player you may end up wondering how you ever did without it. We expect to see more products offering similar functionality in the near future. Magellan, in particular, has some in the pipeline and will be interested to see how they compare. *Paul Lester*

Details

Price £250

Contact Mio www.mio-tech.be

Specs 2GB internal capacity • 2.7in display • 4.5-hour battery life • 22x60x87mm • 166g

Verdict

Pros Wide range of tools for frequent travellers; doubles as a multimedia player; European maps included

Cons Small display and controls make it difficult to use on the move; fairly expensive; not particularly stylish

★★★★★

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

Overall Despite its average performance on the GPS front, we were impressed by all the extras the Digiwalker has to offer, and would certainly like one to hand on a jaunt around Europe

★★★★★

GRAPHICS CARD

MSI NX8600GT-T2D256E-OC

An overclocked DirectX 10 Nvidia Geforce 8600GT card for under £100



Although we're still waiting for the first DirectX 10 game to arrive, the desire to future-proof is widespread.

Having launched high-end cards that retail for several hundred pounds in the form of the Geforce 8800GTS and GTX, Nvidia is now catering for the mid and low end of the market. Three new cards are the first to arrive: the 8500GT, 8600GT and best of the bunch, 8600GTS. On the face of it, this 8600GT from MSI looks like the perfect balance between performance and cost. Nvidia recommends a GPU clock speed of 540MHz, but MSI has overclocked this to 580MHz.

The 8600GT is one of the first graphics cards to use a unified shader design, which means each pipeline is capable of performing vertex, pixel, geometry or physics calculations instead of needing separate pipelines for each task. This results in a more efficient design, where resources are allocated as needed.

MSI's 8600GT contains 32 stream processors, much lower than the 96 present in the 8800GTS and 128 in the 8800GTX. Internal shader clock speed remains at 1.2GHz, the same as 8800GTS. MSI has also overclocked the 256MB of DDR3 on-board graphics Ram. It runs at 800MHz (1.6GHz effective), 100MHz higher than Nvidia's 700MHz reference design.

On our benchmarking kit (an Intel Core 2 Extreme X6800, Asus P5W DH Deluxe motherboard and 1GB Ram), performance was impressive in 3Dmark05, with a score of 9,903, while the more demanding 3Dmark06 returned a very good 5,984.

The NX8600GT-T2D256E-OC is great for gaming at 1,200x1,024 resolutions and below. Half-Life 2, Far Cry, Doom 3 and Fear all remained playable and above 60fps (frames per second). When we turned on 4x

FSAA (anti-aliasing) and 4xAF (anisotropic filtering) at 1,200x1,024, scores wobbled a bit, although only two games dropped below 60fps – Doom 3 dropped to 48fps and Fear dropped to 37fps.

At resolutions above this, gameplay wasn't particularly smooth, hovering between 25fps and 55fps, and you'd be better off with something like a 320MB 8800GTS. Based on past results from www.reportlabs.com, at resolutions of 1,200x1,024 and above, 8800GTS cards pushed out roughly double the frame rate of the 8600GT.

It's not as fast as the ATI Radeon X1950GT, and it's certainly no replacement for an Nvidia Geforce 7800GTX or 7900GTX, but this card is superior to Nvidia's Geforce 7600GT and ATI's X1650 range. At £95 it sits in the same price category as low-end 7900GS cards. ATI's Radeon X1950Pro only costs £5 more and performance-wise we'd pick that out of the bunch.

The back of the card is equipped with two dual-link DVI-I outputs so the card can power two 3,840x2,400 monitors at 30Hz.

The Geforce 8600GT and 8500GT graphics processing units do not contain HDCP keys as standard. Using a Sony BWU-100A Blu-ray drive and HDCP-enabled display, we ascertained that MSI's NX8600GT-T2D256E-OC is not HDCP-enabled and the system failed to play back a Blu-ray movie.

There's no need for an external power connector for the card and it runs quietly. The card is also relatively short, only 17.7cm, and is simple to plug in. It's certainly not an attractive card, though.

The performance of MSI's 8600GT is reasonable, and its small size and DirectX 10 support add to its appeal.

Emil Larsen

Details

Price £96

Best price www.pcw.co.uk/bestprices

Contact MSI www.msicomputer.com

Specifications Nvidia Geforce

8600GT GPU • 580MHz clock speed • 800MHz memory speed (1,600MHz effective) • 256MB DDR3 • 32 stream shaders • Two DVI-VGA adapters • S-video cable

Verdict

Pros DirectX 10 support; good performance at 1,200x1,024

Cons No HDCP support; ATI's Radeon X1950 Pro offers better performance for a similar price

★★★★★

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

Overall DirectX10 support and reasonable performance make this card a good choice, but competing ATI cards are just around the corner

★★★★★

19IN TFT

LG 1960TR

A stylish display that boasts an impressive specification



The LG 1960TR is a standard 1,280x1,024, 5:4 aspect ratio monitor with an emphasis on style and image quality. Finished in matt and gloss blacks with subtle chrome trim, it'll look good in both home and office environments.

Other than a discreet touch-sensitive power switch, there are no visible control buttons from the front. One particular control, labelled F-Engine, accesses the preset movie and text modes that are designed to be more frequently used. F-Engine is also the key to the monitor's 3,000:1 contrast ratio.

You can choose from Movie, Text and User modes,

each of which is designed to enhance image quality. Selecting one of these modes causes the display to be split into two vertically, with the normal display on the right, and the enhanced display on the left. If you like the look of the enhancement, you can select it or tweak individual settings by using the User mode.

The rated 3,000:1 contrast ratio doesn't emerge from a straightforward measurement of white and black in a single image. In Movie mode, the LG 1960TR changes the brightness of the backlight in response to displayed content, meaning darker scenes appear darker and brighter scenes brighter.

When switching to Movie mode, we measured a 29 per cent improvement in contrast ratio when running our routine calibration process, which keeps the brightness of most of the screen constant. Movie mode is visually striking and possibly enjoyable depending on your preference, but it's inaccurate and unsuitable for tasks such as processing digital photographs.

A height-adjustable stand would have been preferable for prolonged use, but on the whole we found the image quality to be very impressive. The LG 1960TR would make an excellent upgrade for anyone needing a display that both looks good and performs well.

Paul Monckton



Details

Price £186.88
Best price www.pcw.co.uk/bestprices
Contact LG www.lg.co.uk
Specifications 19in TN panel • 3,000:1 dynamic contrast • 300 cd/m² brightness • 2ms response time • DVI and VGA inputs • 422x261x410mm (wxhxd) • 5.4kg

Verdict

Pros Stylish design; image quality; high contrast

Cons Fiddly controls; no height adjustment

Features

Performance

Value for money

Overall A stylish monitor with very good performance, excellent cable management and an interesting design, but the controls are a little fiddly to use

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Audio Technica ATH-ANC7 Quietpoint

Price £129.95 Contact www.audio-technica.com Overall ★★★★☆

With a noise-cancelling feature, these headphones are ideally suited to commuters wanting to zone out from the hubbub on the train. Rather than the cups closing around the ear, the replaceable synthetic pads rest partially on the ear. The ear cups can rotate a full 90° in one direction, so they sit flat in relation to the headband for storage in the supplied case.

Sound reproduction is clean and transparent in the upper register, while the bass is deep and powerful. However, there is a slight lack of focus to the bass and the stereo soundstage isn't as open as it might be.

Overall A well-made and fine-sounding pair of headphones with good noise reduction

Terry Relph-Knight

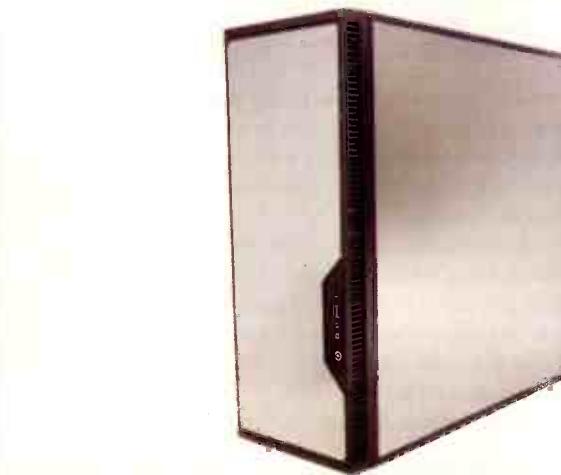
Samsung 32GB SSD

Price €649 (£442 approx) Contact www.samsung.co.uk Overall ★★★★☆

Samsung has been talking about Nand Flash memory-based Solid State Drives (SSD) for some time now, and we've managed to get our hands on its 32GB 2.5in Pata drive. The 32GB SSD proved an outstanding performer. Thanks to its low access times, it scored 6,306 in PCmark05, making it the fastest 2.5in disk we've ever tested. The Samsung also took just 0.2ms to respond, compared with the Hitachi's 15ms. For bigger file transfers, access times become less relevant. As yet, it's not available in the UK, but you can pick it up from Amazon in Germany for €649 (about £442). Read more at www.pcw.co.uk/2187904.

Overall The Samsung SSD offers real-world performance gains, making it the future technology of choice

Emil Larsen



Antec P182 Special Edition

Price £150 Contact www.Overdockers.com Overall ★★★★☆

The P182 is extremely photogenic and, up close, its gunmetal silver panels are a good substitute for a mirror. Components are stored in a modular fashion; for example, the hard drive compartment can be removed as a single block. To reduce noise and clutter, the power supply (PSU not included) is located at the bottom in its own compartment.

Two quiet 120mm fans sit externally, with fan controllers to adjust their speed, while a pair of rubber-clad vents is provided for water cooling. A wealth of accessories is supplied, including cable ties, extra PCI card backings and a cloth to clean the mirror panels.

Overall It's expensive, but the construction and layout of the P182 is second to none

Emil Larsen

Avocent Switchview DVI

Price £152.75 or £211.50 Contact www.avocent.co.uk Overall ★★★★☆

Avocent's four-port KVM is suitable for newer PCs that use a DVI display port and USB2 instead of PS2 peripherals. It can also switch a mic and speaker between PCs and packs a two-port USB2 hub.

The supplied cables are DVI-I, which means the connectors include four analogue pins. Our test screen used a VGA port for analogue signals and its DVI-D digital port would not take the supplied DVI-I plug. This would not normally be a problem as most similar monitors will come with a DVI-D cable that can be used with the Switchview, but it is confusion users could do without. Read more at www.pcw.co.uk/2187824.

Overall Despite the DVI-I problem, it's a good choice for PCs equipped with DVI graphics cards.

Clive Akass





Coolermaster Real Power Pro

Price £199 Contact www.yoyotech.co.uk Overall ★★★★☆

Another huge power supply joins a growing number of PSUs around the 1,000W mark. Coolermaster's Real Power Pro is the world's first six-12V rail model and complies with the latest Intel ATX 12V v2.2 and SSI (Server System Infrastructure) EPS 12V v2.91 specifications. The compact design is cooled by a 135mm fan with a noise level of 16dBA.

The Real Power Pro isn't a modular design but if you're buying a 1,000W PSU there's a good chance you'll need most of the connectors anyway. The soon-to-be-released RS-A00-ESBA is the modular version of this supply.

Overall More compact than other 1,000W supplies, the Coolermaster Real Power Pro is the first to offer six 12V rails and the latest PCI-Express connectors

Simon Crisp

Coolermaster Gemini-II

Price £28.20 Contact www.yoyotech.co.uk Overall ★★★★☆

Coolermaster's latest CPU cooler is so big it manages to keep your motherboard's temperature in check as well.

To give an idea of just how big the Gemini-II is, it supports two 120mm fans (not included) and towers above whichever CPU you attach it to (it supports AMD sockets 754/939, AM2 and Intel's LGA775).

The fans sit on top of the huge aluminium heatsink (179x134x81mm - wxdxh), which connects to the copper base via six copper heat pipes. The heatsink can be fixed horizontally or vertically across the motherboard, but either way you are going to need a big case to accommodate this beast.

Overall An interesting design that cools many other parts of the motherboard as well

Simon Crisp



Zerotherm GX810

Price £25 Contact www.quietpc.com Overall ★★★★☆

The GX810 graphics card cooler is suitable for ATI's X1300 to X1900 series of cards and Nvidia's Geforce 6800, 7800, 7900, 7600 and 6600 (except the 6600 AGP version).

It uses a single 6mm heatpipe and polished base to take away heat from the GPU. 140 thin cooling fins are then used to dissipate the heat.

The 70mm dual ball bearing fan is temperature controlled and spins from 900 up to 2,500rpm, depending on how hot the GPU is running. Quoted noise levels start at 16.95dBA, peaking at 29.85dBA at full pelt. You also get eight separate heatsinks to stick on the card's memory modules.

Overall A well-designed, good value and quiet graphics card cooler

Simon Crisp



Asus M2N32-SLI Premium Vista

Price £150.98 Contact www.scan.co.uk Overall ★★★★☆

Asus has crammed its latest motherboard, the M2N32-SLI Premium Vista, with a range of features. Along with a boxful of data cables, Serial ATA power cables and expansion plates, you get a clip-on cooling fan for the VRM heatsink, Screenduo (a small display panel that shows information without having to boot up the system) and even a remote control.

Based around AMD's AM2 socket and Nvidia's Nforce 590SLI chipset, the motherboard is well laid out and includes what Asus calls the Accelerated Propeller - a small USB riser card containing 512MB of memory for use with Vista's Readyboost.

Overall It's £50 more expensive than the standard version, but good value considering the extras

Simon Crisp



VIDEO-EDITING SOFTWARE

Corel Ulead Videostudio 11

Cheap yet powerful editing package, with limited export opportunities in standard edition



Videostudio is a comprehensive, if rather stingy, editing package

It seems odd to keep calling this Ulead Videostudio, since Ulead was taken over by Corel some time ago. Corel obviously thinks that the program's brand name and reputation are worth hanging on to.

There are actually two versions of the program available. The basic Videostudio 11 costs £39.99, and there's also Videostudio 11 Plus, which costs £59.99 and includes several additional features.

When you launch Videostudio, the initial splash screen presents you with three simple options. The DV-to-DVD Wizard enables you to quickly grab video clips from a camcorder and burn them straight onto DVD. The Movie Wizard is a bit more sophisticated, allowing you to import a series of video clips and select a template that will automatically create an introductory sequence for you and then insert transitions between each clip. The Movie Wizard in version 11 gains a few new templates that can create montage effects containing multiple video clips, although these are only available in the Plus version of the program.

If you're new to video editing, you can use the Movie Wizard to quickly put together a project before moving onto the third option, which is the main Editor module. There are some useful new options here, such as the Deblock filter, which can be used to smooth out the blocky appearance often found on heavily compressed video clips.

Perhaps the most powerful new feature is the ability to apply chroma-key effects to video overlays. We were pleased to see that this feature is available in both versions of Videostudio, and we also liked the ease with which you can modify overlay effects. Just click on the handles surrounding your video clips

and you can quickly use the mouse to distort or resize your clips by hand.

The 'Plus' version of the program includes an additional option that makes it easier to work with overlays. It allows you to expand the editing timeline to display a more detailed view of the overlay tracks in your movie, providing greater precision when editing complex effects sequences. Beginners probably won't need sophisticated features such as this, so there's no need to pay for Videostudio Plus unless you feel confident about tackling this sort of advanced editing work.

Similarly, most of us won't need the option for burning our movies onto HD-DVD (high-definition DVD) discs either; not only will you need an HD television and HD camcorders, but an HD-DVD burner will also be required.

However, there are a couple of options found in the Plus version that we do feel people shouldn't be asked to pay extra for. The standard version of the program has no options for exporting video to an iPod or PSP – although, rather oddly, it can export to Microsoft's less popular Zune player.

The standard version can't export in Mpeg4 or H.264 formats either; a serious omission given that these are key formats for putting video onto the internet or devices such as an iPod or mobile phone.

If you're a newcomer to video editing, you'll find the core editing features in the standard version of Videostudio 11 to be more than adequate for your needs. However, given the vast numbers of iPods and PSPs that have been sold, and the increasing importance of Mpeg4 and H.264, we do think that Corel is being a bit stingy by asking you to pay extra for these features.

Cliff Joseph

Details

Price £39.99 standard, £59.99 Plus edition

Best price www.pcw.co.uk/bestprices

Contact Corel www.corel.co.uk

System requirements Intel P4 or higher • 512MB Ram • 1GB hard disk space • Windows XP/Vista

Verdict

Pros Powerful video-editing tools; well-designed interface

Cons Limited export capabilities in the standard version

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall A powerful, yet easy-to-use, video editor, but iPod and Mpeg4 support should be a standard feature

★★★★★

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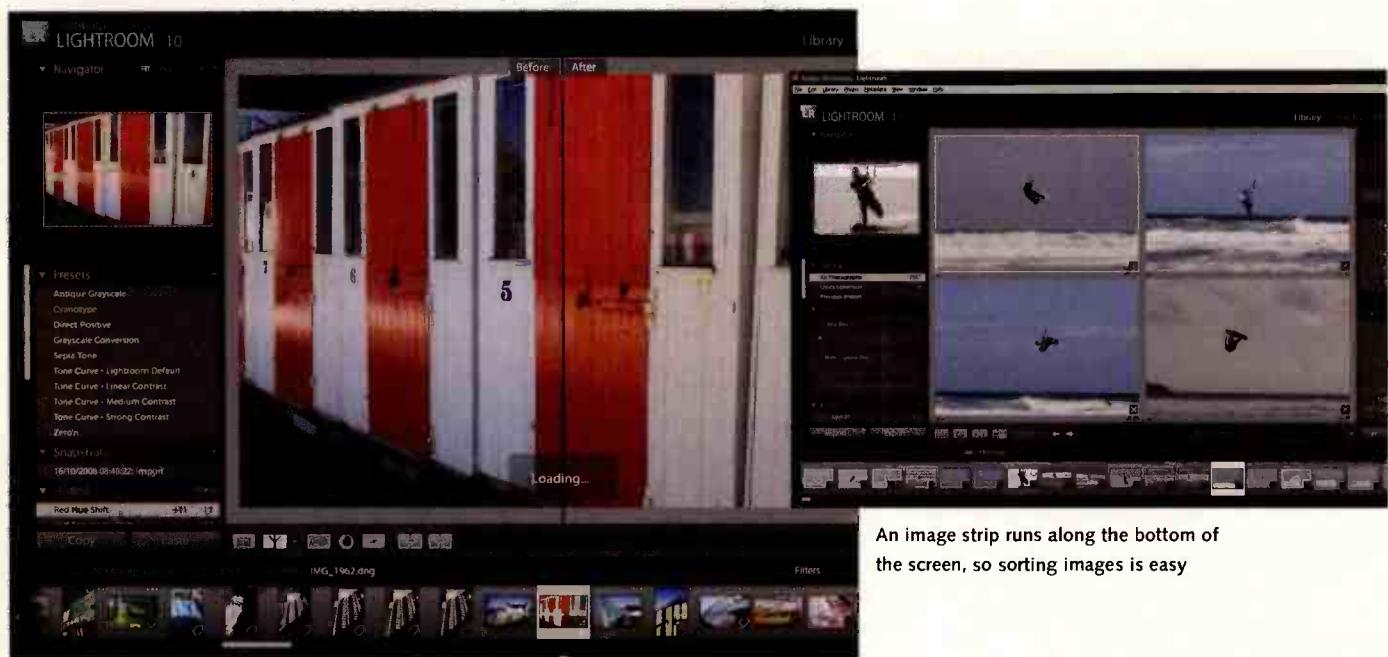
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PHOTO EDITOR

Adobe Photoshop Lightroom

High-end photo editor and organiser



An image strip runs along the bottom of the screen, so sorting images is easy

When Adobe announced the public beta of Lightroom just over a year ago, there was speculation that the company was anxious to make up lost ground with Apple's Aperture as quickly as possible. Whatever the reason, there's no denying the two products share a lot of common ground, so comparisons are inevitable. Like Aperture, Lightroom is aimed at professional photographers looking for basic image-editing tools combined with a robust digital image database.

Lightroom's workspace adopts a tabbed layout that is reminiscent of the Kai Krause Soap and Goo apps of almost a decade ago. Each tab provides the tools needed for a particular stage of digital post processing. Images are imported, organised and tagged in the Library, Develop provides tonal and colour adjustments, and the Slideshow, Print and Web tabs provide everything needed to generate outputs for those formats.

Aimed at professionals, Lightroom is designed to work with Raw format images (a list of supported cameras can be found on Adobe's website), but works equally well with Jpegs, Tiffs, Psd and Dng formats.

Although not configurable for a dual-monitor setup, the workspace is designed to help with the task of sorting and sifting large numbers of images, so multiple view modes are possible. In addition to an image strip running along the bottom of the screen, a central display panel can be configured for a thumbnail grid view, single-image zoomable loupe view, two-up comparisons, or multiframe surveys.

Panels on either side of the main display provide the necessary tools for the task in hand. In Library mode they allow you to organise images into collections, add and search keywords and other

metadata, and filter folders by star rating, flags or labels. A Quick Develop pane provides a subset of the Develop tab's Basic colour and tonal adjustment tools, which should be adequate for most images.

The Develop tab will be familiar to users of Camera Raw, Adobe's Raw file processing and converter utility. All of the ACR tools are here, some having developed more sophisticated controls, and there's new stuff too. These tools are designed to squeeze the last ounce of quality from 16-bit Camera Raw files, but they can also be used to good effect on Jpegs.

The primary Develop tools are organised into seven panes, providing just about everything you could want in terms of colour and tonal adjustments. In addition to the usual histogram and curve controls, a recovery slider helps claw back blown highlights and Fill Light works in a similar fashion to the first half of Photoshop's Shadow/Highlight adjustment.

A Vibrance slider boosts colour in a similar way to the Saturation one below it, but it manages to avoid the clipped, super-saturated look that results from over-extending the latter.

The HSL pane provides graphic equaliser-style control of individual hue ranges, so you can boost blue saturation without affecting other colours. Used on greyscale conversions, the same controls provide a multiband channel mixer with eight sliders.

The Slideshow, Print and Web tabs don't provide anything groundbreaking, but they do make light work of outputting image collections. For most photographers, post-processing should involve little more than grading, cataloguing and minimal tweaking to make an image pop. And that's exactly what Lightroom provides.

Ken McMahon

Details

Price £205.63

Best price www.pcw.co.uk/bestprices

Contact [Adobe](http://www.adobe.com) www.adobe.com

System requirements Intel P4 processor or higher • 168MB Ram • 1GB hard disk space • Windows XP (also runs on Vista, but not certified) • Mac OSX 10.4

Verdict

Pros Clean functional workspace; some excellent Camera Raw processing tools

Cons Workspace not configurable for dual-screen setup

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

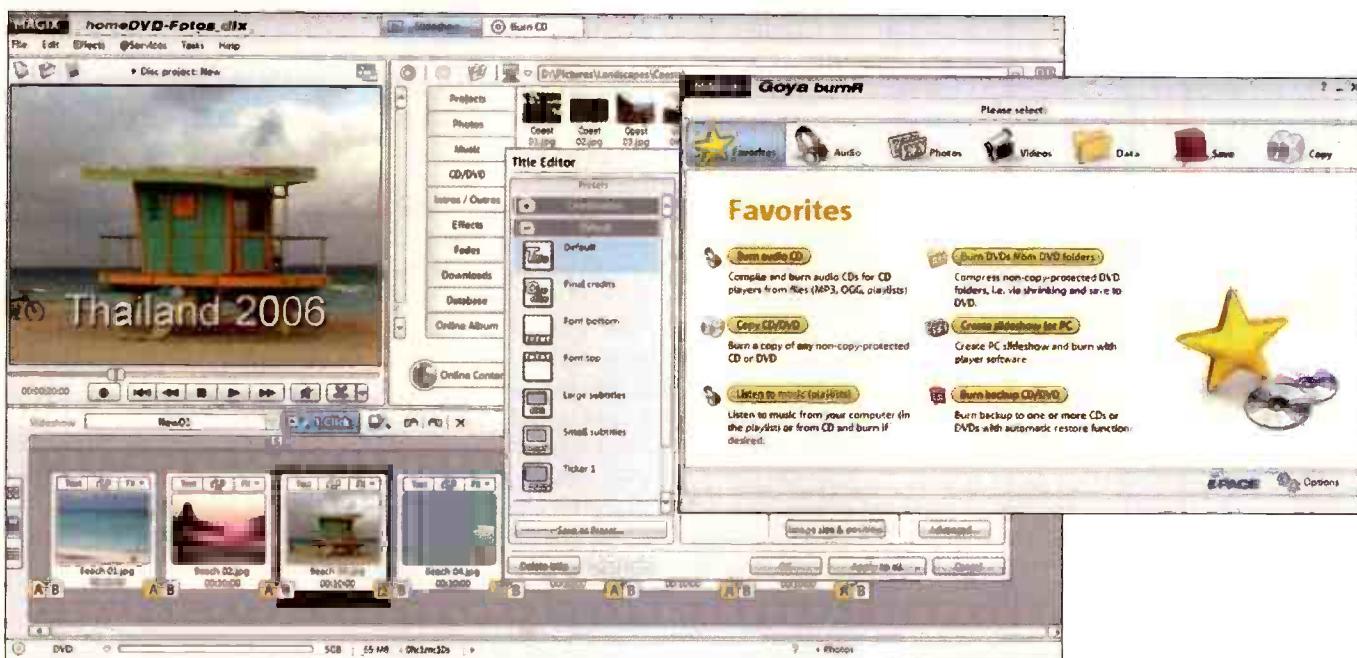
Overall Adobe Photoshop Lightroom is an excellent high-end photo editor, equipped with a wide range of powerful tools

★★★★★

MULTIMEDIA AUTHORITY

Magix Photos on CD & DVD

A decent collection of tools for managing your media



Photos on CD & DVD is something of a misleading title for this Magix multimedia suite.

The Deluxe version we tested is actually a powerful collection of tools covering a wide range of multimedia, akin to the excellent Roxio Easy Creator 6.

The software enables you to create photo slideshows to burn to CD or DVD. There is also a wide range of transitions and effects, all controlled through an intuitive interface, which involves dragging and dropping your photos on to a template. From here you can make adjustments, such as adding text, changing the orientation of the images and applying a range of special effects – all with quick preview options.

It's easy to add music, create intro and outro sequences, and burn the resulting project on to disc, so professional-looking presentations can be created quickly and easily.

The title application is just one of a range of powerful tools available in the suite. As an accompaniment to building your own photo-based projects, you'll find Photo Clinic, a photo retouching and image-processing application for improving your snaps. Using Photo Clinic, you can perform quick fixes on, for example, red-eye and lighting, and you can also remove scratches and stains. The suite also comes equipped with more creative Photoshop-style effects and manual correction tools for fine-tuning.

Each of the effects are added as layers over the image, so it's easy to remove individual effects or revert back to the original if things aren't working out.

Elsewhere on the photo front you'll find Photo Manager 2007. This lets you keep track of all the digital snaps on your computer while offering easy access to printing and burning. You can gain more

control over printed media using Print Studio, which makes it fast and easy to create disc layouts and cover art for your finished projects.

There are additional tools that can help you create, edit and produce audio material in a similar fashion. Supplied as part of the main suite of applications is Music Editor 2.0, which offers a full range of audio editing and production for those who want to create and edit their own music. Your work can then be added to your slideshows.

A Music Manager tool keeps track of the audio files on your hard drive and offers you a range of cataloguing, editing and burning options for your tunes.

Finally, there's Goya Burnr, a comprehensive burning application that'll help you produce anything from audio CDs to photoshows, as well as convert double-layer DVDs to single-layer discs. Goya Burnr supports new formats such as HD-DVD.

One annoyance with this suite is that upgrade dialogue boxes often pop up encouraging you to purchase advanced versions of the audio and photo applications supplied. You'll also find many of the applications act independently from the others. It would have been preferable to have the suite totally integrated into a single interface, or at least tighten up accessibility between tools.

Magix has produced an impressive collection of multimedia software that, on the whole, is easy to use and enables you to create professional-looking projects quickly. It's slightly more niche than suites such as Roxio's Easy Creator, focusing most of its attention on building photo- and audio-based material. But if this is your main concern you'll find more than enough here to keep you happy.

Paul Lester

Personal
Computer
World
RECOMMENDED

Details

Price £39.99

Best price www.pcw.co.uk/bestprices

Contact Magix www.magix.net

Specifications 700MHz processor •

256MB Ram • 500MB hard disk

space • DVD drive • Windows

XP/2000/Vista

Verdict

Pros A wide selection of tools for photos and music; excellent degree of control over projects; easy to use

Cons Individual applications not particularly well integrated; promotional adverts are a nuisance

Features 

Performance 

Value for money 

Overall This highly affordable Magix suite offers a fantastic degree of control in creating your own photo- and audio-based multimedia projects



REMOTE ACCESS SOFTWARE

Logmein Ignition

An easy way to access your PC when you're away



The regular Logmein service is accessed via your web browser. Once you've set up the service on the PCs you want to access, you can sign in from anywhere and connect to them with a single click. Depending on the level of service you've signed up for, you'll be able to perform tasks such as file transfers, chat and comprehensive remote diagnostics.

With Logmein Ignition, you no longer need your browser to sign in to the service, nor do you need to remember your account details for your remote PCs. Instead, it installs a small software

application on to a USB Flash drive. When you insert the drive into your PC, the auto-run system starts up Logmein Ignition automatically.

Since Logmein Ignition is a software product, all it requires is some form of storage space. Any form of writeable storage will do, so instead of a dedicated USB Flash drive you could use an mp3 player, PDA or digital camera.

You can take it with you wherever you go, plug it in and use it without having to install any browser-based plug-ins or leave any browsing history on the guest computer.

Logmein's remote access has always been extremely quick and easy to use. And, somewhat ironically, this is the biggest problem with Logmein Ignition. It's designed to speed up and simplify what is already impressively fast and simple. The entry-level Logmein subscription, which comes without file transfer, is free to use, so it's hard to imagine users of this service paying a subscription for the added convenience of Logmein Ignition.

Those who upgrade to Logmein Pro will pay an annual subscription of \$69.96 (£35 approx) per PC, and Logmein Ignition would add \$49.95 (£25 approx) to that price – a significant sum. *Paul Monckton*

Details

Price £25 (approx \$49.95) per year or £5 (approx \$9.95) per month

Best price www.pcw.co.uk/bestprices

Contact Logmein www.logmein.com

System requirements Windows-based host and client PCs • USB Flash drive recommended

Verdict

Pros Superb ease of use; entirely self-contained; built-in security

Cons Many will be perfectly happy with the web-based service

Features

Ease of use

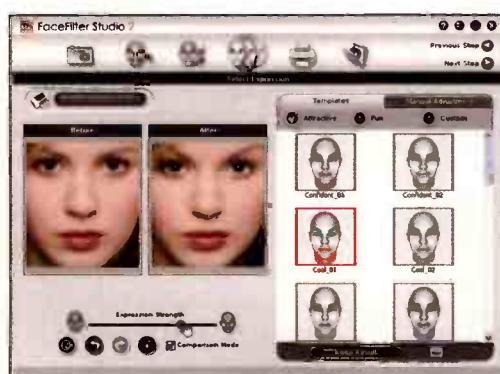
Value for money

Overall Logmein Ignition makes an already easy and convenient service even more easy and convenient to use

PHOTO EDITOR

Reallusion Facefilter Studio 2

If you're in the mood to mess with someone's face, here's software that makes it a cinch



Photoshop artists often spend many hours removing flaws from celebrity snapshots, perpetuating the belief that beautiful people don't suffer from wrinkles, warts or pimples. Rather than challenge this notion, Reallusion seeks to make the art of perfecting portraits easier and cheaper with its Facefilter Studio 2.

Not only does the software promise ease of use and fuss-free removal of blemishes and imperfections, it also claims to be able to alter the subject's facial expression, say, from surprise to anger.

On loading the software, you're presented with the option of correcting skin tones. Automatic correction is somewhat vicious and tends to bleach out reasonably acceptable tones, but manual tools are available by which to achieve subtle correction.

Facefilter Studio 2 invites you to dabble with skin texture and expression, presenting anchor points that can be aligned with a face template so the software knows the location of the subject's key features. Once the anchors are in place, a mask is created, ensuring that skin enhancements don't affect detail areas, such as the eyes and lips. The tools for smoothing complexion, whitening, darkening and tweaking colour quickly lead you into 'plastic face' territory, where pore detail with any semblance of reality is lost.

You can transform deadpan into scowl, sneer into smile and perform many other cheats, but the more extreme the manipulation, the more comedic it looks.

It is a fun feature, however, and there's the means to output contact sheets featuring variations of expression for printing onto stickers, for example.

Facefilter Studio 2 will not distract the pro from Photoshop's portrait retouching power, but it does offer an inexpensive means of rapid mugshot manipulation for casual users.

Karl Foster

Details

Price £29.99

Contact Reallusion www.reallusion.com

System requirements 500MHz processor • 64MB Ram • 300MB disk space • Internet connection • Windows 2000/XP/Vista

Verdict

Pros Easy to use; low price; can handle large files (up to 12-megapixels); works on group shots; photo-sticker export

Cons Skin manipulation rapidly induces 'plastic face' effect; artifacts afflict more extreme expressions; no Tiff export

Features

Ease of use

Value for money

Overall Facefilter offers fun facial distortion tools, but it's doubtful a professional photo retoucher will use it

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As a valued reader of *Personal Computer World*, your views about the magazine are very important to us. They will help us with planning future developments for *Personal Computer World* and our understanding more about your interests, likes and dislikes.

We would be grateful if you could spare some time to complete our 2007 Reader Survey. This consists of questions about *Personal Computer World* and your use of technology. It should take no longer than 10-15 minutes to complete. Simply visit www.pcw.co.uk/survey to get involved.

The research is being carried out according to the Market Research Society Code of Conduct, so all your answers and personal information will remain confidential and will only be used for the purposes of this research.

As a thank you for your participation, every respondent who completes the survey in full will be entered into a prize draw to win one of three iPod Nano personal music players.

Thank you in advance for helping to shape the future of *Personal Computer World*.

Kelyn Taylor
Editor, Personal Computer World



Visit www.pcw.co.uk/survey to complete the Personal Computer World reader survey

REAL-TIME STRATEGY

Command & Conquer: Tiberium Wars

Kane and co are back for more commanding and even more conquering in this strategic sequel



Never ones to shy away from cheese, the C&C creators have come up trumps once again with an exciting new chapter in the famous series

Back in the old days before computer graphics looked so realistic, game makers sometimes filmed live-action cut scenes and slotted these between levels to try and lend more credence to the playable sequences. It was a technique that was soon dropped by most developers and now looks cheesy.

But the chaps at EA Games clearly don't care about cheese. In fact, if the latest chapter in Command & Conquer (C&C) history is anything to go by, they seem to positively encourage it.

The C&C series is almost 12 years old now and has seen many variations on its winning real-time strategy theme since the first game was released in 1995. Tiberium Wars is a kind of back-to-basics sequel to the original games, rather than linking directly to the alternate Red Alert or Generals series.

We pick up the story in the year 2047. The conflict between the allied nations of the Global Defense Initiative (GDI) and the Brotherhood of Nod is still rumbling along nicely, and both sides are battling to control resources of the valuable but unstable substance known as Tiberium. However, another threat has appeared on the scene in the shape of an alien race called the Scrin, which also appears to have an unhealthy vested interest in Tiberium.

It's your job as commander of either of these forces to defeat the opposing factions by using your wits to outsmart them and your military might to crush them. Naturally, this involves a certain amount of resource gathering and base building before you can sink your teeth into combat, but the action element tends to come around a lot quicker in this game than in some other RTS titles we could mention. And, when it does, things can get pretty frantic. Thankfully, the controls

are all logical and easy to pick up, making the game suitable for newcomers as well as old hands.

The main single-player campaign is playable from either the GDI (blue) or Nod (red) perspective, which effectively makes for two completely different games. There's also a rather juicy set of bonus missions available upon completing these. Add to this both LAN and online multiplayer for up to eight players, as well as customisable single-player skirmishes, and you've got plenty of game for your money.

Tiberium Wars wouldn't be a C&C game without the high level of presentation that has traditionally accompanied games in the series. In-game graphics are exceptional, with plenty of colourful pyrotechnics and fully destructible models. And there are the cut scenes.

EA has clearly spent a lot of money on the 90 minutes of high-definition live-action footage that comes as part and parcel of your Tiberium Wars experience. The cut scenes are peppered with recognisable Hollywood talent, including Billy Dee Williams, Josh Holloway, two lady Cylons from the current reimagining of Battlestar Galactica and the actor who has played the Kane character since the original C&C. Throwing all that talent at the FMV sequences doesn't necessarily make them any good. But then, you can always skip them if you want.

What sets Command & Conquer apart from all the other space-age strategy games on the shelves is its investment in story and melodrama, which goes some way towards justifying the live-action bits. Without them and without its intelligent, allegorical plotline, Tiberium Wars would still be a very good game, but it wouldn't necessarily be the great game that it actually is.

Jonathan Parkyn

Details

Price £34.99

Contact EA Games

www.commandandconquer.ea.com

System requirements 2GHz

processor • 512MB Ram • 6GB hard

disk space • DVD-Rom • Windows

XP/Vista

Verdict

Overall Tiberium Wars is a lavishly produced blockbuster that will go a long way towards satisfying fans of the series, while being accessible enough to encourage newcomers on board too



ROLE-PLAYING GAME

Elder Scrolls IV: Shivering Isles

Oblivion gets officially expanded – and loses its marbles in the process



In terms of sheer value for money, the Elder Scrolls series is pretty hard to beat. Last year's Oblivion provided more than 100 hours-worth of gameplay for just £30 and can now be picked up in the budget section of most games stores for less than £20.

Given that even the most devoted of players will have found it hard to complete everything the original game has to offer, there's an argument that Oblivion doesn't need expanding beyond its already generous proportions. Nevertheless, Bethesda has provided us with Shivering Isles, Oblivion's first 'proper' expansion

pack (not counting the Knights of the Nine collection of mini add-ons).

Sensibly, Shivering Isles doesn't try to reinvent the wheel, with the main difference being its setting. The all new realm of Sheogorath is about a third of the size of the original Oblivion map and sufficiently different from the land of Tamriel to make the experience feel fresh yet familiar. Compared to the original game world's realistic setting, the Shivering Isles themselves will come as quite a shock when you first visit them. The new game world is split into two distinct lands – Mania and Dementia – both of which look much like they sound.

Environments, creatures and characters you meet are much more colourful than those in the original game, including the quirky Prince of Madness, at whose bidding you soon find yourself.

Within this Alice in Wonderland-style set-up, the template for what follows is similar to that of the original game's main quest. You'll find yourself dispatched to retrieve artefacts, bump off characters, solve puzzles and save the realm from total destruction. And, once again, there's plenty here to keep you occupied – about 30 hours of main story quests, plus countless side quests and general exploring to do – and for less than £20. Bargain.

Jonathan Parkyn

Personal
Computer
World
RECOMMENDED

Details

Price £19.99

Contact Bethesda Software

www.elderscrolls.com

System requirements

2GHz processor • 512MB Ram • 4.6GB hard disk space • DVD-Rom drive • Windows 2000/XP

Verdict

Overall The long and short of it is that those who already have Oblivion will almost certainly want to make the trip – and trip is definitely the word – to the Shivering Isles.

★★★★★

SPORTS SIMULATOR

Virtua Tennis 3

Sega's grand slam tennis sim makes it to the desktop this time around



Originally released in the arcades and on Sega's own Dreamcast system, Virtua Tennis has always felt like a console game rather than a 'serious' sports simulation, which might explain why the previous version never even made to the PC platform.

It might also explain the fact that this version is almost unplayable with a keyboard and mouse. Given the fact that Virtua Tennis 3 has had a simultaneous release across all the latest console formats, it's perhaps unsurprising that the game is best enjoyed with a gamepad – or several gamepads if you intend

on playing doubles against human opponents.

Virtua Tennis 3 probably has one of the most easy-to-pick-up control systems of any tennis game. Three types of shot are mapped to three buttons and holding down the buttons for longer gives you more power.

Several play modes are available, including Tournaments, customisable Exhibitions and a whole World Tour career. Again indicative of the game's console roots is the inclusion of a series of cartoon-like mini-games – everything from a tennis spin on 10-pin bowling to a fruit-catching game that involves avoiding tumbling tennis balls.

In fact, these mini-games also serve a purpose; to train you in areas such as footwork, shot accuracy and return power. When you first start your career you'll find that your player will need to train using the mini-games in order to proceed.

Virtua Tennis 3's single-player campaign suddenly swings from being a complete walkover to being almost impossible as you progress. And while many famous faces appear in the game (including Tim Henman), some well-known players are hard to recognise. For all its minor failings, however, there really isn't a better tennis game than this available for the PC at the moment.

Jonathan Parkyn

Details

Price £29.99

Contact Sega www.virtuatennis.net

System requirements 2GHz processor • 512MB Ram • 3.9GB hard disk space • DVD-Rom • Windows 2000/XP

Verdict

Overall As long as you have a game controller, Virtua Tennis makes it easy to get into the swing of things and, most of the time, looks pretty good too

★★★★★

How we test

Performance testing is an important part of PCW's reviewing process and to obtain our authoritative results we use the UK's best PC testing resource – VNU Labs. Here we explain why you can trust our results and give you a tour of our most frequently used benchmark programs.

One of the main reasons people upgrade their PCs is because their old model seems 'too slow'. But how do you tell whether the one you're going to replace it with is any faster? At PCW we take PC testing very seriously and we have the UK's best PC testing labs – VNU Labs – on tap to help us give you reliable, authoritative performance figures, to help you with your purchasing decisions.

It's true that speed isn't everything, but it's an important part of the buying equation, especially when there are so many components out there. As many of our PC group tests are based on price bands, checking the performance is even more important – if the core system is underperforming, you need to know before you part with your hard-earned cash.

In VNU's UK Labs, which is part of the European VNU Labs network, our staff have over 20 years of combined testing experience. We know all the perils and pitfalls of practical benchmarking and we contribute to the development of industry-standard benchmarks through our full membership of Bapco (www.bapco.com), the non-profit benchmark consortium. We are also a media member of the Futuremark Benchmark Development Program (www.futuremark.com). Listed below are the main benchmarks we use for testing PC systems and components.

- Bapco Sysmark 2004 SE – an application-based benchmark that tests real-world system performance.
- Futuremark 3Dmark03 – a 3D graphics benchmark designed to test the performance of DirectX 8 graphics cards.
- Futuremark 3Dmark05 – the latest version of 3Dmark that tests DirectX 9 3D graphics performance.
- Ubisoft Far Cry – we use the Fort level timedemo to see how graphics cards perform in a real DirectX 9 game.
- Futuremark PCmark05 – a synthetic benchmark used to test the performance of a PC's major subsystems.
- Bapco Mobilemark 2005 – used to assess the battery life of notebooks using real-world applications and usage scenarios.
- Test beds – we use standardised AMD and Intel-based test rigs to test components and peripherals.

There's more information about our testing procedures and benchmarks on our Labs site at www.reportlabs.com/testbed/bguides/benchmarks.php.

Performance

Sysmark 2004 SE: 200 

3Dmark05* PNY Geforce 7800 GTX: 7,490 

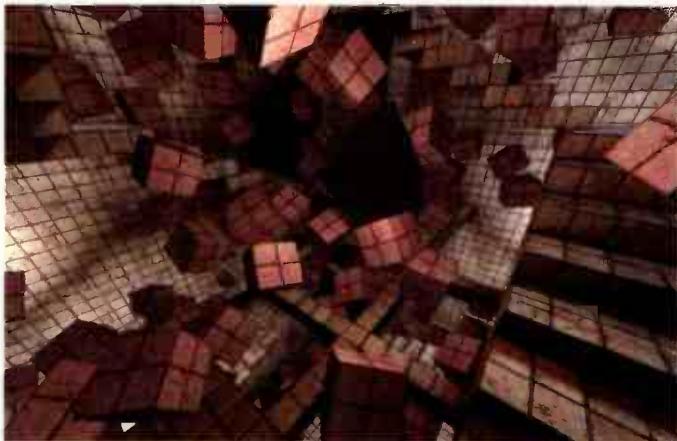
* tested at 1,024x768 in 32-bit colour

Far Cry (fps): 60 

- ❶ A score of 200 indicates that the system is twice as fast as the reference PC
- ❷ The reference PC (2GHz P4 512MB of Ram) scores 100
- ❸ A Geforce 7800 GTX would score in the region of 7,490
- ❹ A score of 60fps (frames per second) or higher is most desirable
- ❺ A result of 30fps or above means the machine can produce playable frame rates at the tested resolution



Far Cry is a real-world DirectX 9 test



PCmark05 measures memory, processor, graphics and hard drive performance



3Dmark05 pushes modern graphics cards to their limits

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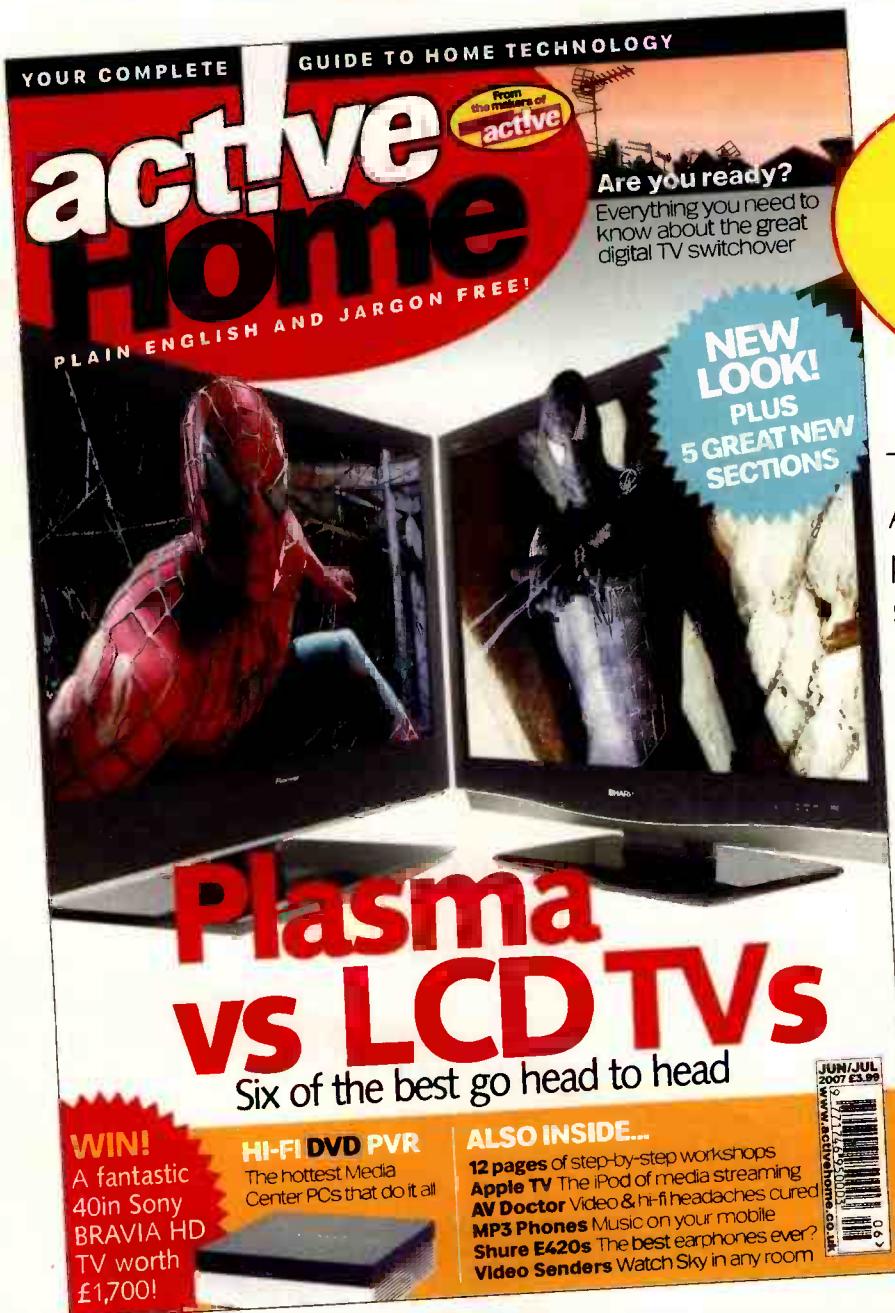
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ON TEST

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'We decided to look at high-end laptops that provide maximum performance and the widest range of features, regardless of price'

The power and the glory

There are times when a cheap, low-power laptop just doesn't cut it. This month Cliff Joseph looks at eight premium models from the top end of the mobile market

Whenever we've done a group test recently focusing on low-cost laptops, we've been impressed with the features and performance that are available for relatively little outlay.

However, we decided the time was right to look at the other end of the market – high-end laptops that provide maximum performance and the widest range of features, regardless of price.

We were certainly impressed by some of the imposing models that were sent in for review. Five of the eight laptops boasted 17in widescreen displays that were ideal for watching DVDs, gaming or applications such as video editing. Dell took our breath away with the

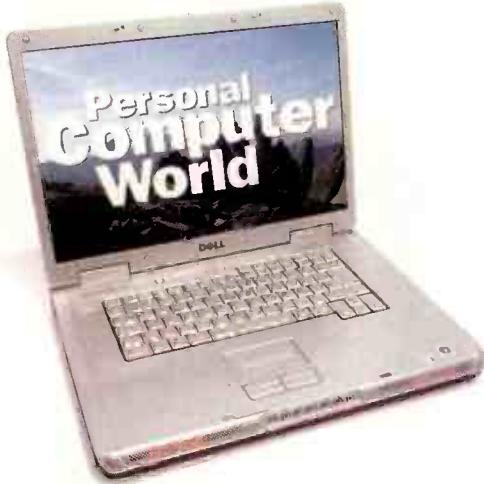
tank-like construction and gratuitous eye candy of its XPS M1710 laptop, which came with an equally weighty price tag that wasn't far off £2,000. In contrast, MSI managed to provide a 17in model for half the price – albeit without the same barnstorming games performance.

We were also taken by surprise by business-oriented laptops from Sony and Samsung. These companies opted to focus on the ultraportable market, putting the emphasis on compact and lightweight design, while still using the latest Core 2 Duo processors to provide strong performance. So whether you're a hardcore gamer or a frequent-flyer business user, we've got the best laptops that are currently available.



Dell XPS M1710

Price £1,879 Contact www.dell.co.uk 0870 152 4699



Years ago, Dell used to be seen as a 'safe' choice. The company produced PCs that were affordable and reliable but not particularly outstanding. And, in their trademark black and silver livery, they certainly couldn't be described as eyecatching.

However, Dell has obviously picked up a few tricks from Alienware – the manufacturer of gaming PCs that it took over a year or so ago. As a result,

the XPS M1710 really does stand out from the crowd – and in more ways than one.

The first thing you'll notice is the design – bedecked with glossy black panelling on the outside, and with utterly gratuitous glowing lights sparkling from every nook and cranny. Even the trackpad glows in the dark.

Fortunately, there's more to the M1710 than mere eye candy. Its 17in glossy widescreen display is ideal for watching DVDs or playing games, and the screen's 1,920x1,200 resolution is high enough for watching high-definition video – which is just as well, as Dell has taken the plunge and equipped the M1710 with a Blu-ray optical drive. This doubles up as a recorder for conventional DVDs, so you've still got the option of creating your own DVDs if you want to.

These leading-edge features are backed up by excellent performance. The M1710 has a 2.33GHz Core 2 Duo processor and Nvidia Geforce Go 7950GTX graphics card with 512MB video memory. That combination produces an impressive average frame rate of just over 100fps when running *Fear* – a level of performance only rivalled by the Evesham and Rock laptops that use the same processor and graphics card.

Admittedly, those laptops have 2GB of Ram to the M1710's single gigabyte, but the M1710 has that Blu-ray drive, which might well seal the deal if you want to use it as part of your home entertainment system.



Verdict

Pros Excellent performance; great display; Blu-ray drive

Cons Expensive; very heavy

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

Overall It's expensive, but the M1710's performance and state-of-the-art components make it an outstanding games and entertainment system

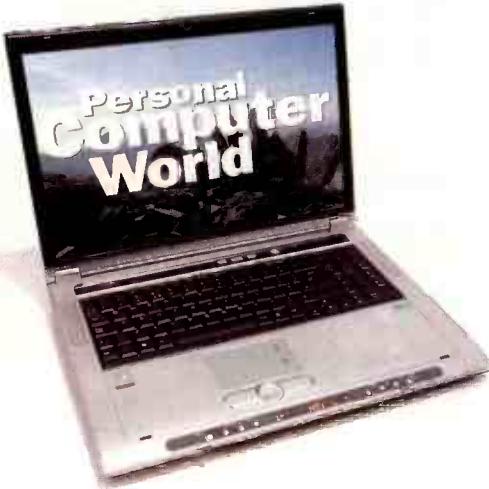
★★★★★



The M1710 is fitted with a next-generation Blu-ray disc drive

Evesham Voyager C720DC

Price £1,799 Contact www.evesham.com 0870 160 9500



It can't match the gratuitous eye candy of Dell's M1710, but the Voyager C720DC from Evesham more than holds its own in other respects.

Like the M1710 and Rock's Xtreme CTX Pro, the Voyager is equipped with a 2.33GHz Core 2 Duo processor and Nvidia Geforce Go 7950 GTX graphics chip, which combine to produce very impressive performance. It produced consistently high scores in all our benchmark tests, earning it joint first place overall.

Graphics performance was excellent, as shown by the average score of 114fps in our *Fear* gaming tests. The 7,200rpm hard disk did well too, making this a good system for work such as video or photo editing, which can involve handling very large files. The 2GB of Ram will come in handy for video work too.

The Voyager backs up its strong performance with a good set of additional features too. The 17in widescreen display provides nice rich colours when playing DVDs, although we would have liked a bit more control over the brightness of the screen. There isn't very much difference between the minimum and maximum brightness settings, and there were occasions when we would have liked to turn up the brightness a bit more.

There's a built-in webcam, along with 7.1-channel audio output, so the Voyager has the makings of an excellent all-round home entertainment system. It was also the only laptop in this review that included Vista Ultimate Edition, so you can be sure that you've got all the multimedia bells and whistles available.

The Voyager is £100 more expensive than the almost identical Rock Xtreme but, as well as including Vista Ultimate, it also has a higher resolution display (1,920x1,200 compared to Rock's 1,680x1,050), so its all-round combination of performance and features certainly justifies the price.



Verdict

Pros Excellent all-round performance and features

Cons Expensive; heavy; screen could be brighter

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

Overall Strong performance and features make this an ideal multimedia workstation and entertainment system

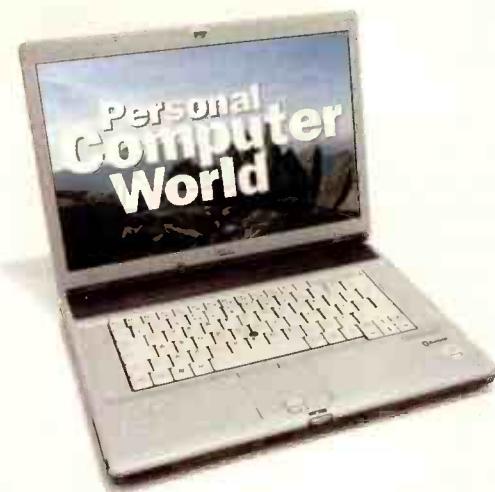
★★★★★



Excellent performance and home entertainment potential

Fujitsu Siemens Lifebook E8210

Price £1,494.30 Contact www.fujitsu-siemens-shop.co.uk 0845 678 0172



Fujitsu Siemens' Lifebook is very much the mid-range workhorse in this group. Its 15.4in widescreen display sits neatly between the 17in laptops from Dell and Evesham and the more compact 12in and 13in models from Samsung and Sony.

The Lifebook's screen provides good image quality, however Fujitsu Siemens has opted for a matt finish rather than the glossy finish used by most of its rivals. This reflects the Lifebook's emphasis on business use;

glossy displays are good for playing games and DVDs as they tend to have a brighter image and bolder colours, whereas a matt screen is better suited to the more sedate pleasures of spreadsheets and suchlike.

The decision to stick with the tried-and-tested Windows XP will also appeal to business users, as will the slot for a security card, optional fingerprint module and built-in 3G Sim card slot.

The weight – a relatively modest 2.6kg – should also appeal to users who have to carry the Lifebook around. The smaller Samsung and Sony systems are lighter, but if you need a decent-sized screen for presentations, the Lifebook is a good choice. It's also got S-video output for connecting to a larger TV screen if required.

That's not to say that the Lifebook can't also turn its hand to leisure pursuits. It's equipped with an ATI Radeon Mobility X1400 with 128MB of video memory, and while this can't match the extravagant 3D performance of the Dell and Evesham laptops, it still produced a very respectable average frame rate of more than 50fps when running our Fear gaming test.

The Lifebook's performance and three-year warranty make it a good choice for the business user who needs a good all-round laptop. Our only complaint is that it is a little expensive, given that it lacks the portability of the Sony and the Samsung.

Verdict

Pros Good performance and security features for business users

Cons Expensive; relatively small hard disk

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

Overall A solid and secure workhorse that will appeal mainly to business users

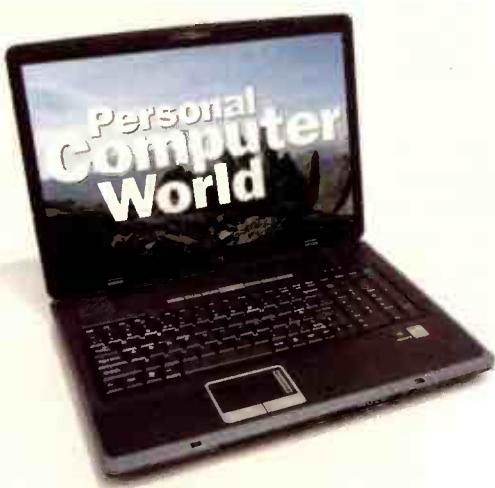
★★★★★



The E8210's portability will appeal to business users on the move

MSI Megabook L735

Price £859.99 Contact www.cclonline.com 01274 471201



Intel's Core 2 Duo processors seem to have pretty much cornered the market for mobile computing. Seven of the eight laptops in this group test use Intel processors, leaving MSI's Megabook L735 as the sole AMD flag bearer.

And we have to say that the 1.6GHz AMD Turion processor chosen by MSI doesn't exactly break any performance records. As you'd expect, it's clearly outperformed by the Intel-based laptops that run at

2.0GHz or more, and even the Toshiba Satellite with its 1.66GHz Core 2 Duo CPU manages to edge slightly ahead in terms of overall performance. However, where the Turion does stand out is in terms of value for money. It's a lot cheaper than the Intel processors at the moment, which means that MSI is able to sell the Megabook for well under £1,000 and still include a 17in widescreen display.

The viewing angle on the screen is a little restricted – you need to look at the screen almost directly head-on or else the brightness level starts to dip noticeably – so this probably isn't the best option for giving presentations at work (unless you plan to use the S-video or DVI connectors to attach the Megabook to an external display). However, it still works pretty well for watching DVDs and video files downloaded from the internet.

The Megabook can also turn its hand to games. Its 32fps average frame rate when running Fear may not attract the hardcore games fans – they'll go for the Dell, Evesham and Rock laptops – but it's still enough for the casual gamer. Throw in a built-in webcam on top and you've got a pretty good all-round package. There are more expensive alternatives in this group that provide greater performance and screen quality, but the Megabook does a good job at providing a versatile multimedia system at a competitive price.

Verdict

Pros Good performance and 17in widescreen display for under £900

Cons Screen viewing angle could be improved

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

Overall Attractively priced, but the Turion processor is looking a little dated compared to its Intel rivals

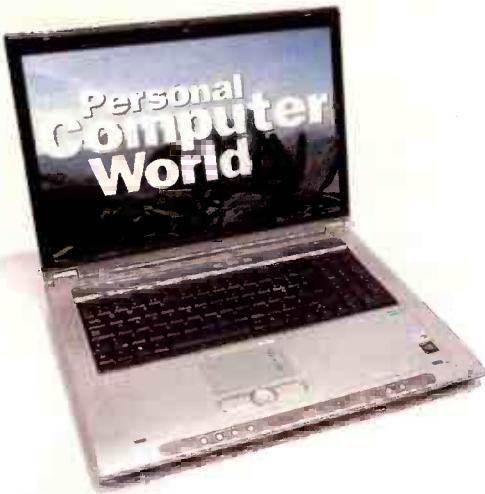
★★★★★



The L735 returns impressive performance for a sub-£900 laptop

Rock Xtreme CTX Pro

Price £1,699 Contact www.rockdirect.com 0845 688 0556



At first sight, Rock's Xtreme CTX Pro looks identical to Evesham's Voyager laptop, and a quick glance at the labels on the underside of these machines confirms that they were both manufactured in China by Clevo. But closer inspection does reveal differences that set the two systems apart.

Admittedly, the basic design of both laptops is very similar, with a handsome 17in widescreen display and a row of audio and video playback controls on the

front edge of the unit so that you can quickly play any music or video files that you've got stored on the PC. The Xtreme CTX Pro even has the same little built-in webcam as the Evesham Voyager.

The similarities go deeper too, with a series of identical components, including a 2.33GHz Core 2 Duo processor, Nvidia Geforce Go 7950 GTX graphics card, 2GB Ram and 100GB hard disk. Not surprisingly, the two systems produce almost identical performance as a result. That's hardly a criticism, though, since the Xtreme Pro's average frame rate of almost 100fps when running Fear means that it's got more than enough power to play games or handle demanding multimedia applications such as video editing.

However, we did eventually notice a few details that differed from the Evesham Voyager. The most obvious was simply that Rock has opted for Vista Home Premium rather than the Vista Ultimate installed on the Evesham Voyager. The Xtreme CTX Pro also has a slightly lower resolution display – 1,680x1,050, compared to Evesham's 1,920x1,200. Of course 1,680x1,050 will keep most of us perfectly happy, but it's not quite high enough to handle 1080i or 1080p high-definition video. Home cinema buffs may prefer the higher resolution models from Dell or Evesham, but the Xtreme CTX Pro provides performance and features that will satisfy the vast majority of home users.

Verdict

Pros Outstanding performance; 17in screen; built-in webcam

Cons Heavy; lower resolution display than other 17in models

Features

Performance

Value for money

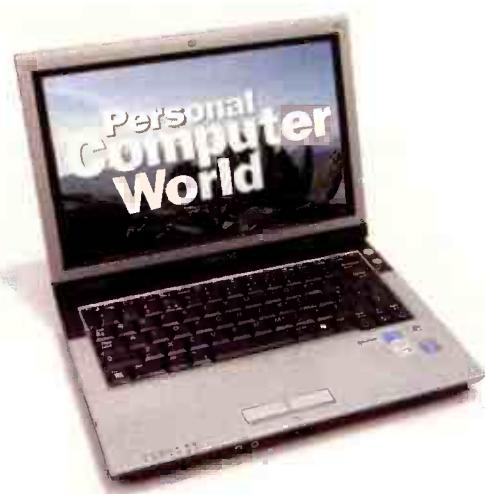
Overall Top performance at a slightly lower price than the Dell or Evesham machines



The Xtreme CTX Pro looks for all the world like the Evesham Voyager

Samsung Q35 HXD2 T7200

Price £1,053 Contact www.samsung.co.uk 0870 726 7864



Most of the laptops in this review take the 'bigger is best' approach, aiming to win you over with their big widescreen displays and powerful graphics cards. Samsung's Q35 takes the opposite approach, opting for an ultraportable design with a 12.1in screen.

As a result, it weighs less than 2kg – compared to the Rock Xtreme CTX Pro's 4kg – and is small enough to slip into a suitcase or backpack with no trouble at

all. Frequent travellers are the obvious market for an ultraportable machine such as this, although the Q35 may also appeal to other users, such as students, who simply want a compact machine that they can carry around easily.

The Q35 is equipped with a 2.0GHz Core 2 Duo processor, which provides very solid performance – certainly enough for running business software, and also for more demanding multimedia work. However, the small screen means that it's not ideal for presentations or other graphics-intensive tasks. You do have the option of using the Q35's VGA port to connect to an external monitor, but we were a little disappointed that there was no DVI or S-video output, as this would have given users more options for connecting to external displays.

The only other noticeable weakness is the use of an integrated Intel GMA 950 graphics processor, which doesn't provide very good 3D graphics performance and wouldn't run our Fear tests. However, the target audience is more likely to be interested in the Q35's compact design than its graphics performance.

Admittedly, Sony's Vaio is even lighter than the Q35 – despite having a larger screen – but the Vaio is also about £700 more expensive. The Q35 is therefore a good choice for business travellers who need a powerful but portable machine at a competitive price.

Verdict

Pros Compact, lightweight design; attractive price

Cons Poor 3D performance; limited video output options

Features

Performance

Value for money

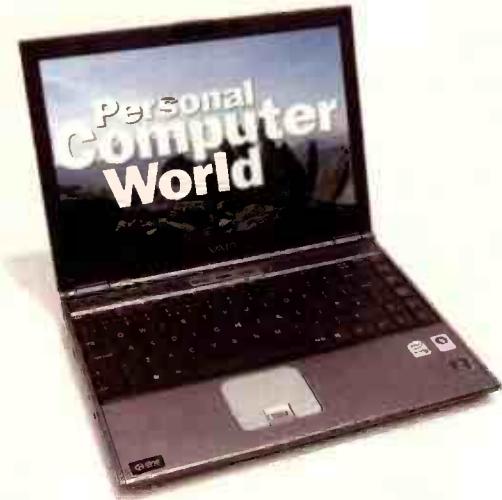
Overall Attractive ultraportable laptop for business travellers on a budget



A 12.1in screen is one of the reasons Samsung's Q35 is highly portable

Sony Vaio VGN-SZ4WN

Price £1,799 Contact <http://shop.sonystyle-europe.com> 020 7365 1585



Like the Samsung Q35, Sony's Vaio VGN is aimed at the travelling business user rather than the home entertainment market. And while it's actually a little larger than the Q35, the Vaio's elegant and understated design makes it even more suitable for mobile users.

The Vaio clearly takes aim at its target audience by being the only laptop in this group to use the Business version of Windows Vista. And instead of a heavy 17in

display, it has a compact 13.3in display and a slimline design that makes it smaller than an A4 notepad. The Vaio is also partly constructed from lightweight carbon fibre, which keeps its weight down to an impressive 1.7kg – even lighter than the Samsung Q35 with its smaller 12in screen.

This ultraportable design makes it ideal for business users who travel a lot. However, Sony hasn't had to cut too many corners to keep the weight down. The 2.0GHz Core 2 Duo processor will provide all the power that business users need, while the built-in fingerprint sensor provides additional security for sensitive data. And, in addition to its 802.11g wireless networking, the Vaio is also supplied with an HSDPA wireless broadband card that provides internet access even if you're nowhere near a wireless hotspot.

For after-hours entertainment the Vaio has a built-in webcam, and the high-quality widescreen display is well suited to DVD playback even if it's not as large as some of its rivals. The only real weakness is the use of an integrated Intel GMA950 graphics processor, which isn't really powerful enough for modern 3D games.

The Vaio is more expensive than Samsung's Q35, which is its only real rival in the ultraportable category. However, its elegant and lightweight design and features such as fingerprint security make it an excellent choice for business users who travel a lot.



Verdict

Pros Good performance; compact, lightweight design

Cons Poor 3D graphics performance

Features

Performance

Value for money

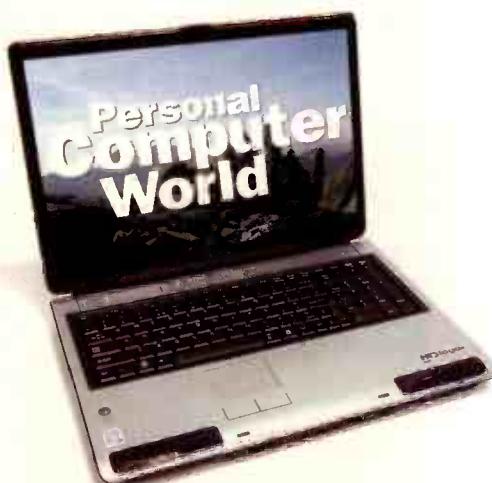
Overall A bit pricey, but the lightweight design and good 2D performance are ideal for those wanting the ultimate in portability



At just 1.7kg, the VGN has the ultraportable category sewn up

Toshiba Satellite P100-216

Price £1,199 Contact www.computers.toshiba.com 0870 444 8944



Games fans may prefer the greater 3D performance offered by more expensive rivals such as the Evesham and the Dell, but Toshiba's Satellite P100 provides good performance and a 17in widescreen display at a more modest price.

Screen quality has always been one of Toshiba's strong points, and the first thing we noticed about the P100 (apart from its bright orange upper panel) was the pinpoint clarity and bold colours of the display. We

were a little disappointed that the screen only has a maximum resolution of 1,440x900, as that's high enough to handle 720p high-definition video but not for 1080i or 1080p. Still, HD video is still in its infancy in this country so that's not a distinction that is going to worry too many people right now.

We also liked Toshiba's attention to detail, such as the clever little onscreen menu that appears whenever you press the 'Function' key on the keyboard, and which indicates settings such as screen brightness or the zoom function that are controlled by that key.

The P100 has one of the less powerful processors in this group – a Core 2 Duo running at a relatively modest 1.66GHz. Not surprisingly, then, it can't match the performance of rival laptops running at 2.0GHz or more. Even so, its overall performance in our benchmarks is still very respectable, and the P100 will meet the needs of most home users who want to run office software or even do some more demanding creative tasks on the machine. The only thing that we can't recommend it for is playing games. Its Geforce Go 7600 graphics card can only manage an average of 25fps when running Fear, so games fans will need to look elsewhere. However, those who can't stretch their budget too far will find that the P100 provides good performance and an attractive widescreen display at a competitive price.

Verdict

Pros Excellent screen quality for graphics and video

Cons 3D and games performance not outstanding

Features

Performance

Value for money

Overall Offering a good balance of performance and price, it's a well-thought out system with good attention to detail



Excellent screen quality makes the Toshiba P100 stand out

Lab results

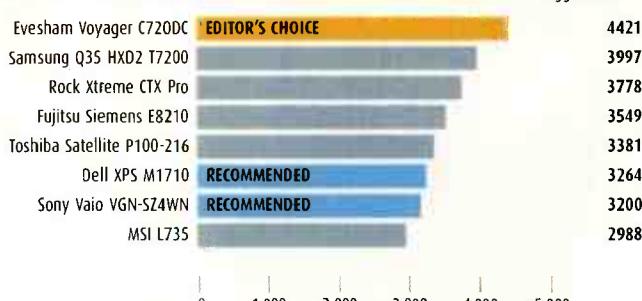
Premium prices should mean premium performance, and most of these laptops don't disappoint. The Dell, Evesham and Rock models are particularly impressive

PCmark05 overall



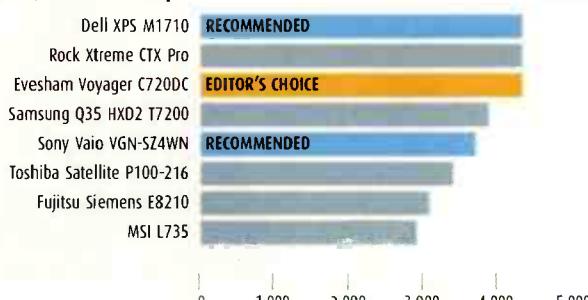
Bigger is better

PCmark05 - hard drive



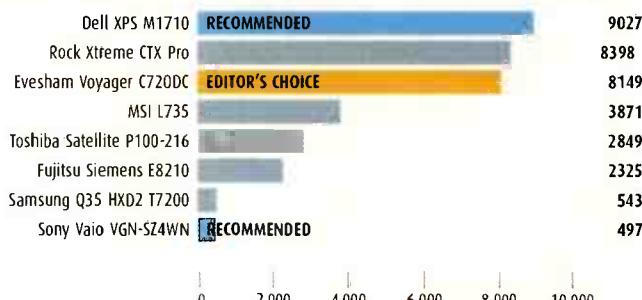
Bigger is better

PCmark05 - memory



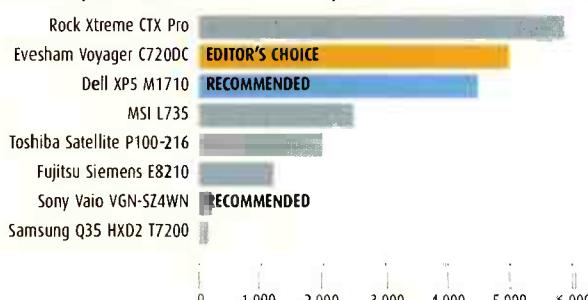
Bigger is better

3Dmark05 (1,024x768, 32-bit colour)



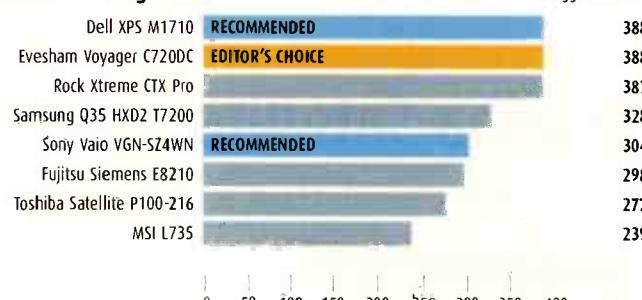
Bigger is better

3Dmark06 (1,024x768, 32-bit colour)



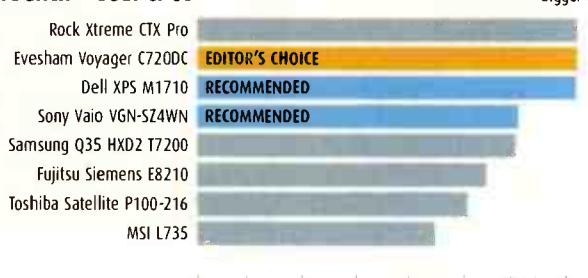
Bigger is better

Cinebench - single CPU



Bigger is better

Cinebench - dual CPUs



Bigger is better

Fear (1,024x768, 32-bit colour)



Average fps

Where are Mobilemark and Sysmark?

You'll notice from the graphs that we haven't included any Bapco Sysmark or Mobilemark scores in this month's group test. This was due to delays in the launch of Sysmark 2007 Preview and Mobilemark 2007, which are the latest Vista-compatible versions of these benchmark suites.

We could have reverted to our older PCW spreadsheet-based battery life benchmark, but we felt this would simply be inconsistent, misleading and confusing for readers. The good news is that the benchmarks have now been launched and we'll recommence publishing full results at the first available opportunity.

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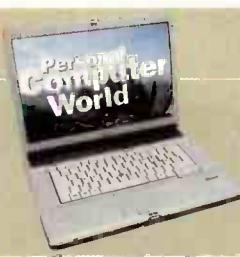
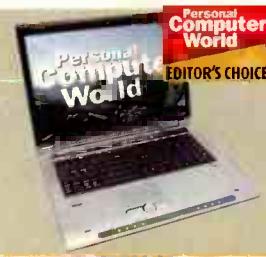


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Laptops



| MANUFACTURER | DELL | EVEHAM | FUJITSU SIEMENS |
|--|---|---|---|
| Model name | XPS M1710 | Evesham Voyager C720DC | Lifebook E8210 |
| Price | £1,879.00 | £1,799.00 | £1,494.30 |
| Sales telephone | 0870 152 4699 | 0870 160 9500 | 0845 678 0172 |
| URL | www.dell.co.uk | www.evesham.com | www.fujitsu-siemens-shop.co.uk |
| HARDWARE | | | |
| Processor | Intel Core 2 Duo T7600 (2.33GHz) | Intel Core 2 Duo T7600 (2.33GHz) | Intel Core 2 Duo T7200 (2.0GHz) |
| Chipset | Intel i945PM / ICH7-M | Intel 945PM / ICH7-M | Intel i945PM / ICH7-M |
| Available Ram (and type - ie 1GB DDR2) | 1GB PC2-667 DDR2 (333MHz) | 2GB PC2-667 DDR2 (333MHz) | 1GB PC2-667 DDR2 (333MHz) |
| Occupied/spare memory slots (ie one occupied/ one spare) | 2/0 | 2/0 | 1/1 |
| Maximum memory supported | 4GB | 4GB | 2GB |
| Hard disk size | 120GB | 100GB | 80GB |
| Hard disk manufacturer and model | Hitachi HTS541612J9A00 | Seagate ST910021AS | Seagate ST98823AS |
| Number of Express card slots | 0 | 1 | 1 |
| Number of PC Card slots | 1 | 0 | 1 |
| Number of USB 2.0 ports | 6 | 4 | 4 |
| Number of Firewire ports | 1 | 1 | 1 |
| MULTIMEDIA | | | |
| Optical drive - manufacturer and model | Panasonic UJ-210 | Sony DW-D56A-11 | NEC ND-6650A |
| Optical drive formats and speed (maximum) | 1.6x BD-Rom, 8x DVD-Rom, 1x BD-R, 1xBD-RE, 6x +/- DVD-DL, 8x +/- DVD-R, 6x DVD +/- RW, 5x DVD-Ram | 8x DVD-Rom, 2.4x DVD-DL, 8x DVD +/- R, 8x DVD +/- RW | 8x DVD-Rom, 4x DVD +/- DL, 8x DVD +/- R, 8x DVD-RW, 6x DVD+RW |
| Soundchip - manufacturer and model | Sigmatel HD audio | Azalia HD | Realtek ALC262 |
| Soundchip output - ie 5.1 or 7.1 | 7.1 | 7.1 | 4.1 |
| Graphics processor - manufacturer and model | Nvidia Geforce Go 7950 GTX | Nvidia Geforce Go 7950 GTX | ATI Mobility Radeon X1400 |
| Graphics processor memory | 512MB | 512MB | 128MB |
| Screen size | 17in Ultrasharp WUXGA | 17in WSXGA X-Bright | 15.4in WSXGA+ |
| Screen resolution | 1,920 x 1,200 | 1,920 x 1,200 | 1,680 x 1,050 |
| OTHER INFORMATION | | | |
| Additional hardware (ie TV tuner, Ethernet) | Gigabit Ethernet, S-video output, 5-in-1 Card reader, modem | Gigabit Ethernet, 7-in-1 Card reader, 1.3Mpixel webcam, modem | Gigabit Ethernet, 3-in-1 Card reader, Smart Card reader, S-video output, 3G Sim card slot |
| Wireless networking (if any) | 802.11a/b/g | 802.11a/b/g, Bluetooth | 802.11a/b/g |
| Weight (kg) | 3.96 | 3.95 | 2.6 |
| Dimensions (w x d x h) mm | 390x28x45 | 397x294x44 | 360x260x35 |
| Operating system | Windows Vista Home Premium | Windows Vista Ultimate | Windows XP |
| Bundled software | Microsoft Works 8.5 | Bullguard Antivirus, Roxio 9, Microsoft Works 8.5 | Norton Internet Security, Nero |
| Standard warranty (RTB = return to base, C&R = collect and return) | 2 years NBD on-site | 3 years on-site | 3 years C&R |
| VISTA WINDOWS EXPERIENCE INDEX SCORES | | | |
| Overall Windows Experience Index (WEI) | 4.3 | 4.7 | n/a |
| CPU | 5.2 | 5.2 | n/a |
| Memory | 4.5 | 4.7 | n/a |
| Graphics | 5.9 | 5.9 | n/a |
| Gaming graphics | 5.8 | 5.8 | n/a |
| Hard disk | 4.3 | 5 | n/a |
| SCORES | | | |
| Features | ★★★★★ | ★★★★★ | ★★★★★ |
| Performance | ★★★★★ | ★★★★★ | ★★★★★ |
| Value for money | ★★★★★ | ★★★★★ | ★★★★★ |
| OVERALL | ★★★★★ | ★★★★★ | ★★★★★ |



MSI

Megabook L735
£859.99
01274 471201

www.cclonline.com

ROCK

Rock Xtreme CTX Pro T76-2
£1,699
0845 688 0556

www.rockdirect.com

SAMSUNG

Q35 HXD2 T7200
£1,053
0870 7267864

www.samsung.co.uk

SONY

Vaio VGN-SZ4WN
£1,799.00
020 7365 1585

shop.sonystyle-europe.com

TOSHIBA

Satellite P100-216
£1,199
0870 444 8944

www.computers.toshiba.com

AMD Turion 64 X2 1.6GHz

Intel Core 2 Duo T7600
(2.33GHz)

Intel Core 2 Duo T7200 (2.0GHz)

Intel Core 2 Duo T7200 (2.0GHz)

Intel Core 2 Duo T5500
(1.66GHz)Nvidia Geforce 6100 (CS1MV) /
Nvidia MCP51M

Intel i945PM / ICH7-M

Intel i945GM / ICH7-M

Intel i945GM / ICH7-M

Intel i945PM / ICH7-M

2GB PC2-667 DDR2 (333MHz)

2GB PC2-667 DDR2 (333MHz)

1.5GB PC2-667 DDR2 (333MHz)

2GB PC2-533 DDR2 (266MHz)

2GB PC2-533 DDR2 (266MHz)

1/1

2/0

1/0

2/0

1/1

2GB

3GB

1.5 GB

2GB

4GB

100GB

100GB

160GB

120GB

200GB

Toshiba MK1032GSX

Hitachi HTS721010G9SA00

Hitachi HTS54616J9SA00

Seagate ST9120821AS

Fujitsu MHV220BT BL

1

1

0

1

1

0

0

1

0

1

3

4

2

2

4

1

1

1

1

1

Optiarc AD-7530A

Sony Q520A

Hitachi TS-L632D

Matshita UJ-852S

Matshita UJ-8505

8x DVD-Rom, 4x DVD +/- DL 8x
DVD+RW, 6x DVD-RW, 5x DVD-
Ram8x DVD-Rom, 4x DVD +/-R DL,
8x DVD+/-R, 8x DVD+RW, 6x
DVD-RW8x DVD-Rom, 2.4x DVD+R DL,
8x DVD+R, 4x DVD+RW, 5x DVD-
Ram8x DVD-Rom, 6x DVD-R DL, 4x
DVD+R DL, 8x DVD +/-R, 8x
DVD +/- RW, 5x DVD-Ram8x DVD-Rom, 4x DVD+R DL, 2x
DVD-R DL, 8x DVD +/-R, 4x
DVD+/-RW

Realtek HD

Realtek HD Audio

Soundmax HD

Sigmatel

Toshiba BES with SRS
Trusurround XT

7.1

7.1

n/s

5.1

5.1

Nvidia Geforce Go 7600

Nvidia Geforce Go 7950 GTX

Intel GMA 950

Intel GMA 950

Nvidia Geforce Go 7600

256MB

512MB

Up to 128MB shared system
memory

Shared memory up to 225Mb

512 MB

17in WSXGA

17in WSXGA+ X-Glass

12.1in WXGA

13.3in X-Black

17in WXGA+ Trubrite

1,440 x 900

1,680 x 1,050

1,280 x 800

1,280 x 800

1,440 x 900

10/100 Ethernet, 5-in-1 Card,
reader, 1.3Mpixel webcam,
S-video outputGigabit Ethernet, 4-in-1 Card
reader, S-video output10/100 Ethernet, 6-in-1 Card
reader, modem10/100 Ethernet, webcam,
wireless broadband card10/100 Ethernet, 5-in-1 Card
reader, modem, S-video output

802.11a/b/g

802.11a/b/g

802.11a/b/g, Bluetooth

802.11a/b/g

802.11a/b/g

3.2

4.3

1.89

1.7

3.2

395x278x26.5

399 x 294 x 52

299 x 214 x 35.8

315 x 234 x 32.6

394 x 275 x 41.9

Windows XP

Windows Vista Home Premium

Microsoft Windows XP
Professional

Windows Vista Business

Windows Vista Home Premium
Intervideo WinDVD, Microsoft
Works 8.5, Norton Internet
Security 2007, Ulead DVD
Moviewriter

Microsoft Works 8.5

Norton Anti Virus, Cyberlink
Power DVDPhotoshop Elements, Easy Media
Creator

2 years - year 1 C&R, year 2 RTB

3 years C&R

1 year C&R

1 year C&R

1 year C&R

n/a

4.7

n/a

3

4.3

n/a

5.2

n/a

4.9

4.7

n/a

4.7

n/a

4.5

4.5

n/a

5.9

n/a

3

4.8

n/a

5.9

n/a

3.1

4.4

n/a

5

n/a

4.5

4.3

★★★★★

★★★★★

★★★★★

★★★★★

★★★★★

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★★★★★

Protect and survive

Almost by definition, laptop PCs are at greater risk of being damaged than ordinary desktop PCs. After all, your desktop PC just sits there month after month, never moving from its cosy spot in your office or back bedroom.

Laptops, however, are constantly on the move, being carried from room to room at home or even from continent to continent if you're a business traveller. And, of course, there's the classic laptop disaster scenario of having someone trip over the power cable and send the machine crashing to the floor.

Repairing a broken laptop is expensive – sometimes so expensive that you're probably better off just buying a completely new one (especially if your laptop is a couple of years old, as the latest models will provide greater performance and additional features). There are lots of independent companies around offering laptop repairs, but it's never cheap due to the high cost of parts and the complex labour involved for anything but the most basic repairs. The best way to save money here is to make sure that the laptop is properly insured.

This can be a tricky area. If the laptop is intended purely for non-commercial use – that is, for home users who just want to surf the net, play games, or do a bit of video editing – you may find that the laptop is covered by your existing home contents insurance policy. Remember, though, that laptops are expensive and some insurance policies impose something known as an 'individual item limit'. This is

the maximum amount that they will pay to replace expensive individual items, such as jewellery or laptop computers. If the laptop cost £1,500 and the policy's individual item limit is £1,000, then you'll be £500 out of pocket. You should therefore contact your insurance company to find out if your policy provides adequate cover for expensive electronic items such as your laptop. If not, or you want specific types of cover, then you'll need to find a separate policy. For example, at www.laptopguard.co.uk insuring a £2,000 laptop will cost you £99 for a year's UK cover, or £129 for worldwide cover. Similarly, www.burnett.co.uk charges £100 a year with no excess for worldwide cover. But be sure to check the small print: Burnett's policy, for example, only insures against theft 'accompanied by forcible and violent entry', so forgetting your laptop in a taxi or train isn't covered.

If the laptop is used for work you may find that it isn't covered by your ordinary household insurance policy. This is a particularly important issue for home workers, as damaging your laptop can completely disrupt your work schedule, causing additional financial losses on top of the basic cost of the laptop. There are insurance companies, such as Icon Insurance (www.icon-insurance.com), that specialise in insurance policies for home workers and small businesses, and their policies can include additional cover for 'increased cost of work' or loss of fees due to damage to your laptop or other home office equipment.

Cliff Joseph

Editor's Choice

Editor's Choice Evesham Voyager C720DC

Recommended Dell XPS M1710 • Sony Vaio VGN-SZ4WN



Evesham Voyager C720DC



Dell XPS M1710



Sony Vaio VGN-SZ4WN

The sheer variety of laptops here makes it an interesting process when it comes to choosing a winner.

If you're on a tight budget, then the MSI Megabook is certainly a tempting proposition. It offers a 17in display for well under £1,000. Its AMD processor isn't a top performer, and neither is its Geforce 7600 Go graphics processor, but it offers a fair combination of features and performance at a tempting price.

However, our emphasis was on high-end laptops. For sheer no-holds-barred power and damn-the-expense features the obvious titans in this group were the 17in laptops from Dell, Evesham and Rock.

These three machines have the same core components, so the choice here boils down to price and additional features.

The Evesham Voyager sits in the middle of this trio in terms of price, costing £1,799 compared to £1,879 for the Dell and £1,699 for the Rock. It has 2GB of system memory – twice that of the Dell M1710 – and a built-in webcam that the Dell also lacks. The Rock Xtreme CTX Pro also has these features, but the Voyager beats it thanks to its higher resolution display and the inclusion of Windows Vista Ultimate. It's this all-round combination of performance and features that earns the Evesham Voyager our Editor's Choice award.

However, we have to give the Dell M1710 a well-deserved Recommended award, as its Blu-ray drive points towards the future of home entertainment.

Sony's Vaio VGN-SZ4WN also gets a Recommended award. At £1,799, the Vaio is the same price as the Evesham Voyager, yet the two machines couldn't be more different. Instead of the Voyager's 17in entertainment powerhouse, the Vaio offers a compact 13in screen and lightweight design aimed at the business user.

Samsung and Fujitsu Siemens both offer less expensive laptops for business users, but the Vaio's extremely lightweight design and its features make it ideal for the business traveller.

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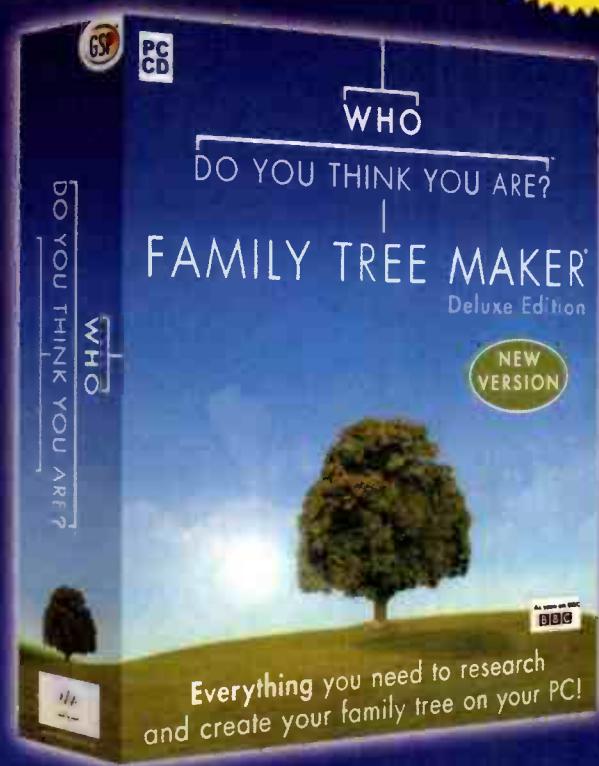
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**ON TEST**

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How we tested the software

104 Web design alternatives

Editor's Choice

'Microsoft has entered the fray with Expression Web'

Grand designs

Nigel Whitfield takes a look at three tools you can use to create a professional-quality website

Putting a professional website together isn't as straightforward as it used to be when there were only a handful of HTML tags and the quickest way to get things done was to code it all yourself in Windows Notepad.

A modern website may use standards-based HTML, or even XHTML, with a bewildering array of tags and options. It can use CSS (Cascading Style Sheets) to control formatting, enabling you to give the whole site a makeover by simply changing the style sheet, and it may even connect to a database to provide interactivity.

For large sites, you may need to keep track of who's been working on which pages, and deal with a wide range of server technologies.

And, while many web technologies still come down to a text file that's interpreted by the server to generate the page, for all

but the very simplest of sites it really is impractical, and time-consuming, to create everything by hand.

Modern web design tools can help you create stylesheets, use templates, and manage the upload of files to your web server. They may even write code for you to enable interactivity.

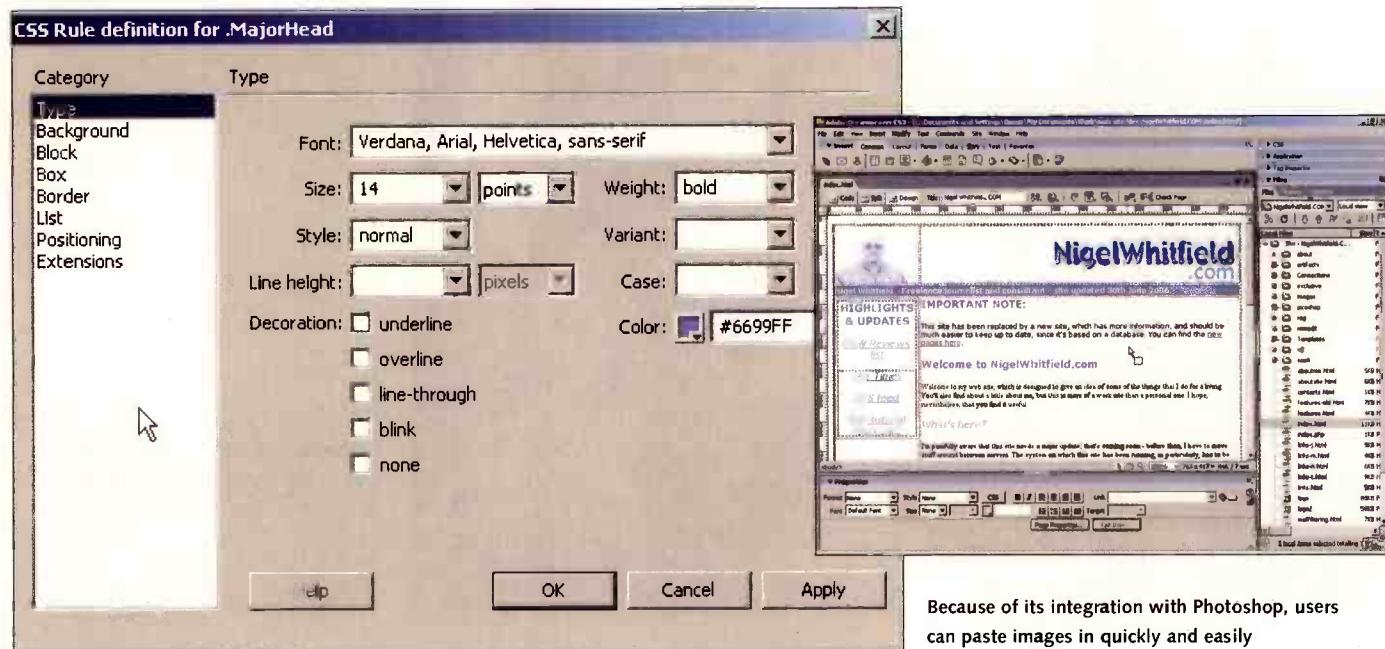
The leader of the pack has long been Dreamweaver, now owned by Adobe, which failed to usurp it with its own Go Live product. But Microsoft has entered the fray with Expression Web, and there are many open source and free products out there, too, of varying sophistication.

Over the next few pages, we'll look at Dreamweaver, Expression Web and the open source Kompozer (which is based on the popular but ageing NVU application) to help you find the best tool for your needs.



Adobe Dreamweaver CS3

Price £393.62 (upgrade from £162.32) Contact www.adobe.com/uk 020 8606 1100



Because of its integration with Photoshop, users can paste images in quickly and easily

If you can't beat 'em, buy 'em – and that's exactly what Adobe did. The web element of its Creative Suite 3 is now Dreamweaver, following its acquisition of Macromedia, rather than its own Go Live. The main screen is made up of the main page-editing area, with a dizzying range of panels that can be hidden or shown, including the usual tag inspectors, CSS styles, application elements for data-driven websites, and also quick reference.

One of the most useful features for inexperienced developers and pros alike is that you can have quick reference material from O'Reilly books at hand, together with some of Adobe's own reference material. Although the information is all useful, you're really going to need a large or widescreen display; on a 15in monitor, Dreamweaver can become very cramped.

Getting to grips with Dreamweaver isn't too difficult, and setting up a new site is straightforward: just a few simple questions about the URL, and the type of technology you want to use – ASP, ASP.NET, Coldfusion, PHP and JSP are all supported. There's also a good range of templates and samples you can work with, including multi-column CSS-based layouts. You can use secure connections to the web server for uploading, as well as FTP, Webdav or Microsoft Sourcesafe.

CSS support has been beefed up; traditionally, if you started formatting text on a page in your site, an inline style would be created in Dreamweaver, and you'd have to switch to source code view, then copy and paste it to a text document, and then link that text document to the original page as a stylesheet. You can still create styles on the fly, but now you can just highlight them and move them to an existing or new

stylesheet, which is a great timesaver. CSS issues are also covered by the browser compatibility check, and there's a separate accessibility check.

Another tool that those who do their own design will appreciate is integration with Photoshop, so you can paste images directly and then double-click to edit the original later.

One new added feature is Spry – a Javascript library that makes it easy to add elements such as fly-out menus, form fields with validation and information from XML data sources. There are even collapsible and tabbed panels, so you can add that 'Web 2.0' look to your site with just a few clicks.

As with previous versions, creating database-driven sites is where Dreamweaver excels. Dragging and dropping fields from the Applications panel into a document is a lot simpler than the tedious code-hacking Expression expected. But, as with previous versions, we also found that Dreamweaver seemed a bit sluggish when adding some of these elements to a page – and the same was true of the Spry code, too.

Those niggles aside, Dreamweaver CS3 is a very capable tool, and if you're looking for a flexible web-development program, it's still up at the top – helped by integration with Adobe's other products and by being cross-platform.

For all but the hardcore .Net crowd, it's probably the best all-round choice – but the price unfortunately (especially inflated as it is in the UK) puts it out of reach for many. Existing users, too, may not feel that the extra features in CS3 are worth the £163 upgrade cost, when you could simply buy cheaper tools to help you validate CSS and design templates for an older version of Dreamweaver.

Verdict

Pros Integrates with other Adobe tools; good server-side support

Cons Sometimes a bit slow; no preview in CSS editor; price

Features

Performance

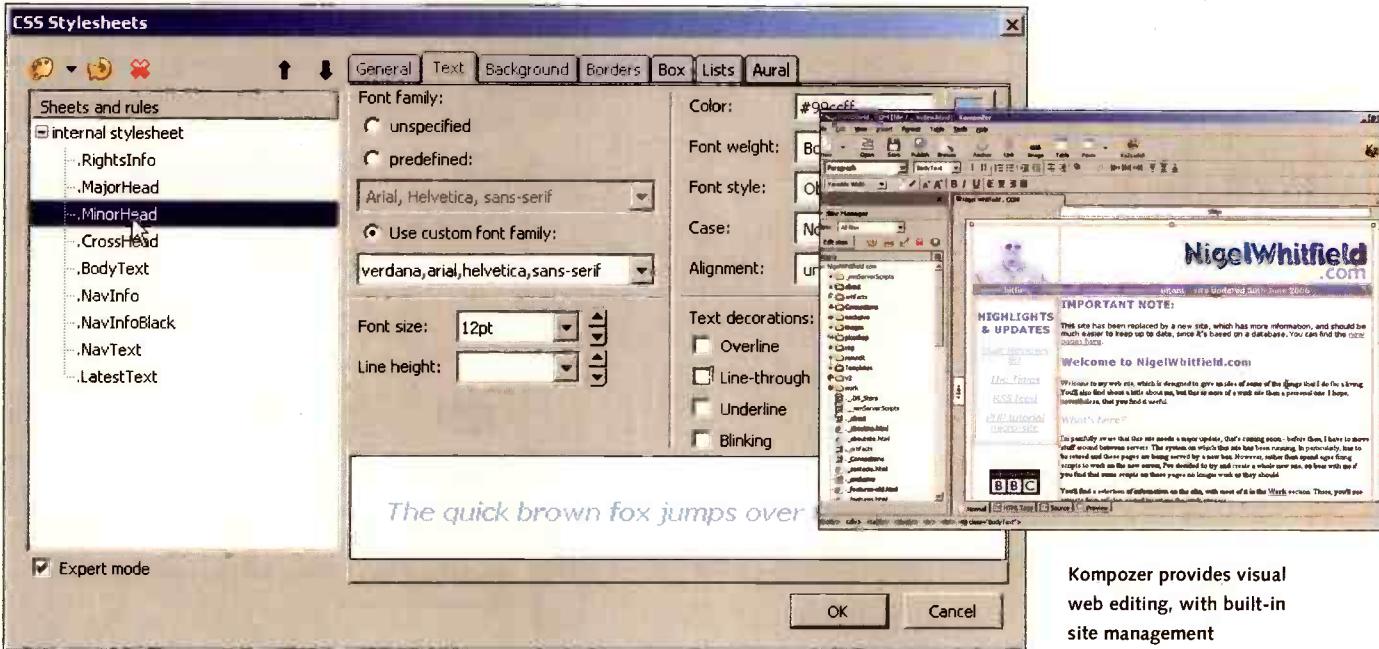
Value for money

Overall With support for a broad range of technologies and handy code generation, Dreamweaver is still the one to beat



Kompozer

Price Free Contact www.kompozer.net



Kompozer provides visual web editing, with built-in site management

Kompozer may not be a product you're at all familiar with – or have even heard of. The reason, perhaps, is because it is actually an unofficial piece of software – the 'bug-fix' version of the open-source NVU (www.nvu.com).

It's a visual designer for web pages that helps you create XHTML or HTML, with full support for CSS. It's available for Windows, OSX and Linux.

Installation is simple and straightforward. When the program starts up, you are presented with a main screen showing toolbars at the top of the screen, a site manager panel on the left-hand side and a main area for designing your page.

There are four different views for editing: the normal one shows grid lines for elements such as tables. If you highlight a section of text, or a table, you'll see bars at the side and top that you can click and drag to set the width and height of elements on the page. Then there's the tags view, which marks each element with the relevant HTML tag. Source view shows the raw source code (unlike the other tools on test, there's no split view), and the final option is a proper preview.

Inserting elements such as tables is a simple matter of clicking a button on the toolbar and choosing the size. You can resize easily by clicking and dragging. Form elements are similarly easy to add, as are images – helpfully you have to take a conscious action to omit adding Alt tags. Then there are advanced edit buttons on most dialogues, which make it easy to add inline styles or Javascript events to elements of your page.

So far, so good, right? Using Kompozer, even a newcomer to web design should find it easy to

put pages together. However, while it is fairly easy to use, we did come across a few niggles. For example, it was fiddly to drag items around on the page. And, while it does offer CSS support, we didn't think it was quite as well integrated as it could have been.

To create styles, you need to launch the CSS editor via a button on the toolbar. The first click creates a stylesheet, then a new rule. Work through the various tabs of the CSS editor to set the options you want, such as text, background, border and so forth.

You'll see a short preview on each tab, so you can see the effect of the options you've chosen. But while the tabs make it simple to get to the various items, there just seems to be a lot more clicking involved than some of the other products available and it seemed a lot less intuitive.

The same is also true of the site manager. It has the synchronisation options of other programs and is a bit confusing at first. It's really designed for saving files directly to a remote FTP server. If you enter the server details, when you click to expand the site view you'll see the list of files there. You don't get to see the local files on your computer, unless you select a local folder as the publishing directory.

And, of course, there's no support at all for server-side scripting – be it PHP, ASP or anything else. That's not necessarily an issue if you just want to create a straightforward site, or write your scripts by hand, but it will deter many potential users.

If you don't need scripting support, though, and you want to create a CSS/XHTML-based site, Kompozer is well worth trying out.

Verdict

Pros Clear visual design; cross-platform; integrated CSS editor

Cons No support for server-side technologies; awkward site manager

Features

★★★★★

Performance

★★★★★

Value for money

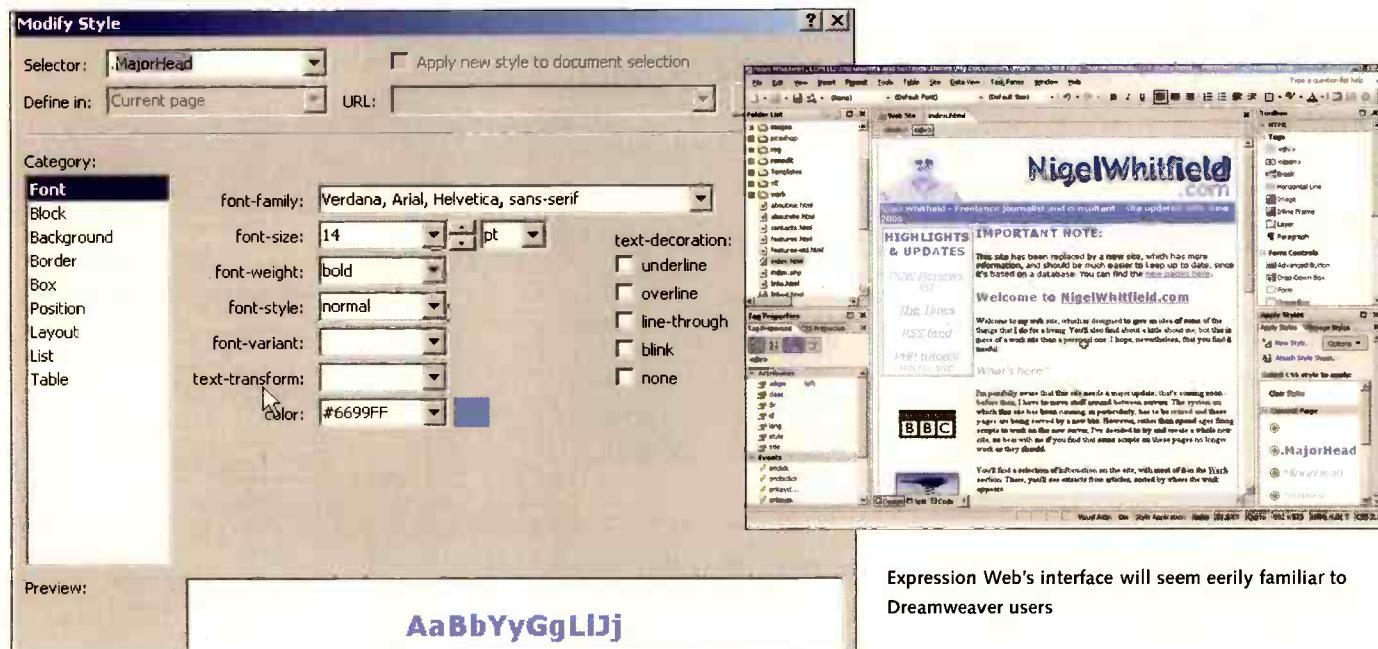
★★★★★

Overall If hand coding fills you with horror, but you don't want to spend big money on the professional products, Kompozer is a worthy alternative

★★★★★

Microsoft Expression Web

Price £260 Contact www.microsoft.com/expression 0870 601 0100



Expression Web's interface will seem eerily familiar to Dreamweaver users

Microsoft is not, it must be said, a name that many people regard with fondness when it comes to standards and the web. Front Page, Microsoft's previous web design tool, was not known for over-adherence to standards and often assumed that you'd be working with a Microsoft web server.

Expression Web is the web design element of a new suite of tools, which includes other packages designed to help create the code behind web applications, with tight integration between them. Here, though, we're looking at the package as it stands alone, as a web editor that – in theory, at least – stacks up against Dreamweaver.

Right from the beginning, there are some uncanny similarities, even in the way the screen is laid out and the views available. Just like in Dreamweaver, there are three main views of your page: Design, Code and Split, where the top part of the window shows the code relating to the highlighted part of the design. Another nice touch is the HTML and CSS element information appearing when you select in Design mode; for instance, 'p.bodytext' might appear in a tab at the top of a paragraph when you click in it, making it easy to see which style you might want to change. Applying styles is simple, from a Wysiwyg palette; even the editing dialogue is reminiscent of Dreamweaver.

Novices will be able to get to grips with things quite quickly, and there's a small range of templates you can modify. In fact, Dreamweaver templates work with Expression Web.

There's a handy printed quick reference to CSS, too, which will help newcomers understand what it's all about. Other useful features include a built-in checker

for accessibility so you can be sure your site is usable by everyone.

Site management is fairly straightforward, with synchronisation options and support for Webdav, FTP and Front Page servers, but no SCP or SFTP. And you'll need to tell it not to save metadata in those annoying VTI files that Front Page used to use, too.

Of course, the main reason for using tools such as this is for creating database-driven sites. If you're hoping to develop with PHP/MySQL, Coldfusion or anything like that, you're out of luck. It's strictly a Microsoft affair. That said, you can use XML files as a data source, which may be useful for those who want pages based on relatively static data. And, as well as SQL Server, you can select an Access file. We found it works fairly easily, so you can create a page that will display information from your .mdb files quickly. There's also an included test server, so you can test things on your desktop PC. In fact, it can be quick and easy to build a page around a simple database query, with auto-formatting options for tables of results, if you don't want to spend time designing a layout yourself. There are also some wizards for common tasks such as creating user accounts via ASP.Net, or maintaining a site map database. But while Dreamweaver lets you drag field names into a repeated area, Expression Web tells you to switch to code and add the items manually, which is disappointing.

Compared with Microsoft's previous efforts, Expression Web is a great tool – but with caveats. It's still tied too much into its own web technologies, so if you want to explore things such as Ajax, PHP and other cool technologies, you'll need to code by hand. Alternatively, choose a different tool.

Verdict

Pros Good CSS and XHTML support
Cons No PHP/MySQL support; some ASP work requires manual editing

Features
Performance
Value for money

Overall A worthy competitor, with more standards support than you'd expect. But with only Microsoft server-side technologies supported, many will have to pass it by



Web design tools



| DEVELOPER | ADOBE | KAZE | MICROSOFT |
|-------------------------------|-------------------------------|-----------------------------------|---|
| Product name | Dreamweaver CS3 | Kompozer 0.77 | Expression Web |
| Price | £393.62, upgrade from £162.32 | Free (Open source - GPL/LGPL/MPL) | £260 |
| URL | www.adobe.com/uk | www.kompozer.net | www.microsoft.com/expression |
| WEB STANDARDS | | | |
| HTML | 4.01, Transitional and strict | 4, Transitional and strict | 4.01, Transitional and strict |
| XHTML | 1.0, 1.1, Mobile | 1 | 1.0, 1.1 |
| CSS | 2.1 | 2 | 2.1 |
| INTERFACE VIEWS | | | |
| Code only | ✓ | ✓ | ✓ |
| Code and design | ✓ | ✗ | ✓ |
| Design only | ✓ | ✓ | ✓ |
| Design with tags | ✗ | ✓ | ✗ |
| Live data | ✓ | ✗ | ✗ |
| Highlight tags | ✓ | ✗ | ✓ |
| SERVER TECHNOLOGIES SUPPORTED | | | |
| Asp | ✓ | ✗ | ✓ |
| Asp.net | ✓ | ✗ | ✓ |
| Coldfusion | ✓ | ✗ | ✗ |
| JSP | ✓ | ✗ | ✗ |
| PHP/MySQL | ✓ | ✗ | ✗ |
| XML data | ✓, via Spry | ✗ | ✓ |
| FILE TRANSFER | | | |
| Frontpage | ✗ | ✗ | ✓ |
| FTP | ✓ | ✓ | ✓ |
| RDS | ✓ | ✗ | ✓ |
| SFTP | ✓ | ✗ | ✓ |
| Sourcesafe | ✓ | ✗ | ✗ |
| Webdav | ✓ | ✗ | ✓ |
| Sync support | ✓ | ✗ | ✓ |
| REPORTING | | | |
| Accessibility | ✓ | ✓ (HTML validation, via W3C site) | ✓ |
| Browser compatibility | ✓ | ✗ | ✓ |
| CSS | ✓ | ✗ | ✓ |
| OTHER | | | |
| Annotate pages | ✓ | ✗ | ✗ |
| Reusable code | ✓ | ✗ | ✓ |
| Reference library | ✓ | ✗ | ✗ |
| Templates | ✓ | ✗ | ✓ |
| OPERATING SYSTEM SUPPORT | | | |
| Windows XP/Vista | ✓ (not Vista Basic) | ✓ | ✓ |
| Mac OSX | ✓ (10.4.8) | ✓ | ✗ |
| Linux | ✗ | ✓ | ✗ |
| MINIMUM SYSTEM REQUIREMENTS | | | |
| CPU | (Windows) Pentium 4/Centri | Not specified | Pentium 700MHz |
| Memory (MB) | 512 | Not specified | 512 |
| Hard disk space (GB) | 1 | Not specified | 1.5 |
| Graphics | 1,024x768, 16-bit | Not specified | 1,024x768 |
| Other | DVD-Rom drive | Not specified | CD or DVD-Rom drive, internet connection for activation |
| SCORES | | | |
| Features | ★★★★★ | ★★★★★ | ★★★★★ |
| Ease of use | ★★★★★ | ★★★★★ | ★★★★★ |
| Value for money | ★★★★★ | ★★★★★ | ★★★★★ |
| Overall | ★★★★★ | ★★★★★ | ★★★★★ |

Web design alternatives

If you read discussions between web designers on the internet, one common view expressed is that, even if you do use tools such as Dreamweaver or Expression, you need to understand the code they're generating, plus you may often need to tweak it manually as well. When you go down that route, you are, in effect, using these expensive tools as quick ways to generate text files you'll be editing later – and some people feel that a few hundred pounds is a lot to pay for a text editor.

But, as we said at the start of this article, with CSS, XHTML and scripting languages there's a lot to juggle, and a basic text editor won't necessarily be sufficient. Even if you're writing your own code, the sort of hints that Dreamweaver will give you on PHP commands, or reminders that you've opened a tag but not closed it, can be great timesavers, saving hours of time having to pore over code later to work out what went wrong.

So, what are the alternatives to the sort of packages we've reviewed here? One of the most popular, and incredibly flexible, tools is called HTML-Kit, available as a free download from www.htmlkit.com. You do need to register for \$49 (£25) if you're using it commercially. With code highlighting and hints, plus a live preview that updates as you type code, it's a powerful tool. It's

extensible too, with a huge range of plug-ins, including ones that provide code snippets and reference tools for technologies such as ASP and PHP. While it won't generate your code in the same way as Dreamweaver, it will certainly speed things up for you.

Another useful low-cost tool is Topstyle Pro from www.newsgator.com for \$79 (about £40). It provides HTML, CSS and XHTML editing, with functions such as clip libraries and site management, too. Where it's really useful, however, is in CSS management, as it can upgrade old HTML code that uses font and colour attributes, converting it to CSS-based code, making for much tidier pages.

Similarly focusing on CSS is Style Master from www.westciv.com, at \$60 (£30). It includes a range of templates and wizards you can use to create CSS-based sites, including one that takes the pain out of designing multi-column layouts.

You can even apply a stylesheet you're editing to a live website, making it a useful tool for site makeovers.

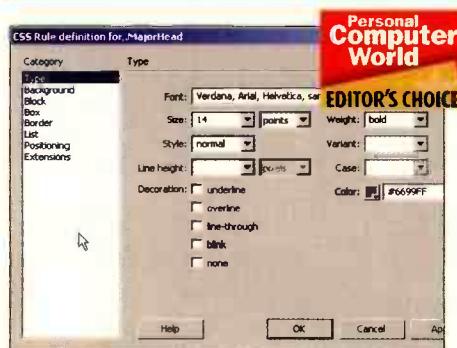
Both Topstyle Pro and Stylemaster have trial versions and are well worth taking for a spin. Either one combined with HTML-Kit could provide you with a flexible solution for both static and interactive sites.



HTML-Kit is a great tool for people who want a more hands-on approach to the coding of their web pages

Editor's Choice

Editor's Choice Adobe Dreamweaver CS3



Adobe Dreamweaver CS3

To some extent, while they all cover the basics of modern standards-based web design, all the packages we tested are quite different. Kompozer is more or less just a web page design tool – and a pretty capable one – but it lacks the tools for working with database-driven sites that are becoming an increasingly important part of modern sites, with their need for personalisation and live data.

For some years now, Dreamweaver has been the tool of choice for many working on high-end websites. Such has been its impact that even Go Live, the competitor created by

Adobe, is quietly fading away now that both products are owned by the same firm. So it's a brave company that seeks to take on the mighty Dreamweaver.

Of course, the presence of a long-established competitor has never deterred Microsoft from entering a market, and while its previous effort, Front Page, was aimed at the casual web designer – and often had scant regard for standards – Expression Web is altogether a more professional product. The interface will seem uncannily familiar to Dreamweaver users, and it's certainly a powerful tool. With good support for standards such as CSS and XML, it's a flexible tool, which works well with some of Microsoft's other visual development tools.

But – and it's a big but for many people – when it comes to server-side technologies, Microsoft just can't resist the temptation to try to lock you into its own web servers. And so, despite its many good points, Expression Web doesn't quite make it.

Adobe's Dreamweaver is not, of course, without its flaws; the PHP support isn't the most up to date, and nor is some of the support for Microsoft's .Net technologies. But despite

those niggles, there's little doubting that it can be an invaluable tool, helping you put together data-driven websites swiftly and with little need for programming skills.

That it integrates well with Adobe's other tools, including Photoshop, and is available for both Mac and PC, adds to its appeal. For those who want to build standards-based websites based on open technologies such as PHP and MySQL, it remains the tool of choice.

The only fly in the ointment – and to be fair, Microsoft is also guilty of this – is Adobe's pricing policy: UK users are charged £393 for the same product, in the same language, that costs US users only \$399 (£199). Expression Web costs \$299 (£149) in the US and £260 in the UK.

So, despite our misgivings about pricing, we award the Editor's Choice to Adobe Dreamweaver CS3. PCW

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SORT OUT YOUR SOFTWARE

If you find installing and managing software a bit of a chore, this month's business section feature will be of huge interest. In it we look at hosted services, where someone else does all the hard work while all you need is an internet connection and a browser.

Everything from basic email to business management applications and even complete desktops can now be bought this way. We tell you what's on offer, how much they cost and what these services are really like to use.

We also have a selection of interesting reviews, including a first look at the latest Enterprise Linux from market leader Red Hat, plus a couple of small business wireless routers – one from Billion, the other from D-Link. Elsewhere, we put a new HP Laserjet through its paces, along with an uninterruptible power supply and, lastly, we look at a remarkably simple server backup program.

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OUR SCORING

Excellent ★★★★★ Very good ★★★★★ Good ★★★★★ Below average ★★★★★ Poor ★★★★★

OUR AWARDS

Editor's Choice: The best product in a comparative group test. Anything that wins this award is of better quality than its competitors.

Recommended: A product that combines great features, usability and value for money.

Great Value: Not the best in class, but a product that has superior features and performance for the price.



Editor's Choice
Business



Recommended
Business



Great Value
Business

The business awards are used for products that are more suited to home offices or small businesses.



'Gone are the drab blue and grey colours in favour of a much smarter, glossy black and white livery'

Read the review on page 113

Hosted services

Alan Stevens looks at the alternatives to running your own servers

It doesn't matter how modest your IT requirements, managing your own PCs, servers and applications can still be a full-time task. So why not get someone else to do some or all of the hard work for you? All that's needed is a connection to the internet and, in most cases, a browser. You can then access a wide range of applications, remotely hosted and fully managed by online service providers, without needing in-house support personnel or expensive hardware.

On the downside there's not quite as much choice as some analysts once predicted. Indeed, a few years back, the market for hosted applications was expected to skyrocket, with some pundits even predicting the demise of local solutions altogether. That didn't happen and a lot of the original big name providers have long since pulled out of the market. However, a number of specialised solutions persist, designed and marketed specifically for the smaller business. New products from Google and Microsoft are also on their way, and we'll look at those alongside others in this feature.

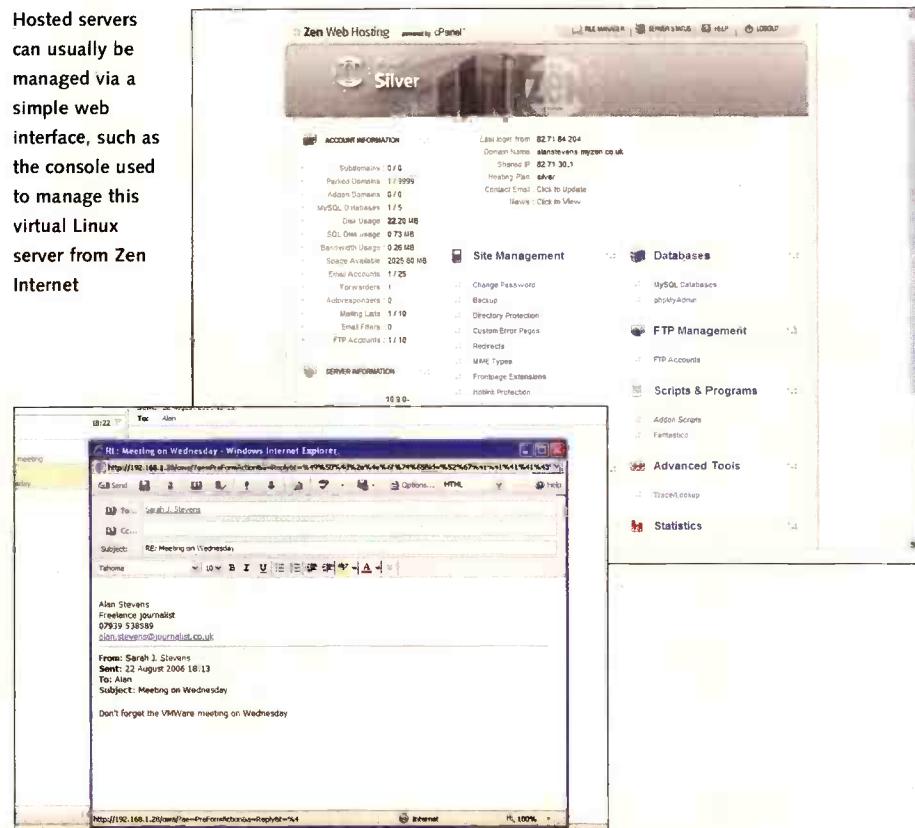
Traditional web hosting

Web server and email hosting are, without doubt, the most readily available of online services, typically included free when you sign up for a broadband internet connection. In addition, there are plenty of providers ready and able to host more demanding websites and email requirements independently, for anyone prepared to pay.

Sign up for one of these services and you can have your own 'virtual' server, running either Linux or Windows, complete with associated web server software (Apache or IIS), a supporting database server. Ecommerce and other back-end applications. Prices will be worked out based on a mix of disk space usage, software licensing costs and the amount of web traffic the site will attract. As such they can start from just a few pounds per month for a shared Linux server, rising to hundreds to get a dedicated server of your own running Windows or a big name Linux distro.

An example of one of the providers of this kind of small business service is 1&1 (www.1and1.co.uk) whose basic Linux-based business hosting packages start from £6.75 (ex Vat) per month. From £60 (ex Vat) per

Hosted servers can usually be managed via a simple web interface, such as the console used to manage this virtual Linux server from Zen Internet



month you can get your own Windows server to do with more or less as you like; similar packages are available from Zen Internet (www.zen.co.uk), Demon Internet (www.demon.net), UK2 (www.uk2.net), RackSpace (www.rackspace.co.uk) and numerous others.

Typically, simple web-based management interfaces are provided to enable customers to configure software themselves, without the need for in-depth technical expertise. However, it's not compulsory and, especially on the more expensive products, access to the server via a remote desktop and other utilities is also available, along with dedicated support and guaranteed availability to agreed service levels.

Hosted messaging

Prices for hosted email services can vary considerably. The cheapest solutions (some free) are nearly all Linux-based, offering basic Pop3 and Imap access to messages received by the hosted server. These can be used with any client software that supports those protocols, in addition to which most

will include a webmail interface for remote and mobile access via browsers and, possibly, the option of sending mail out to Blackberry handhelds and other mobile devices.

Hosted implementations of Microsoft Exchange are also becoming common, such as those available from 1&1 starting at £5.99 (ex Vat) per user per month. You get a licensed copy of Microsoft Outlook for each user and a set amount of mailbox space (1GB with the 1&1 service) on an Exchange server configured to host your domain.

Support for Outlook Web Access (OWA) is usually provided, together with anti-virus and anti-spam protection, and email facilities to forward messages to mobile computers and smartphones. Groupware functionality is also provided as part of the hosted Exchange service, with users able to share address books, calendars and other folders just as they can if connected to a local server.

Other providers offering hosted Exchange include Fasthosts (www.fasthosts.co.uk), whose services start from £9.99 (ex Vat) per user per month, and Simply Mail Solutions (www.simplymailsolutions.com) where mailboxes

start at £4.99 (ex Vat) per month. Microsoft also offers hosted email based on Exchange, as part of its Office Live solution, which also includes a hosted web server, Sharepoint workspaces and a range of business applications – the exact content depends on the subscription.

Messaging and groupware services based on open source alternatives are another option. For example, as well as Exchange, Simply Mail Solutions can provide email and collaboration services using a hosted implementation of the Zimbra open source solution.

Tommie

Other companies offer groupware and information-sharing functionality as a service independent of email. Examples of this include Tommie (www.tommie.co.uk) and BT Workspace.

Short for Total Office Management Made Incredibly Easy, Tommie provides web-based tools to share and manage the kind of information on which small businesses thrive.

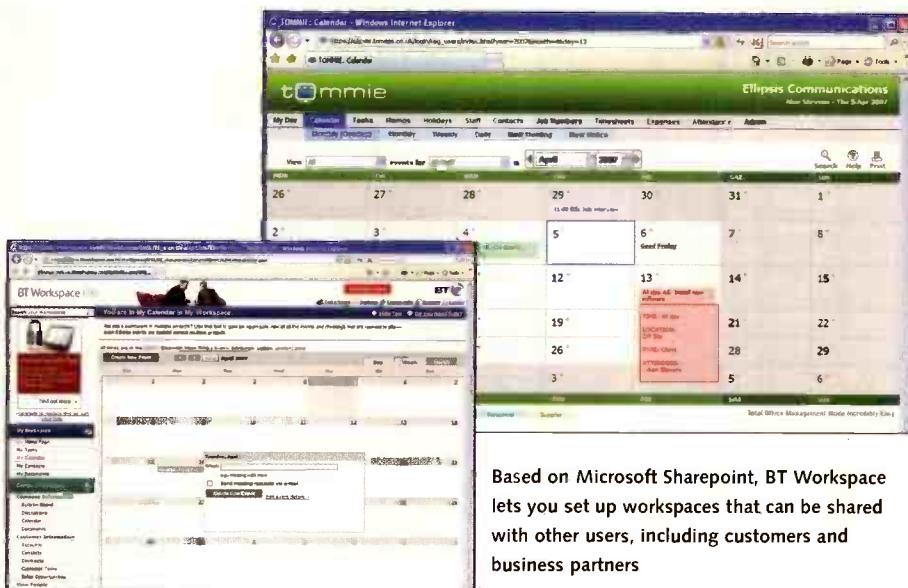
Each user, for example, has a calendar that can be shared with others to organise their time, arrange meetings, book holidays and so on. They can also manage contacts, fill in timesheets, and do their expenses online while managers can, similarly, keep an eye on things, approve holiday requests, collate timesheets and, generally, run the office from a browser. The interface is very straightforward, with tools provided to change its appearance and customise what you see, by adding text and logos. You can

'Hosted email services can vary in cost – the cheapest are mostly Linux-based'

also import existing information such as contact lists, although not directly from Outlook at present.

Data is held on a secure storage array and continuously replicated to a backup system, with 128-bit SSL encryption used to secure all communication between the host servers and its clients.

A flat rate of 10p is charged for each user per day, and customers are invoiced monthly in arrears. Users can be added or removed as required, with no limits on how many you can have. Performance is largely dictated by internet bandwidth, with broadband giving the best results, although the service is optimised to give usable results even on dial-up and via wireless hotspots, with support for handheld computers another key feature.



BT Workspace

BT's Workspace service uses Microsoft Sharepoint services to provide tools for groups of users to share information and work on projects collaboratively.

Each user has their own workspace, accessible through a browser, with an online calendar, task and contact manager, as well as space to securely store documents and other files. A separate shared company workspace then acts as an intranet, providing a bulletin board and discussion forum, plus a company-wide shared calendar and access to

Based on Microsoft Sharepoint, BT Workspace lets you set up workspaces that can be shared with other users, including customers and business partners

common customer and other contact lists.

Independent workspaces can also be created to manage specific projects, each with their own calendars, discussions and shared files. These workspaces can be shared with other users and extended to create an extranet by inviting customers and business partners to collaborate as either observers or contributing participants.

SSL encryption is used to secure client connections to the service, and it's possible to import contacts lists from Outlook and other applications for use in BT Workspace.

Connectivity is all

Sign up for any kind of online service and your connection to the internet becomes all important. Available bandwidth will dictate how quickly you can work and if, for any reason, the connection is lost, you won't be able to send or receive email, open shared documents, connect to your CRM system or do whatever it is you've paid that money for. It becomes essential, therefore, to make sure you buy the right kind of connectivity and arrange for backup in case things go wrong.

Most hosted small business services will be designed to consume only small amounts of bandwidth, so they can be operated across standard broadband ADSL (Asymmetric DSL) and cable connections. However, they can be bandwidth greedy and, of course, the more users you have, the larger your internet pipe needs to be. With ADSL, upstream bandwidth (the rate at which you can send data out to the hosted application) will be only a fraction of the headline downstream rate, so you might want to consider an SDSL (Symmetric DSL) service or, if that's not available, a leased line connection.

In terms of backup, SDSL and leased line users should look at having an independent SDSL/ADSL connection available to take over in the event of a failure, while ADSL users should consider a second service from another provider on one or more separate lines. You might also want to consider using the backup connection alongside the main link for load balancing and to save having to manually reconfigure the setup should a failure occur.

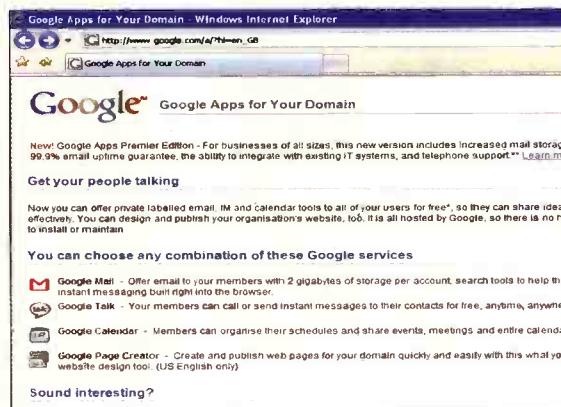


Google it

Google is keen to grab a slice of the hosted services market, and has a number of tools in beta, as part of its Google Apps Premier Edition product, which is designed to compete with Microsoft's Office Live. Domain hosting is included as part of the solution, along with email (GMail), a shared calendar and online word processing and spreadsheet tools, complete with facilities to upload and share documents.

The Google tools themselves are functional but fairly basic and, as free beta products, there are no guarantees of availability or support. However, the service is due to go live in May

2007, at which point service and support guarantees will apply, and subscriptions will cost \$50 (about £25) per user per year. Contact www.google.com/a/smallbiz.



Clearly designed to compete against Microsoft's Office Live, Google Apps Premier Edition includes a hosted domain, plus email and group collaboration tools

BT Workspace Lite is available free of charge for two users, allowing two project workspaces to be created, which can be shared with an unlimited number of other users. You're limited to just 10MB of storage with the Lite version, otherwise you can opt for a paid-for service, which costs £7.50 per user per month (minimum of two users). Each user then gets 100MB of storage space that can be pooled by everyone, with an unlimited number of project workspaces also available when you opt to pay for the service.

Licences are required for access to the company workspace, but extranet users invited to collaborate in project workspaces do not have to be paid for.

Microsoft Office Live

Office Live doesn't give you online access to Word, Excel or other programs in the Office suite. Instead, it's designed to provide small businesses with a complete online presence, starting with a hosted domain together with virtual web and email servers.

The free Office Live Basics subscription includes registration and hosting of a .co.uk or .com domain (existing domains can be transferred in), plus 25 Exchange email accounts and 500MB of web space. Web design tools are also included while, for £11.95 (ex Vat) per user per month you can upgrade to Office Live Essentials, doubling the number of email accounts (each with 2GB of mailbox space) and increasing the web space to 1GB. Support for mobile email using Windows-powered handheld devices is also included, along with shared workspaces, the ability to use third-party web

'Small providers may struggle to deliver on service-level promises'

development tools, and a hosted implementation of Microsoft's Business Contact Manager application.

Take out an Office Live Premium subscription (£22.95 ex Vat per user per month) and web space rises to 2GB with additional workspace support and business-management applications also provided.

Designed to be accessed using a browser (only Internet Explorer at present), close integration with Outlook and other Office tools is, naturally enough, an option, although these have to be licensed separately.

In beta at the time of writing, Office Live is due to be released with full UK hosting by the middle of 2007. Beta users trialling the service for free will be able to upgrade or opt out when the full service starts.

And the rest

Hosted storage is another common offering, with lots of products from which to

An Office Live subscription includes domain registration plus web and hosted email servers, with optional shared workspaces and business applications in the paid-for implementations

choose, including hosted accounting and Customer Relationship Management (CRM) solutions, such as the recently released SageCRM.com (<https://uk.sagecrm.com>), which starts at around £35 (ex Vat) per user per month. Ecommerce, VPN and security services are all available too.

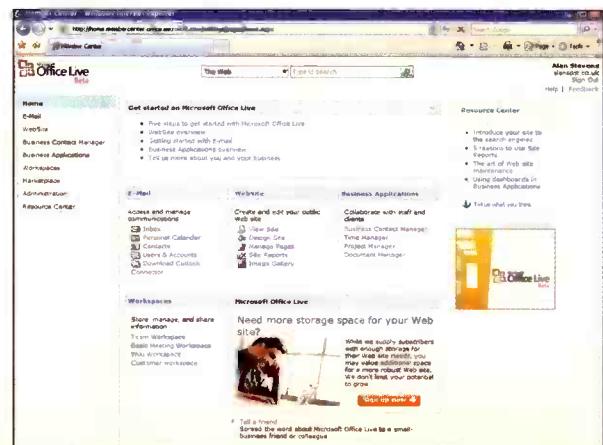
You can even get fully hosted desktop products; there aren't that many yet, but it's worth looking at Online Desktop from ADS Portal (www.adspotal.net). Subscribe to this and for around £84 (ex Vat) per user per month, you can throw away your local PC and applications in favour of Office and anything else you might want to access, running on remotely managed servers equipped with Citrix thin client software.

A word of warning

Before you rush to the web and sign up for any of these services, it's worth stressing the importance of doing a little research before handing over responsibility for any part of your business IT to a third party. The vendors mentioned in this feature are reputable, and most are backed by large companies with established trading records. However, that's not always the case and it's all too easy for a small startup, with limited facilities and staff, to appear bigger than it really is. It's not always a problem, but small providers may struggle to deliver on service-level promises and can disappear as quickly as they arrived.

Don't rely solely on a website. Phone up the company and talk to them about the services they provide, how much it will cost, where they're based, how they will protect your data, and so on. This will give you a good idea of the kind of people you're dealing with. Ask also for references, if possible, from customers in the same line of business and of same size as your company.

If you think they're pulling the wool over your eyes, check the provider at Companies House and any other investigations, just as you would before committing to any potential business partner. **PCW**



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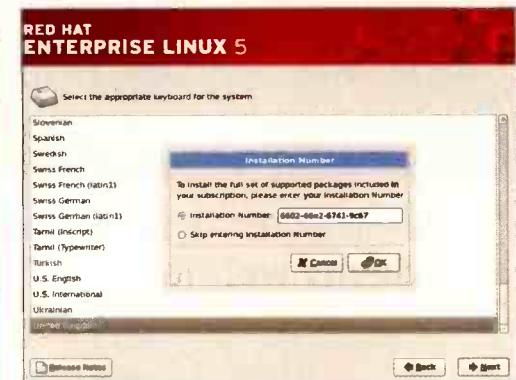
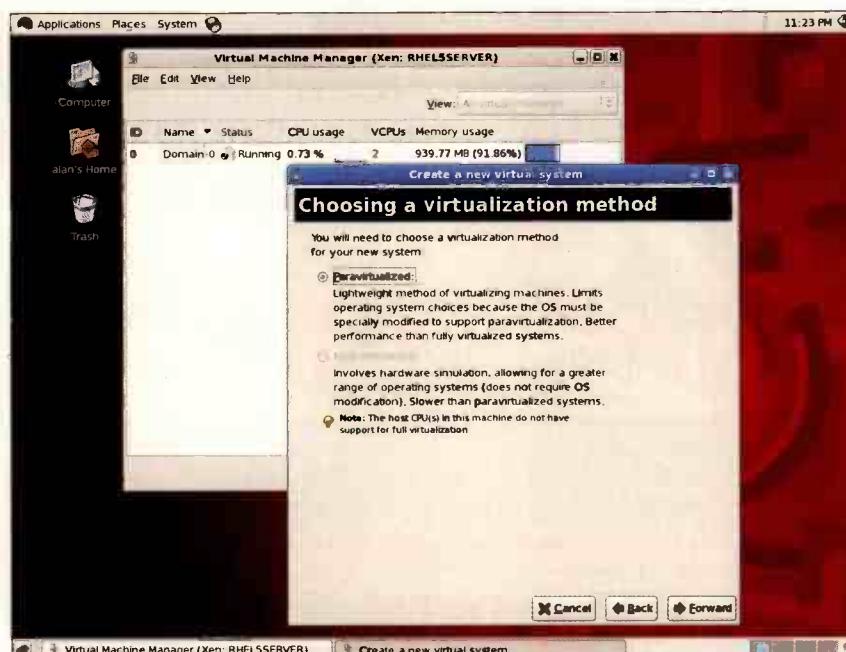
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OPERATING SYSTEM

Red Hat Enterprise Linux 5

Red Hat gets real about virtualisation



Above: An installation code can be entered to automate the RHEL 5 software setup

Left: Xen Source-based virtualisation is included in Red Hat Enterprise Linux 5, but Intel-VT/AMD-V processors are required to run Windows virtual machines

The latest release of Red Hat Enterprise Linux (RHEL 5) sees the usual clutch of open source performance, functionality and security updates joined, for the first time, by integrated virtualisation facilities deemed suitable for production use.

Based on Xen Source technology, RHEL 5 offers support for two types of virtualisation: so-called para-virtualisation, where guests are limited to modified versions of the Red Hat Linux O/S; and full virtualisation, where other guests, including Windows, can be run unmodified. However, as with Xen Server for Windows (reviewed in PCW, May 2007), you'll need the latest Intel VT or AMD-V enabled processors to take advantage of the full virtualisation option.

Management could be an issue, too, especially in a small business with limited expertise. Command-line and graphical management tools are provided, but we didn't find them as easy to use, or as comprehensive, as those provided with the standalone Xen Server application. Neither do they measure up to what you get with VMWare or Microsoft virtualisation products.

That said, the virtualisation capabilities are a welcome addition, as are the licensing changes that also accompany this release. An annual subscription still applies, but a single RHEL 5 server licence now replaces the old tiered ES and AS subscriptions, which means you get everything on offer, including the full set of virtualisation features, no matter what level of subscription you opt to buy.

On the downside, there are some limitations, such as support for just two processor sockets in the base server and four virtual guests. As such customers with larger networks will be interested in the new Red Hat Advanced Platform which, at £1,235 ex Vat (about

£836) per system/year, is great value because it has no limits when it comes to either processors or guests. It also incorporates the Red Hat Cluster Suite and Red Hat Global File system for storage virtualisation.

A unified RHEL Desktop implementation has also been developed (desktop subscriptions start at £62 – about £42 – per system ex Vat) to which you can add optional enhancements. The Workstation option provides support for dual processors and unlimited memory, while the Multi OS option adds similar virtualisation facilities to those available on the server.

Desktop users will also welcome support for high-performance graphics cards, better wireless and power management, plus printer and USB enhancements. The application set is still based on the Gnome desktop, Mozilla Firefox and OpenOffice, but these are similarly updated, and fancy graphical effects, such as those in Windows Vista, are possible with the right hardware.

Performance enhancements include support for the latest quad-core processors and improved SMP scalability. Security also gets a boost with improvements to both the SE Linux implementation and management tools. Finally, installation has been streamlined with the option of supplying an installation number to automatically configure the setup to match the licence purchased, with minimal operator input required as a result.

Coming as it does some months after the release of Novell's rival SLES 10, RHEL 5 will help Red Hat counter growing competition from both Microsoft and Linux. Existing ES Server customers can upgrade straight away, while those with AS will get the full Advanced Platform features when they renew their subscriptions, with no change to the price.

Alan Stevens

Details

Price From £287 (about £195 ex Vat) for the base RHEL 5 server subscription, per system per year

Best price www.pcw.co.uk/bestprices
Contact Red Hat 0800 358 2018
www.redhat.com

System requirements 32-bit or 64-bit Intel/AMD x86 processor (also supports Intel Itanium 2, IBM Power or zSeries mainframe) • Intel-VT or AMD-V-compatible processors required for full virtualisation option • 512MB memory (1GB required with IBM Power processors) • 1GB disk space; compatible video/network cards

Verdict

Pros Production quality virtualisation; server and desktop implementations; storage virtualisation and clustering in Advanced Platform

Cons Late to market; Intel VT or AMD-V processors required for full virtualisation; management tools not as comprehensive as some others

Features ★★★★
Ease of use ★★★★★
Value for money ★★★★★

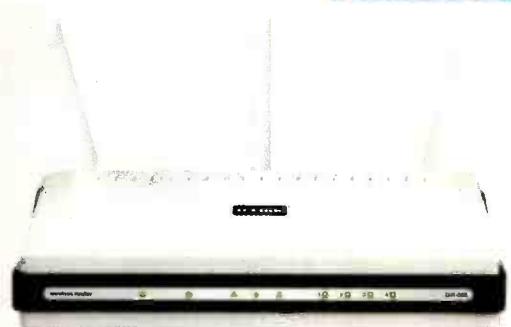
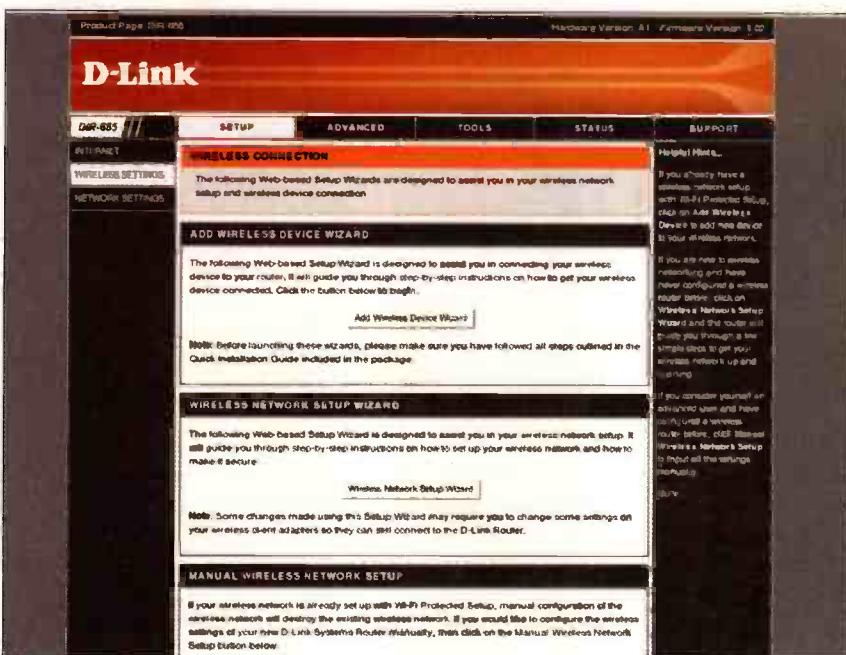
Overall Not perfect, but Xen Source virtualisation will help keep the latest Red Hat distro on the top of the enterprise Linux pile

★★★★★

GIGABIT ROUTER

D-Link DIR-655 Rangebooster N

A new look and a lot more on this Draft-N wireless router



The DIR-655 Rangebooster N Gigabit Router comes in a smart new glossy white case

D-Link has revamped its management GUI on the DIR-655, making it more intuitive and easy to configure

Networking vendor D-Link has, in the past, tended to release competent, albeit uninspiring, products. An approach it appears determined to change, at least if its new wireless router, the DIR-655 Rangebooster N, is anything to go by.

The changes are obvious. Gone are the drab blue and grey colours in favour of a much smarter glossy black and white livery, with blue status LEDs at the front and three stubby antennas for the wireless interface to the rear. The router can be wall-mounted and is silent in operation, but it does get quite hot.

The Rangebooster N offers support for the latest Draft 802.11n wireless technology, giving enhanced range as well as extra bandwidth compared with earlier 802.11b/g wireless implementations. You'll need compatible 802.11n adapters to get the full benefit, but suitable notebook, PCI and USB adapters are all available from D-Link and other vendors.

The wireless interface is also backwards-compatible with 802.11b/g adapters and guaranteed not to interfere with existing networks based on these standards. Moreover, although marketed mostly as a small/home office product, it's a full business-grade implementation with support for WPA/WPA2 security in both personal and enterprise formats, the latter requiring an external Radius server for 802.1x user authentication. WEP encryption is also available for backwards-compatibility.

The DIR-655 is well specified on the wired side, with a four-port Gigabit Ethernet switch for local connectivity and a similar 10/100/1000Mbit/sec Ethernet port for attachment of a cable or DSL modem.

We ran a variety of throughput tests and recorded throughput rates as high as 80Mbit/sec using a

compatible D-Link notebook adapter. It also performed well with Draft-N adapters from Belkin and Linksys based on compatible Atheros chipsets, with excellent results when it came to coverage.

We were also impressed with the new web-based management interface, which D-Link intends to use on all its products. A huge advance over previous implementations, the GUI employed here is both quicker and slicker than before, with wizards to help with common setup tasks, plus lots of helpful hints and advice as you go through the various options. The stateful inspection firewall comes ready-activated, which was good to see, added to which there's a revamped setup routine dubbed Click 'n' Connect.

Interestingly, the new router also supports WiFi Protected Setup (WPS) technology, as implemented in Windows Vista. This allows WPA encryption settings to be configured simply by pressing a button or entering a Pin code rather than having to remember the actual keys or pass phrases. The DIR-655 just supports the Pin code option at present.

Other features include intelligent Quality of Service (QoS) which, if you leave the default settings alone, will prioritise VoIP and other delay-sensitive traffic on wireless and wired connections. Pass-through of VPN and other common data streams is also enabled by default, plus you can configure your own port forwarding and virtual server rules.

As with all Draft-N wireless devices, future compatibility with the full standard isn't guaranteed, but D-Link promises to be able to cope with any changes through Firmware upgrades. It also offers an 11-year warranty, so this product is worth a look if wireless bandwidth and range are an issue.

Alan Stevens

Details

Price £123.38 (£105 ex Vat)

Best price www.pcw.co.uk/bestprices

Contact D-Link 020 8955 9000, www.dlink.co.uk

Specifications Draft 802.11n wireless router • Integrated 4-port Gigabit Ethernet Lan switch • 10/100/1000Mbit/sec Wan port • USB port for transfer of wireless settings • WPA-Personal and WPA-Enterprise encryption (WPA and WPA-2) • Integrated stateful inspection firewall • Nat protection with VPN pass-through, port forwarding and virtual server support • Web-based management

Verdict

Pros Draft 802.11n wireless interface; integrated Gigabit Ethernet switch for Lan connectivity; improved web management interface

Cons External modem required; full benefit of Draft 802.11n wireless, only available with compatible clients

Features



Performance



Value for money



Overall A good performer and easier to deploy, thanks to a new management interface



UNINTERRUPTIBLE POWER SUPPLY

MGE UPS Systems Evolution 1150

All you ever wanted in a UPS, and then some



Above: Add the optional network interface card and the Evolution UPS can be managed remotely over the Lan

Left: The Evolution 1150 is designed to power up to four servers

An uninterruptible power supply (UPS) is just a big battery, right? Wrong. There's a lot more than just a battery to this essential piece of high-availability kit, especially if you're determined to keep your servers running no matter what. Indeed, if you opt for a rack-mount Evolution from MGE UPS Systems, you'll be getting a lot more than you might expect for your money.

The Evolution family of UPS products is designed to provide power to anything from one to 15 servers, with several different models available from the single server Evolution 650 (about £140 ex Vat) to the Evolution S 3000 at just over £700 ex Vat.

All are line-interactive, which means the UPS can both stabilise and clean the power supply, as well as keep the batteries charged and switch over to battery backup should the AC mains be interrupted.

The Evolution 1150 we tested is designed to power up to four servers with, as on most models, a choice of either rack (1U in this instance) or tower models. A convertible rack/tower version is also available, along with yet another implementation designed for short depth communication racks.

Mounting brackets come with all the rack models as standard, along with all the cables required, plus monitoring software and a documentation pack, which vendors of other IT products would do well to emulate – it's simply superb.

Following these instructions we were able to mount the Evolution 1150 in our rack – it can go either horizontally or vertically – and connect the test equipment. Four individually controlled output sockets are located at the rear, with a screw-on cover to stop the leads being pulled out once in place. RS232 serial

and USB communication ports are also provided, along with software to control attached systems.

There's also a slot to take an optional network management card (£101 ex Vat). With this installed, the UPS is connected to the Lan with its own IP address and an integrated web server for status monitoring. It can also send email and SMS alerts, and can be integrated into wider SNMP management systems (a separate software kit is required).

The batteries are of the lead acid type in maintenance-free sealed modules that can be replaced should the need arise. You can even get a power distribution strip, known as a Hotswap Maintenance Bypass Module (£76 ex Vat), to allow the batteries, or even the whole UPS, to be replaced without the need to power down the attached equipment. The autonomy of the larger 'S' models can also be enhanced by adding up to four additional battery modules.

Exactly how long the batteries will last on the Evolution 1150 when the power fails will depend on the load. With a full complement of servers attached, for example, the UPS will probably only manage about 10 minutes – just enough to close any open files and shut everything down gracefully. However, if you only have one server and, perhaps, a network switch and router, it can keep them all running for 20 minutes or more.

The word comprehensive simply doesn't do the Evolution 1150 any justice. Absolutely everything you might ever want or need is included in this very impressive package, which won't break the bank and, in the event of a mains failure, could prove invaluable.

Alan Stevens

Details

Price £392.45 (£334 ex Vat)
Best price www.pcw.co.uk/bestprices
Contact MGE UPS Systems
 0845 077 1945, www.mgeups.com
Specifications 1U rack-mount line interactive UPS • 1150VA • 770 watts; automatic voltage regulation • Rack-mount brackets • Four 240 volt power outlets; RS-232 serial and USB communication ports • Monitoring and shutdown software for Windows, Linux, Unix and Netware • Optional network management card

Verdict

Pros Comprehensive package; multiplatform monitoring and shutdown software; serial and USB communication ports; hot-swappable batteries

Cons No expansion beyond four outlets

Features



Performance



Value for money



Overall An affordable yet comprehensive UPS solution for small-to-medium size businesses



MONOCHROME LASER PRINTER

HP Laserjet P3005dn

Boring it may be, but this business laser is worth a second look



The somewhat dull casing hides a fast laser engine, capable of spitting out up to 33 pages per minute

With the advent of colour lasers, monochrome printers may seem a little old hat, but they still have their place with a lot to commend the new Laserjet P3005 series to small business buyers.

Gone are the exotic curves of previous Laserjets in favour of a square and somewhat squat grey plastic casing on the P3005. Controls too have been kept to a minimum on this printer with an equally tiny monochrome LCD display to show you what it's up to.

Inside, however, it's a different story with a 1,200x1,200dpi laser engine capable of firing out documents at up to 33 pages per minute. It produced crisp and clear monochrome results with the first page appearing in around 10 seconds on our tests no matter how complex the documents. PCL and Postscript drivers both come as standard, with direct printing of PDF documents another option.

Several different models are available, all based on the same laser engine combined with a 400MHz Motorola Coldfire processor, starting with the basic P3005 (£325 ex Vat) with just 48MB of memory and no networking interface. However, a more generous 80MB of memory was supplied on the P3005dn model we looked at, which also features built-in networking and a duplexer for double-sided printing. All models can be upgraded to 320MB of Ram using industry-standard DIMM modules.

As well as being very quick, the laser engine is good for up to 100,000 pages per month on each of the models, making the P3005 a good choice for small companies looking for a general-purpose workhorse, or larger organisations wanting a capable departmental laser. It's also very easy to maintain

with a single, quick-to-replace cartridge available in two capacities – 6,500 or 13,000 pages. The 6,500 page cartridges sell for just under £66 (ex Vat) on the web, with the larger capacity cartridges on offer for about £109 (ex Vat).

Paper handling was adequate but nothing special. A 500-sheet paper tray comes as standard with a second available as an optional extra (£79 ex Vat), which is worth having on a printer of this speed. You could also opt for the P3005x (£569 ex Vat) and get it already fitted. Both trays can handle 120gsm A4 sheets with a 100-sheet fold-out multipurpose tray at the front to provide a straight-through path for card, labels and other heavier materials.

Printed pages come out face down into a well on top of the printer, but there are no additional sorting or finishing options, which is a little unfortunate as it limits the appeal of this laser.

A USB2 interface allows the P3005dn to be hooked up to desktop PC or server directly, but most buyers will opt for network connection using the integrated HP Jetdirect adapter provided. This enables the laser to be shared on a mix of Windows, Linux, Apple and other networks with remote management via a browser using the embedded web server or, where multiple printers are deployed, using HP's Web Jetadmin software.

We had no problems installing the printer or accompanying software, and were impressed both by the quality and speed at which documents were printed. The paper handling lets it down a little, but for a lot of small businesses that won't be a major issue with the HP pedigree alone likely to make it a top seller.

Alan Stevens

Details

Price £598.08 (£509 ex Vat)

Best price www.pcw.co.uk/bestprices
Contact HP 0870 241 3625

www.hp.com

Specifications 33 pages per minute mono laser; up to 1,200x1,200dpi • 100,000 pages per month duty cycle • 400MHz Motorola ColdFire V5 processor; 80MB Ram (upgradeable to 320MB); PCL5e, PCL6 and Postscript Level 3 emulations • Direct PDF printing; USB2 and integrated Jetdirect Fast Ethernet interfaces • 100-sheet multipurpose tray • 500 sheet A4 feeder; duplexer; 6,500 page cartridge supplied with printer

Verdict

Pros Fast, integrated duplexer and network interface; multipurpose drivers

Cons Limited paper handling, with no sorting or finishing options

Features

Performance

Value for money

Overall A solid specification makes this mono laser worth considering, but others offer better paper-handling facilities

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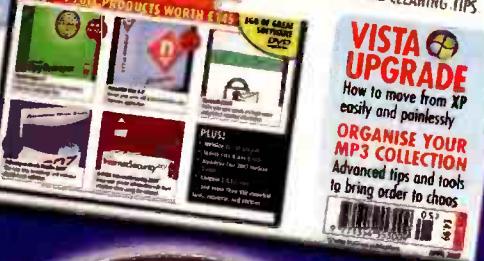
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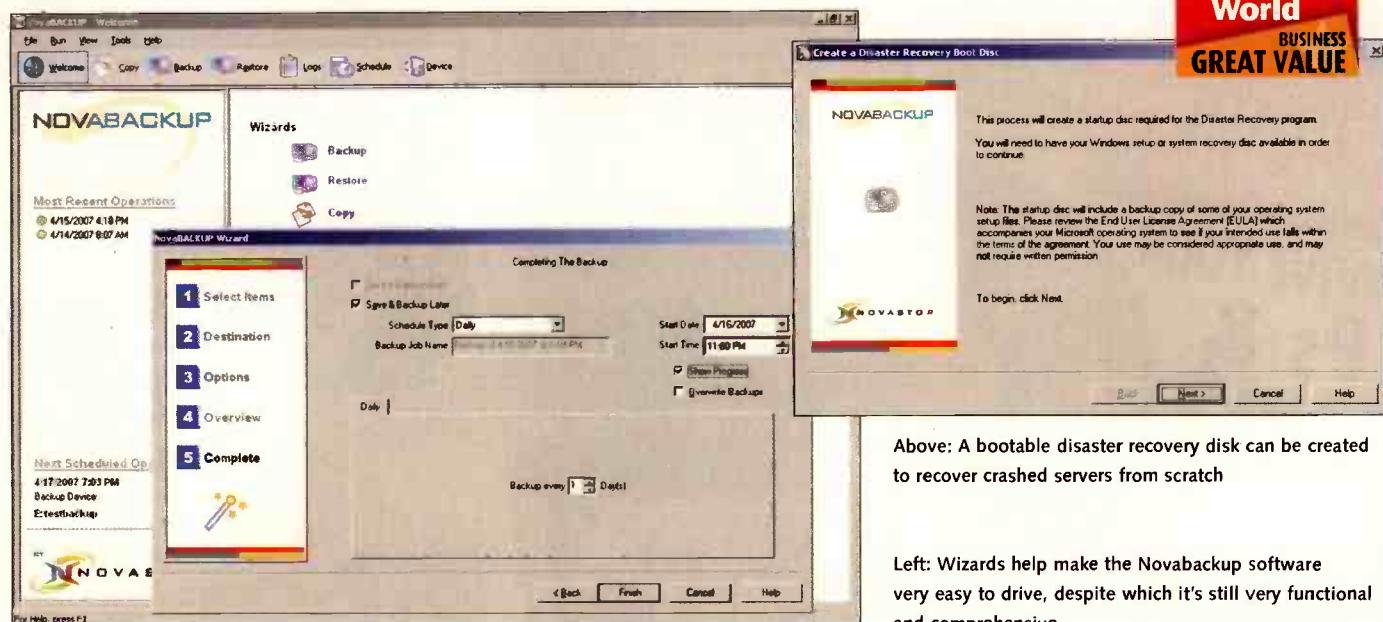
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SERVER BACKUP SOFTWARE

Orlogix Novabackup Server Edition

At last, a server backup program that isn't rocket science



Above: A bootable disaster recovery disk can be created to recover crashed servers from scratch

Left: Wizards help make the Novabackup software very easy to drive, despite which it's still very functional and comprehensive

Backup software tends to be expensive and difficult to get to grips with, especially when it comes to servers where most of the products are aimed at large companies with terabytes of data and complex applications to protect. For those with more modest needs, however, Novabackup Server Edition is well worth considering, offering solid backup protection in a format that's affordable and easy to use.

It's important not to be fooled by the low price; Novabackup is a very complete solution, designed to protect servers running Windows NT or later. Moreover, backups can be taken using a variety of devices, from traditional tape drives to removable hard disks and writable CD-Roms and DVD-Rams, with target devices automatically detected and configured ready for use during installation.

With the latest v7.5 release too, it's possible to copy and mirror files to another location rather than store them in compressed backup format. This enables users to recover lost data themselves while the file copies can be performed on demand or scheduled like regular backup jobs.

Anti-virus scanning is another useful feature, using software from Norman (www.norman.com) for which updates are provided free of charge. It's also possible to back up and copy open files, to save having to shut down applications or log users off before backups are run. No extra software is needed as this option is implemented using the Volume Shadow Service (VSS) in Windows XP, 2003 and Vista. Unfortunately, earlier versions don't offer it, but it's a very useful facility for those that do.

What we liked most, however, was the simplicity of Novabackup. Advanced users can drill down to

fine tune the various options if they want, but the default interface is a simple menu of wizards that makes it easy to create backup, restore, copy and disaster recovery jobs.

Each step is itemised with clear instructions when it comes to choosing what to back up or restore, the device to use and so on. You can then run a job immediately or save and run it later with all the usual options to schedule executions also available.

Job progress can be monitored on the screen with several levels of logging plus the ability to email logs to a named recipient when a job finishes.

Performance, naturally, depends on the source and target devices involved, but we found the program very quick, with facilities to compress data to further enhance both throughput and capacity. As such we were able to take full backups of a Windows 2003 Small Business Server in just a couple of hours. We were also able to include network shares on other servers and desktop PCs, although you can't capture remote registry and other information required to recover such systems.

You do, though, get integrated disaster recovery for the host system, requiring access to a writable CD-Rom/DVD drive to create a special boot disc. This can then be used to start and recover a crashed server from a backup with no need to first reinstall the operating system or the backup software.

On the downside there's no support for anything other than Windows and no central management console if you need to deploy the package on a number of servers. Still, if it's a standalone server backup program you want, they don't get much cheaper or easier than this.

Alan Stevens

Details

Price £89.95 (£76.55 ex Vat)
Best price www.pcw.co.uk/bestprices

Contact Orlogix 0800 3883 2000
www.orlogix.com

System requirements Pentium processor or later, 128MB Ram • 15MB disk space plus additional capacity for backups as required • Bootable CD/DVD drive for disaster recovery • Windows NT or later

Verdict

Pros Very easy to use; integrated disaster recovery option; open file backup; integrated anti-virus scanning; wide support for backup devices

Cons Open file backup only available with Windows XP/2003 and Vista; no central console to manage multiple servers

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall You don't need to be a technical expert to use this backup program or have very deep pockets to afford it

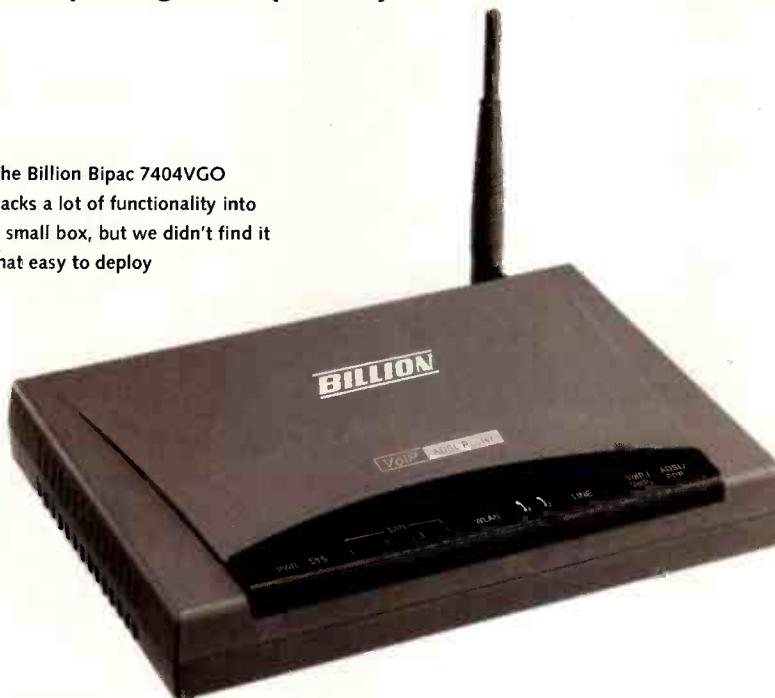
★★★★★

INTERNET ROUTER

Billion Bipac 7404VGO

An impressive package, but possibly too much for most small businesses

The Billion Bipac 7404VGO packs a lot of functionality into a small box, but we didn't find it that easy to deploy



Multifunction devices such as the Bipac 7404VGO have their advantages, with Billion's new router offering virtual private network (VPN) and Voice-over-IP (VoIP) facilities, as well as wired/wireless networking and an ADSL modem. However, compromises are inevitable and, although well specified, it's not a 'one-size-fits-all' solution.

In its favour, the datasheet for the Bipac 7404VGO reads like a small business shopping list. To start, there's a built-in ADSL modem capable of handling the latest ADSL2+ services, plus a four-port Fast Ethernet switch and an 802.11g wireless access point to make it easier to share that connectivity. WPA2 encryption comes as standard and the wireless interface can be configured as a repeater to extend the wireless range if needed, plus there's the usual mix of network address translation (Nat) and stateful inspection firewalls with packet- and content-filtering options thrown in for good measure.

Next, there's a built-in VPN server for remote Lan access, capable of supporting up to 16 concurrent connections using a variety of tunnelling protocols including PPTP, L2TP and IPSec. SNMP management also comes as standard and, finally, it's possible to plug in a couple of handsets and save money by using VoIP to make and receive phone calls.

That's a long list for a device priced at just over a hundred pounds, but there are a few things missing, such as support for anything other than pre shared keys when it comes to wireless encryption, for example. VPN client software would also be welcome, together with a lot more help when it comes to configuring options such as the VPN server and VoIP interfaces.

Indeed, the biggest issue we had with the Billion router was its poor management interface and a lack of supporting documentation. We didn't encounter any major problems getting it to work, but then we've configured a lot of routers before. A small business manager with little technical expertise could end up not using the router to its full potential.

The slim quick-start guides cover the basics, but the manual is aimed at techies and doesn't really add that much. We also found the browser-based management interface a little quirky, with no wizards or context-sensitive help, as with most small business products. Moreover, on a couple of occasions we lost our setup changes completely because we forgot to save the settings before manually rebooting.

Yet another concern was finding the wireless interface enabled without encryption as soon as the router powered up. Similarly, we had to turn on the firewall and other security features ourselves and add custom rules to allow common protocols through.

For those able to live with such shortcomings, the Bipac 7404VGO is a very well-specified device at an affordable price. We were impressed with the VoIP functionality, which enables two analogue handsets to make and receive calls via hosted Sip services or a standard landline with automatic failover to the PSTN when the internet connection isn't available.

The VPN functionality is similarly impressive with an embedded encryption accelerator that enables the otherwise modest processor to cope with a large number of connections. However, most small businesses will need help to get these and other options working and, as such, could find better value elsewhere.

Alan Stevens

Details

Price Price £125 (£106.38 ex Vat)

Best price www.pcw.co.uk/bestprices
Contact Billion 020 8982 8228
www.billion.uk.com

Specifications Internet router with 32MB SDRAM and integrated ADSL/2+ modem • Four-port 10/100Mbps/sec Ethernet switch • 802.11g/b wireless interface • Integrated VPN client/server • Up to 16 IPSec tunnels • Integrated encryption accelerator • Two RJ-11 FXS ports for analogue telephone handsets • RJ-11 FXO port for PSTN connection • Web management interface • SNMP v3 management

Verdict

Pros ADSL modem built in; integrated 802.11g wireless networking; VPN server; VoIP support; QoS

Cons WPA encryption uses pre-shared keys only; no VPN client software provided; quirky management interface; lack of documentation

Features

★★★★★

Performance

★★★★★

Value for money

★★★★★

Overall Impressive, but marred by a poor management interface and lack of supporting help and documentation

★★★★★



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4 SCARTS

42"
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ALL YOU NEED TO KNOW

Hands On is – quite rightly – always full of useful gems for PC users, and this month is no exception, with topics ranging from an interesting flaw in Windows' security, to problems at the dog races and backup strategies. Along the way, there's a discussion of video effects plug-ins, the best ways to store your data, custom controllers for Midi devices and how to access your computer when away from home.

With Vista still a hot topic, this month it's the turn of Word and Excel 2007 to come under the spotlight, with tips for users making the move and a look at the interface changes that may delight or confuse, depending on your point of view, plus a look at how User Account Control affects programmers.

Finally, alongside our answers to your questions, we have a look at the Linux boot process too. Your feedback is always welcome; contact us at the addresses on page 125.

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HANDSON

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- WORKSHOPS
- HARDWARE SOLUTIONS
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- Q&A

Advice from our experts

PCW's experts solve your PC problems

DIGITAL IMAGING

Burning issue

Q I have taken several short video clips on my new digital camera and downloaded these as Avi files onto my computer. I have combined these into one using Windows Movie Maker, which has produced a Wmv file. Then I burned this from Windows Movie Maker onto a CD, but it is not playable on my DVD recorder/player. Is it possible to convert this file to a format suitable for playing on the DVD player?

Mike Craig

A Windows Movie Maker has many good points, not least of which is that it's free, but you can't use it to author and burn DVD videos. You could buy a standalone product such as Roxio Easy Media Creator or Ulead DVD Movie Factory. A better option would be to upgrade to a more fully featured video-editing application, which has DVD authoring and burning built in. Options include Adobe Premiere Elements, Ulead Video Studio and Pinnacle Studio 10.

Noisy problems

Q Is there an easy way to remove wind noise? I use Adobe Premiere

Elements 2.0.

Ken Leeper

A Like most audio problems, avoidance is much easier than removal. Use a windshield or 'windsock' on your mic – if you have a camcorder with a built-in mic. Find a sheltered spot or use your coat, hat or hand to provide a bit of protection. If the deed is already done, some filters can alleviate wind noise to a degree, but it's near impossible to eliminate altogether. Premiere Elements has a denoiser, but it's intended to remove analogue tape hiss and won't get you far with wind. Try using the low pass

filter to eliminate the worst of it. For a limited time you can download and try out the Adobe Soundbooth beta, which has excellent noise removal tools. You can find it at <http://labs.adobe.com/technologies/soundbooth>.

HARDWARE

Lost for words

Q I often work in full-screen Dos mode, but have recently found the first three characters on the left side of the screen are being chopped off. This also happens when switching on before the Windows XP load screen appears. All is well with a smaller window, though. I have tried

updating my video drivers and also the parameters for the Dos window, but nothing seems any different. I'm using a 19in CRT monitor.

Alan Willmott

A If you used to be able to see these characters, and they're still there when you shrink the Dos window, then it's likely the image scale or position settings on your monitor have drifted. This is not uncommon for CRT monitors. The solution is to use the controls on your monitor to slightly shrink the horizontal scale or shift it to the right a little. Hopefully, the missing characters will then be revealed, although your Windows Desktop will now be shifted

Databases

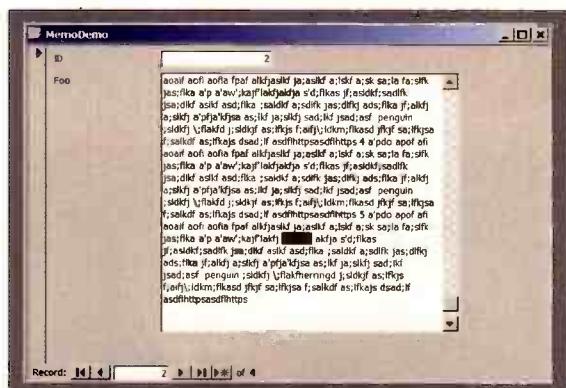
Q I'm creating an Access database for my local history group to index their resources, which range from single topic photos to books covering many subjects. It's a simple database with reference number, donor, type of item, etc. Ideally, I'd like a simple, non-grammatical text file searchable by a simple word search, so I can avoid setting up a string of categories (never enough and never quite right) for the description.

John Clarke

A Try storing the text in a memo field. They are searchable for individual words and will hold many characters – 65,536, in fact. That's roughly 11,000 words, or about 30 pages of a paperback novel.

In the file DBCJUL07.MDB on the cover DVD or www.pcw.co.uk/2151344 is a table, MemoDemo. The FOO memo field contains four records, each of around 50,000 characters including spaces. Each record contains, near the end, the word

'first', 'second', 'third' etc, as shown in the screenshot of the form, FMemoDemo. If you query (QMemoDemo) for Like '*second*' the answer table contains just the second record. The query works, finding text deep in the memo, but Access doesn't display the memo field contents in a way that is easy to read, or even at all. If you click around the table the text will sometimes appear – a bug rather than a feature. Memos are relatively slow to search, but as long as you don't have too many records, it should be fine.



The demonstration memo field contains much text, including the word 'second'

or scaled. In these situations, you often have to compromise and work in a window or optimise the monitor for either Windows or Dos use.

Hot topics

Q I was interested to read your Hardware article in January's issue about the system you built around an Intel Core 2 Duo. I have constructed something very similar: same processor, same heatsink, same memory type, Asus P5WDG2 WS motherboard, Zalman power supply and Gainward 7900GT graphics card.

In the article you said your processor ran as cool as 18 degrees Celsius. The system I've built seems to run at about 46 degrees, according to the Asus utility, and I wondered if you had any ideas as to why this is the case.

David Talbot

A If you're using the same processor and Zalman heatsink as our January Hardware project, the difference in temperatures points towards two likely culprits. First is the actual mounting of the heatsink itself. It's surprisingly easy when fitting a heatsink to not seat it properly, which can result in considerably less effective cooling; large heatsinks, such as the Zalman model in question, can also shift in transit. Either way, we'd advise removing the heatsink and replacing it with a fresh scraping of thermal paste.

Secondly, the airflow within and around the case, not to mention the heat generated by other components, can have a big impact on your processor's temperature. Take a look inside your case and ensure any cabling is neatly routed and not obstructing airflow. Additionally, make sure there's sufficient space around your case and that any vents aren't blocked. You're also using a higher-end graphics card than the Nvidia 6600 in the article, and it will almost certainly be giving off more heat.

Monitor

Q My sister-in-law's two-year-old daughter decided to express her artistic talent on their new Apple LCD monitor. The resulting scratches have apparently damaged the screen to the extent they can be felt when passing a finger over

| Product | New/Used | Totals | New | Used |
|----------|----------|--------|-----|------|
| Table | | 3 | 1 | |
| Chair | | 2 | 1 | |
| Sofa | | 1 | 2 | |
| Bookcase | | 0 | 2 | |
| Table | | 0 | 0 | |
| Cabinet | | 0 | 1 | |
| Chair | | | | |
| Sofa | | | | |
| Table | | | | |
| Chair | | | | |
| Sofa | | | | |
| Bookcase | | | | |
| Table | | | | |

SCREEN 1

the screen's surface.

Do you know of any reputable firm in the UK that can repair such damage? So far, my sister-in-law's research has only resulted in suggestions to either replace the entire screen or try to claim on her home contents insurance. Any ideas?

Matthew Kinch

'It's surprisingly easy when fitting a heatsink to not seat it properly'

A We have good news and bad news. The good news is that the LCD panel is normally fitted behind a sheet of transparent material, so it sounds like this, rather than the panel itself, has been damaged. The bad news is these sheets can be proprietary to the panel behind them and not readily available as spare parts. We couldn't find an independent source that could provide a replacement, so are publishing your letter here in case any PCW readers know of a firm that may help. If Apple UK cannot offer any kind of repair, it may be a very costly lesson to owners of high-end monitors.

SPREADSHEETS

Out of range

Q Is there a way to highlight all the named ranges at once on an Excel worksheet?

Nikki Jinks

A There is a very strange shortcut in recent versions that does this. Go to the Zoom box. Instead of clicking the down arrow, enter 39% in the box. Borders will

appear around the ranges and their Names will be displayed (see screen 1).

Perfect form

Q Excel offers an option, 'Enable automatic percent entry' under Options, Edit, Settings on the Tools menu. Can you enlighten me as to what this does? Rob Clifton

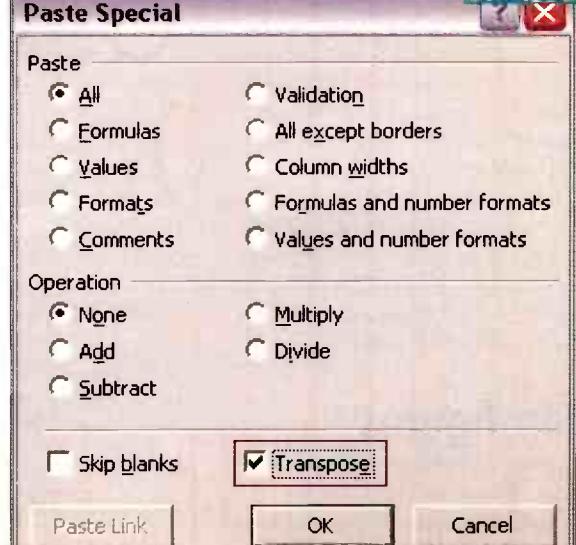
A It only makes a difference if you format a cell as a percentage before making an entry. With this option unchecked, if you format a cell with the Percent tool before entering 0.15 in a cell, it will display 15%. It will display 1,500% if you enter 15. However, with this option checked, if you format a cell with the tool before entering 0.15 or 15, it will display 15% in both cases. If you format a cell with the Percent tool after making an entry, it doesn't make any difference whether the option is checked or not. In either case 0.15 will display as 15% and 15 will display as 1,500%.

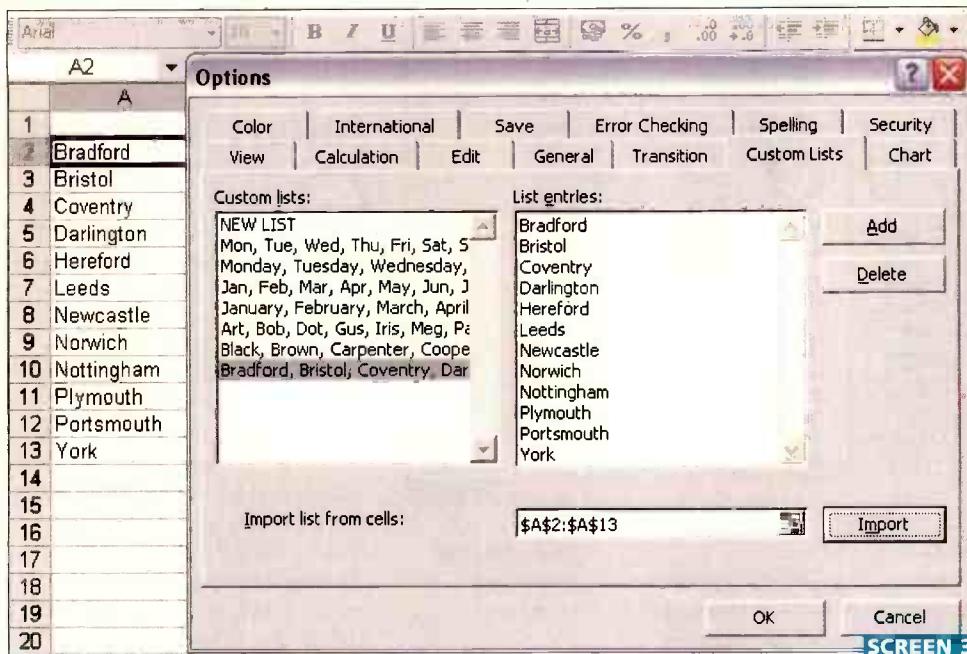
Growing business

Q I currently use Excel 2000 to analyse the performance of my business. I have one row of dates and underneath that I have the sales figures. I've been graphing these figures since 1982. I've now got to the extreme right end of the spreadsheet. I've tried everything I know to add data to the graph, but it simply does not work. Can you help? Martin Cray

How to turn a table around

Paste Special





the other person. They can then open this file, choose the Custom Lists tab under Options on their Tools menu, click the red arrow next to the 'Import list from cells:' box, highlight the displayed list, click the red arrow to return to the Options dialogue box, and click Import, OK. The list is now saved in their Windows registry (under Smartlist) and available in any of their Excel workbooks (see screen 3).

WORD PROCESSING

Lost macro

Q Some time ago you gave us a handy macro that puts the filename and path of a document in the Word title bar. I found this very useful, but have lost it. I'd be so grateful if you could give the details again.

Jean Elliott

A It is possible to do this with a macro, but it needs some fairly complicated code to keep the information current when more than one document is open. An easier method is to go to Tools, Customise. Select 'Web' in the left pane, and from the right pane drag 'Address' on to a toolbar or the menu bar. This will then show the full path of the current document (see screen 4).

Moving words

Q How can I move the Word custom dictionary to a folder of my own choice so I can more easily back it up and synchronise it with another PC?

Martin George

A First, determine the current location of the Custom.dic file, by going to Tools, Options, Spelling & Grammar and clicking the Custom Dictionaries button. If you then select a custom dictionary (there may be more than one), you'll see its



Q How can I share an Excel Custom List with someone else?

Jenny Shaw

A Open a new file and display the Custom List on it. Save this workbook and give it to Show the path on a toolbar

A The simplest solution is to upgrade to Excel 2007, which offers 16,384 columns. The cheapest is to swap your table around. You only have 256 columns, but there's room for 65,536 rows. Copy your table. Go to a blank area of the worksheet sheet and choose Paste Special, Transpose. This will rearrange your table and you can chart it without a problem (see screen 2).

Hidden notes

Q As an alternative to making a note in a cell using a Comment, I believe there is a way to hide a note within a formula.

Peter Johnson

A You can use the N() function within formulas. Its original purpose was to make Excel compatible with other spreadsheets that didn't automatically convert values to numbers. You can use the function to include a note in a formula such as =SUM(D1:D12,N("This year's commissions")). Double-clicking on the cell will display the formula. But if you turn off 'Edit directly in cell' under Tools, Options, Edit, Settings, the reminder can only be read in the Formula Bar, and that can be concealed via the View menu.

Top figures

Q Can you solve a problem with an Excel Roman numerals calculation? I tried it out but can't enter a larger number

A The Help file description of the Roman function clearly states, "If number is greater than 3,999, the #VALUE! error value is returned." But for each millennium, in the case of annual dates, you only need to add the prefix M to the result for an additional thousand years. For example, with 3,921 entered in cell A3, if you enter in another cell =ROMAN(A3)

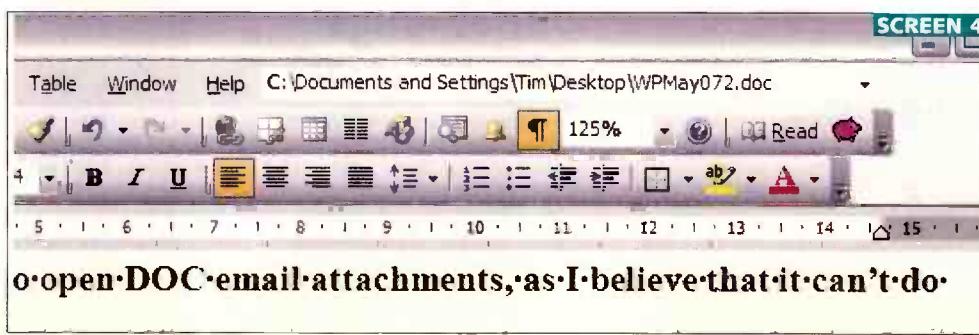
Excel will display MMMCMXXI. For 4,921 simply enter =M&ROMAN(A3) and MMMCMXXI will be displayed.

Share options

Q How can I share an Excel Custom List with someone else?

Jenny Shaw

A Open a new file and display the Custom List on it. Save this workbook and give it to Show the path on a toolbar



o·open·DOC·email·attachments,·as·I·believe·that·it·can't·do·

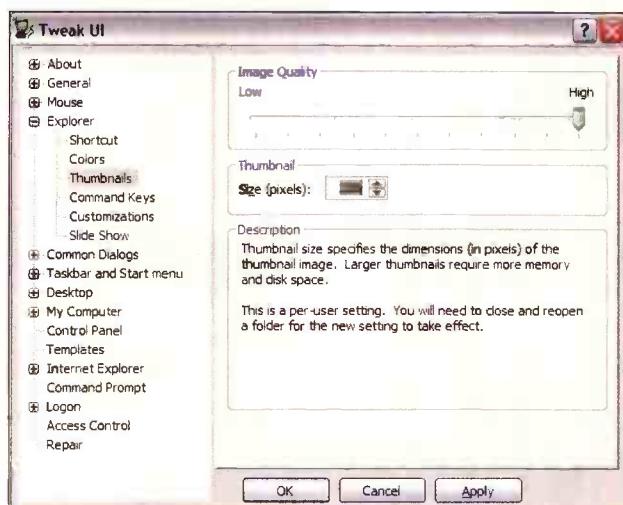
Windows

Q Is it possible to change the size of image thumbnails in Windows XP? I have a large collection of digital snaps and would prefer the thumbnails to be bigger.

Carole Bradley

A Yes, this can be done easily with the XP version of Tweak UI, which you can find at <http://tinyurl.com/2meyw>. It's possible to increase both the quality and the size – up to 256 pixels. There is a trade-off in terms of the disk space and memory taken up by the Thumbs.db files. And since the Filmstrip view uses the same settings, you will find that the selected image appears smaller – in extreme cases smaller than the thumbnails.

Changing the size of thumbnails



location given in the dialogue. Close the dialogue, then in Windows Explorer, copy the Custom.dic file from its current location to your chosen folder. Go back to the Custom dictionaries dialogue, select the Custom.dic you have just copied from and click Remove. Then click Add, and browse to the new location. Select the Custom.dic file you copied to here. OK out of all the dialogues and the job is done.

Cap it all

Q Like many two-fingered typists, I tend to look at the keyboard rather than the screen and often hit the CAPS LOCK KEY BY ACCIDENT AND ONLY REALISE THIS WHEN I NEXT LOOK AT THE SCREEN. I'm using Word 2000 – is there a way of changing all-cap text without having to type it all out again?

Joe Robertson

A If you select the affected text then press Shift & F3, you will find that the text cycles through all lower-case, initial capitals and back to ALL UPPER CASE.

Unwanted tabs

Q When I start a new document in Word 2003 and look for templates on My Computer, I get a dialogue full of tabs for things such as Legal Pleadings, Letters & Faxes, Memos, which I never use. Presumably, these are taking up room on my hard disk, but I can't

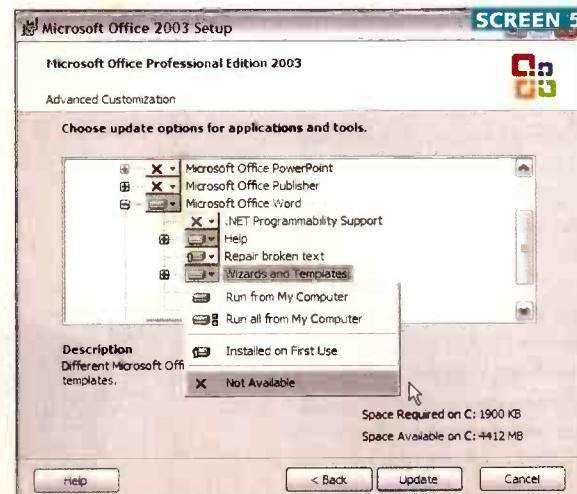
find them. Is it possible to get rid of these?

Gail Dennett

A Thanks to the 'Install on demand' feature, the template files may or may not be on your disk, but you can get rid of the tabs and items in File, New, (and, if present, the files) as follows. Close all Office programs and go to Control Panel, Add/Remove Programs and hit the Change button. Choose the 'Add or remove features' option in the next dialogue, then tick the 'Choose advanced customisation' in the next screen.

In the following screen expand the Microsoft Office Word branch, click on the drive icon next to 'Wizards and Templates', then choose 'Not available'. Click the Update button. When this finishes, restart Word – you'll find all the unwanted templates are gone (see screen 5).

Get rid of unwanted templates



WINDOWS

Speed trap

Q When I click on the ISP connection icon in the System Tray, the window that appears always shows the same speed in Kbits/sec. Is this accurate, because loading web pages seems much slower at times? I often find that closing the connection then reopening it improves things.

Ken Hughes

A Your suspicions are justified. What is shown is just the nominal speed of the connection. If you want to find out what your actual download and upload rates are at any particular time, then you'll find an online tester at www.wugnet.com/myspeed/speedtest.asp.

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Gordon Laing has been a hardware enthusiast since his first Sinclair ZX80 and as a former editor of PCW and contributor for over 10 years, what he doesn't know about technology isn't worth knowing

→ Comments welcome on the Hardware column.
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Please do not send unsolicited file attachments.

To Raid, or not to Raid?

Should you protect your data using Raid? It depends on what you're storing

Our recent articles benchmarking various Raid configurations sparked a debate in the Hands On mailbox. Long-term Raid users defended the technique of using multiple hard disks as the only certain way to protect against disk failure. Others believed Raid was overkill for general users and argued that copying files onto an external hard disk was a much better use of resources.

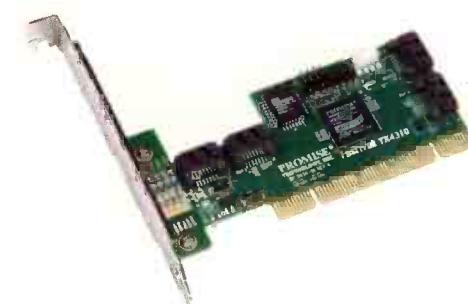
As with all good arguments, there are cases for both sides. Raid can be perfect for some situations, but overkill for others. The important thing is to have some kind of solution in place to protect your data against disk failure. So, with this in mind, we're returning to the subject of Raid, but this time weighing up its pros and cons against simpler solutions to see if it's the right technology for you.

Basics of Raid

In previous issues, we've described in detail how Raid works, so we'll just cover the basics here. Raid stands for Redundant Array of Inexpensive or Independent Hard Disks and, in fact, uses two or more disks to deliver improved performance, reliability or both.

All Raid arrays are managed by a Raid controller, which does the work of distributing the data between the disks and allowing them to be treated by an operating system as a single storage volume. Raid controllers come in many shapes and sizes, and most motherboards now feature one of some description as standard. Alternatively, you can equip a PC with Raid facilities by using an expansion card from companies such as Promise.

Budget Raid controllers provide little more than a number of plugs to connect the hard disks and offload the data management to software running



under your PC's main processor. More expensive controllers feature dedicated hardware to handle the disk and data management to deliver much improved performance. Different Raid controllers also support different types of Raid arrays.

The most common type of Raid arrays are known as Raid 0, Raid 1 and Raid 5. Raid 0 reads and writes data on all disks simultaneously, improving speed and making the full capacity available, but at the cost of reliability – if one disk fails, you lose the whole array. Raid 1 makes an identical copy of one disk on another to provide 100 per cent redundancy, albeit at the cost of half the total capacity and a slower speed than Raid 0.

Raid 5 uses three or more disks and delivers 100 per cent redundancy by writing parity data on all of them. The advantage over Raid 1 is losing only one disk's worth of capacity to redundancy, but the calculation of parity data is complex and delivers poor write performance under software-based controllers. Hardware-accelerated Raid 5 controllers solve the performance

Higher-end controllers such as the Promise EX8350, right, offer hardware-based Raid 5 support. This greatly improves the performance of Raid 5 arrays and reduces the impact on your main processor, but they're more expensive than software-based controllers

Budget controllers such as the Promise TX4310 can equip any PC with Raid capabilities, but most lower-priced models only offer software-based support for Raid 5. This results in higher overheads on your main processor and relatively slow write performance on Raid 5 arrays

issues and can deliver read and write speeds approaching Raid 0, but decent models can cost more than £200.

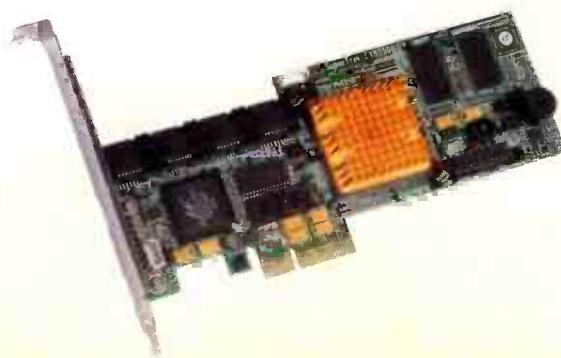
The case for Raid

Since we're talking about protecting your data, we'll dispense with Raid 0 and concentrate on Raid 1 and 5. Once configured by the controller and formatted by your operating system, a Raid 1 or 5 array presents itself as a storage volume, just as a single hard disk would. And like a single hard disk, you can copy files to and from it.

Should everything behave in your system, you won't notice any difference between using a Raid array and a single hard disk, apart from potentially larger capacity and slightly different read and write speeds, depending on the Raid level and the type of controller.

The clever part of Raid kicks in when something goes wrong. Should one of the disks in a Raid 1 or 5 array fail for whatever reason, your data remains fully accessible – and so does any remaining capacity in the array. In fact, as far as how your operating system sees and presents your data, nothing's changed. Life can go on as if nothing happened – except, of course, you now have a failed disk and something needs to be done about it.

The Raid controller, or the software that came with it, will identify the failed disk, allowing you to swap it for a working one. The controller will



then rebuild the array, distributing the data onto the new disk. This can take several hours but it happens in the background, so, once again, there's no disruption, other than a temporary reduction in I/O performance, the degree of which again depends on the Raid level and controller type.

If you have hardware that supports hot swappable disks, you can even swap the broken disk for the new one without having to power-down the system.

This 100 per cent uptime is the key benefit of Raid 1 and 5, which are used by PCs that simply have to remain running all the time, such as mission-critical servers. The question is whether you value your data to the same extent.

As we'll explain in the next section, there are definite downsides to Raid, and if you can tolerate some downtime, there are cheaper, simpler and more efficient alternatives.

The case against Raid

The biggest case against Raid is cost. There's the cost of the controller, particularly if you've gone for a hardware-accelerated model, and the cost of the disks in the array. Remember, with Raid 5 you lose one whole disk's worth of capacity, while for Raid 1 you lose half of your total. It can be pretty galling to splash out on, say, two 500GB disks and end up with only 500GB worth of storage.

Then there are the environmental aspects. Having two, three or even more disks running simultaneously consumes proportionately more power, while generating greater heat and noise. This in turn demands better cooling, a bigger case and heftier power supply. There's also the concern that all these disks are gradually wearing themselves out just to protect you against a moment that may not happen for years. But then that's the catch with any type of insurance.

It's also important to understand that a Raid 1 or 5 array with a failed disk, or even a new one that is currently rebuilding, is in a vulnerable state. Should a second disk fail before the array is rebuilt, you're out of luck and will lose all your data – so you should really see it as dodging a bullet and having a window of opportunity to make things right. More sophisticated versions of Raid, such as level 6, can actually tolerate two disks failing, but they're beyond the scope of this column – for now.



The case for another disk

The popular alternative to Raid is to simply back up your data onto a separate hard disk at regular intervals. There are many benefits to this process, the most obvious being that you're able to use every last gigabyte you've paid for.

Since the backup disk only needs to be connected during the backup process, it's also only powered up for short periods, consuming just the power that's required and not wearing itself out unnecessarily.

Most second hard disks used for backup are external models, which brings the additional benefit of portability. After backing up, you can simply move the disk to a different location, greatly reducing the risk of losing everything through fire, flood or theft. You can, of course, also use the disk to transport the data to different locations.

The case against another disk

The big downside to manually backing up onto another disk is you're only covered up to the point you last did it. So if that was, say, one week ago, and your disk fails, then you've effectively lost one week's worth of data.

Another crucial downside is that until the data has been recovered, you can't access it from the failed disk. This can be a big deal for system disks as your PC will, in effect, be out of action until the recovery process is completed.

Portability is additionally a double-edged sword, as you can more easily lose or damage an external disk, or accidentally transfer a virus onto it while connected to another system.

Verdict

If you absolutely need 100 per cent uptime and constant protection for your data, Raid is the only way to go. While you'd assume everyone falls into this category, there are many situations where it's actually overkill.

Let's say you back up a media collection of ripped CDs and digital photos onto an external hard disk. Should the original disk fail, it may not matter a great deal if you have to wait a few hours while you fit a new disk and transfer the files across from the external backup. And if you needed the data straightaway, you could access it direct from your external disk.

It's also worth noting that most media collections aren't updated on a constant basis. You only tend to update them after buying a new CD or returning from a trip with a camera full of photos. So having a system that in effect performs a constant backup for data which changes infrequently, as in this instance, is unnecessary.

Where Raid becomes invaluable, though, is for data that is being constantly updated, such as emails and documents. Even if you scheduled a backup every night (which would be very conscientious), you stand to lose up to a day's worth of new files and changes to existing ones. This could be intolerable for many businesses. Raid automatically keeps you protected right up to the moment a disk failure occurs, and allows you to continue working through it as you fit a replacement.

It boils down to the degree of protection you're after for your data. Raid may be necessary for mission-critical data protection, but if the files you're protecting change infrequently and some downtime is acceptable, then backing up onto a single disk represents better overall value. Just remember to perform that backup every time the data changes. For more details on the difference between software and hardware Raid 5, see March's Hands On Performance column at www.pcw.co.uk/2173912. PCW





Gordon Laing has been a hardware enthusiast since his first Sinclair ZX80 and as a former editor of PCW and contributor for over 10 years, what he doesn't know about technology isn't worth knowing

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Backup blues

Blu-ray discs have potential for PC data storage

In last month's Performance column, we tested a Blu-ray drive for high-definition movie playback on a PC. Like HD-DVD, you'll need a compatible software player and pretty quick hardware to decode the high-definition video files without dropping frames. If you're using a DVI connection for your display, you'll also need both a graphics card and monitor that support HDCP.

While both Blu-ray and HD-DVD are delivering high-definition pre-recorded content today, Blu-ray has the advantage of drives that can also record data; most HD-DVD drives are currently read-only. This is clearly of interest to PC owners, as Blu-ray could be used to backup and transport a large amount of data on a convenient 5in optical disc. Single-layer write-once (BD-R) and rewritable (BD-RE) discs boast unformatted capacities of 25GB – over five times more than a single-layer DVD, or around 35 times that of a CD. Dual-layer 50GB write-once blanks are also available.

Test configuration

To test the data recording facilities of Blu-ray, we fitted a Sony BWU-100A internal drive to a Core 2 Duo E6700 system. This Sony model, like most Blu-ray drives so far, is an IDE device, requiring an old-style, wide parallel ATA connector on your motherboard. As time goes on, we expect to see the Serial ATA interface adopted on more optical drives.

Most modern writing software applications are already equipped for Blu-ray. We used Nero Premium Reloaded version 7.7.5.1 running under Windows Vista Ultimate, and the program recognised the drive's recording capabilities straightaway.

The Sony BWU-100A was one of the first Blu-ray drives, so it only offers 2x recording speeds. Newer models,



such as LG's GBW-H10N, offer 4x speeds with BD-R discs.

The considerably higher data density of Blu-ray means 2x should correspond to a speed of 8,990 Kbytes/sec. To test this, we burned a BD-RE disc with 40 separate ISO CD images, each of around 650MB. This resulted in 22,951MB of data, which was just under the maximum formatted capacity of the disc.

Nero initially predicted just under three quarters of an hour to complete the task, but readjusted its estimate as time went on, with the last bits eventually written as the clock approached 90 minutes. This worked out closer to half the claimed 2x data rate, which Nero had clearly been using to make its initial estimate. Like all storage devices, the data rate can vary greatly depending on the size and number of files you're writing.

Suitability

As Blu-ray allows you to squeeze 25GB or 50GB onto single- or dual-layer blanks respectively, it will appeal to anyone who wants to back up and transport a large amount of data. But as a relatively new technology, the prices are currently high. You're

looking at over £400 for a drive and £12.50 for a 25GB rewritable blank, which works out at 50p per gigabyte. That's pricey compared with 4.7GB rewritable DVDs, which cost 50p each, or about 10p per gigabyte.

To be fair, this is no different from the situation a few years ago, when DVDs were much more expensive than CDs. Early adopters still have to pay for the convenience of having the highest capacity on a single disc.

Unlike the launch of DVD, though, Blu-ray – and HD-DVD – enter a market where the growth of personal data has exploded. A few years ago, you could back up a lot of data on to a DVD, but today most average media collections far exceed the capacity of even Blu-ray. So while these next-generation formats may offer five times the space of a blank DVD, it's already insufficient for most people.

Hard option

The biggest rival to Blu-ray for storage and backup is arguably another hard disk. You can buy a 500GB model for around £100 today, which works out at 20p per gigabyte, or two-and-a-half times less than Blu-ray costs now. A single 500GB disk can also store the same amount of data as 20 Blu-ray discs and can write the data much faster, too. This makes a big difference if you want to perform a backup on a regular basis.

So, while Blu-ray is impressive, technologically speaking, it needs to fall considerably in price before it'll be tempting to use as a PC storage medium. If personal data collections continue to grow at this rate, though, Blu-ray and HD-DVD may find themselves un compelling for PC data storage and predominantly used for pre-recorded movies. The cost, speed and capacity of a hard disk for data storage is hard to beat. **PCW**

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Tim Nott is a full-time freelance journalist. When he is not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family.

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Sticky business

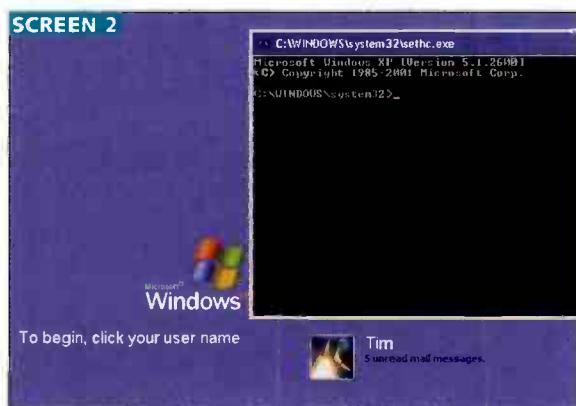
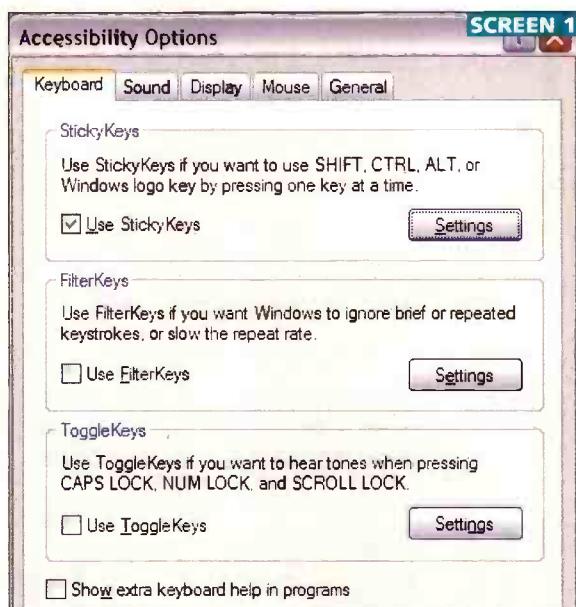
How to improve accessibility and other keyboard tricks with Windows

Last month, we looked at a way to circumvent keystroke logging using the on-screen keyboard. This month, we look at another aspect of the Accessibility options that potentially offers a back door into a Windows XP system. If you go to Control Panel, Accessibility Options and enable Sticky Keys (screen 1), then click the Settings button, you can set a shortcut key so five presses on the Shift key launches Sticky Keys. The idea is that you can access key combinations one press at a time; for example, Shift followed by a letter will capitalise that letter.

A curious thing about this shortcut is that it works at the login screen – you can summon the Sticky Keys dialogue without being logged in. And those five Shift key presses launch a program with the file name `sethc.exe`. Warning bells should be ringing now, as the file `sethc.exe` may be an imposter. For example, if `sethc.exe` is renamed or deleted, and a copy of `cmd.exe` (the command prompt) renamed `sethc.exe`, then tapping Shift five times at the Welcome screen will launch a command prompt, as in screen 2. With a command prompt active, the world is the intruder's oyster. For example, `compmgmt.msc` launched the Computer Management console, where a new user with administrative privileges can be created or a user's password changed.

Way in

The good news is that it is not easy to rename or delete `sethc.exe`. If you try from Explorer or a command console, the XP file protection will create a fresh copy. But, as we saw in May's column, there are ways to access an XP NTFS partition without starting Windows XP, and, in those cases, the file protection won't apply. So there's no real solution to this vulnerability –



you could try removing the Accessibility features, but an intruder could always put them back. The only real answer is the physical securing of unattended PCs.

In December last year, we discussed the strange phenomenon, whereby viewing a file's 'last accessed' time and date stamp via its properties changed that stamp to the present. We showed that even viewing this stamp by other means that didn't 'access' the file or

folder was fairly pointless. So you may want to turn this off altogether. Since the date/time stamp is written (in theory) to disk in two locations each time a file or folder is read, preventing this should make a small increase in performance. Open a command console (Start, Run, cmd) and type:

FSUTIL behavior set <disabledlastaccess 1

(Key: < code string continues)

Note the US spelling of 'behavior'. When you restart the computer, the last accessed time and date will no longer be recorded.

Key killer

Reader Jim James emailed with a keyboard problem. He had "never learned to type properly and do so using mostly the two fingers and thumb from my right hand with the left forefinger hovering over the Shift key". He often hits two keys at once with 'unexpected results', from summoning the help system to starting a second instance of Outlook Express and freezing the system. Was there, he asked, a way to disable keyboard shortcuts. Let's assume Jim wants to keep the Shift key working, rather than emulate E.E. Cummings, who wrote many of his poems entirely in lower case.

A search through the Hands On archives revealed a very old utility that was part of the Windows 95 Kernel Toys. You can still download these from Microsoft at <http://tinyurl.com/10sn>, but the bit we want – the Keyremap utility – only works in Windows 95, 98 and ME. If you're using one of those, it adds a remap tab to the Control Panel keyboard settings, so you can remap (but not disable) the Caps Lock, Left Shift, Ctrl, Alt, Right Ctrl, Alt, Menu and Windows – everything save the left Windows key (screen 3).

If you have a Microsoft (or compatible) keyboard, you can download the Intellitype software from www.microsoft.com/hardware/downloads/default.mspx. This adds a lot of customisability to the keyboard, including disabling Caps Lock (screen 4). But apart from changing the behaviour of the Windows key, it doesn't offer more scope in that dangerous bottom left corner.

We looked at a utility called 'I Hate This Key' back in 2005, and it's still available from www.bytegems.com. However, although it tackles the Windows, Caps Lock and various other keys, it doesn't touch Ctrl or Alt. One way to tackle this – or any other keyboard customisation in Windows 2000 or XP – is to edit the Registry. This particular hack is rather tricky, involving a long string of hexadecimal numbers that needs to be exactly right. So, first create a System Restore point. Second, rather than hitting the Registry directly, it's far less anxiety-provoking to create .Reg files to do the work. First we'll create an 'undo' file. Start Notepad and type in the code below:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Keyboard]
```

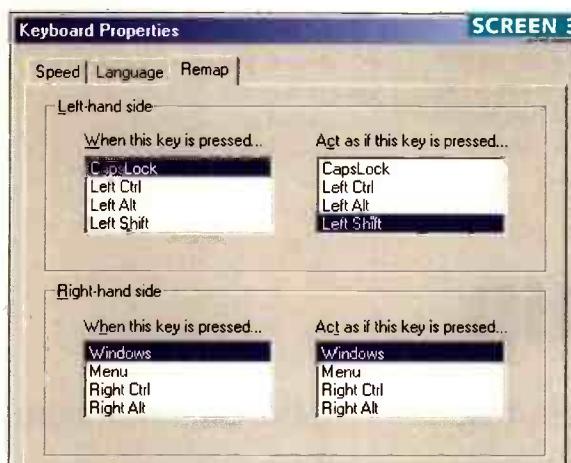
Save this file as UNDO.REG. This is your lifebelt in case anything goes wrong or you change your mind, as it removes all the changes when you merge it into the Registry. Note that both this and the code below will replace any existing Scancode Map value, so if you've used something such as Jason Tsang's Flock to swap the behaviour of the function keys on Microsoft keyboards (see May's Question Time), this will undo it.

Next, create another Notepad file with this code:

Windows Registry Editor

00,00,38,00,00,00,5b,e0,00,00,↵
00,00

Save this as CUSTOM.REG. Each pair of bytes (or word) is delimited by



Left: Remapping the modifier keys – for Windows ME or earlier

could map it to emulate the left Shift key with 2a,00,3a,00. Next, we treat the left Control key (1d,00) similarly, followed by the left Alt (38,00) and left Windows (5b,e0). Finally, the last blank mapping is four pairs of zeroes.

Double-click on the saved CUSTOM.REG to merge it with the Registry. You can check that it has merged by going to the Registry key HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Keyboard Layout and double-clicking on the Scancode Map value. What you see should match our screen 5. As this is an HKEY_LOCAL_MACHINE entry it will affect all users of the PC, so if another user is in the habit of using Control & C to copy text, they will find the selected text disappears and is replaced by a letter c. You will need to reboot the PC for the changes to take effect, as you will if you can't live with it and merge the UNDO.REG file.

Coolsswitch

It's a strange thing – and as far as I know it has been the same since Windows 95 – that if you have a Control Panel item open, it doesn't appear on the Taskbar. Control Panel itself does – though it may be grouped into a single button with other folders – but not the individual modules. This is especially irksome if you are experimenting with various settings and need to return to the module repeatedly. There are several ways round this. One way is to scrabble round the desktop, moving or minimising windows until you uncover the elusive module. Method two is to restore Control Panel and click on the module's shortcut again. This won't launch a new instance, but will find the existing one. If you've got Control Panel showing as a cascading menu rather than a folder, it won't appear on the Taskbar, but the module will be three clicks away via the Start Menu. However, if you right-click on Start, Control Panel when it's configured as a menu, you can still open it as a folder.

The best way is to hold down Alt and press the Tab key, which will produce a small window of icons showing everything that is open – including Control Panel items. Repeat pressing Tab to switch between them. Holding the Shift key down as well reverses the order. **PCW**

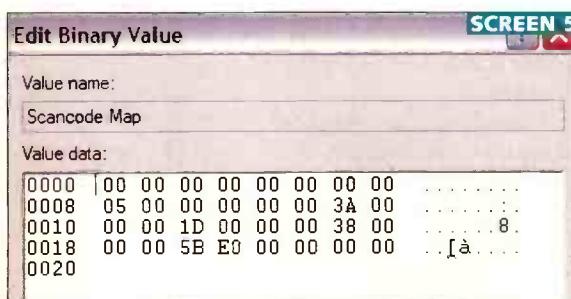


Above: Banish
Caps Lock with
MS Intellitype

commas, and a backslash followed by return and two spaces tells the Registry to ignore the line break and treat the string as continuous. The first eight pairs of bytes are all set to zero. The next four pairs state how many mappings are to be made – there must always be a final blank mapping, so if we want to modify the Caps Lock, Left Control, Left Windows and Left Alt keys this should be 05,00,00,00. Connoisseurs of this sort of thing will note this is a 'little-endian' number.

Below: The
Scancode Map
registry entry

Next come the mappings. Each keycode is two pairs of bytes, and the code for the Caps Lock key is 3a,00. The destination comes before the source, so we map this to do nothing with 00,00,3a,00. Alternatively, we





Barry Shilliday has worked with computers for almost two decades. By day, he is a Linux and Unix consultant, but in his free time he prefers to travel the world – and snap it with his camera.

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Start me up

How the Linux boot process begins – and how to overcome common problems

In recent months, we have looked at some of the booting and filesystem aspects of Linux and PCs, including partitions and image files. This month, we'll take a much closer look at the initial booting process and how to overcome a very common problem associated with removing Linux from a computer that's also running Windows.

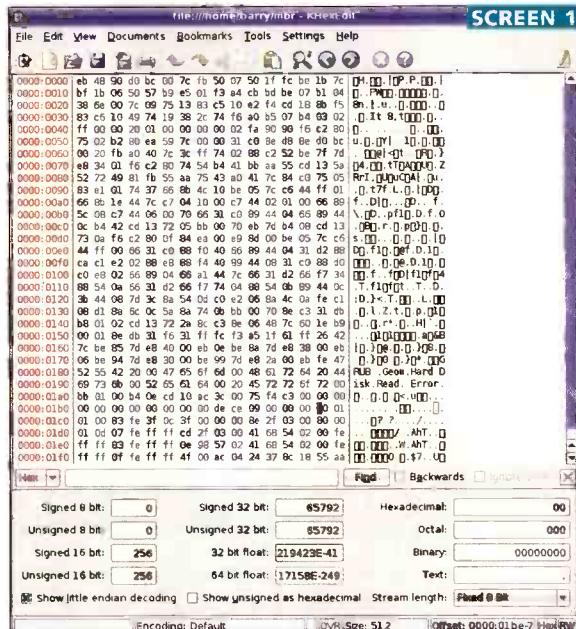
Most of the problems experienced with booting into Linux (or any PC operating system) lie with the Bios, which is an archaic piece of software dating back to the first PCs, and on which Microsoft Dos and older versions of Windows used to rely. These days, the Bios is used largely just to initialise the hardware and start the operating system, but its limitations still have an impact on how operating systems are installed.

After switching on a PC, the Bios must find and start the operating system on the hard drive. To do that, it loads the first sector of the hard drive into memory and executes the code there. A sector is 512 bytes, and is the smallest chunk of data a hard drive handles. This first sector is commonly referred to as the Master Boot Record (MBR) and contains the boot code, together with the disk's partition table.

MBR structure

At just half a kilobyte, a sector isn't a huge amount of space to do anything with, especially when you compare it with a typical 200GB hard drive (around 420 million sectors). It consists of two fixed sections. The first 446 bytes are reserved for executable code and it is this that is executed directly via the Bios on startup. After that comes 64 bytes for the partition table and a final fixed two-byte code to identify the sector as a valid MBR.

We recently saw in Hands On that a



The contents of a typical MBR displayed in hexadecimal. The 64 bytes from the red cursor contain the partition table

by Windows sits, or if Grub is installed, the first stage of the bootloader. In the case of the former, the code performs a very simple task: it scans the partition table for any partition marked as bootable (or 'active' in Dos terms) and then executes that. It cannot do anything else, which is why it's unsuitable for any kind of dual-boot configuration or for starting a Linux kernel. Grub, on the other hand, is a far more versatile piece of software, but as such it needs a lot more space than 446 bytes can afford.

The first stage of the Grub bootloader does little except to locate the next stage. Due to the awkward restrictions imposed by the Bios, a small amount of extra space is available directly after the MBR. If you look at a partition table with Linux's fdisk and set the units to sectors, you will see that the first partition begins at sector 63. You can see this for yourself by running the following command, assuming your hard drive is /dev/hda:

\$ sudo fdisk -l -u /dev/hda

We know that the first sector is used for the MBR, which leaves 62 sectors spare, or 31KB (62x512 bytes). This anomaly is because of the old 'cylinders, heads and sectors' method for locating a position on a hard drive. Starting at sector 63 allows the first partition to start on a cylinder boundary; Linux doesn't worry about this, but it's maintained for compatibility. Grub uses this extra space for its 'stage 1.5' code.

The next stage of Grub must be loaded from a regular filesystem on a partition. Grub can read most

standard PC can have only four primary partitions, and now it may become clearer why: with just 64 bytes available for the partition table, that leaves 8 bytes per partition – just enough to locate each one on the disk, set the filesystem type and bootable flag. Take a look at screen 1 for an example of a real MBR, viewed in a

The Bios is used largely to initialise the hardware and start the OS

hex editor. The final two bytes (0x55 and 0xaa) mark the end of the MBR. The partition table starts at position 0x01be (marked in red in the screenshot):

The fixed structure of the MBR means that only the final 66 bytes (including the 2 byte signature) are necessary for a valid MBR and partition table, since the first 446 bytes are used only for booting. It is here that the common Dos bootloader used

partition types, including the standard Linux ones and Fat. This is where the images for a graphical interface version of Grub are found, too, and where the configuration data for the menu is kept.

On a typical Linux system, this data is found in /boot, which may be on its own partition or part of the root (main) partition.

MBR problems

This multi-stage setup gives a very flexible approach to booting, but also leads to problems if you simply delete Linux from your computer in a dual-boot scenario. If the partition with the second stage is deleted, Grub can't load itself completely, so the boot will fail. All your data is, of course, still present and safe on any other partitions, but there will be no way to boot the computer's hard drive directly without rectifying the problem.

One solution is to restore the Dos MBR that Windows installs. You can do this from an installation CD or by running the **fdisk /mbr** command from a Windows 98 CD. This will replace the boot part of the MBR without modifying the partition table. As above, this code will simply boot the primary partition marked active. Grub ignores this flag, allowing you to boot any partition, primary or extended, from any hard drive. There is an alternative open source install-mbr command for Linux that will install a compatible piece of code instead (see screen 2).



Above: KDE's help centre, showing the main page for **install-mbr**, a command to install a simple bootloader similar to the Dos/Windows version

Another option is to make a backup of your MBR's boot code before you install Grub. The easiest way to do this is from Linux, using the dd command, which we've seen a number of times over the past few months. Since we do not want to modify the partition table, we need only copy the first 446 bytes:

```
$ sudo dd if=/dev/hda <br/> of=boot.bin bs=446 count=1
```

(Key: <code> string continues)

You can write this back to your hard drive with the reverse options:

```
$ sudo dd if=boot.bin <br/> of=/dev/hda
```

No size options are necessary here, since you are writing the entire file to the hard drive. If you have a full backup copy of your MBR, as I have

recommended you always do, you can write the first 446 bytes only using a version similar to the first command:

```
$ sudo dd if=mbr.bin <br/> of=/dev/hda bs=446 count=1
```

This issue presents itself also in the reverse case; if you install a copy of Windows after Linux, it will erase the boot code on the MBR and replace it with the Dos version, preventing you from booting into another operating system. To get around this, back up your Grub boot code before installing Windows, and then rewrite it after the installation is complete.

There are other ways to get around these problems. One method is to use a small separate partition for /boot. If you delete the main Linux partition, Grub's files are still intact and you will still be

Another option is to make a backup of the MBR's boot code before installing Grub

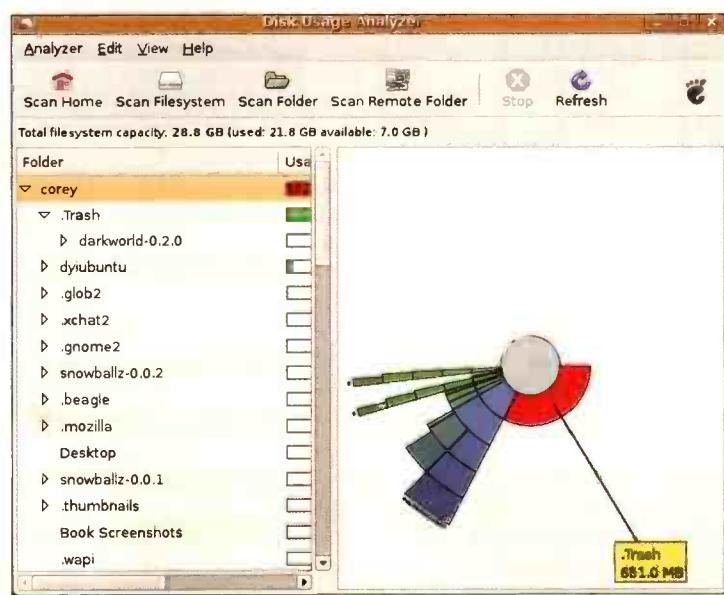
able to boot successfully. Another option is to install Linux onto a primary partition, mark it as active and install Grub onto this partition instead of the MBR. This leaves the Dos MBR in place, which in turn boots Grub.

This is the easiest to maintain, but does require that Grub is placed onto a primary partition so that the Dos boot code can start it. Most distributions allow you to place Grub on the MBR or the root partition at install time. PCW

Feisty Fawn

As you read this, the latest version of Ubuntu Linux, known as Feisty Fawn or version 7.04, will have been released and made available to download. As usual, it comes in three main flavours: Ubuntu with the Gnome desktop, Kubuntu with the KDE desktop and Xubuntu with the lightweight XFCE desktop. The new version has had significant interest during development, with some popular user-friendly features added to make life easier for users and get the desktop up and running as quickly as possible. Following on from a somewhat disappointing Edgy Eft release, Feisty looks set to make much more of an impact, with some very favourable reviews of the development milestone releases. Next month, we will look at the new release, and as we have done previously with Dapper and Edgy, any necessary configuration steps to get the most out of it.

Feisty Fawn includes lots of changes to make getting up and running simpler





Ken McMahon is a freelance journalist and graphic designer. His involvement with digital cameras began with a Commodore 64. He graduated to Macs and now works mostly with PCs.

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Get plugged in

Whatever your video-editing software, there is no shortage of plug-ins

No matter what video-editing application you use, there will come a time when you hit the buffers. You'll know exactly what it is you want, you'll be able to see it in your head, but after several hours – or even days – poring over the help file and attempting different approaches, you'll come to the gut-wrenching conclusion that it can't be done.

For users of Windows Movie Maker, that time may be sooner than for those using, say, Sony Vegas, but the solution is the same – get a plug-in. These can help you achieve the impossible, whether it's producing a complex 3D composite effect or providing a heart-shaped vignette transition.

There are free, cheap and expensive plug-ins that do simple and complex things, and most decent video editors are capable of working with them. Most are produced by third-party developers. In some cases, these are companies that have grown up to serve the film and TV production industry, while in others they are individuals with programming skills and an interest in digital video.

If your video editor costs less than £100, there's a good chance you'll be able to find inexpensive plug-ins for it. If you're a professional and you need a certain tool or effect, price will be less of an issue. I've rounded up some plug-ins for the more popular video editors across the board – from consumer to pro applications and freeware to pro prices. The box gives details of the websites of all the plug-in developers mentioned, and some retailers.

Ulead Video Studio

NewBlue Essentials is a suite of VST-compatible audio tools and filters. Effects include Chorus, which makes an individual voice (or any sound) sound like a chorus of many, delay,



echo, flange, reverb and slap back. Audio plug-ins often provide an array of incomprehensible parameters, but NewBlue has combined these into controls that are easy to use.

The plug-ins are well-designed and fit well with the application interface. Many of the controls are provided with presets, so reproducing the acoustics of a cathedral doesn't require hours of experimentation.

All the NewBlue AudioFX plug-ins – there are also equalisers, production tools, scrubbers and sound benders – cost \$49.95 (around £25), or you can get all five for \$149.75 (around £75).

Boris Factory uses a greyscale image to create 100 transitions, including 3D flying zooms, page turns, particle effects and so on. Boris is well known in the pro video editing world for its Boris Red and Boris Blue 3D compositing, titling and effects applications. While they cost nearly \$1,000 (around £500), this Ulead plug-in is a bargain at \$49.95 (around £25).

After effects

Red Giant produces two Magic Bullet products – Magic Bullet Suite and Magic Bullet Editors. Both of these plug-ins are used to make video footage look as though it was shot on film. Film makers working on tight budgets are often forced to work with (relatively) inexpensive video, but want the results to look like film, which appears softer, smoother, less 'real' and just plain nicer than video.

The first step in this process (unless you are shooting with a progressive video camera, such as the Canon XL-2) is to combine interlaced video frames. Magic Bullet Suite carries out this conversion in addition to all the features in Magic Bullet Editors. The remaining tools are film effects that allow you to add characteristics such as specific colour and tonal attributes, grain, damage and projection artefacts.

Magic Bullet Suite costs \$799 (£400); Editors costs \$399 (£200).

Adobe Premiere Elements

SteadyMove Pro is an image stabiliser. The standard version, with fewer controls, ships with Premiere Pro. At \$470 (£235), it's probably out of the price range of many Premiere Elements users, but there are times when a steady shot is worth any amount of money, and compared with hardware stabilisers, SteadyMove Pro is effective and economical.



SCREEN 3

Other than overall shake reduction, SteadyMove Pro provides additional controls for dealing with specific situations. Panning can be a problem for image stabilisers, which have difficulty differentiating between deliberate and accidental camera movement. The Camera Motion control lets you specify which is which. Smooth Zooming removes sudden zoom changes and cut detection prevents stabilisation across cuts.

Pinnacle Studio

A demo version of Heroglyph is included on the bonus disc with Pinnacle Studio 9 and 10 – it watermarks the results, but otherwise is identical to the full version. To unlock it you need to log on to the Pinnacle website. This plug-in is also available for other video editors – see the box.

Heroglyph is an advanced video titling and text animation editor, but its use goes beyond captions and credits. Its motion paths and masking tools provide the means to produce motion graphics and animated picture-in-picture effects. The plug-in costs €249 (around £170), while Heroglyph Rapid, which doesn't include the customisation or animation and effects controls, costs €79 (about £55).

Windows Movie Maker

In Hands On Digital Imaging and Video, PCW, July 2005, I looked at making SpiceFX. As they are based on greyscale images, Pixelan SpiceFX are easy to produce, so there's no shortage of options (see screen 2). There are 13 SpiceFX packs for Windows Movie Maker, which provide more than 600 individual transitions and effects.

Windows Movie Maker isn't exactly endowed with stunning effects and transitions, so this is an affordable way to make good that shortcoming. SpiceFX is as easy to use

Stupendous software produces a huge range of iMovie plug-ins

as Movie Maker's own transitions and the Pixelan site provides downloadable free demos. Individual packs include from 30 to 99 effects and cost \$14 (£7) for one, with multiple pack discounts. All 13 will set you back \$59 (£30). See the box for other supported editors.

Sony Vegas

New Blue Motion Effects includes 69 effects and seven video filters, which add movement to shots.

Motion blur and zoom blur, like their still image counterparts, add a dynamic edge by blurring the subject. There's also spin blur and wiggle – a ripple effect. As with other New Blue filters, they're well designed and easy to use. Spin blur is typical, with rotary sliders for spin, direction and blend and a drag button with co-ordinate inputs to define the spin centre.

Motion Effects works with Sony Vegas and Vegas Movie Studio and costs £37.80.

Pure Motion Editstudio

Wax is a freeware video compositing and special effects application, and comes in standalone format or as a plug-in for Pure Motion Editstudio, Sony Vegas and Adobe Premiere. You can use it to create 3D animated title sequences, particle effects and for rotoscoping. Wax can create chains of plug-ins with customised parameters that you can apply as presets. The basic installation comes with hundreds of presets and you can add your own.

iMovie

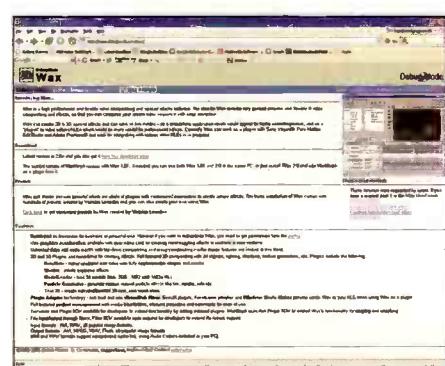
Stupendous software is the place to go for iMovie plug-ins, and the bundle contains all 16 Stupendous plug-in packs. That's a lot of plug-ins, covering titling and transitions, slow motion, dissolves and fades (see screen 3). Given that most people get iMovie free as part of the iLife suite with new Macs, £108.06 might sound a lot, but if you think of it as an alternative to moving up to Final Cut Studio (£899) it looks like a wise move. PCW

Plug-ins – where to look

- Plug-inz.com is primarily a retailer of professional plug-ins for video and 3D modelling applications. www.plug-inz.com
- Bedagi.com has plug-ins for video and still image editing. The focus is mainly on pro applications, but there's also some consumer-level stuff. www.bedagi.com
- Pixelan's well-known Spice range of organic effects and transitions is based on alpha channel masks. There are versions for Adobe, Sony, Avid, Pinnacle, Ulead, Microsoft and Apple movie-editing applications. www.pixelan.com
- Red Giant develops high-end special effects plug-ins for professional digital-video editing. Probably best known for its Magic Bullet plug-in suite, Red Giant's site sells other pro plug-ins including Knoll Light Factory and Trapcode. www.redgiantsoftware.com
- Vasst is a retailer for plug-ins and develops its own for Sony Vegas Movie Studio. These include Gearshift, which converts HDV to Sony 4:2:2 YUV, 24p conversion and produces DV widescreen proxy files for faster editing on slower computers. www.vasst.com
- At New Blue FX you'll find video and audio effect plug-ins compatible with Adobe, Sony, Pinnacle and Ulead video editors. Trial download versions watermark the output. www.newbluefx.com
- Toolfarm has moderated forums and a selection of tutorials. www.toolfarm.com
- Heroglyph is the home of three ProDAD

video effects plug-ins – Heroglyph, Vitascene and Adorage – which work with Adobe, Avid, Canopus, Magix, Microsoft, Pinnacle, Sony and Ulead video editors. www.heroglyph.com

- Stefan Burger's transitions for Ulead Video Studio are all free. There are more than 20 customisable plug-ins, plus the popular Fxbench – a programmable filter extension with 204 predefined filter definitions. www.burgers-transition-site.de
- Satish Kumar's website contains downloads for his freeware compositor and effects application Wax, as well as WinMorph morphing editor, Image Compression Toolbox and FrameServer. www.debugmode.com
- Stupendous does iMovie plug-ins. There are 16 plug-in packs at £13.51 each or £108.06 for the bundle. www.stupendous-software.com



Wax is a fully fledged 3D compositor – and it's free



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→ **Comments welcome on the Word processing column.**
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Ribbons and bows

Word 2007 customisations, and find out how properties can save you time

Over the past 12 months, I have reviewed both Office 2007 betas and the final product. In each review, I have stated, in so many words, that apart from the Quick Access Toolbar, the interface cannot be customised in the way that previous versions could.

This doesn't mean that it can't be done at all. Microsoft has provided RibbonX, an XML-based language for customising the ribbons, but this is intended for developers, rather than end users.

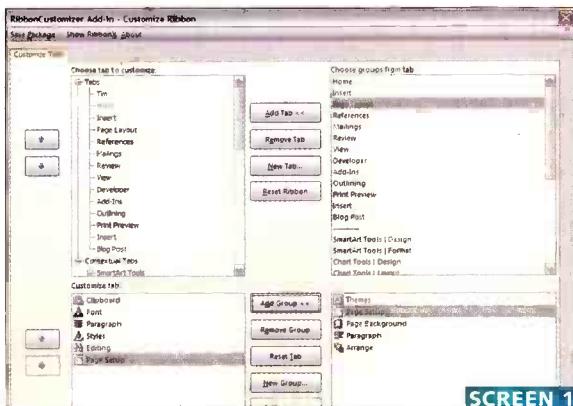
However, one such developer, Patrick Schmid, has produced Ribboncustomizer, which does all the clever scary stuff for us.

You can create your own tabs with personalised ribbons – either using existing groups from other ribbons or creating your own groups and populating them with commands (see screen 1).

You can move groups between ribbons, delete groups and much more. So, if you want the Page Setup group to be part of the Home ribbon, it can be. You can save customised schemes for use on other PCs and view your customisations as RibbonX code.

There are a few limitations – you can't change the order of the existing Microsoft tabs or the order of the groups within them, though you can place your own anywhere among them. You also cannot remove the tab that contains the Ribboncustomizer group, for reasons that should be obvious. Finally, should you make a complete mess of things you can remove all the customisation with two clicks.

You'll find it at <http://pschmid.net/index.php> and you can get a 30-day trial of the full product before deciding whether you want to part with \$29.99 (£15.25), or revert to the free 'starter'



SCREEN 1

edition. Note that you'll also need Microsoft .Net Framework version 2.0 or later – you can download this free from <http://tinyurl.com/8vgak>.

Where are they now?

As well as having many new features, Word 2007 has produced several casualties – features that have been, in Microsoft's words, 'Removed from product'. One such is the Text Effects, such as Las Vegas Lights, Sparkle and the migraine-inducing Shimmer. Since I've yet to meet anyone over the age of 10 who actually likes these, this is probably no great loss. Strangely, text effects created in previous versions are preserved when opened in 2007, and survive being saved in .docx format.

Other features that have fallen by the wayside include speech recognition (now part of Windows Vista), getting pictures straight from a scanner or camera, most of the online collaboration and web tools, script (as opposed to VBA) macros and, famously, the Office Assistant. Since there are no more toolbars, one of my favourites, the function key toolbar, is also a victim of collateral damage. The useful thing about this is not that you can use it with the mouse, but that the button labels show what the various function keys do, and those labels

It can be done – customise the Word 2007 ribbons

change accordingly when you press the Shift, Alt and Control keys or combinations thereof. Microsoft keeps this crib sheet hidden in Word 2003 and earlier. It doesn't appear in View, Toolbars, but if you click on Customise in that menu and turn to the Toolbars tab, you'll find it (see screen 2).

Trussed up

A nasty 2007 shock came when I tried to open a Word document that I had written in 1992. Up came a message saying that I was 'attempting to open a document that was created in an earlier version of Microsoft Office' (hey, well spotted) and that to help secure my computer 'Microsoft or the administrator of this computer implemented a registry policy setting that prevents opening this type of file'.

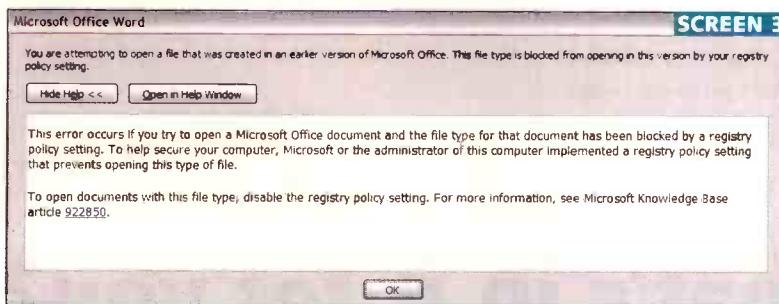
Well, the administrator of this computer – me – certainly hadn't done this. And I could still open the file in Word 2003. So it must have been Microsoft, which had kindly provided a link to a Knowledgebase article.

So, bristling with indignation, I followed the link and found out that Word 2007 'no longer supports documents that were saved in Word for Windows 1 or 2'. A further link gave instructions on how to modify a registry setting to overcome this. This involved creating five sub-levels of registry keys and a DWORD value, which casts into doubt the veracity of a previously implemented registry policy setting (see screen 3).

Fortunately, there is a much easier way. Go to the Word Options and open



SCREEN 2



SCREEN 3

Left: Look out – those Word 1 files are out to get you

Below: Document properties from Explorer

the Trust Centre. Click on the Settings button and choose Trusted Locations from the list on the left. In the right-hand pane you see a list of 'Trusted Locations'. Click the 'Add new location...' button and you can add folders to the list of trusted locations. Lo and behold, if those locations contain Word 1 or 2 files, Word 2007 completely forgets that it no longer supports them and opens them normally. I've added My Documents and all its subfolders to the trusted locations, and so far the attack of the killer Word 2 files has yet to happen.

Hot property

One neglected area of all Word versions is document properties. Once you've saved a file, if you go to File, Properties, you'll get a tabbed dialogue showing the properties. The General tab gives you the file information – size, dates, attributes and so on – just like any other Windows file. The Summary tab, typically, shows only the title – which it takes from the first few words of the document or template – your name, and your company name, if you gave one when you installed Word. Other fields, such as Manager or Category, can be specified in the document template or entered on an ad hoc basis.

The Statistics tab shows the number of words, characters, paragraphs and length of editing time. The Contents tab doesn't appear to do much – it usually just shows the title. But if you check the 'Save preview picture' box on the Summary tab then after you've next saved the document, the Contents tab will show all your level one, two and three headings.

Things get a little more interesting with the Custom properties box. Although there's a ready-made list of suggested custom properties, such as Client, Department or Telephone number, you can specify anything you want. Just type a name, choose a type (text, number, date or yes/no) and give it a value. These custom properties can also be inherited from



SCREEN 4

the template. If you want to be reminded to enter or edit the document properties, there's an option to 'Prompt for document properties' in Tools, Options, Save.

Having gone to this effort, what can you do with these properties? For a start you can access many of them without having to open the file – if you right-click on a .Doc in Explorer,

You can access many properties without having to open a file

then choose Properties, you'll be able to see the Author, Title, Word count and so on, as well as custom properties, such as a telephone number (see screen 4).

Second, a document and its properties can interact in a number of ways. Word fields, for example, can be used to return a property. If you want to have your name appear automatically somewhere in a document without having to bother typing it, Insert, Field, then choose Docproperty. Then, from the list on the right, Author. This is especially useful if your name is Cholmondeley-Featherstonehaugh, but you could achieve the same thing more conveniently with an Autotext entry. However, the same principle applies with any document property, including custom properties (screen 5).

Both built-in and custom properties can also be accessed by macros. To take an example close to home, for every article I write, I have to send an invoice to the relevant publication. So

I need to keep track of what's been invoiced, to which publication, when and for how much. And like most self-employed people, I don't enjoy bookkeeping and bureaucracy.

So, to make invoice management as painless as possible, the templates I use for writing articles have custom properties for the publication name, type of article, invoice amount and so on. You can't access a property that has a blank value, so the numeric properties are all initialised to zero and the text to dummy values.

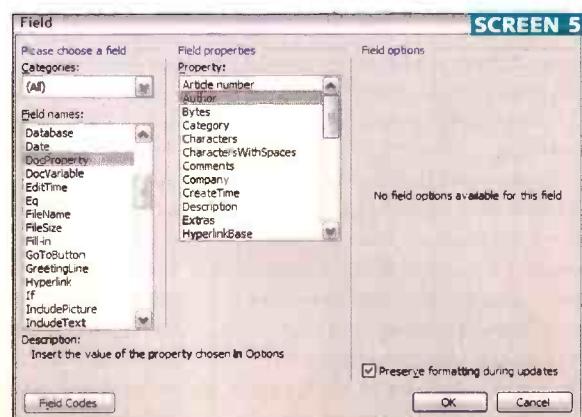
When the article is finished, I run a macro that prompts me to enter the actual values, which are then stored in the document properties. The details also get stored in a table by the macro, and from there it's a simple matter to generate an invoice with another macro.

Although it would be possible to generate the invoice directly from the article, the table method allows an invoice to be for more than one article. The macros took a while to create, but they've saved me hours of drudgery.

You can also link properties to content in the document. Let's say you have a recipient's name in a document. Select this and create a bookmark for it. Now go to Document properties and create a new custom text property called Rname. Tick the 'Link to content' box, then select your new bookmark from the Source box. You'll now be able to insert that same name anywhere in the document from Insert, Field, Docproperty, Rname.

Cynics might argue that copy and paste achieves a similar end, but here's the clever bit. Edit the original bookmarked text and the custom property will update automatically – and subsequent insertions in the document will reflect the change, as will existing instances of the Rname field, once you've persuaded Word to update the fields. **PCW**

Below: Inserting a property into the document



SCREEN 5



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Excel 2007: What's in it for you?

What's new and improved in the latest version of Microsoft's spreadsheet

Bigger is not always better – boils and warts, for example. But with Excel it is. Version 8 (Excel 97) came in a 5.5MB file. By Version 10 (Excel 2002), the file had grown to 9MB. Version 12's file (Excel 2007) is 17.5MB and it is very much better.

Power users will rejoice that an Excel 2007 worksheet now offers 1,048,576 rows by 16,384 columns, where previous versions were limited to 65,536 rows by 256 columns. The number of levels you could undo was 16, but now it's 100. The previous limit of seven nested levels of function has been upped to 64. The Recently Used files list was limited to nine entries and it's now increased to 50.

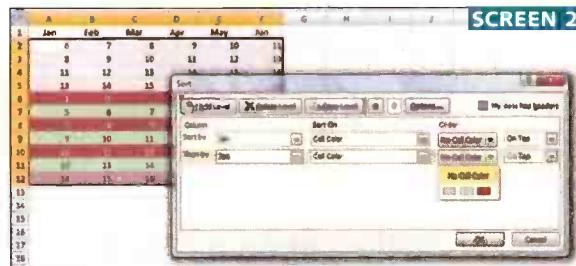
The good, the bad...

Primary schools will like the new built-in Styles, 'Bad' (a pinkish-red font colour and cell background) and 'Good' (a grass-green font and background). They can also select a cell, or highlight a range, and hover the mouse over a choice of Themes, the Fill tool colour chart, or the new

Readers with how-to questions have had their wishes granted

Style Gallery (see screen 1), and the cell or range will preview that Style.

Many readers of this column who have sent me 'How-can-I?' questions now have their wishes granted. Those who have asked about removing duplicate rows in a list will appreciate the new Remove Duplicates Tool under the Data tab. To sort rows by colour doesn't require a work-around any more. In addition to sorting by values, Excel 2007 enables you to sort by font colour or cell



background colour (see screen 2).

In Microsoft-speak: 'The new results-orientated user interface makes it easy for you to work in Excel. Commands and features that were often buried in complex menus and toolbars are now easier to find on task-oriented tabs that contain logical groups of commands and features.'

This may very well be true for those buying a new computer today with Windows Vista and Office 2007 installed. Those who have grown familiar with the traditional Excel toolbars and menus over the years have a lot to learn, though.

In earlier versions, you simply chose Options on the Tools menu to set up your preferences. In Excel 2007, you click on the enigmatic circle at the top left of the screen. This is the new Office icon. It offers Save, Save As and Print options previously found on the File menu. Way down at bottom right of this dialogue box, there is an unexpected Excel Options button. This

Top: Excel 2007 offers a plethora of styles in a colourful interactive gallery

Above: Now you can sort rows in a table by their colour

leads to nine options groups with not very intuitive headings, such as Popular and Advanced (see screen 3).

Where the more identifiable previous groups of View, Calculation and Custom Lists used to be shown on tabs in the Options dialogue box, the links to the new groupings are listed in a panel to the left. Perversely, at the top of the Excel worksheet screen, the menu items which used to be links on a toolbar are now tabs on a ribbon.

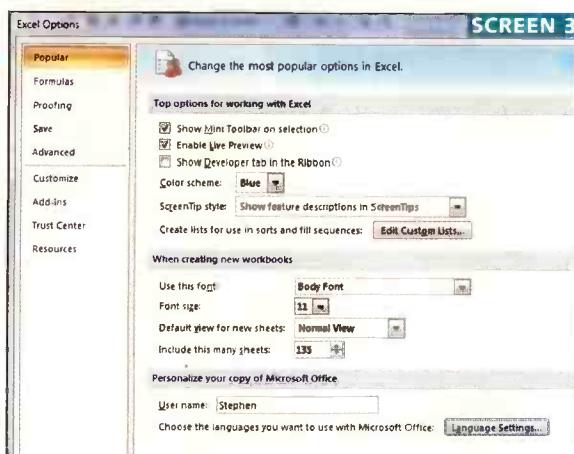
Shortcuts

However, long-term Excel fans will be comforted by the fact that all the familiar traditional keyboard shortcuts still work. Can't find the new Name Manager? Just press the familiar Ctrl & F3, and you can still check spelling via F7. Even the ancient option for Lotus 1-2-3 compatibility is still available. And if you're irritated by the hover feature that displays an example when selecting a Theme, Fill Colour or Style, you can turn it off via the Office icon. Click the Excel Options button, choose Popular and uncheck 'Enable Live Preview.'

Beginners will appreciate the new Autocomplete feature. If you type an equals sign and a first letter of a function in a cell, or the Formula Bar, a drop-down list of likely functions or Names will appear. If you have created a Name, VAT, for example, and you type =V in a cell, the pick-list will offer you functions such as VLOOKUP and VARA, but also the name VAT.

Formatting choices

There are so many new options in Conditional Formatting that I'll come back to it in a future column, but as a taster I'll mention a feature that puts a shaded bar in the background of every cell you select. This data bar's length reflects the value in the cell (see screen 4).



Left: How to choose your options in Excel 2007

Right: Values in a table can be supplemented by data bars

| | A | B | C | D | E | SCREEN 4 |
|----|-------|-------|-------|--------|--------|----------|
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | Sun 1 | Sun 8 | Sun 15 | Sun 22 | Sun 29 |
| 4 | Barry | 4 | 15 | 38 | 22 | 16 |
| 5 | Billy | 50 | 12 | 15 | 24 | 4 |
| 6 | Harry | 68 | 55 | 34 | 13 | 10 |
| 7 | Laury | 25 | 13 | 45 | 56 | 89 |
| 8 | Marty | 33 | 12 | 11 | 58 | 45 |
| 9 | Molly | 35 | 14 | 25 | 36 | 24 |
| 10 | Sally | 12 | 15 | 18 | 34 | 35 |
| 11 | Vicky | 29 | 31 | 47 | 56 | 14 |

Windows has offered style themes for donkeys' years. Now Office has the equivalent – 20 Themes are offered and more are available online. An Excel Theme affects the fonts used for headings and body copy, the colours offered in the Style Gallery and the graphics drawn by Excel's drawing tools. You can create Themes of your own to be available in the current workbook and give them their own names. You can also create a .thmx file for use in other workbooks or to share with others.

New file formats

Speaking of file extensions, a new default one, .xlsx, is introduced with Excel 2007. It uses Zip file compression and splits regular content, pictures and macro code into separate sections, making disaster recovery easier. It also uses XML – eXtensible Markup Language. But you can also save individual files – or all of your files by

default – in the familiar .xls format. If you want to save a file in a version of .xlsx without XML, you can make an .xlsb file. This uses a raw binary form that is faster for saving huge files.

There are a dozen new functions offered in Excel 2007. Those users wishing to analyse a list will appreciate the additional conditions allowed with totalling, counting and averaging functions.

Previously, SUM totalled the values in a list. SUMIF totalled those values in a list that met a condition, such as those numbers higher than 100. But

New functions allow multiple conditions

| | | =COUNTIFS(Condition,"N",Products,A2) | | | | | |
|----|---------|--------------------------------------|------|----------|----------|----------|---|
| A | B | C | D | E | F | G | H |
| 1 | Totals | New | Used | Stock No | Products | New/Used | |
| 2 | Tankard | 5 | 4 | 45896 | Tankard | N | |
| 3 | Goblet | 5 | 2 | 45897 | Goblet | U | |
| 4 | Tureen | 3 | 2 | 45898 | Tureen | N | |
| 5 | Caddy | 1 | 4 | 45899 | Caddy | U | |
| 6 | Beaker | 0 | 2 | 45900 | Beaker | N | |
| 7 | Salver | 0 | 2 | 45901 | Salver | U | |
| 8 | | | | 45902 | Goblet | N | |
| 9 | | | | 45903 | Beaker | U | |
| 10 | | | | 45904 | Tankard | U | |
| | | | | 45905 | Salver | N | |

SCREEN 5

The latest VBA

Visual Basic for Excel has added another decimal to its version number. Version 6.3 came with Excel 2002, 6.4 with Excel 2003 and Excel 2007 has 6.4. The quickest way to open VBA is still by pressing Alt & F11. Otherwise, you click on the Office icon, then the Excel Options button. Select Popular, and then under 'Top options for working with Excel,' check the box 'Show Developer tab on the ribbon.' Back on your worksheet, an additional tab will now be displayed labelled Developer. On the far left of that ribbon is the VBA icon. If you then choose Help, you'll find a totally rewritten Help file starting with separate listings for the Object model changes since Excel 97, 2000, 2002 and 2003. The new How to descriptions are great. They answer most of the questions posed by a beginner macro author, with code examples to copy and paste.

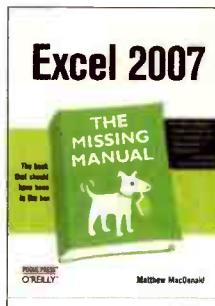
It's all in the book

There hasn't been a proper manual included with Excel since Version 4. Although the Help files in the latest version are commendable, they still require a familiarity with Microsoft terminology.

The Missing Manual series, published by O'Reilly (www.oreilly.com), rectifies that. Excel 2007, by Matthew MacDonald, is a very easy read and a comprehensive tutorial. It is also a handy reference book. You are much more likely to find the answers to your queries via its excellent index than by searching the Help files.

This 832-page volume covers the long-standing features of Excel as well as the latest ones, but it assumes you are using the Excel 2007 interface. More than just a record of the tools, functions and options of Excel, it includes lots of tips on handling dates and times, advanced formula writing, list management, building custom templates, creating charts, Pivot Tables and an excellent introduction to writing macros.

If you are new to Excel or have just upgraded to Excel 2007, this book could save you a lot of time.



The Missing Manual is an invaluable companion to Excel 2007

Excel 2007 adds SUMIFS, COUNTIFS and AVERAGEIFS, which not only let you specify several conditions but can be in other ranges. Instead of a nested two-function array formula such as `=SUM(IF(Products=A2, IF(Condition="N", 1, 0)))`

you can use this (see screen 5). `=COUNTIFS(Condition, 'N', Products, A2)`
(Key: ↵ code string continues)

Both options count the number of instances of the letter N in the range named Condition when the item appears alongside the named range, Products.

The templates that come with Excel 2007 have all been improved. The Timecard and Loan Amortization Schedule templates, previously unchanged since Version 4, have been redesigned. And there are two new ones – a Personal Monthly Budget (though you'll have to reformat from dollars to pounds) and a Blood Pressure Tracker (bear in mind that 120 over 80 is the US guideline, according to the US National Institutes of Health, and 140 over 80 is the NHS-approved guideline). **PCW**



Niall Magennis has been dabbling in Midi and digital audio since the days of the Atari ST. He writes for a number of music magazines and lives in London in a flat overrun with music equipment

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Device squad

Device Panels can help you get your plug-ins under control

Device Panels are one of the most criminally under-used features in Steinberg's Cubase sequencer. They allow you to build your own customised panels for controlling the synths you use with the software.

When Device Panels were first introduced in version 3 of the sequencer, they could only be used to control external synths and modules, but since version 3.0.1 you can also use them to operate software plug-ins.

At first, this may not seem like a big deal. After all, software plug-ins already have their own graphical user interfaces and so are pretty easy to use. This is true, but sometimes these interfaces can be a bit cluttered. As a result, there may be times when you'd rather work with a simpler subset of the controls, so you can quickly jump to the ones you need to tweak.

But as well as this, Device Panels are also of benefit because they can be shown in the extended area of the main mixer and in the inspector section of the arrange window.

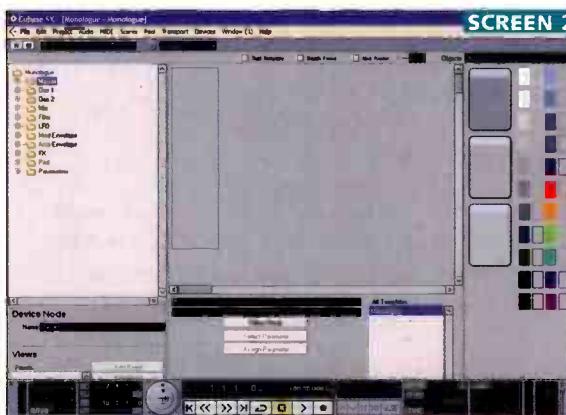
Being able to have speedy access to a synth's controls in these windows can be a great time saver. This is especially true when you're putting together mixes that call for you to be constantly tweaking filter cut-off and resonance controls on the fly to give the track lots of movement.

If you want to put together a Device Panel for an external synth or module, you'll need to familiarise yourself with the synth's system exclusive data, and that's not a particularly easy task (see box).

However, creating Device Panels for software plug-ins is much easier. This is because all the parameters that can be controlled via a Device Panel are automatically labelled in Cubase, so you can just select the controller that you need by name from a list. It really



SCREEN 1



SCREEN 2

is a very simple process to create a device panel from scratch for a software plug-in, so there's absolutely no reason not to give it a go.

Creating a control panel

We're going to take a look at how to build a simple control panel for the Monologue synth plug-in that comes bundled with Cubase. Remember, the control of plug-ins via Device Panels was only introduced in version 3.0.1, so you'll need that version or a later release to follow these steps. Also, Device Panels aren't available to those who use the LE, SE or SL versions of the software.

First, start up Cubase and then

Top: To get started, you need to load the Monologue synth into your instruments rack

Above: The blue outline shows the area in which you can build your panel

create a new project. Once the new project window appears, click on the Devices menu and select VST Instruments to open up the instruments rack. Click on the first box and select Monologue from the list of synths (screen 1).

Now if you have a look in the main arrange window, you'll see that Cubase has added two new tracks: one for the instrument and the other one for the audio output from the instrument. On the first track, there's an Edit button that looks like a keyboard enclosed within a black circle. Hold down the Control key and click on this button to make the Device Panels window appear.

The Device Panels window should

At times, you may prefer a simpler subset of the controls

contain the Device Panels that are available for the currently selected synth, but as you haven't created any yet, it just shows a tree structure along with a button marked Set-Up. Double click on this button to start building a new Device Panel for your synth.

Once the Device Panel editor has opened, you need to begin by clicking on the Add Panel button. Cubase will automatically fill in the name of the panel with the name of your synth, but it'll ask you to choose a size for the panel. As we want it to fit neatly in the mixer window, select the Channel Strip option and then click on the OK button (screen 2).

You'll now see that Cubase has added the blue outline of a channel strip panel to the editing window. This represents the space that you have available for adding knobs and sliders into your panel. You add these knobs and sliders by selecting them in the

right-hand pane and dragging them onto the channel strip outline. To see the available controls, you have to select a category of controller from the Objects menu. Let's start by adding a new knob to the panel. Click on the Objects menu and select knobs from the drop-down menu.

Adding controls

The window below will fill up with various icons. Select the one on the far right of the third row and drag it to the top of the channel strip. Once you drop the knob on the channel strip, a box pops up asking you to select a parameter. Unfortunately, the parameters listed are not ones that we want to use, so click on the Cancel button.

Back in the main window, you can now begin to assign a control parameter to the knob. We're going to use this knob to control the filter resonance of the Monologue synth.

First, click on the knob to highlight it. Next, turn to the tree structure shown in the pane on the left-hand side of the screen. Click on the plus sign beside the Filter entry and then open the Parameters folder. From the list of options shown, click on the Resonance entry to select it (screen 3).

To assign the resonance control to the knob you've already created, just click on the Assign Parameters button in the pane at the bottom of the screen. Once you do this, you should notice that the two boxes above the button change from showing Monologue and Not Assigned to Monologue/Filter and Resonance. To label the knob, double click on the title and enter Resonance.

Now that we've assigned the resonance control, it's time to add a slider to control the filter cut-off frequency. First of all, we need to pick the graphical slider that we're going to use, so click on the Objects box and select Faders from the drop-down list. Next, click on the fader on the far right of the first row, drag it onto the channel strip and drop it just under the Resonance knob.

When you drop the fader on the channel strip, the Control Parameters Assignment box will pop up again, but it doesn't contain the parameters that we want to assign so click on the Cancel button.

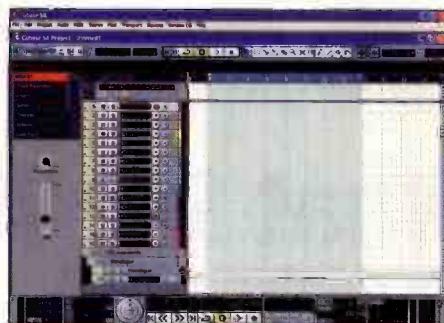
Now click on the fader you've just added to the Device Panel to highlight it and then click on Cut-off under the Filter entry in the tree structure of the

Panels for external synths

It is possible to create Device Panels for external instruments, but it's not a job to be taken on lightly.

Setting up a device panel for an external instrument will involve getting to know its control change commands and figuring out the correct system exclusive data to use. This is hardcore Midi programming and many experts would balk at the thought of undertaking such a task. On top of this, the documentation that Steinberg provides isn't all that clear on how to use SysEx in Device Panels.

If you still want to try your hand at it then your best bet is to seek out information on the net from those who have already gone through the pain of creating their own panels. Perhaps the best place to start is at www.cykong.com/CubaseSX/SXpanels-Tips.htm, where you'll find a lot of detailed information about how to go about creating a panel



Click on the User Panel down arrow to call up the Device Panel in the track inspector

for an external synth from scratch. On this site, you'll also find a number of Device Panels for external synths that you can download. These include panels for the Access Virus A, Roland Juno-106, Kawai K1 Novation BassStation Rack and the Line6 POD.

Below: Use the panel on the left to assign controls to knobs and sliders

Bottom: The Assign button sets the fader to control the synth's filter cut-off frequency

left-hand pane. Once it's selected, you then need to click on the Assign Parameters button in the pane at the bottom of the screen (screen 4).

You've now finished setting up the Device Panel, so close the Parameter Editor and choose Save to store the Panel.

Now it's time to try out the panel that you've just created. First of all,

you need to assign the Monologue synth to a midi track. In the main arrange window, click on Midi Track 1 and then move to the inspector on the left-hand side and change the output to Monologue. Look for the User Panel bar, click on the down arrow and then select Monologue as the entry. This should bring up the Device Panel.

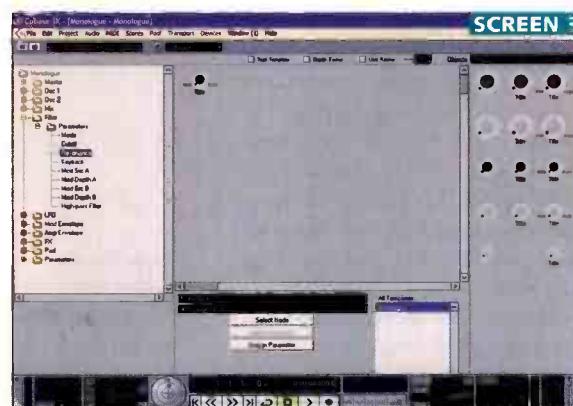
Cubase also allows you to use the Device Panel in the main mixer. To see this in action, open the main mixer window (hit F3) and click on the Show Extended Mixer button. In the top of the mixer pane for Midi Track 1, click on the down arrow and select User Panel. This will cause the Panel for the Monologue to appear in the mixer.

Later changes

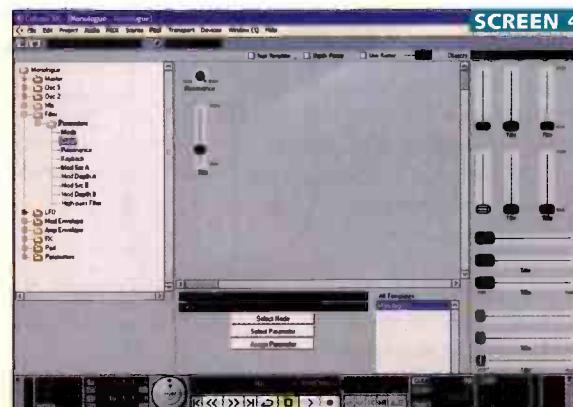
It's easy to edit a panel at a later stage if you find that you need to make some changes to it.

Start by returning to the two instrument tracks in the main arrange window. Then, on the first of these tracks, hold down the Control key and click on the Edit button (the one with icon that shows a keyboard within a circle).

This brings up the list of panels available for the instrument. Double click on the panel you want to edit to open its control window. At the top of this window, click on the edit button and you'll find yourself back in the panel editor, where you can make changes to your panel's layout. **PCW**



SCREEN 3



SCREEN 4



Alan Stevens has implemented and supported networks for over 25 years, working for IT vendors, system integrators and customers. He now mostly researches and writes about networking matters.

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What SSL VPN can do for you

SSL can make setting up a virtual network easier and cheaper. Here's how

Virtual Private Network (VPN) products have never been very cheap or easy to set up. But in the past couple of years, they have become a lot more affordable and, with the introduction of SSL based technology, a lot simpler.

VPN backgrounder

By VPN, we mean the ability to connect to a remote network over the Internet, with the data encrypted to create a secure "tunnel". Traditionally, that involves the use of specialised software to handle not just the encryption/decryption but also the encapsulation of the encrypted data using common tunnelling protocols, the most popular and secure of which is IPSec, short for IP Security.

Using protocols such as IPSec, VPN tunnels can be configured between two networks (site-to-site VPN) or between a network and individual users (site-to-client VPN). Site-to-site tunnels are normally terminated by a hardware device at each end, typically an Internet router or firewall.

With a site-to-client tunnel, however, client software has to be installed on the user PC to handle all the encryption and tunnelling. This software also has to be configured with the correct passwords, keys, digital certificates or whatever authentication is being used, making management a lot more problematic.

An SSL VPN tackles this by taking advantage of the Secure Socket Layer encryption available in Web browsers such as Internet Explorer and Mozilla Firefox – the same technology used to make secure credit card payments when shopping online. Because it's built-in already, there's no need for special client software, although on most implementations you will need to install ActiveX or Java plug-ins and



other agents to take advantage of all the functionality on offer. Still, that's no harder than installing any other browser plug-in, and there's usually very little configuration work required on the client side.

What's involved

SSL-based VPN solutions are designed to provide site-to-client connectivity, rather than site-to-site links and, because they're effectively clientless, are installed centrally. They can be implemented using either software or hardware. Early hardware appliances were expensive, but prices have dropped considerably of late.

A couple I've looked at recently are the Sonicwall SSL-VPN 200, for sale online at around £340 inc Vat, and the Billion BiGuard S10, which retails at around £280 inc Vat. Those prices may seem expensive, especially when compared to ordinary VPN enabled routers, but with those you have to factor in the cost of client management and licensing. And although the SonicWall appliance is solely an SSL VPN gateway, the BiGuard S10 also incorporates an Internet router and a traditional firewall.

Both products can handle up to 10 remote users at a time and are configured and managed through a browser interface.

To connect to the remote network,

Above: The Billion BiGuard S10 incorporates an Internet router and firewall, as well as an SSL VPN gateway

Left: The Sonicwall SSL-VPN 200 is a dedicated SSL VPN gateway designed to sit behind an existing Internet router

you open a Web browser and type in either the IP address of the target SSL gateway or a DNS name pointing to it. You then identify yourself by logging on while, behind the scenes, authentication is managed using either an internal database maintained on the appliance itself or an external service such as Radius, an NT domain, Active Directory or LDAP.

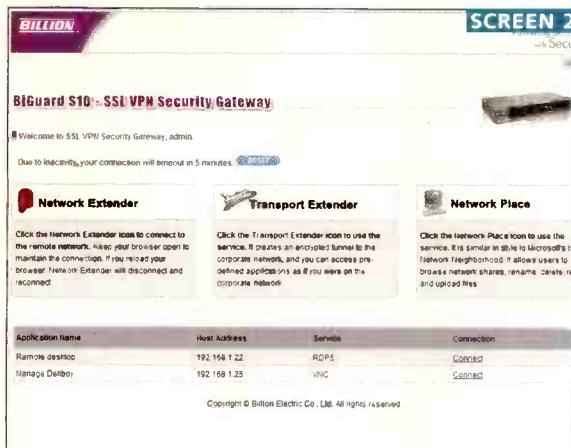
When that's done, you're presented with a portal, through which you gain access to network resources. A typical Sonicwall interface is shown in screen 1, with the GUI for the Billion gateway in screen 2. In both cases, the portal interface can be customised if necessary, for example, by changing the colours and fonts or by adding custom text of your own and logos, although the options on the Billion are somewhat limited (screen 3).

A major advantage of the SSL VPN is the very granular control it gives over what users are allowed to see and do. With a traditional VPN, the encrypted tunnels act like any other network connection, enabling remote users to see more or less what they would if they were connected locally.

Below: Point a browser at the Sonicwall SSL-VPN 200 and this is the kind of portal you'll see

SCREEN 1

The screenshot shows the Sonicwall SSL-VPN 200 interface. At the top, it says "PCW Virtual Office" and "Welcome, alan!". Below that, it says "Welcome to the SonicWALL Virtual Office". It explains that SonicWALL Virtual Office provides secure Internet access for remote users to log in and access private network resources via SSL-VPN technology. It shows a list of users: Alan PC, Alan server 1, and dellboy. For each user, it shows their IP address (192.168.1.100, 192.168.1.101, and 192.168.1.102 respectively) and services (Terminal Services (RDP5 - Active), Terminal Services (RDP5 - Java), and Virtual Network Computing). There are "Import Certificate" and "Add Bookmarks" buttons at the bottom.



Left: The Web portal can be customised, although the facilities on the Billion BiGuard S10 are quite limited in this respect

More than that, such VPN users are free to do as they like, unless other controls and filters are applied to protect individual resources.

With an SSL VPN, the controls and filters can be applied at the gateway itself, giving very precise control over what's possible. On the Sonicwall appliance, for instance, access to resources can be controlled using application bookmarks which are assigned to particular users or user groups, with associated applications only available through the Web portal and not directly from the desktop.

Similarly, on the BiGuard S10, remote users are presented with a customisable menu of applications, accessed through a set of built-in proxies implemented via ActiveX and Java applets. These can be preconfigured and assigned to portal menus on an individual user or group basis with VNC and Microsoft Remote Desktop Protocol (RDP) proxies available to remotely manage servers and Windows desktops.

Controlled access

If necessary, users can be restricted solely to this tightly controlled access, with rights only to specific applications and files via a browser-based portal. But this approach doesn't fit every situation and you're limited to the proxies provided, so both products also allow for unfettered access, with facilities to create the same kind of secure tunnel as a traditional VPN, for general TCP/IP access beyond the confines of the browser.

On the Sonicwall appliance, this involves the use of a so-called NetExtender agent which, in theory, cancels out many of the advantages of using an SSL VPN in the first place. But by clicking on the portal link, users can install the required software

Above: The Web portal on the Billion BiGuard S10 is very similar, with a choice of user authentication methods available

themselves and very little additional setup or management is required.

The same applies on the Billion appliance, with separate network and transport extenders, implemented using downloadable applets. The transport extender can be used to support specific applications, for example to connect Outlook to a remote Exchange server, while the

network extender provides more general Lan access.

There are other, similarly priced, appliances with similar functionality. You can also get software to do much the same job, such as OpenVPN (<http://openvpn.net>) and SSL Explorer (<http://www.sshtools.com>), both of which are open source and available for Windows and Linux. **PCW**

Another way in

A VPN is all very well, but is something of a sledgehammer solution, especially when the nut you want to crack is no more than the ability to connect to your home PC when you're out and about. In that situation, a subscription to a hosted remote control service could be easier and more cost effective.

Several such services are available, of which two of the more popular are Go To My PC (www.gotmypc.com) and Log Me In (www.logmein.com). They're pretty similar. Sign up and you get an account on a server maintained by the host vendor, from where you can download and install an agent onto the PC you want to access. This identifies that PC to the server and, because it's initiating the connection, overcomes issues that might arise from the use of dynamic IP addressing, network address translation (Nat), firewall settings and so on, which would otherwise prevent you from connecting to a remote PC over the internet.

Then all you have to do is open a browser on the machine you're using and log in to your remote access account using the password you've set up. You can then connect to your home PC and transfer files or remotely control the desktop as if you were at home. All the encryption and tunnelling work is taken care of. All you need are the passwords to log on.

Designed for use with Windows PCs, the remote system can be anything with a browser, from Apple Mac, Windows and Linux PCs to PDAs and smartphones. Browser plug-ins are required, but these are cleaned up when you

disconnect and with Log Me In, you can also get client software (Log Me In Ignition) that can be run from a USB memory stick, iPod or other removable storage device, which you can carry about with you, so that there's no possibility of leaving anything behind on a guest system when you leave. Apart from the memory stick, that is, and even then it's useless without the associated passwords to connect to the Log Me In server and the target system.

Although dependent on the bandwidth involved, performance is excellent with both services. The basic Log Me In service is also available free, with subscriptions to more functional versions of Log Me In.

Go To My PC costs around £5 to £12 per month, depending on the number of licences and level of access required.



If you only want to connect to one or two PCs, a remote access service such as Log Me In or Go To My PC is a lot simpler than a custom VPN solution



Mark Whitehorn is one of those lost souls who actually likes databases. He splits his time between consultancy, writing, working for two universities and tinkering with old cars.

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Going to the dogs

A night at the track helps unlock the mysteries of database keys

Pprimary and foreign keys are the glue that holds relational databases together. The primary key contains a unique value for each record in a table and the foreign key in another table can point to that value.

So if, for example, you have a table of orders placed with your company, you would probably use the order number as the primary key column. For a table of cars, you could use either the registration number or the commission number.

Multiple column primary keys
Often the primary key consists of a single column, but it can be made up of multiple columns. For example, suppose that you wanted to store the results of greyhound racing. Each dog can race only once a night at a given track. You might decide to store the date of the race, the track where it was held, the name of the dog, the position it achieved and so on (screen 1). The sample database is on the cover DVD as DBCJUL07.MDB and also at www.pcw.co.uk/2151344.

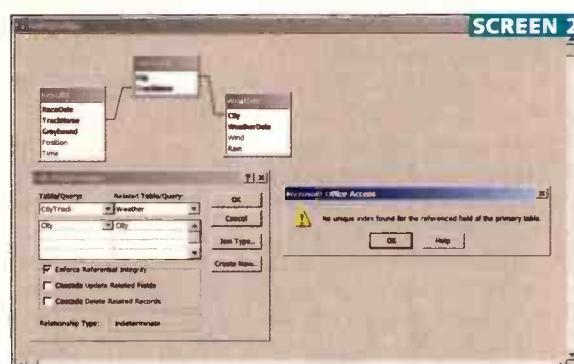
No single field/column contains information that is unique for each row in the table. One option is to add another column, which simply contains a unique number, so that the first row is numbered 1, the next row 2 and so on. This is appealing (because it is simple) and it obeys the letter of the 'rule' for primary keys, which is that every table must have a unique identifier. However, it doesn't obey the spirit of the rule. The rule isn't there simply so that we can comply with it – it's there to help ensure that our data is consistent with reality. Reality, in this case, is that we know that no dog can run more than once on a particular date at a given track.

Selecting a combination of the date of the race, the track and the dog's name

| SCREEN 1 | | | | |
|------------|-------------|-----------|----------|------|
| RaceDate | TrackName | Greyhound | Position | Time |
| 01/01/2007 | DoggyDig | Fred | 1 | 45 |
| 01/01/2007 | DoggyDig | Jim | 3 | 56 |
| 01/01/2007 | DoggyDig | Sally | 2 | 47 |
| 01/01/2007 | Fleethound | Alice | 3 | 55 |
| 01/01/2007 | Fleethound | Billy | 1 | 52 |
| 01/01/2007 | Fleethound | Sally | 2 | 54 |
| 03/01/2007 | GoWhippetGo | Alice | 1 | 45 |
| 03/01/2007 | GoWhippetGo | Billy | 3 | 50 |
| 03/01/2007 | GoWhippetGo | Sally | 2 | 48 |
| 03/01/2007 | NarrowDog | Nuts | 1 | 43 |
| | | | 0 | 0 |

| SCREEN 1 | | | | |
|-------------|-------------|----------|------|--|
| City | WeatherDate | Wind | Rain | |
| Birmingham | 01/01/2007 | Strong | 1 | |
| Birmingham | 03/01/2007 | Gusty | 2 | |
| Birmingham | 06/01/2007 | None | 7 | |
| Carcassonne | 03/01/2007 | Light | 3 | |
| Coventry | 01/01/2007 | Moderate | 5 | |
| Coventry | 03/01/2007 | Strong | 4 | |
| Leeds | 01/01/2007 | None | 9 | |
| Leeds | 03/01/2007 | Gusty | 8 | |
| Leeds | 06/01/2007 | Light | 7 | |
| | | | 0 | |

| SCREEN 1 | | | | |
|-------------|-------------|--|--|--|
| City | TrackName | | | |
| Birmingham | DoggyDig | | | |
| Birmingham | Fleethound | | | |
| Birmingham | HappyHound | | | |
| Carcassonne | NarrowDog | | | |
| Coventry | FastRun | | | |
| Coventry | QuickDog | | | |
| Leeds | DiggyDog | | | |
| Leeds | GoWhippetGo | | | |
| | | | | |



as the primary key ensures that our table can never store two identical events. So our primary key is keeping the table in synchronisation with the rule that we know applies to reality.

For example, the first record in the Results table tells us that Fred ran at DoggyDig on 1 January. Access's primary key constraints will prevent us from entering another result for Jim at the same track on the same date. If the real world had a different rule – perhaps a dog can race several times per night at one track – we could add a field for race number to our table and make it also part of the primary key.

OK, so we now have a Results table

that works well. Suppose we now become interested in the weather and its effect on racing. We start logging the weather for cities, such as Birmingham, where there are race tracks. Since a city can have several tracks, one weather report can cover more than one track. If we hold weather data in a Weather table like the one in screen 1, what would we use as a primary key?

The answer is City and WeatherDate, which ensures not more than one weather report for each city per date. Finally, we need to record which track is in which city, so we have a third table (CityTrack), where a combination of city and track name comprise the

The primary key contains a unique value for each record

primary key, also shown in screen 1.

So the take-home message is that we should pick primary keys that help to ensure the data stored in our tables is consistent with reality.

Foreign keys

Foreign keys are columns in other tables that point to the primary keys. At least, that's true in 99.9 per cent of cases, so if you are learning the basics at present, this is another take-home message – foreign keys point to primary keys.

OK, that concludes the back to basics section but if you've been wondering why I'm suddenly interested in dog racing, it's because these sample files are part of a larger problem sent in by a reader. And, as it happens, the answer I provide to his question illustrates one of the very rare cases where we point a foreign

SCREEN 3

Above: Not the answer we expected

key at something which is not a primary key.

Richard Payne wants to study the effect of weather on dog racing. He is using the tables described here but is having problems getting his queries to run. So let's take a look at why these tables currently fail to work together and then convince them to do so.

The obvious first approach is to create relationships between the tables as shown in screen 2. However, as you can see, although you can set up the joins, you cannot enforce referential integrity.

This may initially seem odd, but Access is behaving entirely logically. Referential integrity requires that the column(s) at the 'one' end contain unique values. A complete primary key is guaranteed to contain unique values but parts of it are not. For example, neither CityTrack.City nor Weather.City contains unique values, so neither can be used to enforce referential integrity.

However, you can still set up the relationships. So what happens if we do that, build a query that links the weather to the race results and run it (screen 3)? We expect 10 rows, one for each result, but we actually get 28. This has nothing to do with referential integrity; the problem is that we are getting multiple weather reports for each result.

For example, Alice only raced once at GoWhippetGo but we are seeing three rows for her at that track. That is because we have three weather reports for GoWhippetGo and our query is showing us all three. We, of course, want only the one for the date upon which she raced. No problem, we simply need another join (which we can add to the query itself or in the relationship editor) and

SCREEN 4

This example is the answer we expected

of this field to be 'Yes (No Duplicates)' (screen 5). This tells Access in no uncertain terms that the values in here will always be unique.

If we now go back to the relationship editor and edit the join between Results and CityTrack, we find that we now can set referential integrity between the two tables. This is perfectly reasonable, but it is worth noting that it is also highly unusual because we have just enforced referential integrity without using a primary key at the 'one' end.

As I said above, mostly we do use primary keys at the 'one' end but, in truth, this is not an essential requirement. The really essential requirement is that the 'one' end must be a column (or columns) that are guaranteed to contain unique data. By setting up the unique index, we have provided this guarantee and so Access will set up the referential integrity.

Now to the issue of City names. It turns out that we don't have any unique list of city names in the database. No problem, we'll add one as a new table called City (screen 6). Now we can allow CityTrack.City and Weather.City to become foreign keys to City.City – which is a primary key. The net result is that we can still run the query about weather and races but we have more control over the quality of the data.

Circular queries

Incidentally, 'circular' queries, like those in screen 4 can sometimes give database engines indigestion, so always test them thoroughly with your database engine of choice. PCW

SCREEN 5

Above: Setting the indexed property for CityTrack. TrackName

'Circular' queries can give database engines indigestion

the query returns the correct information (screen 4).

Now we get the right answer and, within reason, this kind of solution will work, but it is unsatisfactory for several reasons, the most important of which is that there is no referential integrity control over the data that's entered. So I can, for example, add results for tracks that don't exist or weather reports for non-existent cities.

We'll solve the issue about track names first. An important question at this point is do we have, anywhere in the database, a unique list of the track names? In other words, a list where each track name should occur only once? The answer is that CityTrack.TrackName meets this criterion (screen 1). (Note that two tracks have similar, but not identical names.) If we edit the design of this table, we can set the Indexed property

SCREEN 6



Tim Anderson is an IT journalist and software developer, and began writing for PCW in 1993. Since his first Commodore Pet, he has acquired expertise in Rad programming, Windows and the internet.

Comments welcome on the visual programming column. Email visual@pcw.co.uk Please do not send unsolicited file attachments.

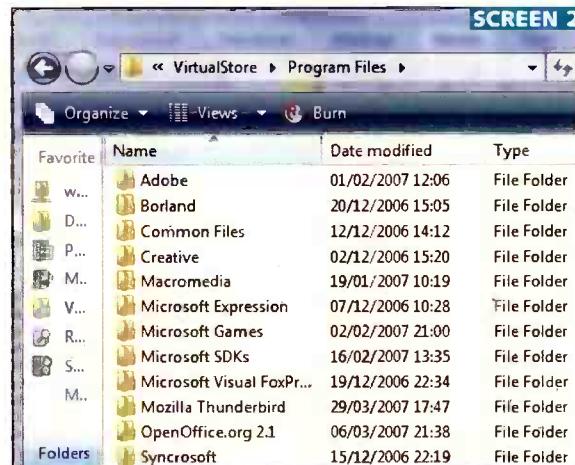
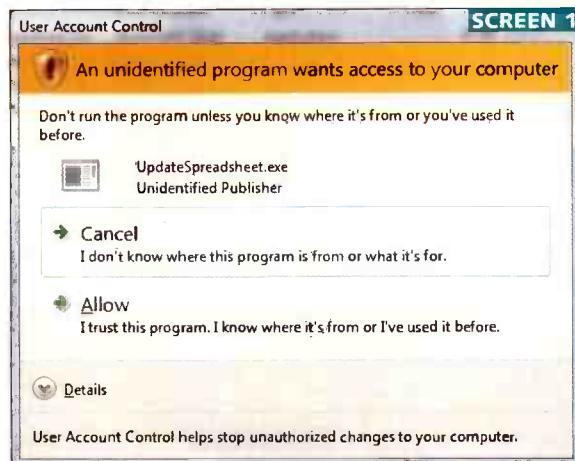
Vista's User Account Control

A look at the changes programmers need to make for compatibility with Vista's UAC

Vista's User Account Control (UAC) may seem like a strange topic for a programming column, but Microsoft designed this feature with programmers in mind. The idea is to force them to build applications that work properly when users are not running with full administrative rights.

Presuming the strategy works, some future version of Windows will be even more locked-down by default. Windows guru Mark Russinovich, who now works for Microsoft, explained this in detail on his blog (<http://tinyurl.com/20054d>). "Windows Vista introduced elevations and Integrity Levels (ILs), even though there is no guarantee your elevated processes aren't susceptible to compromise by those running at a lower IL: [Microsoft wants] to get us to a world where everyone runs as a standard user by default and all software is written with that assumption. Without the convenience of elevations, most of us would continue to run the way we have on previous versions of Windows – with administrative rights all the time."

The essence of User Account Control is that all users run as standard users, with read-only access to system locations such as the Windows directory, Program Files, and the Hkey_Local_Machine section of the registry. This applies even if you are running as a local administrator. On occasions when you need real administrative rights, Vista raises a dialogue on a separate desktop (see screen 1) inviting you to allow or cancel the action. This is called elevation. However, once it is approved, the elevated process runs on the same desktop as the standard user. The obvious danger is that malware running with standard user rights may be able to trick the elevated



process into running malicious code. To prevent this, Vista places restrictions on the extent to which non-elevated processes can communicate with elevated processes. The degree of elevation is called the integrity level, and Vista actually supports four of these: Low is used for Internet Explorer's protected mode; Medium for normal running; High for administrative tasks; and System. Processes running at a higher integrity level are protected to some degree from lower level processes, but Microsoft admits to some compromises.

Top: The public face of UAC is this dialogue box, which only has Allow or Cancel. There is no option to run without elevation

Above: The Virtual Store should be empty, but applications from many vendors turn up there

Another feature of UAC is called virtualisation. This is designed to support applications that attempt to write to system locations. When virtualisation is enabled, which it is by default, the write appears to succeed, but the data is not really written to the system location. Instead, it goes to the virtual store, which is hidden in the user's home folder. By default, this is at C:\Users\yourname\AppData\Local\VirtualStore.

If all your applications are behaving well, this will be empty. Most likely it is not: mine includes folders from Adobe, Borland, Creative, Open Office and Microsoft (see screen 2). The virtual store is ugly. Files written there appear to be in a system location, but only when you run as the user who created them. In addition, elevated processes cannot see the virtual store. There is plenty of potential here for bugs and other unexpected behaviour. The registry also has a virtual area that works in the same way for disallowed registry access.

As Russinovich explains, Microsoft created this elaborate system with one eye on security and the other on compatibility. The aim is to make it feasible to run old applications that require administrative rights, but sufficiently awkward that developers will stop writing applications that need such rights. This is not just about shrink-wrap software, but also the custom applications on which many businesses rely.

Should you just disable UAC? This is an option, but it does compromise security. You lose features such as Internet Explorer's protected mode as well as the elevation dialogue. Furthermore, even if you do disable UAC, it is unreasonable to expect this of other users of your application. UAC has received a bad press in some quarters for displaying too many

dialogues, but the problems are exaggerated. Once a machine is set up, elevation dialogues are infrequent, and they will reduce further still as application compatibility improves.

How to use a UAC manifest

An annoying aspect of UAC is that much of it is automatic. At times this gets silly. For example, Microsoft decided that any application with the word 'setup', 'install' or 'update' anywhere in the name should run with administrative rights. It is easy to call a harmless utility `UpdateSpreadsheet` or something, and then wonder why it is displaying a UAC prompt.

The solution is to make your utility UAC aware, by embedding a manifest. You can use this either to prevent or require elevation for your application.

To embed a manifest in Visual Basic 2005, first create a text file, as in screen 3. You can use Visual Studio for this. The key setting is the line:

```
<ms_asmv2:requestedExecutionLevel
level='asInvoker' uiAccess='false' />
```

Change the value of the level attribute to 'requireAdministrator' if you need to enforce elevation. Save the file as `UpdateSpreadsheet.manifest`, for example.

Now you have to embed the manifest in your application. To do this you need the `mt.exe` tool, which is part of the Windows SDK, a free download. If you have the full version of Visual Studio, `mt.exe` is installed with it. To use it, open a Visual Studio 2005 command prompt, or any command prompt with `mt.exe` on the path. Navigate to the folder where your manifest is saved and run the following command:

```
mt -manifest
UpdateSpreadsheet.manifest -outputresource:bin\Debug\UpdateSpreadsheet.exe;#1
```

Substitute the path to the application for the output resource. The result is no UAC prompt because `asInvoker` was specified. The virtual store is also disabled for this application. If you have the full Visual Studio 2005, you can add the manifest in an automatic post-build step – see Project Properties, Compile, Build events.

Setup hassles

Once you have created your application, you might want to build a setup for it using a Visual Studio Setup

(Key: ↵ code string continues)

project. You can create one automatically using the setup wizard in Visual Studio 2005. This builds a setup file using the Windows Installer technology. On the surface this seems a handy tool, but dangers lurk. The Installer API is among the most arcane and complex in Windows. Everything is fine if you just want to use a single executable, but once you start adding extra files or customising the installation process, there are many potential pitfalls. One of the Microsoft installer team members wrote a document called the *Tao of the Windows Installer*. It contains no less than 69 rules you should observe to create a well-behaved setup. It is true that many of these are not relevant to a simple, non-corporate install, but even trivial tasks can trip you up, especially when combined with UAC.

For example, the Windows installer is designed as a database, the idea being that concepts such as commit and rollback are useful when installing applications. One problem is that many setup routines require procedural logic to accommodate user preferences, or different scenarios such as versions of Windows and upgrades versus new installations. Procedural logic is an uncomfortable fit with the database model. The installer gets round this by allowing for 'custom actions', which are scripts or executables you can fire during the install. Even Visual Studio setup projects allow for these, in the Custom Actions editor.

Now imagine your custom action has to copy some files to Program Files, or make other system changes. Even on Vista, setup routines almost always run with administrative rights, so you would think this would be fine, but this is not so. Custom Actions can



```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<assembly xmlns="urn:schemas-microsoft-com:asm.v1" manifestVersion="1.0">
  <assemblyIdentity version="1.0.0.0" processorArchitecture="X86" name="MyApp" type="win32"/>
  <description>My Spreadsheet app</description>
  <!-- Identify the application security requirements. -->
  <ms_asmv2:trustInfo xmlns:ms_asmv2="urn:schemas-microsoft-com:asm.v2">
    <ms_asmv2:security>
      <ms_asmv2:requestedPrivileges>
        <ms_asmv2:requestedExecutionLevel level="asInvoker" uiAccess="false"/>
      </ms_asmv2:requestedPrivileges>
    </ms_asmv2:security>
  </ms_asmv2:trustInfo>
</assembly>

```

SCREEN 3

An example UAC manifest

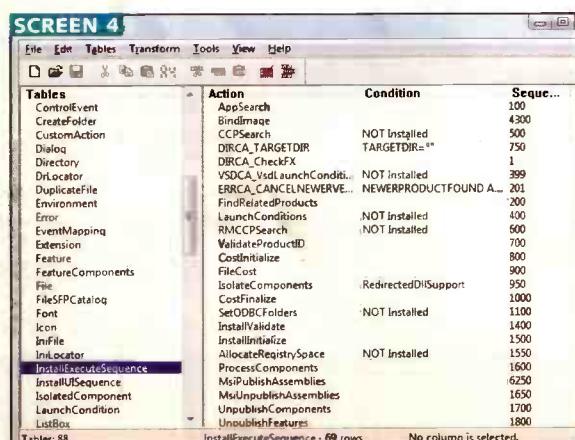
be of two types – deferred or immediate. For various reasons, deferred Custom Actions are generally more useful, so Visual Studio creates these by default. However, they are executed using a feature called impersonation, which means that even though the setup has full rights, the Custom Action has only the standard rights of the current user; they are not elevated. You can overcome this by changing the type of the Custom Action to switch impersonation off, but you cannot do this within Visual Studio. You have to use a clunky tool called Orca (see screen 4), which is a database editor for Microsoft Installer (msi) files, or else use a different setup tool.

Even then there are problems. When you switch off impersonation, the Custom Action runs as System. This means it probably has limited network access. If your users run the setup from a network drive, it may fail.

Also, Custom Actions can be DLLs or executables. It is tempting to make them executables, so they have their own user interface. However, this is not usually a good idea. If your Custom Action displays a dialogue, it may well appear behind the Installer window. Your users will probably think the setup has hung. The solution is to make the Custom Action a DLL, and call functions in the Installer API to display messages and dialogues.

Visual Studio setup projects are not for the faint-hearted. It is best to use other options, such as one-click install, which is the Publish option on the Visual Studio Build menu. Windows Installer is unavoidable in some scenarios, as many Windows management tools assume its use. **PCW**

The Orca utility shows a setup file in its raw database form



Resources

Tao of the Windows Installer:

http://blogs.msdn.com/windows_installer_team/archive/2006/05/01/587990.aspx

Guide to Vista compatibility:

<http://msdn2.microsoft.com/en-us/library/aa480152.aspx>

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- Dual layer DVD±RW, 5.1 audio

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acer

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Warranty: 1 year Fuji warranty

£79⁹⁹ ex VAT £93⁹⁹ inc VAT



FUJI

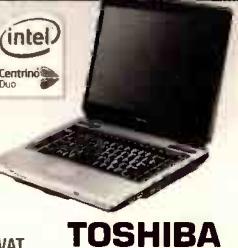
TOSHIBA EQUIUM A100-147

Dual core notebook with multiformat DVD writer and Windows Media Center.

- Intel Core Duo T2050 (1.6GHz) chip
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JVC

SAMSUNG DUPLEX LASER

Fast 24 page minute laser printer with duplex double sided printing.

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Brand new stock, 1 year warranty
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HP PRINTER/SCANNER

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Brand new, 1 year warranty
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Nikon

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PHILIPS DVD RECORDER

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10.00am - 6.00pm
10.00am - 4.00pm
11.00pm - 5.00pm

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Stock & prices subject to change. E&OE

How to buy the best products tested by our Labs

This Buyer's Guide is a comprehensive listing of the best products PCW has tested across a range of areas, helping you to make the best decision when you're planning a purchase. Over the following pages you'll find products, their verdicts and ratings, plus information on where you can read the full review.

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| Digital music players | Routers |
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| DVD drives | |

Prices are for guide purposes only and may be subject to change



HOW TO BUY: PCs

Many of the choices you are faced with when buying a PC are covered in the following pages. You need to think about the graphics card, memory, sound requirements, size and type of hard disk, CD or DVD burner and so on.

Once your budget is set, the starting point is the CPU (central processing unit), because it is the brains of your PC.

Intel and AMD offer a bewildering number of processors. The differences between the CPUs are in technical details that don't necessarily mean much to users. Pricing is also competitive; AMD PCs are generally cheaper than comparable Intel models.

You can still buy budget PCs with older Intel Celeron or AMD Sempron CPUs. These are aimed at undemanding users. If your needs are for word-processing tasks, surfing the web and some low-end gaming or a PC running, either of these processors will suffice. You won't need a huge hard disk - 80GB will be plenty - coupled with 512MB of Ram and a low-end graphics card. You'll be fine with onboard sound, and can expect to pay up to about £400, depending on the monitor. Be wary of running Windows Vista on a low-end budget PC though.

In the mainstream desktop market, it's Intel Core 2 Duo versus AMD's Athlon 64. Both are 64-bit CPUs, but to take full



Evesham Solar 8600GTS

£899 ★★★★
Reviewed July 2007
www.evesham.com

A great value PC with Nvidia's new Geforce 6800GTS graphics.



Evesham Solar Creation

£999 ★★★★
Reviewed April 2007
www.evesham.com

A decent Windows Vista Premium desktop for less than £1,000.



HP Touchsmart IQ770

£1,199 ★★★★
Reviewed June 2007
www.hp.co.uk

It's one of a kind and looks great, but it needs a significant price drop.

advantage of this you need a 64-bit operating system and applications - Windows Vista is available in both 32-bit and 64-bit editions.

More memory can be supported by 64-bit systems - 32-bit Windows or Linux systems are limited to 4GB of Ram, whereas a 64-bit Windows or Linux system can support 128GB. Data is also moved in larger chunks, allowing a theoretical speed advantage.

AMD and Intel offer high-end processors with the Athlon 64 FX and Core 2 Extreme ranges aimed at the hardcore gaming market. Both are dual-core CPUs (the Core 2 Extreme QX models are quad-core). Dual-core processors, in effect, act as two CPUs in one and offer superior performance.

If you're choosing a PC running the above CPUs, other considerations come down to your needs. If you store lots of

music, video or photos, go for a big hard disk - 200GB or above. Memory will help speed up applications, so aim for 1GB or above and don't drop below 512MB. The latest games demand the latest graphics cards, but for most people, cards that were new six to 12 months ago will be powerful enough.

Most new PCs now come with Windows Vista Home Premium. The Home Basic edition offers improved file handling, but you'll miss out on many of the new features. If it's for a small business, or you need features such as remote access, buy the Business edition of Vista. Few PCs are sold running Linux, and we recommend only the technically confident buy such a system. Linux can always be installed later. Finally, don't overlook the monitor, especially if you're using the PC for gaming or imaging. Buy the best you can afford.

BUYER'S GUIDE

78 PRODUCTS
REVIEWED TO MAKE
YOUR BUYING
DECISION EASIER

GRAPHICS CARDS

| | | | |
|---|---|---|---|
| 1 |  | MSI NX8600GT-T2D256E-OC £96 ★★★★★ Reviewed July 2007 www.msi.com.tw | An overclocked DirectX 10 Nvidia Geforce 8600GT card for under £100. |
| 2 |  | Sapphire Radeon X1950 £155 ★★★★★ Reviewed www.pcw.co.uk/2172003 www.leadtek.co.uk | The best bet for AGP users to get decent frame rates in all games. |
| 3 |  | Leadtek Winfast A7300 GT TDH £75.20 ★★★★★ www.pcw.co.uk/2172003 www.sapphiresitech.com | Budget AGP graphics card that performs well at lower resolutions. |
| 4 |  | 3D Fuzion Geforce 7600GS £75.20 ★★★★★ Reviewed November 2006 www.novatech.co.uk | A good value card for those on a tight budget. |
| 1 |  | ECS N8800GTS-320MX £182 ★★★★★ Review: www.pcw.co.uk/2188204 www.ecs.uk.com | Almost all the performance of the 640MB 8800GTS at a much lower price. |
| 2 |  | Asus EN8800GTS £270 ★★★★★ Reviewed www.pcw.co.uk/2172183 www.asus.co.uk | A fast graphics card for gamers and Vista users. |
| 3 |  | Gigabyte GV-NX88S640H-RH £310 ★★★★★ Reviewed www.pcw.co.uk/2171240 www.gigabyte.com | The G80GTX's smaller sibling offers lots of bang for the buck. |
| 1 |  | ECS N8800GTX-768MX £411 ★★★★★ Reviewed April 2007 www.ecs.com | The fastest graphics card we've tested, but you'll need a similarly fast CPU. |
| 2 |  | EVGA E-Geforce 8800GTX KO ACS3 Edition £469.99 ★★★★★ Reviewed May 2007 www.evga.com | An overclocked beast of a graphics card. |
| 3 |  | Foxconn FV-N88XMAD2-0D £397 ★★★★★ Reviewed www.pcw.co.uk/2184289 www.foxconn.com | High-end graphics card, though slightly faster 8800GTX models are available. |

HOW TO BUY

Most graphics cards are based on either the Nvidia Geforce or ATI Radeon family of chips. Each has its strengths and both offer state-of-the-art image acceleration and comparable features.

Performance improves as you move up a range. Top chips offer more features and draw more pixels or textures in a single pass than cut-down, lower-cost options. All current graphics processors are fine for office work, but hardcore gamers favour Nvidia's Geforce 7800 or new 8800 series and ATI's latest X1950 XTX card.

There are usually three clock speeds quoted (in megahertz). Core clock is the internal speed of the graphics processor. Memory speed (or memory clock) is the speed of data transfer between the graphics card's onboard memory and the graphics processor. Ramdac speed is the capability of the digital-to-analogue converter that provides the graphics output from the card.

Graphics cards use their own dedicated video memory to store data, images and textures. The more you have, the better the performance. A card with 64MB is fine for office tasks, but we recommend at least 256MB for the latest games and video applications.

About £40 will buy you a Geforce FX 5700 or Radeon 9550 card with 256MB of Ram, which is good for 2D action/strategy games, image editing and less demanding 3D games.

To play 3D action games smoothly, you'll need to spend around £150 on a graphics card. Serious gamers should consider the Geforce 7800GTX or Radeon X1900 XTX at around £300. If you want top performance, opt for a Geforce 8800GTX, but expect to pay more than £400.

Depending on the motherboard, you'll need an AGP or PCI Express graphics card. PCI Express is the newest interface standard, offering up to double the bandwidth of an AGP eight-speed slot for even faster and more complex graphics. Both ATI and Nvidia offer PCI Express versions of most of their cards. Nvidia also has SLI (Scalable Link Interface) technology, which lets you use two PCI Express graphics cards in SLI-enabled motherboards for ultimate performance. ATI's rival technology, Crossfire, is an alternative.

Look for support for both analogue (VGA) and digital (DVI) displays, and S-video and composite video outputs for use with TVs. Some 'all-in-one' cards have a built-in TV tuner and video-capture options, so you can save money, rather than buying separate cards.

NOTEBOOKS

| | | | |
|---|---|---|--|
| 1 |  | Evesham Voyager C720DC £1,799 ★★★★★ Reviewed July 2007 www.evesham.com | Strong performance and features make this an ideal multimedia workstation. |
| 2 |  | Dell XPS M1710 £1,879 ★★★★★ Reviewed July 2007 www.dell.co.uk | Expensive, but the powerful components make it a perfect entertainment notebook. |
| 3 |  | Sony Vaio VGN-SZ42W £1,199 ★★★★★ Reviewed July 2007 www.sony.co.uk | This stylish notebook has a good balance of performance and price. |
| 4 |  | Rock Xtreme CTX Pro £1,807.75 ★★★★★ Reviewed February 2007 www.rockdirect.com | Rock debuts Nvidia's Geforce Go 7950GTX mobile graphics. |
| 5 |  | ACI Matrix 1500 notebook £1,198.50 ★★★★★ Reviewed May 2007 www.aciplc.com | Solid performance in an uninspiring chassis. |

HOW TO BUY

Notebooks have caught on like wildfire with consumers, thanks to plummeting prices and massive marketing campaigns. However, there are so many options that it's easy to get confused.

Decide why you want a notebook. Is it for occasional use, running some office applications and accessing the internet and email? If so, then almost any low-cost notebook will do the job. If it's for playing games or running video-editing software, look for a notebook with a large 15in/17in screen - possibly widescreen - a high-end Nvidia or ATI graphics chip, 1GB of memory and an 80GB (or bigger) hard disk. In the low-cost arena, Intel

has its Mobile Celeron chip and AMD has Sempron. In the mid-range/high-end space, there are Intel's Core Duo models, while AMD offers Mobile Sempron alternatives.

For the best in performance with power-saving technology, go for Intel's Core 2 Duo or AMD's Turion 64 processors. Intel currently leads the way with its Core 2 Duo models and, if you're looking for top performance, you should opt for one of these.

Any notebook you get should have in-built Bluetooth and WiFi connectivity, an 80GB hard disk drive, 512MB of Ram, 14-15in screen, USB2 or Firewire ports, DVD/CD-RW combo drive and three to four hours' battery life.

MOTHERBOARDS

| | | | |
|---|---|---|---|
| 1 |  | ECS NF650iSLI-T A £74 ★★★★★ Reviewed June 2007 www.ecs.com.tw | A mainstream motherboard with good features and performance. |
| 2 |  | Gigabyte GA-M61VME-S2 £39 ★★★★★ Reviewed Winter 06/07 www.giga-byte.com | Building a cheap, quiet PC for your granny? Job done. |
| 3 |  | ECS RS485M-M £43.06 ★★★★★ Reviewed January 07 www.ecs.com.tw | Good budget motherboard for PC builders with home theatre in mind. |
| 4 |  | MSI K9N SLI Diamond £99 ★★★★★ Reviewed www.pcw.co.uk/2157641 www.msi.computer.com | A passively cooled AM2 motherboard for quiet gaming machines. |
| 5 |  | ECS 945G-M3 £64.40 ★★★★★ Reviewed www.pcw.co.uk/2159498 www.ecs.com.tw | A compact but well-featured motherboard suitable for home-theatre PCs. |
| 6 |  | Gigabyte GA-M59SLI-S5 £99 ★★★★★ Reviewed www.pcw.co.uk/2159804 www.giga-byte.com | An impressive, high-end AM2 motherboard, with decent overclocking capabilities. |
| 7 |  | Gigabyte GA-8N-SLI Quad Royal £99 ★★★★★ Reviewed www.pcw.co.uk/2157092 www.giga-byte.com | A motherboard with four graphics card slots for quad-SLI. |
| 1 |  | Asus M2N32 WS Professional £183 ★★★★★ Reviewed June 2007 www.asus.co.uk | Another top-notch, albeit expensive, Asus motherboard. |
| 2 |  | Asus M2N32-SLI Deluxe Wireless Edition £136.59 ★★★★★ Reviewed www.pcw.co.uk/2156925 www.asus.com.tw | This is one of the new motherboards to support the AMD AM2 socket. |
| 3 |  | Intel D975XB2 £180 ★★★★★ Reviewed February 07 www.intel.com | The first quad-core motherboard from Intel is a good all-rounder. |

HOW TO BUY

The motherboard dictates the type of processor you can use, how well the other components communicate, the features on offer and upgrade potential. Cheap boards limit processor support, graphics and expansion options. Around £70 to £100 gets you the latest technologies.

Most desktop and tower cases use a standard ATX-size motherboard but, if you're building a small system, look at compact MiniATX or MicroATX designs. If using an existing case, make sure you buy the right form factor.

Your choice is also dictated by the processor. The latest AMD processors require an AM2 motherboard, while Intel's new processors will need a Socket 775 model.

If you're using an older CPU, check the socket type and you should find a suitable model available online.

We would recommend an Intel Core Duo/Core 2 Duo or Athlon 64/FX for a good all-round system. Intel sells quad-core processors, such as the QX6700 and QX6800, but until software applications start making use of all four cores you're best off saving your money and leaving these alone for now.

Today's leading chipset manufacturers include Via, Silicon Integrated Systems (Sis), ATI (now

part of AMD), Nvidia and Intel. Many chipsets include integrated graphics. If you're not fussed about gaming or other graphic intensive applications, this can save you a lot of money.

Also consider the number of slots available. If you're looking to install two graphics cards in Nvidia's SLI or ATI's Crossfire mode, you'll need two PCI-Express slots, preferably both x16. Fit dual in-line memory modules (Dimms) in pairs if the chipset supports dual-channel operation.

The latest boards support both older IDE and new, faster serial ATA (Sata) hard disks. Check the number of connectors available for both. Some chipsets provide Raid support, so data can be spread across two drives for extra performance or backups. SCSI controllers can be found on more expensive boards, or can be added with expansion cards.

Also important is the number of USB2 and Firewire sockets for external add-ons. You may need serial, parallel and PS/2 interfaces if using older legacy peripherals. New motherboards should come with onboard Ethernet networking, a built-in 56k modem (useful when your broadband goes down) and onboard sound. Unless you're an audio buff or avid gamer, there's no need to splash out on a dedicated sound card.

HOW TO BUY

There are two main categories of mp3 player: Flash memory-based players, which go up to 8GB; and mini hard-drive based models, up to 80GB. Prices for a 256MB player start from as low as £20, rising to about £250 for an 80GB player. In terms of songs, the difference is the ability to hold around 80 tracks on 256MB player and 20,000 on an 80GB model.

If you want a high-capacity player, you'll probably end up buying a hard disk-based model. Flash-based players have a low capacity, but they're far more resilient since there are no moving parts to damage.

Ensure whatever you buy supports playback in different

formats, especially those with digital rights management (DRM) and variable bit rates (VBR). Many models include an FM tuner and voice recorder, while others serve as a basic PDA with address book, calendar and alarm functions.

In terms of software, most will hook up with Windows Media Player. Apple's range of iPods use iTunes to transfer music.

If you want to playback video as well as audio, pay close attention to the screen size, the resolution and aspect ratio.

Don't forget to check battery life and whether it's possible to replace the battery yourself. Some players don't have removable batteries, which will cause problems should it die.

DIGITAL MUSIC PLAYERS

| | | | |
|---|---|--|---|
| 1 |  | Sony NW-S706 £180 ★★★★★ Reviewed April 2007 www.sony.co.uk | Sony's superbly stylish player threatens to outperform the competition. |
| 2 |  | Sandisk Sansa e280 £149 ★★★★★ Reviewed March 07 www.sandisk.co.uk | Great range of features for a very reasonable price. |
| 3 |  | Samsung YP-T9 £149 ★★★★★ Reviewed May 2007 www.samsung.co.uk | A strong 4GB rival to Apple's Nano. |
| 4 |  | Netac A200 £69.99 ★★★★★ Reviewed www.pcw.co.uk/2162508 www.netac.co.uk | Broadcast your tunes directly to an FM radio with this compact portable media player. |
| 5 |  | Sony Video Walkman NW-A805 £120 ★★★★★ Reviewed July 2007 www.sony.co.uk | Flash-based video and music player with a widescreen display. |

HARD DRIVES

SIDE SECTION HEAD



Samsung Spinpoint T166 HD501J

£95 ★★★★★
Reviewed June 07
www.samsung.co.uk

A 500GB, 7,200rpm Sata drive that's both cheap and fast.



Seagate Barracuda 7200.10 ST3750640A

£271 ★★★★★
Reviewed June 07
www.seagate.com

This Pata hard drive has a whopping 750GB of storage space and spins at 7,200rpm.



Seagate Momentus 5400.3 ST9160821AS

£98 ★★★★★
Reviewed June 07
www.seagate.com

A relatively cheap 2.5in Sata drive with a 160GB capacity and 5,400rpm spin speed.



Samsung Spinpoint M80 HM160JC

£88 ★★★★★
Reviewed June 07
www.samsung.co.uk

This 2.5in 160GB Pata hard drive offers good value for money.



Samsung Spinpoint P120S

£80.11 ★★★★★
Reviewed February 06
www.samsung.co.uk

This isn't the fastest drive on the market, but it is extremely cool and quiet.



LaCie Ethernet Disk Mini 500GB Nas

£259 ★★★★★
Reviewed www.pcw.co.uk/2172135
www.lacie.com/uk

A decent network storage drive with 500GB of disk space.



Western Digital My Book Essential Edition

£149 ★★★★★
Reviewed June 06
www.wdc.com

A stylish external hard drive, but it lacks a network option.



Buffalo Drivestation Duo

£159 ★★★★★
Reviewed www.pcw.co.uk/2171578
www.buffalo-technology.com

Safeguard your data with this portable hard drive.



ATMT Ultra-portable HD160

£240 ★★★★★
Reviewed www.pcw.co.uk/2164467
www.atmt.co.uk

If portability is important to you, and you're not after a lot of storage, this drive will appeal.



Buffalo Ministation HD-PHS40U2/UC

£70 ★★★★★
Reviewed April 06
www.buffalo-technology.com

This 40GB portable hard drive includes shock protection to minimise the risk of data loss.

HOW TO BUY

If you're building a high-performance system, buy the fastest drive you can afford; if you just want lots of capacity, then slower drives offer better value.

OEM or 'brown box' drives are cheaper – this is the bare drive without the extras, such as cables, included in retail boxed versions. The transfer rates in today's Ultra ATA drives are 100MB/sec (133MB/sec for Maxtor drives), while serial ATA (Sata) drives are rated at 150MB/sec. Check the seek times, spindle speed, buffer size and the areal density of the platters (disks).

Usually in milliseconds, seek time is how long a drive's heads take to find data on the disk. The speed at which the spindle holding the disks spins ranges from 4,200rpm for a notebook drive to 15,000rpm for some SCSI (small computer system interface) drives. Generally, faster speeds give better performance.

The larger the buffer (cache), the more recently written or stored data is held in the drive's memory, resulting in less time finding the data on the disk.

Areal density is the amount of data stored on a given area of a drive's platter. The more data per square centimetre (gigabytes per platter), the less

disk movement is required to bring it under the heads.

Originally Integrated Drive Electronics (IDE), then Enhanced IDE (E-IDE), this common parallel interface is usually written as ATA (AT attachment), modified with speed improvements in recent years to Ultra ATA/xxx, where xxx is the peak bandwidth in Mbytes/sec. To differentiate Ultra ATA from Sata, the term parallel ATA is used. Faster Sata drives are more expensive than parallel ATA. Sata uses two pairs of high-frequency cables, working at low voltage.

SCSI drives are technically no different to ATA drives, but support up to 16 devices on a single channel, and you can have multiple channels in a PC. The disadvantage, though, is the price. Most motherboards support RAID (redundant array of independent disks), which connects multiple drives to improve performance or provide fault tolerance.

You may be unable to access the new drive's full capacity. Some older Bioses only support drives up to 137GB. This may be solved by updating the PC's Bios. Retail boxed disks often come with software to fool the Bios into recognising the disk, or you can buy a separate disk controller card, which fits into a PCI slot.

DVD DRIVES

SIDE SECTION HEAD



NEC AD-7173A

£25 ★★★★★
Reviewed www.pcw.co.uk/2170011
www.nec.co.uk

A cheap DVD writer complete with LabelFlash.



HP Dvd940i

£30 ★★★★★
Reviewed www.pcw.co.uk/2172512
www.hp.co.uk

Dual-layer DVD writing with Lightscribe.



Microsoft Xbox 360 HD DVD player

£130 ★★★★★
Reviewed www.pcw.co.uk/2169633
www.microsoft.com

A great way for Xbox 360 owners to sample high-definition movies.



Pioneer DVR-111

£30 ★★★★★
Reviewed www.pcw.co.uk/2153705
www.pioneer.co.uk

A cheap and versatile optical drive.



Toshiba SD-R6472

£83.42 ★★★★★
Reviewed September 05
www.span.com

A slimline dual-layer DVD writer that performs well and is perfect for small form-factor PCs.

HOW TO BUY

Many systems still offer DVD-Rom drives as secondary drives – used for playback of discs only – while a growing number have a DVD writer or rewriter for burning DVDs as the main system drive.

DVD burners can be divided into internal and external drives. Internal drives are cheaper than their external counterparts, but are no good if you want to use them with a laptop. You can opt for one of the external offerings, which can be hooked up simply via USB2 or Firewire.

Most drives are multi-format, meaning they can write to all key media types, so make sure your drive supports DVD+R, DVD+RW, DVD-R and DVD-RW discs. Newer

double and dual-layer drives can write to new discs, which can store 8.5GB versus the 4.7GB capacity of existing discs. This is useful for backing up your DVD movie collection or chunks of your hard drive on a single disc.

The dual-layer drives cost a little bit more than single-layer drives, so are a good investment. The same cannot be said for the cost of dual-layer discs. A branded, dual-layer 8.5GB disc costs around £2.

If money is no object, you could opt for a Blu-ray writer. Although able to write 25GB to a single disc, these drives are expensive at £400. Prices will fall, so we'd recommend holding off for now.

PRINTERS

PHOTO PRINTERS



HP Photosmart Pro B9180

£499 ★★★★★
Reviewed March 07
www.hp.co.uk

A range of powerful features makes this printer a force to be reckoned with.

2



Canon Pixma iP6700D

£149 ★★★★★
Reviewed January 07
www.canon.co.uk

A very competent printer, with the added bonus of an auto-duplex feature.

3



Canon Selphy CP730

£170 ★★★★★
Reviewed January 07
www.canon.co.uk

A simple-to-use dye-sublimation printer that produces good photos.

4



Epson Stylus Photo R360

£149.99 ★★★★★
Reviewed January 07
www.epson.co.uk

A good choice if you want to use an LCD control panel, with great-quality prints.

1



HP Photosmart C6180

£199 ★★★★★
Reviewed June 07
www.hp.co.uk

Although it has substandard text printing, it does everything else very well.

2



Brother MFC-440CN

£179.99 ★★★★★
Reviewed February 07
www.brother.co.uk

A mid-range entry from Brother's new all-in-one range.

1



Oki B2500 MFP

£149 ★★★★★
Reviewed March 07
www.oki.co.uk

Expensive toner, but a low RRP and great print quality.

2



HP Color Laserjet 2605dn

£299 ★★★★★
Reviewed September 06
www.hp.com/uk

An affordable colour laser that would benefit any small business.

3



Samsung CLP-300

£179.99 ★★★★★
Reviewed February 07
www.samsung.co.uk

Samsung combines inkjet-like convenience with laser-quality documents.

4



Brother MFC-8860DN

£527.58 ★★★★★
Reviewed November 06
www.brother.co.uk

Fax, copy, print and colour scanning combined in a laser multifunction device.

HOW TO BUY

If you don't need colour, consider a monochrome laser or LED printer. The latter tend to be cheaper and may last longer than a laser, but LED printers have a fixed resolution and can't take advantage of software-based resolution enhancements.

If you print hundreds of pages a week, a laser is the best option as they're cheaper and more reliable for high-volume printing. If you print a few pages a month, buy a cheap colour inkjet. If printing high-quality colour photos, buy a dedicated photo printer. Look for the manufacturer's quoted 'duty cycle' – this is how many pages a month the machine can handle. Choose a duty cycle three or four times larger than your expected average usage. Also check the printer's 'engine life' or 'total print volume' – when this expires, the printer's on borrowed time and uneconomical to repair.

Quoted printer speeds often refer to the speed the printer pushes a blank sheet of paper through the device; for documents they tend to refer to lower quality settings. PCW's tests use real documents and photos, giving a better idea of print speed.

For serious inkjet photo printing, consider higher-end models that use up to eight

colour cartridges. Normal inkjets use three colours (cyan, yellow and magenta) plus black, while specialised photo printers add extra shades. Cheaper models often combine three colours in a single cartridge, which is not as economical as using separate cartridges for each colour.

Some 'convertible printers' use four separate black cartridges for longer-life mono printing and you can replace three of them with cyan, magenta and yellow cartridges for colour printing.

Laser models for business use often have a large number of paper-handling options. They're usually modular so you can add features as required. They also have a wider range of interface options and consumables. You'll often find bundled software with a printer. Their quality varies, but there can be some useful programs. The quality and usability of the driver software is vital, but it's difficult to assess before buying.

Check PCW's reviews and online forums ([www.pcw.co.uk/forums](http://www.pcw.co.uk/)) and read the manufacturer's technical support site for any known problems. Third-party or refurbished consumables generally work fine, but can cause problems with quality and reliability. Your warranty may not cover the use of non-approved consumables.

HOW TO BUY

Internal TV tuners require a PCI slot. External options connect via USB and are easier to set up. High-speed USB2 is often needed and devices typically require Windows ME, 2000, XP or Vista. Check if you run Windows 98 or NT. A Freeview digital tuner offers the best channel choice, picture and sound, but may need an outdoor aerial or a wideband aerial (you can check at www.freeview.co.uk).

Analogue terrestrial TV tuners may give better results if using an indoor receiver. If a digital tuner receives radio it doesn't always mean digital audio broadcasting (Dab) support. Look for Teletext and subtitle support.

Digital tuners record to disk for maximum quality; analogue signals need to be digitally encoded – look for Mpeg2 hardware for realtime video and audio encoding; cheaper tuners need a CPU to do this in software.

Most analogue systems let you capture video from a VCR or camcorder. Look for composite or S-video connectors and stereo phono inputs. Typically, an hour of Mpeg2 video uses up to 2GB of disk space. VHS-quality Mpeg1 gives just over an hour on a CD. Better TV cards have personal video recorder functionality, letting you pause, fast forward and rewind live TV. They also have an electronic programme guide to record shows to your PC.

TV TUNERS

1



Terratec Cinergy Hybrid T USB XS

£89 ★★★★★
Reviewed June 06
<http://en.terratec.net>

A dual-format USB TV tuner, complete with remote control and portable aerial.

3



Elgato EyeTV

£69.95 ★★★★★
Reviewed November 06
www.elgato.com

A digital TV receiver and recorder for Mac OSX.

4



Twinhan Magic Box

£69.99 ★★★★★
Reviewed August 05
www.twinhan.com

A stylish external USB2 tuner with good software and an attractive price.

5



Terratec Cinergy 400 TV

£89.99 ★★★★★
Reviewed March 05
<http://en.terratec.net>

A PC Card-based analogue tuner with good software. It's a great buy for laptop users.

6



Kworld Dual TV Tuner DVB-T 220

£49.99 ★★★★★
Reviewed October 06
www.kworld.com.tw

This device provides one analogue and one digital tuner at a decent price.

MONITORS

| | | | | |
|---|-------|---|---|--|
| 1 | 20in |  | Sony MFM-HT205 £649 ★★★★★ Reviewed June 06 www.sony.co.uk | An elegant widescreen multimedia monitor, with superb image quality and a built-in TV tuner. |
| 2 | |  | Belinea 10 20 30W £319.99 ★★★★★ Reviewed July 06 www.belinea.co.uk | A high-quality MVA panel with great specifications, but lacks a DVI port. |
| 1 | 19in |  | LG 1960TR £186 ★★★★★ Reviewed July 2007 www.lg.co.uk | Stylish 19in display that boasts an impressive specification. |
| 2 | |  | Hanns.G HX191DP £199.99 ★★★★★ Reviewed June 2007 www.hannsg.com | Budget 19in screen with digital and analogue inputs. |
| 1 | 17in+ |  | LG Flatron L1732P £239 ★★★★★ Reviewed February 06 www.lge.co.uk | Fast response times make this 17in panel a good choice for gamers. |

DIGITAL CAMERAS

| | | | | |
|---|----------|---|---|--|
| 1 | DIGITAL |  | Nikon D80 £699.99 (body only) ★★★★★ Reviewed January 2007 www.nikon.co.uk | Nikon ups the ante with a 10-megapixel sensor, bigger screen and improved functionality. |
| 1 | PROSUMER |  | Fujifilm Finepix S9500 Zoom £469.99 ★★★★★ Reviewed February 06 www.fujifilm.co.uk | A serious contender to entry-level digital SLRs, with a 10x zoom and 9-megapixel CCD. |
| 1 | COMPACT |  | Canon Powershot A640 £329 ★★★★★ Reviewed January 07 www.canon.co.uk | Outstanding image quality and a host of features make for an enticing camera. |
| 2 | |  | Ricoh Caplio R6 £229 ★★★★★ Reviewed July 2007 www.ricoh.co.uk | A respectable point-and-shoot digicam with a wide lens. |
| 3 | |  | Fujifilm Finepix Z5fd £219.99 ★★★★★ Reviewed June 2007 www.fujifilm.co.uk | Fujifilm Finepix Z5fd digital camera. |

ROUTERS

| | | | | |
|---|-----------------|---|--|--|
| 1 | WIRELESS/ MODEM |  | Zyxel P-336M £73 ★★★★★ Reviewed Winter 06/07 www.zyxel.co.uk | Clearly demonstrates that Super G remains a valid choice, as it is both cheap and effective. |
| 2 | |  | AVM Fritz!box Fon WLAN 7140 £129 ★★★★★ Reviewed www.pcw.co.uk/2173339 www.avm.co.uk | A powerful product, yet with excellent ease of use. |
| 1 | WIRELESS |  | D-Link DIR-635 (wireless) £110 ★★★★★ Review: www.pcw.co.uk/2169612 www.d-link.co.uk | A slick, advanced and compact choice of router. |
| 2 | |  | D-Link DSL-G624M £110 ★★★★★ Reviewed March 06 www.d-link.co.uk | Combines Mimo technology with Super G to give faster speeds and extended coverage. |
| 1 | VOIP |  | Intertex IX66+ ADSL Airsip GW (wireless VoIP) £269.08 ★★★★★ Reviewed March 05 www.intertex.se | For a small business needing multi-user VoIP telephony, the Intertex IX66+ is hard to beat. |

HOW TO BUY

Monitor resolution is the number of picture elements (pixels) displayed on a screen. In any TFT or LCD monitor, each pixel is composed of three sub-pixels coloured red, green and blue. The number of pixels equals the 'native' resolution; a 1,024x768 TFT will have exactly that number of pixels horizontally and vertically. Users wanting 1,600x1,200 will probably need an expensive 20in model - most 19in panels are currently limited to 1,280x1,024.

Modern TFTs can be viewed from a wide range of angles vertically and horizontally, but anything over +/- 45° makes no

difference in normal use. Response time is the time taken for a pixel to reach maximum brightness. Some newer monitors now have response times as low as 4ms, but 12-25ms is typical.

The ISO 13406-2 standard specifies minimum requirements for display contrast, viewing angle, brightness, reflections, flicker, contrast and defective pixels. ISO 13406-2 has stringent standards for defective pixels. Only Class I TFTs are guaranteed no defective pixels - most consumer models are Class II. Some manufacturers offer dead pixel guarantees with Class II TFTs, so check the policy before you buy.

HOW TO BUY

In general, the higher the megapixel count of a digital camera's sensor - and the bigger the sensor's physical size - the more detailed the images. A small sensor and high megapixel count won't always produce better image quality. Four to five megapixels is good for 8x10in or larger prints. The quoted 'effective' pixels number is the camera's true megapixel resolution.

Forget digital zoom and concentrate on the optical zoom, which zooms in on the subject and produces a better-quality image. Digital zooms simply crop

into the centre of the picture. Look at the selection of automatic or preset picture modes for standard shots, portraits, night shots and landscapes, plus macro modes for close-up photography.

Movie modes are not as good as a basic camcorder, but are fine for short clips to play on a PC. Most offer 15fps (frames per second), but some are 30fps, which means the video will be smoother. Keen photographers will want manual controls for aperture and shutter priority, focusing and white balance. Cameras should also provide quick access to image quality, resolution and format settings.

HOW TO BUY

The router is at the heart of any home network. Costing less than £100, they are an inexpensive way to take advantage of being able to share information between the computing devices in your home. A router is a simple networking device to which you connect your PCs and notebooks using a network cable. They often include built-in firewalls and other security measures, making them ideal for protecting your PCs from intruders. The router connects to your broadband modem, as long as your modem uses an RJ45 Ethernet connection - most

routers don't support USB modems. Special broadband routers, also called ADSL gateways, come with built-in ADSL modems. If your broadband is provided via a cable company's set-top box, you should buy a standard router without a built-in modem. Once hooked up, your devices can share broadband as well as swap data. Wireless (Wifi) routers are increasingly popular in the home market, allowing devices to connect to the internet and each other remotely, without the need for cables - but wireless routers usually have network (Ethernet) ports to let you connect non-wireless devices.

PRODUCT INDEX

Below is a list of every product reviewed by PCW over the past three months, to help you find the full reviews quickly and easily in your back issues.

Key: ★ Editor's Choice ★ Recommended ★ Great Value All scores are out of five

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USB2.0, Front Audio, 4x Rear USB2.0,
2x SATA Raid 0,1
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512MB DDRII 667 Kingston
6 Channel On-Board Sound Card
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x1, 1x Parallel, 2x Front USB2.0, 4x Rear
USB2.0, 4x SATA Raid 0, 1, 1x Firewire
AMD Athlon 3600+ Dual Core Skt AM2
512MB DDRII 667 Kingston
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4x Rear USB2.0, 3x SATA Raid 0, 1
AMD Athlon 4200+ Dual Core Skt AM2
1GB DDRII 667 Kingston
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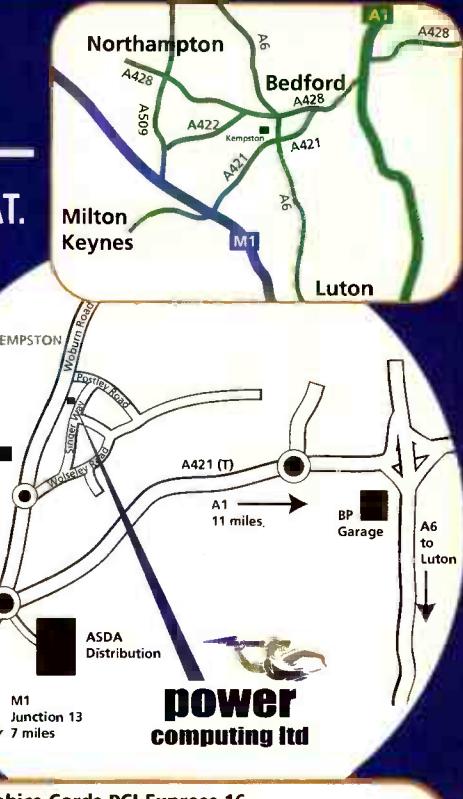
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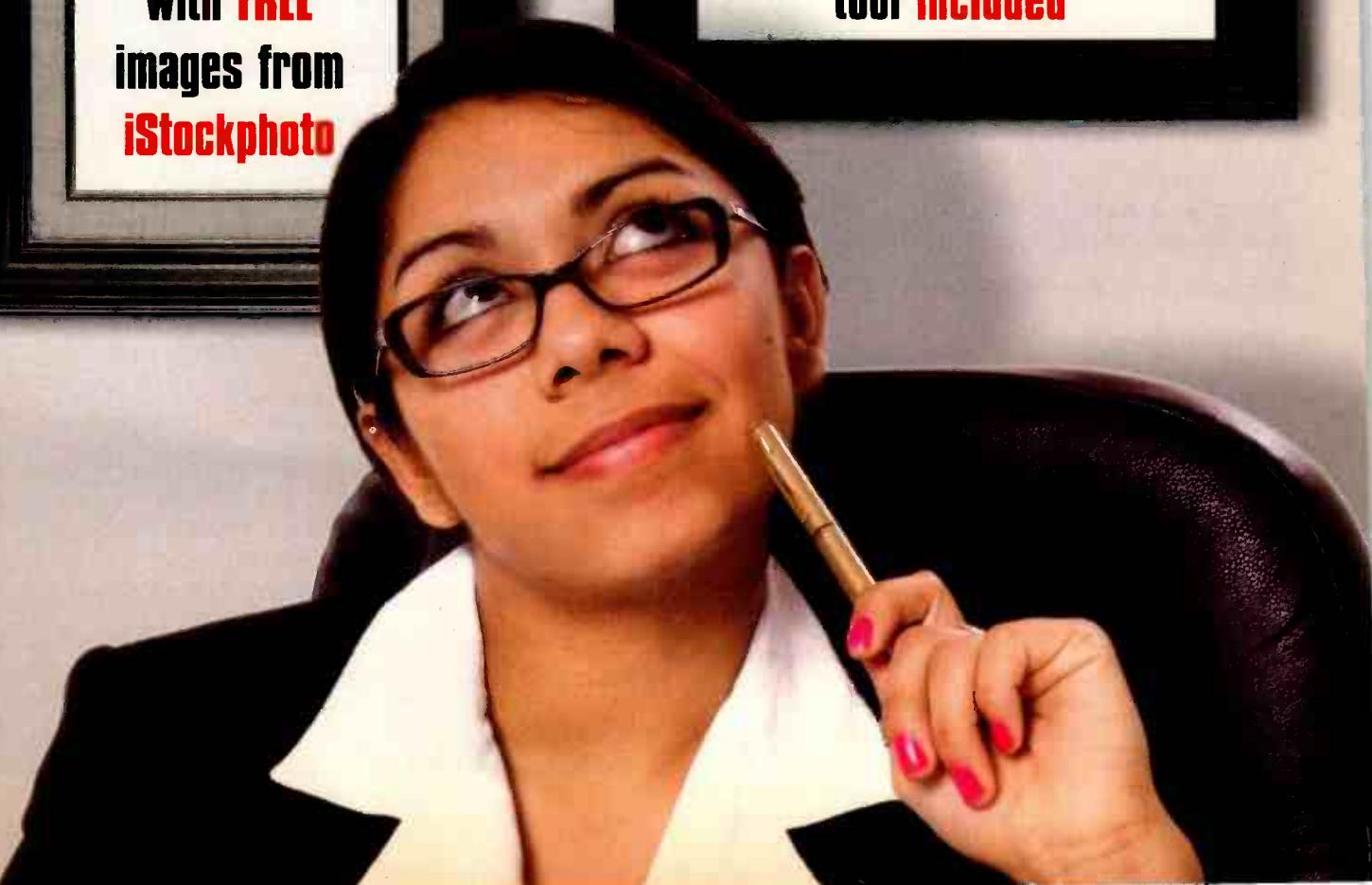
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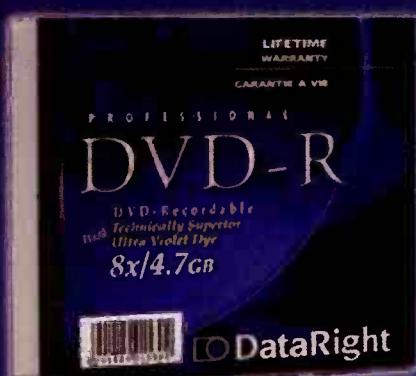
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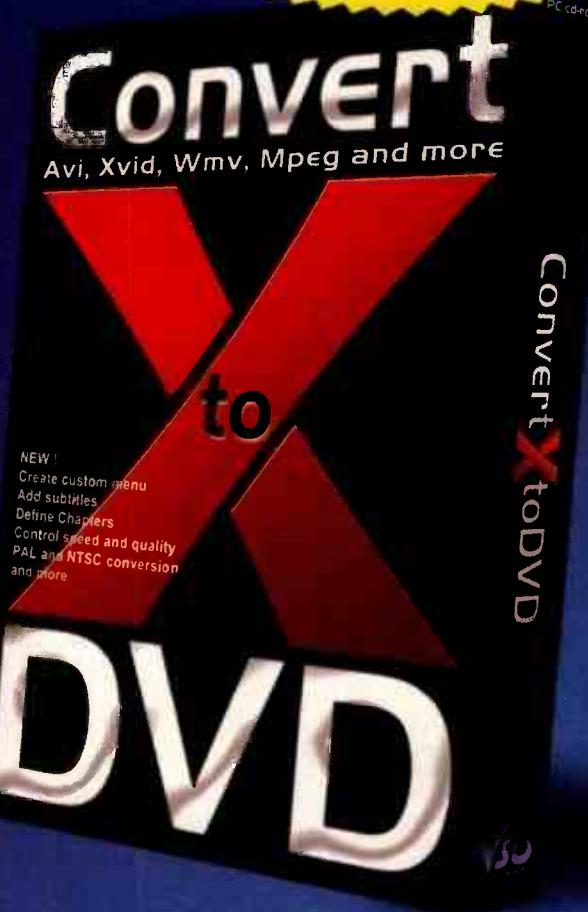
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ON THE CD

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Stuffit Standard 9.5
 Paragon Partition Manager 8.0 Personal
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 Sam and Max Episode 5
 Reality 2.0
 Shrek the Third

USING THE COVER DISC

The PCW cover disc uses a web-browser-style interface. To get full functionality, you'll need to use Microsoft Internet Explorer (version 5.5 or later).

Unfortunately, Netscape doesn't properly support this software. However, we have also provided links to the featured programs so you can still copy them to your hard disk or install them manually (the standard download dialogue box will appear). Programs can be found in the \software\ folder on the disc.

STARTING THE DISC

The CD-Rom (or DVD) should auto-start. If it doesn't, double-click the CD-Rom/DVD icon in My Computer or open the terms.htm file on the root of the disc.

PROBLEMS?

Please note that we cannot give support on individual programs contained on this disc. If you have problems running the disc or any of its content, please note these guidelines:

FAULTY DISC

If the disc is physically damaged and will not load, return it to this address for a replacement: PCW July 2007, cover disc ABT, First floor, 13 Clifton Road, Southend on Sea, Essex, SS1 1AB quoting reference: 'PCW Vol 30 No 8'.

PROBLEMS INSTALLING/RUNNING THE SOFTWARE

Check the support page on the disc or check the manufacturer's site.

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Call 08700 885 995 (9.30am to 5pm Mon, Tues, Thurs & Fri; open until 8pm on Wed and 10am to 2pm Sat). Or go to www.vnusupport.co.uk or email us at pcw@vnusupport.co.uk.

For software requiring registration, PCW cannot guarantee that serial codes will be available later than three months from the on-sale date of the magazine. Please avoid disappointment by registering your software promptly.

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SIX PAGES OF DISC INFO INCLUDING

- PRODUCT DESCRIPTIONS
- WORKSHOPS
- UPGRADE OFFERS
- KEY FEATURES
- CONTACT DETAILS
- NEED TO KNOW



INFORMATION

System requirements Windows 2000/XP,

30MB disk space

Contact www.stuffit.com

Registration Get your serial code from www.allume.com/cgi-bin/freeallume.cgi?standard95-vnu using the magazine code VNUSIT95

Stuffit Standard 9.5

Throw away your tired old file compression program

When you first get a digital camera it feels like you're saving a lot of money, with no film to buy or processing fees to pay. And there's some truth in that, but you soon realise there are other costs; in particular, that of storing your ever-increasing photo collection on a hard drive, CDs or DVDs. Is there any way to regain control and recover some of your disk space? Maybe — if you install Stuffit Standard.

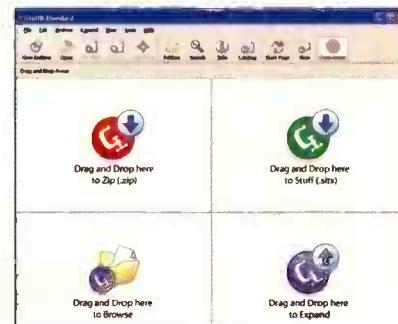
At first glance Stuffit might seem like any other archiving program. But there's a lot more to it than that. It can open a huge range of files: along with Zip and Tar, the program can also handle Arc, Cab, Iha, Gzip, Rar and other archive formats, along with files encoded in internet formats such as Base64.

Mime, yEnc. Opening or creating archives is as easy as a drag and drop.

The best part of Stuffit comes when you use its own archive format, though — Stuffit X. While most Zip programs are poor at compressing Jpegs, saving you one or two per cent at best, Stuffit X can reduce their file size by up to 30 per cent. And that's not an unrealistic maximum, either: we picked 10 large Jpegs at random, and Stuffit compressed them by between 21 and 28 per cent.

In a particularly thoughtful touch, you don't even have to extract images from the archive to view them. The program will, by default, create thumbnails of Jpegs as they're added to a Stuffit X archive, and these are viewable from the main Stuffit screen instantly.

Cut your digital photo disk space requirements by up to 30 per cent



1 Stuffit Standard produces great archiving results from the moment you install it, but if you really want the smallest possible file size then there's more you can do. Click Edit > Advanced Format Options > Stuffit X first, and set the compression level to the maximum 16. And if you don't need Jpeg thumbnails, then click Jpeg and clear the Create Thumbnails box.

2 You could now click New Archive, then browse to various folders to add your digital photo collection. But there's an even easier way. Click Drop Areas and you'll see four targets that can be used to create Zip or Stuffit X archives, browse or expand archives. Use Explorer to select the Jpeg photos you'd like to archive, then drag them onto the Stuffit X target to create your file.

3 Click 'Same as original' to create an archive in the same folder as your chosen images. Drag and drop the Sixt file you've built onto the Expand target, if you'd like to see its contents, and click Archive > View Thumbnails for easy visual navigation of your Jpegs. However, don't forget, it compresses every other type of file, too, usually much better than Zip can do.

UPGRADE OFFER

NEW FEATURES

- Office 2003/2007 integration
- Compress Powerpoint 2007 documents
- Create 256-bit encrypted Zip files
- Build self-extracting Stuffit archives
- Optimised for multicore CPUs
- Compress and burn to CD/DVD

50 PER CENT OFF STUFFIT 11.0 DELUXE

The latest version of Stuffit integrates neatly with Microsoft Office 2003/2007, enabling you to compress documents as you work. And special optimisations for Powerpoint 2007 ensure you'll see better results than ever before. New features include the ability to create 256-bit encrypted Zip files, or self-extracting Stuffit archives. It's possible to compress and burn archives directly to CD or DVD, with no other disc-mastering software required, and Stuffit is now optimised for multicore CPUs to deliver even better performance. Best of all, this industry-strength archiving tool can be bought for £9.99 — half the list price. Find out more at www.allume.com/store/upgrades.html.



INFORMATION

System requirements Windows 98/Me/2000/XP/2003 Server, 40MB disk space

Contact www.paragon-software.com

Registration Click Registration during installation, or visit <http://registration.paragon-software.com/pmpers/>

Need to know Not compatible with Vista

Partition Manager 8.0 Personal

Create, move or resize partitions quickly, and with no loss of data

Partitioning your hard drive can help optimise the use of disk space, give performance a boost, or create a dual-boot PC, perhaps allowing you to install Windows Vista alongside your current XP setup. Just don't use Windows built-in partition tools to do the job, as they somewhat inconveniently wipe the data from your drive. You're much safer using a non-destructive utility such as Paragon Partition Manager 8.

The program provides all the basic management tools you need to create, format, move, resize or delete (and undelete) partitions. There are options to copy a complete drive, or just one partition, too, which could come in useful if you're setting up a new hard drive. Wizards walk you through many of these

functions, and detailed help is on hand if you need more advice.

You also get interesting drive management features, such as the ability to convert a partition from one file system to another. There's the ability to defragment the NTFS master file table, and so give your hard drive a small performance boost. Paragon even throws in a sector editor, which means you can change individual bytes on any part of your hard drive.

Potentially most useful of all is the Recovery Media Builder, which writes a bootable CD or DVD with its own version of Paragon Partition Manager. If your PC's hard drive loses its Master Boot Record or partition table, then boot from the recovery CD and you may be able to fix the problem.

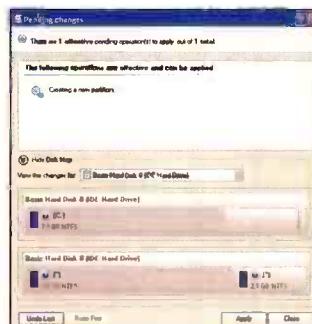
Safely partition your hard drive in minutes



1 Launch Paragon Partition Manager, click Wizards > Create Partition, leave the Advanced Mode option and click Next. You'll see a map of your hard drive showing all current partitions, and can now use the mouse to drag a marker around, showing where you'd like the new partition to be. If you can't see the marker, use the buttons instead.



2 Click Next, then use the slider to decide how large you'd like the new partition to be. Click Next again, and choose the format you'd like for your partition (if you're not sure and have Windows 2000 or later, then go with NTFS for now, you can easily change this later). Click Next again, then select the Finish button to complete the wizard.



3 Click Apply to carry out the changes you've just defined, letting Partition Manager restart your PC if required (sometimes this is necessary when the hard drive is currently being used). And if the partition doesn't appear in My Computer, use the Partition menu options to make it active, and assign it an appropriate drive letter.

UPGRADE OFFER

NEW FEATURES

- Real-time drive backup
- Create CD/DVD images and virtual drives
- Migrate your data online
- Erase data securely
- Powerful hard drive partitioning
- Enterprise imaging and use

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Partition Manager is just one of Paragon's powerful drive-related products. The range also includes Drive Backup, a feature-packed image backup tool. CD-Rom Emulator can create virtual CD and DVD drives, then mount them with disk images so you don't have to keep swapping (and perhaps damaging) the real disks. Disk Wiper erases files securely, so they can't be undeleted later. Or, of course, you could upgrade to Partition Manager 8.5, which is fully Vista-compatible. Prices start from \$29.95 (about £16), and there's a 20 per cent discount available if you order within seven days of registering Partition Manager 8. See your registration email for the promotional code.



INFORMATION

System requirements Windows 2000/XP, 25 MB free disk space

Contact www.genie-soft.com

Registration Not required

Genie Backup Manager Lite 7.0

Keep your valuable data safe from harm with this easy-to-use tool

Backing up your PC will always be dull – that's just one of the fundamentals of computing. Install Genie Backup Manager Lite and you can get the process completed at the fastest possible speed, though. And there are a few surprising touches along the way.

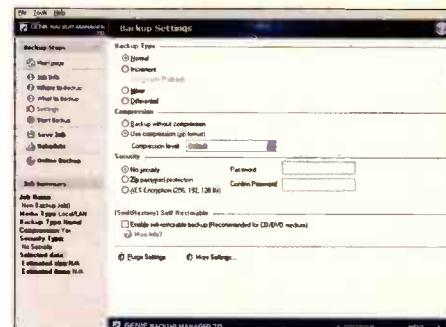
Take the way you define a backup job, for instance. The Genie Backup Manager wizard provides sensible default options for everything, so you don't even have to type a backup name: just keep clicking Next.

Selecting what to back up is straightforward, too. The software displays a tree of common features that you might want to save, such as your Outlook Express mailboxes and settings, your favourites and contacts. Just check a box and they'll be added to the backup job.

The program makes it easy to save the contents of the My Photos or My Music folders. It can also scan your folders for other images, audio or video files, letting you add the whole lot with a click. Of course if this isn't enough then you can specify individual files and folders to be backed up.

There's a good choice of backup types, too: normal, incremental, mirror and differential. Your backup files can be compressed to save time, password-protected, and be made self-restorable (executables that restore their own data whether Genie Backup Manager Lite is installed or not). The backup may be saved locally, to a network drive or using Genie's own subscription-based online service, and a scheduler ensures your job runs automatically once it's been set up.

Create and run a useful backup job in less than five minutes



1 No time to run backups? That's just an excuse, and Genie Backup Manager Lite will prove it. Launch the program, click Backup > Next (switch to Normal Mode if your screen doesn't look like this). If you can back up to an external or network drive then choose it here, otherwise accept the default My Documents\My Backups folder. Click Next.

2 The 'My Profile' screen shows the common files and settings that Genie Backup Manager Lite can save for you. If you use Outlook or Outlook Express for mail, then check the relevant boxes here to back them up. Select the Windows Address Book and your Favourites, too. It's easy to add more, but we want this to be a quick backup job, so click Next instead.

3 The 'Backup Settings' let you choose details such as backup type, compression and security. The defaults are well chosen, though, so you can ignore this and click Next > Backup Now. And that's it: your chosen data will be backed up in a few minutes. Use the Schedule Wizard to run the job regularly, then relax in the knowledge that your valuable data is protected.

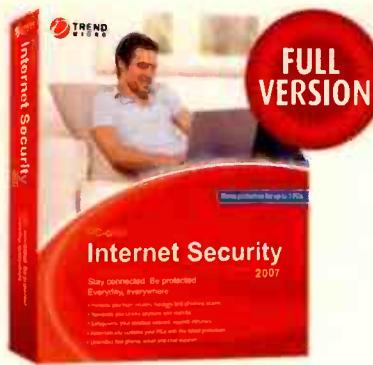
UPGRADE OFFER

NEW FEATURES

- Backup to CD/DVD
- Run commands before/after backup
- Backup to removable media
- Create Outlook profile
- Backup to remote FTP sites
- File shredding/encryption tools

GENIE BACKUP MANAGER PRO 7.0

Move to Genie Backup Manager Pro 7.0 and you'll be able to save your backups to CD/DVD, FTP, removable media (USB drives, floppy disks etc) and tape devices, as well as local or network hard drives and Genie's own online backup service. The program can run the programs of your choice before and after backup. And right now Genie is throwing in its File Access Manager for free, a utility to help you capture files that are open, even if they're changing during the backup. You're still only paying around £28, though: click Buy Now in the Genie Backup Manager welcome screen to place your order.



INFORMATION

System requirements 128MB Ram, Windows 2000 Professional SP4/Windows XP, 250MB hard disk space, Internet Explorer 5.5 or later

Contact <http://uk.trendmicro-europe.com>

Registration Click the Register button when you first launch the program

Need to know You can use the program on up to three PCs; licence expires 90 days after installation

PC-cillin Internet Security 2007

Protect your PC from viruses, spyware, hackers, spam and more

In a world that has more than its share of security suites, it can be difficult to make your product stand out. Trend Micro's answer is to add features and functionality to provide solid, all-round PC protection, and it looks as though they've done an effective job.

The speedy anti-virus engine will scan for threats in downloads and email attachments, for instance, but it also works with webmail and chat or messaging tools, and includes a monitor to prevent viruses spreading across a network.

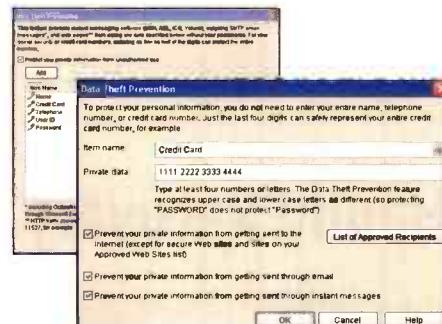
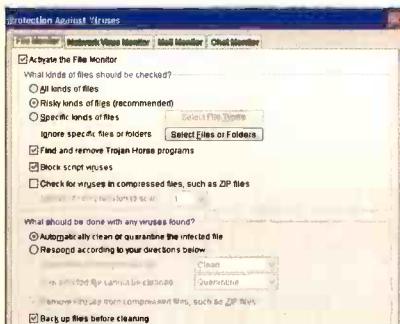
The firewall does a good job of keeping out hackers while monitoring your outgoing internet connections. Trend Micro helps you get set up very quickly, with four profiles that adjust settings according to your situation: wireless network, direct internet connection, home

network or office network. It can automatically switch to the one you need as you change location and new profiles can be added.

No internet security suite is complete without phishing protection, and this PC-cillin Internet Security 2007 checks the pages you visit for signs of fraud. In addition, the spam filter blocks many email threats before they arrive, while a separate website filter looks for spoofed domain names or redirections based on an edited hosts file.

You also get a personal wireless network monitor, checking your network to look for unwanted guests. A privacy tool helps ensure private details aren't transmitted without permission. It's an impressive feature list, and if you're unhappy with your current security solution then PC-cillin is definitely worth a look.

Get even more from PC-cillin Internet Security 2007



1 PC-cillin Internet Security 2007 includes many different modules. Their default settings may not be right for everyone, so exploring them is key to getting the best possible protection. Click Virus and Spyware Controls > Settings > Chat Monitor if you want the program to monitor instant messaging, for instance, and click Mail Monitor to turn on webmail monitoring.

2 The program can monitor your wireless network, too, looking for unexpected visitors who might be abusing your internet connection. However, this may not be enabled by default. Click Personal Network and Firewall Controls to check, turn the Personal Wireless Network Monitor on if necessary, and click Settings to configure how frequently your network will be checked.

3 If you're concerned about your kids giving away personal details, such as a phone number, to people they meet online, then click Internet and Email Controls > Data Theft Prevention > Settings. Double-click on the details of concern; for example, Telephone, then type the information you're trying to protect. Finally, click Add to update the list of personal details.

UPGRADE OFFER

NEW FEATURES

- Spyware Protection
- Personal Firewall
- Fraud Defence
- Wireless Network Monitoring
- Home Network Control
- Trendsecure online security site

EXTEND YOUR PC-CILLIN 2007 LICENCE

Installing PC-cillin Internet Security 2007 will protect your system for a full 90 days, but if you want to keep using the program after that date you'll need to purchase an extended licence. But don't worry, the prices are very reasonable at £27.97 for one year, and £41.96 for two. If you install it on the maximum three PCs allowed, that's less than 2p a day per PC. The extended licence also gets you access to extras such as Trend Micro Mobile Security, which will keep your smartphone safe from viruses and other security threats. Click Other Settings > Subscription > Upgrade Now to place your order.

Facefilter Xpress



FULL
VERSION

If your digital photos come out too dark, blurred, overexposed or with a poor colour balance, then any decent graphics editor should fix these problems in no time at all. But if your relatives have ruined a set of wedding pics by looking thoroughly miserable throughout, then there's not very you can do. Until now, that is.

Run Facefilter Xpress and isolate a face within an image, just by clicking around the eyes and mouth. Then you're able to change that person's expression simply by choosing from a selection of thumbnail templates. So, for example, if you have chosen the Smile template, Facefilter Xpress will raise your subjects mouth,

INFORMATION

System requirements Windows 98/NT/Me/2000/XP (English version), 20MB disk space

Contact www.reallusion.com

Registration Not required

Need to know Works on images up to one megapixel resolution only

Younger, slimmer, happier? Facefilter Xpress delivers in the digital photo world, now we just need something similar for real life facefilter.png

curling it into a smile, as well as widening the eyes and arching the eyebrows. And in no time Uncle Steve is looking suitably cheerful, although with an effect so subtle that even he may not notice you've done anything.

The program doesn't stop there, though. You can use other templates to make people look wide-eyed, slimmer or even younger. Or if you don't like them, then try some of the less flattering templates, which make your subjects look angry, sad or perhaps pulling faces. And there's always the manual controls, letting you tweak features. Fun, but also practical, Facefilter Xpress is a must for every digital photographer.

UPGRADE OFFER

FACEFILTER STUDIO 2

Facefilter Studio 2 delivers all the functionality of the Xpress version, and includes extras such as red-eye reduction, automatic colour balance and facial mask fitting. It can enrich skin tone, reduce camera flash, as well as remove blemishes. The program can print instant photo stickers with various mood expressions for your subject, and it works happily with images up to 12 megapixels. And with a \$10 discount (£5), it'll cost you only \$49.95 (about £26). Read more and apply for your discount coupon at www.reallusion.com/press/event/FaceFilterXpress/FFS2.asp.

Handy Recovery 1.0



FULL
VERSION

INFORMATION

System requirements Windows 98/Me/2000/XP/2003, 1MB disk space

Contact www.handyrecovery.com

Registration Not required

Handy Recovery can restore files on floppies, USB flash drives and flash memory cards, as well as your hard drive

It can happen in a flash, as easy as pressing the wrong key or specifying the wrong folder. It's easily done, but that's no comfort when you've accidentally deleted some important files on your PC and they're not in the Recycle Bin. So what do you do now?

One approach might be a quick visit to Google, search for the nearest Undelete tool, install anything that looks suitable and see if it works. Except, well, using your browser will create all kinds of temporary files, overwriting free disk space that might now include the data you're trying to recover. Not a good idea.

A much better idea is to install a tool such as Handy Recovery before you have any problems,

so it's ready when you need it. Then you can launch the program, click Analyze, and wait as it scans your entire hard drive, looking for deleted files or folders that can be recovered. This may take a while, so be patient.

Once the analysis process is complete, Handy Recovery displays your entire hard drive in an Explorer-type window. Then you can navigate the system, looking for deleted files or folders (marked with a red cross). When you find one you need, select it, click Recover and specify the drive where you'd like the file to be recovered. Make sure you recover data to a different drive, otherwise the process could permanently erase part of the file you're trying to restore.

UPGRADE OFFER

HANDY RECOVERY 3.0

Make the move to Handy Recovery and you'll benefit from in-depth disk scanning for specific file types, making them potentially recoverable even if their file record has been lost. It may also be possible to recover files from deleted or formatted partitions, and the ability to filter files by name, date or size will get the job done quickly. Or you could create an image of your disk to use for recovery later. And all this disaster recovery technology can be yours for around £17 - a 20 per cent saving off the list price, just by entering the coupon code HRCD-6C6F-VNU at the www.handyrecovery.com online store.

COMPETITION

Cyberlink Powerdirector 6

These days it seems as if video is everywhere: from camcorders and iPods to the most inexpensive mobile phones, it's never been easier to capture moving images. But once you've recorded a video and downloaded it to your PC, you need the best tools to help you make the most of your creative talents.

This month Cyberlink – one of the pioneers in the multimedia software field – is offering PCW readers the chance to win one of 20 copies of Cyberlink Powerdirector 6, worth £57 each.

Powerdirector 6 is a full-featured video editing tool designed to take the hard work out of creating professional-quality DVDs and photo slideshows. It includes intelligent Magic tools that enable you to edit videos and photos automatically, and effects libraries that help you express your creativity with ease.

Powerdirector 6 provides multiple video sharing possibilities, including the option to publish online direct to video blogs, and even to the YouTube or Mediamax video sharing sites. You can also output videos in iPod or PSP formats.

Powerdirector 6 features Magic automated video editing tools for fast, easy and stylish results. You can improve video and audio quality, fix shaky videos, edit clip length and add themed effects, transitions and much more. The Magic Wizard enables users to create a polished movie with just a few clicks of a mouse.

The Magic Style tool instantly creates a finished movie from clips and includes alpha-blended and particle effects, such as picture-in-picture (PiP), and improved style templates.

Magic Fix provides a split-screen mode, permitting video playback while previewing changes. It stabilises shaky videos, improves photo focus automatically, and removes red eye from photos.

Finally, Magic Clean includes options for improving audio and video tracks and photos.



With support for high-definition video, write-back to HDV tape and much more, Powerdirector 6 is the easiest way to make great professional-looking movies.

For your chance to win, answer the question below and enter online at www.pcw.co.uk/competitions. The competition opens on 17 May and closes on 15 June 2007.

Which of the following Magic editing tools removes red eye from photos?

1. Magic Clean
2. Magic Style
3. Magic Fix

This competition is open to readers of PCW, except for employees (and their families) of VNU Business Publications, and Cyberlink. PCW is the sole judge of the competition and the Editor's choice is final. Offer applies to residents of the UK and the Irish Republic only. Entrants must be over the age of 18 and only one entry per household will be accepted. Winners will be selected at random from all correct entries received. No cash alternative is available in lieu of prizes. VNU will use all reasonable endeavours to notify the winner(s) within 14 days of the close of the competition. VNU reserves the right to substitute the prize for one of greater or equal value if circumstances make this unavoidable. Prizes will be dispatched by the competition sponsor(s) and the winner(s) name(s) and address(es) will be provided to the competition sponsor(s) for this purpose. No purchase of the magazine is necessary to enter the competition. VNU will use all reasonable efforts to ensure that the prizes are as described on this page. However, VNU cannot accept any liability in respect of any prize, and any queries regarding a prize should be taken up directly with the sponsor of that prize.

ENTER ONLINE AT www.pcw.co.uk/competitions

On the web

www.pcw.co.uk

PCW is not just a great monthly magazine, we also have a website carrying daily news, reviews, features, downloads, competitions and blogs written by us and our sister titles. The website is updated daily, to help keep you abreast of the latest events and new products.

The screenshot shows the PCW website homepage. The top navigation bar includes links for Hardware, Software, Group Tests, Buyers Guides, Best Prices, Best Buys, and Deck Shop. The main content area features several sections: 'Reviews' (Hardware and Software), 'Latest Reviews' (e.g., Review: Archos 404 media player), 'Best Prices' (e.g., TomTom ONE GPS), and 'PhotoBox' (Digital photos from as little as 6p each). There are also sections for 'pods' (podcasts) and 'Personal Computer World Direct' (a service for buying computer parts). A sidebar on the left lists 'Hardware' and 'Software' categories.

The Test Bed

Our labs blog, the Test Bed, gives you regular updates on the latest gossip, technology trends and products. We also have a performance area, where test results can be compared so you can see how well rival products fare against each other. Our database of products makes it the most comprehensive tool you will find and the perfect complement to our Buyer's Guides and reviews.

→ <http://labs.pcw.co.uk> → <http://www.reportlabs.com/testbed>

PCW Interactive

You may recognise some entries in this blog from our Letters pages, but they are published here first, letting you add your views and comments.

→ <http://interactive.pcw.co.uk>

PCW Newsletters

If you want to keep up with the latest news, reviews, blogs, Hands On and software downloads, then sign up for our weekly PCW email newsletter. It is published every Friday and gives you a selection of the highlights from the week. Our Products newsletter goes out on Wednesdays and includes the most important news stories and reviews.

→ <https://www.vnuservices.co.uk/pcw>

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10 tips for buying safely

- 1 Get written quotes from shops specifying components used, or print off and keep spec sheets from websites.
- 2 Use a credit card if possible for purchases of £100 or more; you could get compensation from the card company if a supplier goes out of business.
- 3 Keep good records, storing receipts, correspondence in one place.
- 4 In England and Wales, the onus is on retailers to prove that faults found within six months on purchases are not inherent.
- 5 Goods ordered online, by phone or post can be returned under the Distance Selling Regulations without explanation within a reasonable time – this is widely accepted as being seven days.
- 6 Open and inspect all goods as soon as possible after delivery and make sure they work.
- 7 Companies are not obliged to repair or replace goods damaged by accident or misuse, unless it is caused in transit by a delivery service.
- 8 Companies cannot charge for a service that isn't being delivered, but never stop a direct debit while under contract.
- 9 Consumers should not suffer financial loss for repairs that are not their fault, so claim back carriage charges.
- 10 If a dispute arises, take advice from Consumer Direct at www.consumerdirect.gov.uk.



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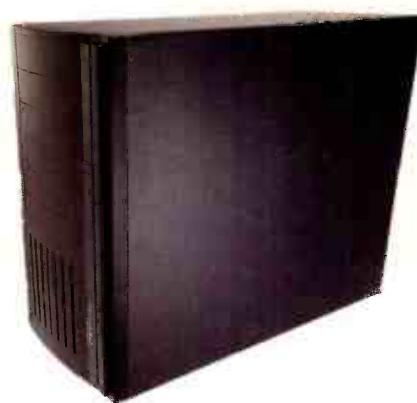
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Buying a complete PC system in these eco-aware times can often seem like overkill, especially when your existing peripherals are perfectly adequate. Or perhaps you simply prefer to shop around for your ideal components. Whatever the case, these impressive base units will give you some serious computing power at a great price.



Vista for power users

Once you've got familiar with Windows Vista's quirks, the first thing a typical PCW reader will want to do is start digging into its innards to make it work better. We'll show you the tips, tricks and tools you'll need to optimise your Vista experience.



Dual digital TV tuners

Adding a TV tuner to Windows isn't the nightmare it once was. Now there's a new wave of dual tuners that will let you use your PC as a fully featured hard disk PVR. We've rounded up the best of the bunch, with USB, PC and PCI Express models on test.



Fix your car

The idea of plugging your car into your PC to see what's wrong with it would have seemed like science fiction not too long ago. But these days affordable PC diagnostic tools can save you some unnecessary and expensive trips to the garage.



There's lots more in August's PCW
DON'T MISS IT...

JULY 2002

This month we took a look at DIY broadband. The days of high charges and low availability were ending, with ADSL, cable and satellite broadband all now an option. We looked at nine providers and found prices ranged from £23 a month for the cheapest 500Kbits/sec service to £294 per month for an 8Mbits/sec line.

In 2002, research showed that 90 per cent of notebooks sold for less than £1,299, so we did a group test covering 15 models under this price. Toshiba's Satellite 3000 took top honours, partly thanks to its Intel Celeron 1.06GHz CPU, whose performance wiped the floor with the other notebooks.

From the archives: Take a look at the important events in technology five, 15 and 25 years ago.



JULY 1992

Many strange pieces of hardware pass through the PCW offices, two of the strangest being the Philips CD-I and the CDTV from Amiga. These forerunners to modern games consoles were reviewed by Chris Cain.

After vigorous testing, Chris concluded that the CD-I was the better of the two. He was convinced it would be at least another five years before the market could produce anything to top it. However, neither format managed to gain mass popularity due to their limited functionality and their expensive hardware.

This month's PC group test pitted 25 machines with the recently introduced Intel 486SX processor against each other. There was a manufacturer for every letter of the alphabet – with the exception of Y.

A less technically sophisticated product featured in the news pages: Jolt cola reached the UK. It was a favourite with gamers and programmers because it kept them at their machines for longer; it contained twice the amount of caffeine present in regular cola.



JULY 1982

PCW went BBC Micro mad in July 1982, with a series of articles covering every aspect of one of Britain's best-loved computers. Back then, the Micro was still a new machine, and our readers were interested to see just how far it could be pushed. With this in mind, PCW examined the various software options and its expansion capabilities.

If you've forgotten how impressive the Micro was, a quick look back over the specs reveals that it had support for networking, modems and dual-processor operation. A workshop on making sounds with it and an in-depth look at the Basic Rom rounded everything off.

Other products to grace the PCW office included the Newbrain, a portable computer with a built-in 16-character display. Sadly, it wasn't battery powered, so couldn't be used on the move. Dick Pountain, meanwhile, looked at Texas Instruments' latest programmable calculator. These were the PDAs of their day, with prices to match, this one tipping the scales at £290.





REDEFINE REALITY! GEFORCE 8600GTS

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POINT OF VIEW GEFORCE 8600GTS

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POINT OF VIEW



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POINT OF VIEW



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SKU: 306786



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1. Shiny Shiny, March 2007. 2. Stuff, March 2007

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