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**PRODUCTS**  
**REVIEWED AND RATED**

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8 BOOTABLE VERSIONS TESTED



# PERSONAL COMPUTER WORLD

October 2004

THE UK'S NO.1 MONTHLY COMPUTER MAGAZINE

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PERSONAL COMPUTER WORLD

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## Reviewed

Fujifilm Finepix A340 digital camera >> Shuttle XP17 TFT  
> Apple Powerbook G4 >> Philips DVDRW885K DVD writer >> Network security all-in-one packages >> Overclocking components >> Dell Axim 30 PDA >> Crucial Radeon X800 Pro >> Philippe Starck Microsoft mouse



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Acer Ferrari 3200 p55



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## XP SERVICE PACK 2

HOW TO IMPROVE YOUR WINDOWS SECURITY

## IPOD KILLER?



SONY'S 20GB WALKMAN

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Dell Dimension 2400

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### Superb System

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- Microsoft® Works 7.0
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- 17" Colour Monitor (15.9" v.i.s 0.28 dot pitch)
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- Integrated Audio
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**0870 907 4403**

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**Dell** | Mobile

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## Dell™ Inspiron™ 1000 2.20GHz

### Mobility

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- Microsoft® Windows® XP Home Edition
- Microsoft® Works 7.0
- 256MB 266MHz DDR RAM
- 30GB Hard Drive
- 14.1" XGA TFT (1024x768) Screen
- Integrated Direct AGP Graphics
- Integrated 8x DVD-ROM Drive
- Integrated TouchPad
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- 1 Year Euro Collect and Return Service

**£449**

Excl. Del. & VAT

**£585**

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E-VALUE Code: PPUK4 - N080C

### Recommended Upgrades

Deluxe Nylon Carry Case  
Kensington Pocket Mouse Pro

**£30 incl. VAT.!**  
**£26 incl. VAT.!**



## Dell Inspiron 510m 1.50GHz

### Mobility

- Intel® Centrino™ Mobile Technology with Intel® Pentium® M Processor 705 (1.50GHz, 1MB L2 Cache, 400MHz FSB) & Intel® Pro/Wireless 2100 (802.11b)
- Microsoft® Windows® XP Home Edition
- Microsoft® Works 7.0
- 512MB DDR SDRAM (WAS 256MB)
- 40GB Hard Drive
- 15" XGA TFT (1024x768) Screen
- Integrated Direct AGP Graphics
- Modular 8xDVD/24x CDRW Combo Drive
- Integrated TouchPad
- Integrated 56K V92 Modem - 10/100 Ethernet
- 1 Year Euro Collect and Return Service

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Excl. Del. & VAT

**£797**

Incl. Del. & VAT

E-VALUE Code: PPUK4 - N0810

### Recommended Upgrades

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15" SXGA+ TFT Display

**£90 incl. VAT.!**  
**£42 incl. VAT.!**



## Dell Inspiron 5150 3.06GHz

### Mobile Performance

- Mobile Intel® Pentium® 4 Processor (3.06GHz, 512KB L2 Cache, 533 MHz FSB)
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- Microsoft® Works 7.0
- 512MB DDR SDRAM (WAS 256MB)
- 40GB Hard Drive
- 15" SXGA+ TFT (1400x1050) Screen
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### Recommended Upgrades

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**£30 incl. VAT.!**



## Dell Inspiron 8600c 1.50GHz

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- Microsoft® Works 7.0
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- 40GB Hard Drive
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- Integrated TouchPad
- Integrated 56K V92 Modem - 10/100 Ethernet
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**£749**

Excl. Del. & VAT

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Incl. Del. & VAT

E-VALUE Code: PPUK4 - N0806



## Dell Inspiron 9100 3.00GHz

### Mobile Performance

- Intel® Pentium® 4 Processor with HT Technology (3.0GHz, 1 MB L2 Cache, 800MHz FSB)
- Microsoft® Windows® XP Home Edition
- Microsoft® Works 7.0
- 512MB 400MHz DDR SDRAM (Was 256MB)
- 40GB Hard Drive
- 15.4" Wide Aspect Ultrasharp™ WXGA (1280X800) Screen
- ATI® Mobility™ Radeon™ 9700 64MB
- Integrated 8x DVD-ROM/24x CDRW Combo Drive
- Integrated TouchPad
- Integrated 56K V92 Modem - 10/100 Ethernet
- 1 Year Euro Collect and Return Service
- Dell TrueMobile™ 1300 Mini-PCI 802.11 b/g Wireless Card

**£879**

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- 256MB DDR RAM (Was 128MB)
- 40GB Hard Drive (7200 RPM)
- 17" Colour Monitor (15.9" v.i.s 0.28 dot pitch)
- Integrated 10/100 NIC
- Integrated Intel® Extreme Graphics
- Integrated Audio
- 20/48x Max CD-ROM Drive
- 1 year Collect and Return service

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Excl. Del. & VAT

**£362**

Incl. Del. & VAT

E-VALUE Code: PPUK4 - D0821

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### Dell™ Dimension™ 2400 2.60GHz

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- Microsoft® Windows® XP Home Edition
- Microsoft® Works 7.0
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- 40GB Hard Drive (7200 RPM)
- 15" Flat Panel Monitor
- Integrated 10/100 NIC
- Integrated Intel® Extreme Graphics
- Integrated Audio
- 20/48x Max CD-ROM Drive
- 1 year Collect and Return service

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Incl. Del. & VAT

E-VALUE Code: PPUK4 - D0822C

#### Recommended Upgrades

- Microsoft® Office® 2003 Basic **£130 incl. VAT.†**  
 17" Flat Panel Monitor **£94 incl. VAT.†**



### Dell Dimension 4600 2.80GHz

#### Value and Power

- Intel® Pentium® 4 Processor (2.80GHz, 512KB L2 cache, 533MHz FSB)
- Microsoft® Windows® XP Home Edition
- Microsoft® Works 7.0
- 512MB DDR RAM (Was 256MB)
- 80GB Hard Drive (7200 RPM)
- 15" Flat Panel Monitor
- Integrated Intel® Pro 10/100 NIC
- Integrated Intel® Extreme Graphics
- Integrated Audio
- 48x CD-RW/DVD Combo Drive
- 1 year Collect and Return service

**£499**

Excl. Del. & VAT

**£644**

Incl. Del. & VAT

E-VALUE Code: PPUK4 - D0842

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- 3 Year Next Business Day On-Site Service **£119 incl. VAT.**  
 Microsoft® Office® 2003 Small Business Edition **£235 incl. VAT.†**



### Dell Dimension 4700 3.00GHz

#### Exceptional Performance

- Intel® Pentium® 4 Processor 530 with HT Technology (3.00GHz, 1MB L2 cache, 800MHz FSB)
- Microsoft® Windows® XP Home Edition
- Microsoft® Works 7.0
- 512MB Dual Channel DDR2 RAM (Was 256MB)
- 160GB Serial ATA Hard Drive (7200 RPM)
- 17" Flat Panel Monitor (17.0" v.i.s)
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- Intel® Graphics Media Accelerator 900
- Integrated Audio
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#### Recommended Upgrades

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#### Ultimate System

- Intel® Pentium® 4 Processor 540 with HT Technology (3.20GHz, 1MB L2 cache, 800MHz FSB)
- Microsoft® Windows® XP Home Edition
- Microsoft® Works 7.0
- 1024MB Dual Channel DDR2 RAM (Was 512MB)
- 250GB Serial ATA Hard Drive (7200 RPM)
- 17" Flat Panel Monitor (17.0" v.i.s)
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- 128MB PCI-Express ATI® Radeon™ X300SE™ with TV-Out & DVI
- Integrated Audio
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- 1 year Collect and Return service

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**£1114**

Incl. Del. & VAT

E-VALUE Code: PPUK4 - D0882

#### Recommended Upgrades

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- Embedded Gigabit NIC
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### Dell PowerEdge Recommended Upgrades

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 <p><b>Dell All-in-One Printer A960</b> (Printer, Scan &amp; Copy)</p> <p><b>£115</b> Excl. VAT</p> <p><b>£136</b> Incl. VAT</p>	 <p><b>Dell Laser Printer S2500</b> (Network version S2500n £419)</p> <p>From <b>£249</b> Excl. VAT</p> <p><b>£293</b> Incl. VAT</p>	 <p><b>Axim X30 Wireless PAN/LAN</b> 64MB RAM and 64MB Flash ROM memory (integ. WiFi &amp; Bluetooth option)</p> <p><b>£229</b> Excl. VAT</p> <p><b>£270</b> Incl. VAT</p>	 <p><b>Dell 2200MP-Micro-portable Projector</b></p> <p><b>£629</b> Excl. VAT</p> <p><b>£739.08</b> Incl. VAT</p>

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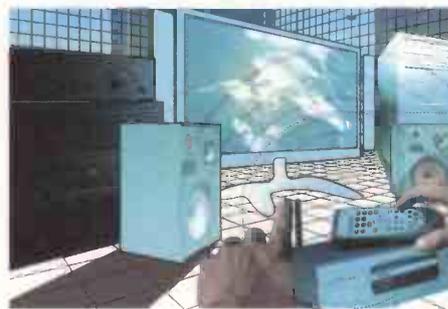
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## PCs with attitude



You won't find any beige here, so if you're looking for a stylish system, check out one of these systems

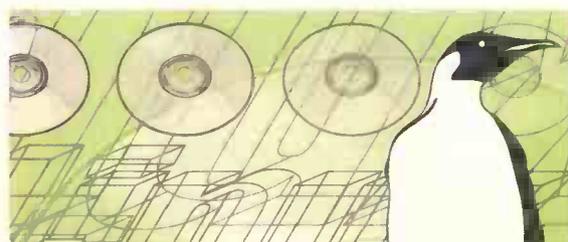


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**WIN!**

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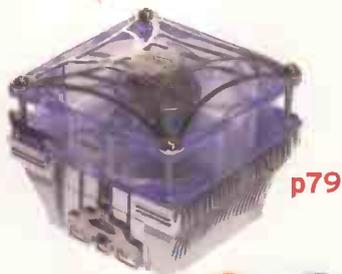
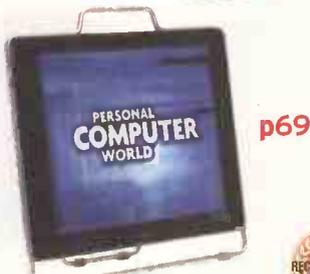
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Netviewer, Style XP 1.01, Stylebuilder 2.03, Wise-FTP 2.1 and Ashampoo Photo Illuminator 1.53



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Is this a PC or a hi-fi unit? Find out on **p164**



## NO PROBLEM

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LC700030

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PRICE £ 20.45

BA000070UK

### Sweex Power Supply Gold 450 Watt



This low-noise, switched power supply is highly suitable for AMD and P4 systems and can simply be installed in almost any casing. The horizontal cooling fan is installed above the electric parts, which offers an extremely effective cooling effect. The power supply also features two serial ATA power connectors that can be connected to your serial ATA hard drive.

PRICE £ 26.95

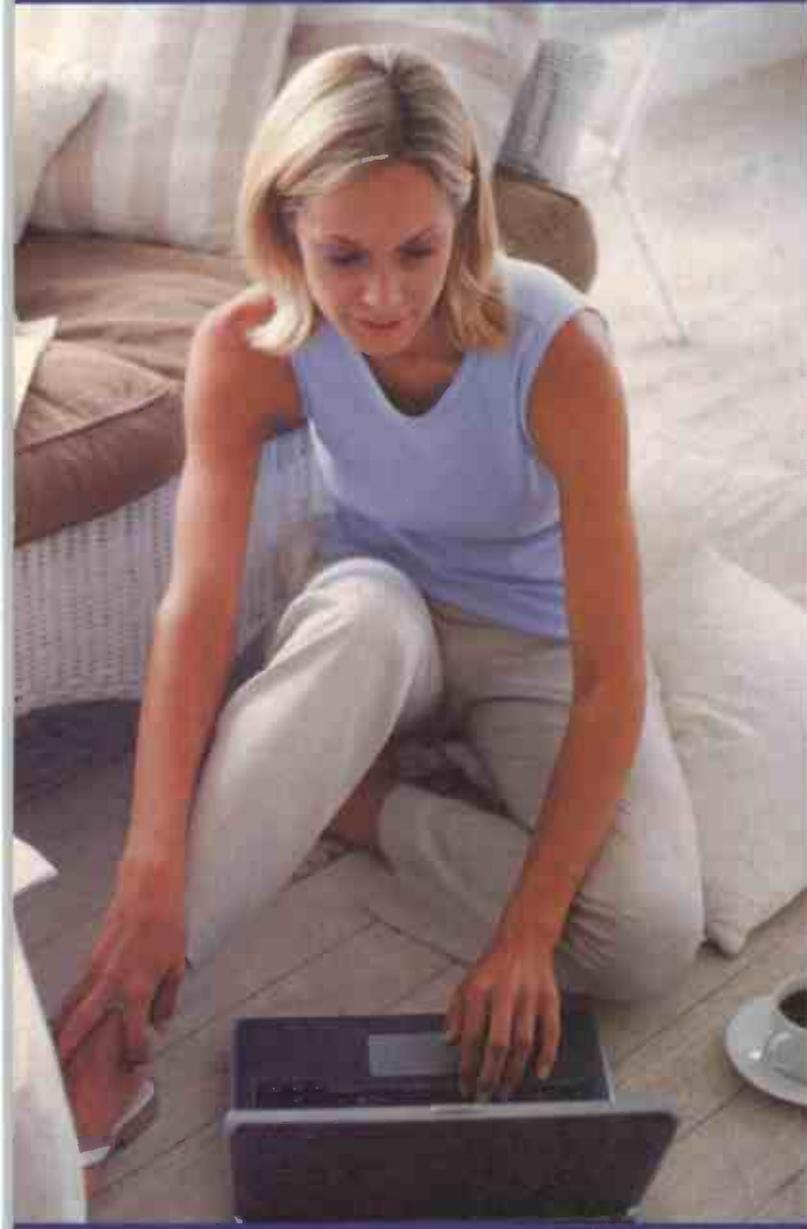
TA000020

### Sweex 4 Port KVM Switch



This is the perfect solution if you have more than one PC, and you would like to use just one keyboard, one mouse and one monitor. Simply connect the Sweex 4 Port KVM Switch and you can switch from system to system with the buttons on the switch or with key combinations on your keyboard. This KVM switch comes with four KVM cables.

PRICE £ 87.45





rob\_jones@vnu.co.uk

# Don't put all the blame on games

Making PC games the scapegoat for violence doesn't address the real issues, warns Rob Jones

**L**ate last month, I was asked if I would appear on ITN news to discuss the game *Manhunt* and whether I thought such games induce people to commit acts of violence.

It was the day after the mother of Stefan Pakeerah, who was brutally murdered by his friend, blamed the game for the way her son was killed and called for it to be banned. At that point, the daily papers were also clamouring for the game – and any of its ilk – to be banned and the Dixons Group withdrew *Manhunt* from its shelves.

This is an extremely emotive and sensitive subject, and the debate over banning is one where people will typically fall on one side of the fence or the other. A child died in a particularly horrific manner, and that means computer games and their increasingly violent content will come under scrutiny.

The question is, does a game induce someone of a peaceful nature to commit real-life violent acts once they have switched it off and walked away from their PC? It's an argument similar to the one that has raged around the film and music sectors for years, and it is one that will long surround computer games.

I don't believe that games, films or music induce violence in people that don't have the capacity to commit violent acts under ordinary circumstances, but that doesn't help the pain of a mother who has lost her son.

Blaming the game gives the killer an easy get-out, and dampens the terrible crime he committed. It should never be forgotten that he was tooled up to commit a vicious robbery to, according to reports, pay off a drugs debt. If you set out to commit a violent robbery, and are armed with a knife and claw hammer, a frenzied attack can quickly become a brutal murder.

Equally though, games manufacturers thrive on gore, pushing the boundaries of violence in the name of entertainment. The market is saturated and so manufacturers need to keep pushing the boundaries to make their games attractive to players and commercially successful (just look at the buzz surrounding *Doom 3*).

*Manhunt's* plot is loosely similar to that of *The Running Man* starring Arnold Schwarzenegger, but the difference is that with a film you are a passive viewer. With a game, you are an active participant, and that does make it all the more important that stricter controls are adhered to, ensuring that retail outlets cannot sell the game to minors and that parents are aware of what they are buying for their children.

Voluntary age limits need to become legally enforceable, with the threat of prosecution against those that ignore them. Manufacturers need to be responsible in how and where they promote their games, especially when that marketing will reach sizable teenage audiences.

Finally, it may sound a glib statement to say parental control should be greater, but if it doesn't start in the home, then who else can we expect to take responsibility for the actions of our children?

## Changes to come

We are planning some changes to *Hands On* over the coming issues, so if you have any views on what you'd like to see covered or how useful you find them at the moment, then let us know. Send your comments to [pcw\\_letters@vnu.co.uk](mailto:pcw_letters@vnu.co.uk).

Also, apologies to those of you that found a number of links in our Buyer's Guide Best Buys tables didn't work. In redesigning the website (see page 39 or [www.pcw.co.uk](http://www.pcw.co.uk)), we found it caused some conflict issues with images, but this has now been resolved. The big difference you will find with the guide this month is we have split it into separate ebooks, making it easier to load and navigate.



### »» Buyer's guides

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### »» PCs with attitude

Nine machines for the style-conscious user – see page 107

'Does a game induce a peaceful person to commit violent acts once they have switched off their PC?'

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Main switchboard 020 7316 9000  
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Rob Jones EDITOR

Kelvyn Taylor DEPUTY EDITOR

Clive Akass ASSOCIATE EDITOR (NEWS)

Chris Cain ACTING REVIEWS EDITOR

Rory Reid STAFF WRITER

Will Stapley STAFF WRITER

Sameena Shami PRODUCTS CENTRE CO-ORDINATOR

Anna Lagerkvist GROUP EDITORIAL ASSISTANT

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Alan Stevens (Network/Enterprise)

Nigel Whitfield

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PCW uses the services of VNU Labs to perform all its hardware testing. VNU Labs' highly experienced staff use industry-standard benchmarks and methodologies to generate accurate, repeatable test results. Below you'll find the details of the most frequently used benchmarks that PCW publishes

## SYSMARK 2004

Sysmark 2004 is a system productivity benchmark, designed to reflect system performance when running the most popular application software in real-world scenarios with real-world workloads.

Sysmark 2004 uses 15 applications, plus anti-virus and compression software, divided into two major categories: office productivity and Internet content creation. It runs through predefined scripts which include concurrent running of applications to test multiprocessing and multithreading capabilities.

In the office productivity scenario, the user creates a marketing presentation and supporting documents. This involves, among other tasks, receiving and detaching documents and email attachments, updating a personal calendar, querying a database, graphing up the results in a spreadsheet, making a slideshow and reviewing the results in a browser.

The Internet content creation scenario includes creating a website targeted at broadband and narrowband audiences. First, a 3D model is rendered into a bitmap while web pages are being prepared. A video movie is then edited from several audio and video clips and processed, while the rendered bitmap file is modified in Adobe Photoshop. Back in the 3D modelling software, the user exports a 3D model as a vector for later use. Once the movie is finished, the user adds special effects and image files before optimising it for faster animation. The final movie is then compressed for delivery over the Internet before the system is scanned for viruses.

Scores are calculated for each of these categories based on various sub-tasks, which are also given individual scores. Individual tasks are scored based on 'response time' – the time the system takes to complete a task initiated by the user. Responsiveness to the user is always scored more highly than the total time taken to complete a number of tasks.

These scores are based on a comparison between the test system and a reference PC with a 2GHz Pentium 4 processor, an Intel D845GBV-based motherboard, 512MB of DDR266 CL2.5 Ram, a 64MB ATI Radeon 9700 Pro graphics card, an 80GB IBM 2MB cache, 7,200rpm hard drive formatted with the NTFS file system and Windows XP SP1.

A score of 100 indicates that the system has a performance equal to the reference PC, 200 indicates twice the performance and so on. We run the benchmark at a resolution of 1,024 x 768 in 16bit colour. It is run three times, rebooting between each category.

When testing PCs and notebooks, we first configure them with standard desktop settings. This includes removing all start-up programs, automatic updates, desktop wallpaper, screensavers and proprietary system tray utilities. This is done in order to ensure the repeatability of tests.

The applications within each category of Sysmark 2004 are as follows:

### Office productivity

Adobe Acrobat 5.0.5, Microsoft Access 2002 SP2, Microsoft Excel 2002 SP2, Microsoft Outlook 2002 SP2, Microsoft Powerpoint 2002 SP2, Microsoft Word 2002 SP2, Microsoft Internet Explorer 6.0 SP1, Scansoft Dragon Naturally Speaking 6 Preferred, Network Associates McAfee Virus Scan 7.0, Winzip Computing Winzip 8.1.

### Internet content creation

Adobe After Effects 5.5, Adobe Photoshop 7.01, Adobe Premiere 6.5, Discreet 3ds Max, Macromedia Dreamweaver MX, Macromedia Flash MX, Microsoft Windows Media Encoder 9 Series, Network Associates McAfee Virus Scan 7.0, Winzip Computing Winzip 8.1.

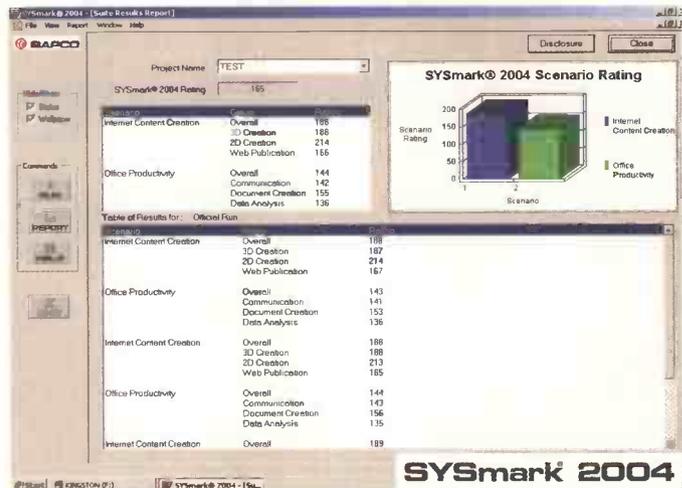
See [www.bapco.com](http://www.bapco.com) for pricing information and full details of testing strategies and methodologies.

### 3DMARK 2001

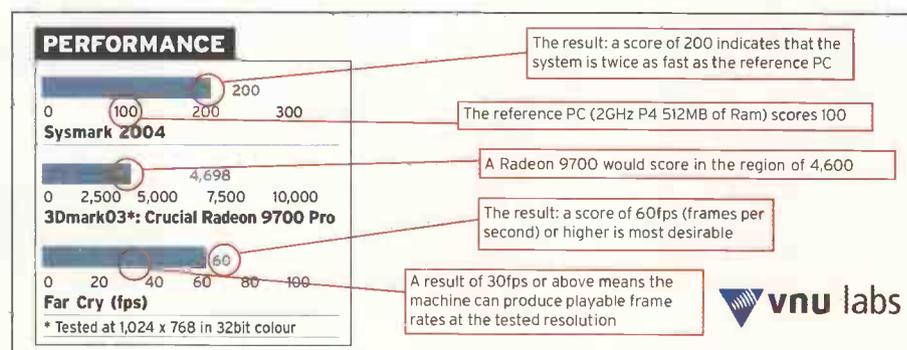
This algorithmic DirectX test runs three specially coded games, based on the Max Payne engine, at low and high detail. A fourth test only runs on cards that are fully compliant with DirectX 8. This results in higher scores being achieved by these cards than others.

The benchmark is run at its default settings of 1,024 x 768 in 32bit colour. When testing graphics cards, it is also run with full scene anti-aliasing (FSAA) and at 1,280 x 1,024, both in 32bit colour and textures, set to loop three times.

The result is calculated through a combination of the average frame rates for the first three games in both high and low detail, with greater emphasis put in the high detail. The result of the fourth test is then added to this – it has less of a bearing on the overall score.



Sysmark 2004 tests system performance by running popular applications





Far Cry is a real challenge for modern graphics cards



PCmark04 measures memory, processor, graphics and hard drive performance

## 3DMARK03

3Dmark03 consists of four tests. The first examines DirectX 7 performance; the following two are DirectX 8; and the final test is DirectX 9. While in theory this means that any DirectX 7 card could run at least part of the test and therefore achieve a score, none have the raw power to run at the speeds 3Dmark03 demands.

The result is calculated in the same way as in 3Dmark 2001; an average of the frame rates from the first three tests. The results from the fourth test are included, but has a lesser bearing on the final score.

This version will only fully run on DirectX 9 compliant cards. As there are still some systems without this functionality, especially notebooks, we will be retaining 3Dmark 2001 as a standard graphics test where 3Dmark 2003 will not run.

## FAR CRY

Far Cry is the new game from Ubisoft we use for testing DirectX 9 gaming performance. The default demo we use is timedemo on the 'Fort' level. Far Cry's game engine is very graphics-intensive, so it presents a real challenge to

modern graphics cards. For PC and notebook testing we test at 1,024 x 768 pixels, 32bit colour, 75Hz refresh and default settings for both anti-aliasing (AA) and anisotropic filtering (AF).

When it comes to testing graphics cards, in addition to the standard test, the card is also tested at 1,024 x 768 with 4x AA and 4x AF; 1,600 x 1,200 with 4x AA and 4x AF and 1,600 x 1,200 with maximum quality settings.

## PCMARK04

Part-way between application-based and entirely synthetic benchmarks, PCmark04 uses a hybrid technology, employing portions of real applications to produce realistic performance results without the overhead of installing complete software packages.

It contains four main suites of tests for measuring memory, processor, graphics and hard drive performance, as well as that of the overall system. It is also customisable, which allows user-specified tests to be configured.

For more information on PCmark and 3Dmark, visit [www.futuremark.com](http://www.futuremark.com).

## BATTERY TEST

To get a feeling for the length of time a notebook battery will last, we run a specific test. Based on a looping Excel Visual Basic application, the test opens worksheets, generates random numbers and pivot tables, then zooms, and adjusts the brightness and contrast of an image. The application also includes 2D animation and periodically halts to simulate natural human pauses. The running time is recorded to disk every 30 seconds until the battery power diminishes.

## TEST BEDS

When testing graphics cards, motherboards, hard disks and optical drives, we use two test PCs. The first uses an Intel Pentium 4 3.2GHz Northwood C with an 800MHz front-side bus (FSB), the second has an AMD Athlon 3200XP+ using a 333MHz FSB. Each has two 512MB PC3200 modules of Corsair memory, a 120GB Western Digital hard drive with 8MB cache and a Crucial Radeon 9800XT Pro graphics card. Graphics and hard disk tests are primarily performed on the Intel system. A fresh image of the hard disk is applied to the PC before any tests begin, and the same image is then used each time for consistency.



3Dmark03 is so demanding it will only work on the latest cards



3Dmark 2001 tests DirectX 8 performance



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4 EXCLUSIVE PROGRAMS

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An image management tool to help you organise, view and share your pictures

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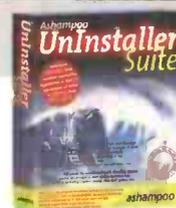


## Featured software on the DVD

### Ashampoo Uninstaller 2002/2003

Remove traces of software installed on your PC

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## Other highlights

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Our expanded easy-to-use, interactive guide gives you expert advice on buying products in 10 categories, from digital cameras and monitors, to graphics cards and soundcards. And we point you in the right direction to get the lowest prices for whatever you're looking for

### Group test trial software DVD

If you want to try out Linux but don't want to install it on your hard drive, check out some of the products reviewed in our Linux Live group test - see page 139 for loading instructions



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EDITED BY CLIVE AKASS

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put online, and we find out how  
metadata could revolutionise  
TV and usher in the age of the  
multimedia book

## Carbon copy

A new Ipod rival emerged as we went to press with the launch of a £199 Rio Carbon player storing 5GB of tracks and boasting a 20-hour battery life. That's nearly twice the battery life of the £179 4GB Ipod mini.

The Carbon can also be used to record voice memos. Rio was one of the first companies to launch a portable mp3 player but chose to concentrate on smaller-capacity Flash memory rather than a disk for storage.

The Carbon will be available by the time you read this.

## 1.6 terabyte drive

Lacie has launched an external hard drive that squeezes 1.6TB into a box slightly larger than two drive bays.

The £1,189 Bigger Disk Extreme supports Firewire 800 link and boasts burst transfer rates of 85Mbytes/sec. A 1TB version is also available for £609. Both prices exclude VAT.

No drivers are required for Windows XP, 2000 or Mac OSX.  
[www.lacie.com/uk](http://www.lacie.com/uk)

# End of line for old phones

**B**T and Yahoo launched a Communicator module supporting web-based voice calls last month, in a move that could be the beginning of the end for traditional telephony. The module enables free PC-to-PC calls and cut-price calls to standard phones across the world. A choice of cut-rate packages is available for calls within Britain.

The move is a case of 'if you can't beat them, join them' for BT because similar Voice-over-IP (VOIP) services on offer from several companies are a serious near-term threat to its analogue voice-call revenues. But it also gives the technology credibility and impetus.

Gavin Patterson, managing director for BT consumer ventures, said BT's service had the edge over rivals in that it can handle large volumes of IP calls to both analogue and mobile phones, and it offered the convenience of having all calls listed on one BT bill.

The free BT Communicator is built into a revamped Yahoo instant messaging (IM) client, which offers the usual features such as text chat and video links.

There were signs that BT's service had rattled rivals. Skype, which offers a peer-to-peer VOIP system, immediately announced that it would offer 1p-a-minute calls to analogue

phones in any of 25 countries including the US, Canada and Australia.

And the day after the launch, by coincidence or not, it was announced that business users of MSN, AOL and Yahoo's IM services will be able to talk with each other by the end of this year. Currently they can talk only with users of the same service, which will remain the case for private IM users.

IM providers have been fighting over this issue for years, fearful of losing subscribers to rivals. But there is more at stake as the IM client evolves into a personal communications portal, the desktop equivalent of the mobile phone interface.

Some people are not convinced that BT is serious about VOIP. Robert Proops, who sells VOIP handsets and services from his site at [www.calls-calls.com](http://www.calls-calls.com), predicted that the company would drag its heels as it did when it saw broadband threatening its huge leased-line revenues.

He said: 'BT has huge capital investment in its exchanges and traditional switching gear and it is not going to put that at risk.'

**BT's new service is built into Yahoo Messenger**



Even Proops admits that VOIP has a long way to go before it supersedes analogue telephony. The quality can be good, but it is not always so; and, while you can make a VOIP call to a standard phone, you cannot easily do the reverse.

Proops' phones have built-in sound cards to boost quality but they are unlikely to attract naive users.

VOIP handsets need to be smarter and more versatile to hit a mass market. Multipurpose phone chips are coming in (see story opposite) and Samsung has demonstrated a Wifi phone that can be used for untethered standard or VOIP calls (see p31).

There remains the problem of addressing. Numeric keypads are not suitable for keying long IP numbers, and still less so for the email-like addresses some VOIP services use instead.

Phones, such as the Siemens model pictured opposite, are beginning to sprout Qwerty keyboards; but the need for an easy-to-use interface, and the increasing use of video links, may eventually favour a market for PDA phones such as HP's new Ipaq (see p19). **Clive Akass**

## Portable convergence challenges portable style

Creative's Portable Media Center (PMC) may lack the style of Apple's Ipod music player but it can do a whole lot more.

Its 40GB disk can hold recorded TV programmes or other video material that can be viewed on its 3.5in screen.

At £399 inc VAT price, it is not a great deal more expensive than the Ipod and the me-too products it



has inspired (see page 36). You can expect the emergence of other PMCs based, like this one, on Microsoft's software.

Broadcasters are beginning to realise that devices such as this will make viewing TV more like reading a book - see our special

report starting on page 34.

For a review of the Creative PMC go to [www.pcw.co.uk/Products/Hardware/1156899](http://www.pcw.co.uk/Products/Hardware/1156899).



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[www.pcw.co.uk](http://www.pcw.co.uk) has to offer on page 39



**VHS to DVD**  
Convert your analogue memories  
into digital format - see page 101



# PC warranties shake-up

**O**ne in two computers will need a major hardware fix in their third year – and one in five fail within a year, according to a firm selling extended warranties.

Buyers are covered for failures within a year by law, and usually by a guarantee. It is commonly argued that PCs which survive a year without problems tend to last four or five years, making many extended warranties a waste of money.

But Warranty Direct, which sells cover from its site at [www.warrantydirect.co.uk](http://www.warrantydirect.co.uk), says its figures are based on claims from more than 50,000 policies.

It says hard-drive problems are the most common at 30 per cent, followed by motherboards (25 per cent), processor fans (15 per cent), memory (10 per cent), monitors (five per cent), power supplies (five per cent), CD

drives and other components (10 per cent).

Extended warranties are to get a major reform before the Christmas rush, following last year's Competition Commission report that said they are often unfair to buyers. Much of its criticism concerned high-pressure tactics used at the time people are buying electrical goods, which is when most extended warranties are sold.

Draft reforms published last month by the Department of Trade and Industry would require extended-warranty prices to be displayed alongside goods in stores and adverts.

They would also require buyers to be given information about their statutory rights, as well as cancellation rights and details of the warranty.

Extended warranties, and any discounts on them, would have

to be available for 30 days after a sale to discourage pressure selling. And buyers would have the right to change their minds with a grace period. The measure will be finalised by November.

Consumer Minister Gerry Sutcliffe said: 'The market in extended warranties is not working for the benefit of consumers, and this change is necessary.'

Duncan McClure-Fisher, managing director of Warranty Direct, said buyers need to learn not to rush into buying extended warranties.

He added: 'Every product comes with at least 12 months' cover from the manufacturer, so in reality you only need to worry about extending protection the following year and then you need to weigh up whether the goods you're buying actually need protecting.'



## >> Qwerty phone

The base of this handset from Siemens twists out to reveal a Qwerty keyboard. It is also said to be the first handset of its kind to support the Blackberry email-on-the-move service. It will ship in late autumn at a price yet to be announced.

## >> Paper tablet

An e-ink screen has been combined with a touch panel to produce a drawing tablet that comes close to the feel of paper for drawing, according to researchers from Philips and E Ink.

## >> Ceramic lens

Casio has developed a lens using a transparent ceramic with a higher refractive index than glass that could reduce the size of zoom lenses by 20 per cent.

## >> Motivator code

A \$49.95 (£27) package called Single Step, is said to help you attain your goals by using 'a patent pending process' to motivate you. [www.single-step.com](http://www.single-step.com).

## Wood you believe it...



That Swedish stripped-wood look is getting everywhere these days, including the desktop. This £25 mouse and £39 USB keyboard are sold by Crown Digital, which also offers a selection of similarly encased flat-panel monitors with prices starting at £330.

For a selection of designer PCs see our group test starting on page 107.

[www.crown-digital.co.uk](http://www.crown-digital.co.uk)

# Smart chip for multimode wireless

Intel has unveiled a radio transceiver chip that can be made using low-cost 90nm Cmos technology and will allow device makers to support multiple wireless technologies.

The chip can tune itself to frequencies up to 10GHz, in 30KHz steps. Krishnamurthy Soumyanath, director of Intel's communications circuits lab, said: 'We are going to have four or five radios on a platform. You've got to make them

cheaper, you've got to make them flexible and you've got to make them smart,' he said.

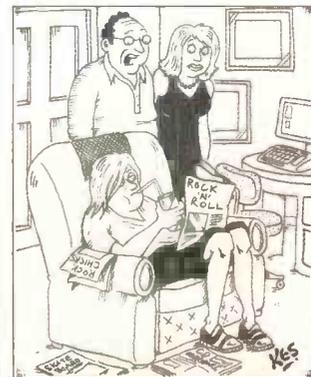
But he warned that the device will not act as a radio 'superchip' able to support all wireless technologies on any device, partly because laptops, mobiles and other handheld devices have very different needs.

● Intel has threatened to sue a British private-investigation company called 7intel, which it says is too like its own brand.

Gary Stapleton, chief executive at 7intel, said he would fight the case and make intel look very silly. He claimed the word 'Intel' in his business means intelligence and that US intelligence staff are ready to testify to the fact on his behalf.

Intel said in a statement: 'We have an obligation to our shareholders to protect our brand investment.'

● Dual-mode handsets – page 31  
● Lindows row settled – page 20



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# 64bit rivals neck and neck

The first 64bit Intel chip to run classic x86 PC code runs neck and neck with a rival AMD Opteron - though the latter clocked 1.4GHz slower, according to tests by our sister magazine *IT Week*.

Both the 3.6GHz Xeon EM64T and the 2.2GHz Opteron offer native 32bit operation for running legacy applications, and support 64bit x86 extensions. But AMD also offers a 2.4GHz Opteron that would almost certainly beat the Xeon.

Real-world 64bit x86 tests are immature compared with those for 32bit. But *IT Week* timed how long software called Gnu

Privacy Guard (GPG) took to encrypt a 200MB file, which is seen as a good test of how a processor performs integer operations and how quickly it moves data to and from memory. The Xeon averaged 21.52 seconds for the test and the Opteron was half a second slower at 22.34.

Intel and AMD have both stopped using the clock rate as a measure of performance because processors do an increasing number of different tasks on the same cycle. But slow-clock chips tend to run cooler and require less power.

The Xeon was tested with both 64bit and 32bit versions

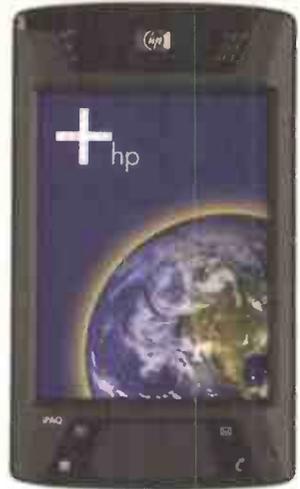
of Suse Linux 9.1, showing a speed gain of about 25 per cent with 64bit.

Intel is widely seen as having launched the 64bit Xeon to prevent being outflanked by AMD with its Athlon 64 and Opteron processors.

Intel's flagship Itanium processors do not use x86 instructions and sales have not been spectacular. But Intel says the sales are good for the high-end market at which the Itaniums are targeted.

But it seems x86 processors will take much of the high-end workstation market that Intel might have hoped to gain for the Itanium.

## HP launches an Ipaq phone



HP has added four new models to its range of Ipaq handhelds, including the first with a mobile phone. The £480 H6340, which should be in the shops by the time you read this, offers 802.11b Wifi, Bluetooth and GSM/GPRS links.

It also includes a snap-on keyboard and expansion slots. Unlike its US equivalent or the three other new Ipaqs, the Rz1710, Rx3715 and Hx4700, it lacks an onboard camera.

The Hx4700, priced at £449, does away with the traditional touchscreen and stylus in favour of a trackpad and a 4in anti-glare screen that HP hopes will attract games developers.

Enhanced data-encryption and security software is included and the machine can operate in landscape or portrait mode.

The £369 Rx3715 can work as a remote control and media player. The £199 Rz1710 offers organiser apps in an ultra-slim casing. Prices include VAT. **Miya Knights**

# Sempron ousts the Duron at low end

AMD has started shipping 32bit Sempron processors that will supersede the Duron for lower-cost PCs while the Opterons and Athlons target the high end of the market.

The first Semprons to launch were the 2200+, 2300+, 2400+, 2500+, 2600+, 2800+ and the 3100+ in ascending order of speed, at bulk prices ranging from \$39 to \$126 (£21-£69) apiece.

Mobile Semprons should be available by the time you read this. The 2600+, 2800+ and 3000+, targeted at desktop-replacement notebooks, cost \$84 (£46), \$108 (£59) and \$120 (£66) respectively.

There are second versions of the 2600+ and 2800+



Sempron... high performance at a low cost, says AMD

Intel has been making inroads in AMD's share of the notebook market in Europe, with its low-end mobile Celerons snatching 15 per cent of retail sales in May compared with 9.7 per cent in January. AMD's market share dropped from 16 per cent to 10.7 per cent over the same period.

Jeremy Davies, senior partner at Context, which produced the figures, said many vendors were using AMD processors as entry-level platforms last year to get prices down. 'Intel responded by slashing the price of Celerons, particularly to local vendors using AMD.'

designed for thin notebooks; they cost \$107 (£59.50) and \$134 (£74) respectively, but an AMD spokeswoman said she did not think this would cause confusion because mobile processors are not sold to end users.

HP plans to use the Sempron later this year in its Pavilion and Compaq Presario PCs.

## Mobile Athlon for power users

AMD has launched a mobile Athlon 64 processor for people who want workstation-class power on the move.

It also supports the enhanced virus protection enabled by the SP2 upgrade to Windows XP, which segregates data from executable code in memory to stop hackers exploiting buffer overruns. This could give it an edge over Intel chips with business buyers worried about security.

AMD also released a 32bit mobile Athlon XP-M 2200+ processor for ultraportables. Avertec will use the chip in its C3500 Tablet PC, which converts



The C3500 uses the new mobile Athlon

into a notebook. It is expected to ship in Britain this autumn but no price has been announced as yet.

## Disk warranty

Seagate Technology has extended the warranties on its internal PC and notebook and enterprise hard drives to five years. The deal applies retrospectively to products shipped since 1 June.

Jeff Loebbaka, vice-president of global marketing at Seagate, said the move would minimise the money and time dealers spent on warranty issues.



## &gt;&gt; Flash system

Macromedia claims its latest Contribute 3 software allows non-techies to update sites as easily as editing a Word document. New features include granular administrator control, editing enhancements and Dreamweaver integration.

It costs £99, bundled with a new product, Flashpaper 2, which converts files to pdf or Flash formats. For £149, you can get both with Macromedia's Web Publishing System (WPS), which is said to provide all you need to manage sites. [www.macromedia.com](http://www.macromedia.com)

## &gt;&gt; GUI builder

A new tool called GUIKit allows user-friendly graphical applets to be built using the engine of the maths toolkit Mathematica 5.0. Registered users can download it from [www.wolfram.com](http://www.wolfram.com).

## &gt;&gt; Quark deal

Students and educators can now get QuarkXPress 6 desktop-publishing package for £130 – compared with a full price of around £1,200 inc VAT. [www.quark.com](http://www.quark.com)

## &gt;&gt; Clean sound

Magix has launched Audio Cleaning Lab 2005, which aims to help you clean up analogue or digital audio from virtually any source and burn it onto a CD or DVD. It is said to eliminate hisses, clicks and scratches. It costs \$39.99 (£22) from [www.magix.com](http://www.magix.com).

## &gt;&gt; Code editor

Coders needing to track version changes are the target market for Visual Comparer, a text editor that marks differences between files. It also numbers lines and highlight syntax in major programming languages. It costs \$29 (£16) from [www.visual-comparer.com](http://www.visual-comparer.com).

## &gt;&gt; Patch alert

Microsoft has warned users to patch three new critical vulnerabilities in its Explorer browser. Only users with administrator privileges are at risk. Download patches from [www.microsoft.com/technet/security/bulletin/MS04-025.msp](http://www.microsoft.com/technet/security/bulletin/MS04-025.msp).

# New Lindow on the future

Microsoft is to pay Linux developer Lindows \$20m (£11m) to change its name and hand over various undisclosed domain names.

The deal ends a court battle Microsoft launched three years ago over the name Lindows, which Microsoft claimed was too close to its trademark, Windows. The case hinged on whether the word 'windows' is generic. It predates the product as a term describing a desktop container: Xerox showed a product with overlapping windows as early as 1972.

Lindows chief executive Michael Robertson founded the company to develop a Linux-based interface that could rival Windows on the desktop, an unrealised dream of most big Linux developers.



Linspiring... the Linux-based desktop with its new name

Robertson agreed to change his firm's name to Linspire, which it has been using since April. He gets a four-year royalty-

The latest version of Lindows Live is on the cover disc of this month's DVD edition of PCW. You can also read our verdict in the group test on page 135.

Apple's successful Mac OSX, which is based on Unix rather than its cousin Linux, shows that it can be done successfully – and that Microsoft has reason to be looking over its shoulder.

free licence to some Windows Media components as part of the deal. He said: 'We are pleased to resolve this litigation on terms that make business sense for all parties.'

Microsoft deputy general counsel Tom Burt commented: 'We are pleased that Lindows will now compete with a name distinctly its own.'

## Stars for beginners

The £29.99 inc VAT Starry Night Complete Space and Astronomy Pack includes three CDs, a DVD about space and a book for the astronomy beginner. Two CDs contain Starry Night software with a browser interface that gives you a view of the sky at any time and from any place on earth. A third CD allows you to explore deep space.

Other products in the series allow you to link a star map to a computer-controlled telescope.

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



## Upgrade to XP 'to be on the safe side'

Users of Windows 9x and Windows 2000 desktop edition should upgrade to XP if they want the latest security measures, Microsoft has warned.

They are not covered by the new security measures in Windows Service Pack 2 (SP2), the mega-upgrade of XP, which should be out by the time you read this.

No date has been given for an equivalent upgrade for older operating systems. 'If we have to make a decision between time-to-market or quality, we always choose quality – especially on security,' said Mike Nash, head

of Microsoft's security business and technology unit.

Microsoft says it is working with third-party vendors to improve security for Windows 9x and 2000.

But Nash said: 'Our best advice to customers is to upgrade to XP if they want security.' He warned that Windows 9x architecture could not support some of the latest security measures. Microsoft has pledged to provide critical security updates for Windows 98, 98 SE, and ME until 30 June 2006.

Microsoft has also postponed by six months the launch of

Windows Update Services, a revamped system for the automatic delivery of software patches. This will supersede Software Update Services 2.0. The first public beta is due to appear later this year, with the final release planned for the first half of next year.

Enhancements in the Windows Update Services include more intelligent patch management and the ability to restart patch downloads if a system crashes.

Iain Thomson  
and Peter Williams

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- 512MB DDR 400 Memory
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- 128MB NVIDIA GeForce FX 6800LE, TV out and DVI
- 19" TFT DVI Flat Panel Monitor
- Sony Multi-Format DVD Writer (8x DVD+/-R)\*\*
- Creative Labs Sound Blaster Audigy 2 ZS
- Creative Labs Inspire 7.1 - T7700 Speakers + Subwoofer
- new ASUS WIFI 54Mbps IEEE 802.11g PCI Card
- Microsoft Works Suite 2004
- Software: Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- new Midi case, Plus A Series Additional Features (see right column)



**£1499** INC. VAT **£1275.75** EX. VAT

### GREAT VALUE UPGRADES

- |  |             |              |
|--|-------------|--------------|
| • Athlon™ 64 3800+ to FX 53 Processor      | £150 EX VAT | £176.25 INC. |
| • 512MB DDR to 1GB DDR 400 Memory          | £100 EX VAT | £117.50 INC. |
| • 128MB FX 5900XT to ATI RX800 XT Platinum | £200 EX VAT | £235.00 INC. |
| • Upgrade to Cordless Keyboard and Mouse   | £39 EX VAT  | £45.83 INC.  |



**AMD**  
**64**  
**Athlon™ FX**

**19" TFT**

## Matrix FX 53+ 939 -Direct e1030

Leading Edge AMD Athlon 64 FX 53 Powered PC

- AMD Athlon™ 64 FX 53 Processor with HyperTransport® Technology
- Microsoft® Windows® XP Home Edition
- ASUS A8V-Deluxe Mainboard, 2000MHz System Bus, GB LAN, IEEE 1394, SATA
- 1GB DDR 400 Memory (2x 512MB)
- 250GB Serial ATA (150mbps) Ultra Fast Hard Drive
- new 256MB ATI RX800 XT Platinum
- 19" TFT DVI Flat Panel Monitor
- new Sony Multi-Format 16x Dual Layer DVD Writer\*\*
- Sony 52x CD Re-Writer Drive (52x32x52)
- Creative Labs Sound Blaster Audigy 2 ZS
- Creative Labs Inspire 7.1 - T7700 Speakers + Subwoofer
- new ASUS WIFI 54Mbps IEEE 802.11g PCI Card
- Microsoft Works Suite 2004
- Logitech Cordless Desktop Optical Keyboard and Mouse
- Software: Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Midi case, Plus A Series Additional Features (see right column)



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**TOP 5**  
**RECOMMENDATIONS**  
**OF THE MONTH**



## MESH recommends Microsoft® Windows® XP

Top Performance Systems with the latest Processors, Graphics & Audio Hardware.

### A Series Additional Features

- > Midi Tower Case & 350W PSU (Matrix FX 53 360W)
- > Network Ready
- > Logitech Internet Keyboard & Optical mouse
- > Internet Ready V.92 56Kbps data/fax/voice modem
- > 3 Year B-to-B, Parts & Labour Warranty (see terms)

### On-Board features include

- > Dual Channel DDR 400
- > Dual 10/100/1000 Ethernet LAN
- > 6 USB 2.0 ports
- > 1x IEEE 1394 Firewire ports
- > 2x Serial ATA connectors supports Raid 0/1
- > 1 S/PDIF out + 1x Surround L/R audio Jack +CNTR/LFE
- > 1 Serial port > 1 Parallel port
- > 1 Audio I/O & 1 RJ-45 jack
- > Slots include 5x PCI & 1x AGP 8x

Optical Storage Technology by Sony

## Elite Series PCs

### new 40GB Fujitsu HandyDrive

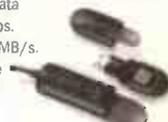
USB 2.0 Data Edition Hard Drive for storing and transferring video, images, music, files etc. 480 MB/s (60MB/sec), Drive powered from Bus



**£129** INC VAT

### Sony 128MB USB 2.0 Micro Vault with Fingerprint Access

Allows you to store private data at the touch of your finger tips. Reads x 12MB/s, Writes x 7MB/s. Includes bio-metric software



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### Norton Internet Security™

Essential protection from viruses, hackers and privacy threats. (Full version - OEM)



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### DVD-R Media - 10x 4.7GB

High Quality DVD-R Media  
 10x 4.7GB



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### Bluetooth Hands-Free Headset

Less than 20g, this headset lets you activate calls with the answer/end button on your ear piece, and works up to 30 feet from your phone



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**MESH Elite Series » PCs ideal for the Home/Office/Business User**

**Elite VM - 3.0GHz**



The Elite VM series features  
 ATI's Radeon 9100 graphics



**Amazing Value Intel PC**

- Intel® Pentium® 4 3.0GHz + HT Processor (1MB Cache, 800 FSB) Intel Hyperthreading Technology
- Microsoft® Windows® XP Home Edition
- ASUS P4R800-VM ATI Radeon IGP Mainboard
- 512MB DDR 400 Memory
- 160GB ATA-133 Hard Drive (7200rpm, plus 8MB buffer)
- 128MB ATI Radeon 9100 graphics (SMA\*)
- 15" TFT Flat Panel Monitor
- Sony 52x CD Re-Writer & 16x DVD-ROM Drive (Combo)
- 5.1 Surround Sound 6 Channel Audio
- Software: Microsoft Works 7.0, Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Plus Elite Series Features (see left column)

(For Sound upgrades see our website or call for details)



*Just need a base unit PC?*

Check out the MESH Build to Order range at [www.meshcomputers.com](http://www.meshcomputers.com) starting from only

**£293** INC VAT **£249** EX VAT

New MESH Mini or Midi Tower case



**£699** INC. VAT **£594.89** EX. VAT

**GREAT VALUE UPGRADES**

- Intel® Pentium® 4 3.0GHz to 3.2GHz HT £50 EX VAT **£58.75** INC.
- 512MB DDR to 1GB DDR Memory £100 EX VAT **£117.50** INC.
- 160GB to 200GB ATA-133 Hard Drive £20 EX VAT **£23.50** INC.
- Add Creative Labs Inspire 5.1 Speakers £40 EX VAT **£47.00** INC.



Great value PCs featuring the high performance all-in-one Pentium 4 Platform

**Elite VM Series Additional Features**

- > Mini Tower Case & 300W PSU
- > Logitech Internet Keyboard & Optical mouse
- > Internet Ready V.92 56Kbps data/fax/voice modem
- > Network Ready 10/100 Ethernet LAN
- > 3 Year B-to-B, Parts & Labour Warranty (see terms)

**On-Board features include**

- > 800MHz Front Side Bus > Dual Channel DDR 400
- > 1x 3COM 10/100Mbps Ethernet LAN
- > 6 USB 2.0 ports > 1 Audio I/O & 1 RJ-45 jack
- > 1 S/PDIF output & 1 VGA port > 1 parallel port
- > Slots include 3x PCI & 1x AGP (8x)

**Elite Series PCs**

**NEW SERVER RANGE**

Incorporating the latest Intel® Pentium® 4 and Xeon™ Architecture. Business Performance and Reliability from £799 EX VAT.



MESH XSERVE 2.4GHz SBS Server, includes

- Intel Xeon 2.4GHz CPU
- MS SBS 2003 + 5 Cal licence
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**Additional Cards for your PC**

Wireless LAN Card to any Elite PC **£39** INC VAT

FireWire Card to any Elite PC **£18** INC VAT

All pictures for illustration purposes only. \*Shared Memory Architecture. \*\*Sony Multi-burners R/W all standard formats Except DVD-RAM

**Excellent, well-rounded system with features to match...**

**17" TFT**



**Elite VM - 3.2GHz**  
**High Performance Intel based PC**

- Intel® Pentium® 4 3.2GHz + HT Processor (1MB Cache, 800 FSB) Intel Hyperthreading Technology
- Microsoft® Windows® XP Home Edition
- ASUS P4R800-VM ATI Radeon IGP Mainboard
- 1GB DDR 400 Memory
- 200GB ATA-133 Hard Drive (7200rpm, plus 8MB buffer)
- 128MB ATI Radeon 9100 graphics (SMA\*)
- 17" TFT Analogue Flat Panel Monitor with built-in speakers
- Sony 52x CD Re-Writer & 16x DVD-ROM Drive (Combo)
- 5.1 Surround Sound 6 Channel Audio
- Software: Microsoft Works 7.0, Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Plus Elite Series Features (see left column)

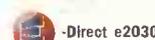
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**GREAT VALUE UPGRADES**

- Pentium® 4 3.2GHz to 3.4GHz HT £100 EX VAT **£117.50** INC.
- 200GB to 250GB ATA-133 Hard Drive £50 EX VAT **£58.75** INC.
- 17" TFT to 19" TFT Flat Panel monitor £150 EX VAT **£176.25** INC.
- Replace Combo with Sony 8x DVD-RW £30 EX VAT **£35.25** INC.

**19" TFT**



**Elite VM - 3.4GHz**  
**State-of-the-Art Elite PC**

- Intel® Pentium® 4 3.4GHz + HT Processor (1MB Cache, 800 FSB) Intel Hyperthreading Technology
- Microsoft® Windows® XP Home Edition
- ASUS P4R800-VM ATI Radeon IGP Mainboard
- 1GB DDR 400 Memory
- 200GB ATA-133 Hard Drive (7200rpm, plus 8MB buffer)
- 128MB ATI Radeon 9100 graphics (SMA\*)
- 19" TFT DVI Flat Panel Monitor
- Sony Multi-Format DVD Writer (8x DVD+/-R)\*\*
- 5.1 Surround Sound 6 Channel Audio
- Software: Microsoft Works 7.0, Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Plus Elite Series Features (see left column)

(For Sound upgrades see our website or call for details)

**£1099** INC. VAT **£935.11** EX. VAT

**GREAT VALUE UPGRADES**

- Upgrade onboard VGA to 128MB FX 5200 £50 EX VAT **£58.75** INC.
- 19" TFT to 20" TFT Flat Panel Monitor £250 EX VAT **£293.75** INC.
- Additional DVD ROM Drive £25 EX VAT **£29.38** INC.
- Add Creative SB250 Speakers £10 EX VAT **£11.75** INC.

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## Elite A PCI-X 540



For those who need power and great graphics

- new Intel® Pentium® 4 540 + HT Processor (3.2GHz Prescott 1MB L2 Cache, 800 FSB) Intel Hyperthreading Technology
- Microsoft® Windows® XP Home Edition
- ASUS P5GDC Deluxe PCI Express Mainboard, Audio, GB LAN, 2x FireWire
- 512MB DDR 400 Memory
- 160GB Serial ATA (150mbps) Ultra Fast Hard Drive
- 128MB NVIDIA GeForce FX 5750, TV out & DVI PCI Express Graphics
- 17" TFT Analogue Flat Panel Monitor with built-in speakers
- new Sony Multi-Format 16x Dual Layer DVD Writer\*\*
- 5.1 Surround Sound 6 Channel Audio
- Network Ready 10/100/1000 Giga Ethernet LAN
- Microsoft Works Suite 2004
- Software: Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Midi case (475W PSU) plus Additional Features (see below)  
(For Sound upgrades see our website or call for details)

The Elite A PCI-X 540 features the GeForce FX 5750 VGA, delivering better graphics and vibrant digital media to PC consumers through additional bandwidth and features offered by Intel's new PCI Express bus architecture.



17" TFT

**£999** INC. VAT **£850.21** EX. VAT

### GREAT VALUE UPGRADES

- |   |             |              |
|---|-------------|--------------|
| • 512MB DDR to 1GB DDR Memory               | £100 EX VAT | £117.50 INC. |
| • 160GB to 200GB Serial ATA Hard Drive      | £20 EX VAT  | £23.50 INC.  |
| • Upgrade from NVIDIA 5750 to ATI RX600 Pro | £30 EX VAT  | £35.25 INC.  |
| • 17" TFT to 19" TFT Flat Panel Monitor     | £150 EX VAT | £176.25 INC. |

### PCI Express explained

PCI Express is the latest I/O interconnect technology.



With a bus bandwidth 4 times higher than that of AGP 8X interface, PCI Express x16 bus performs much better than AGP 8X in applications such as 3D gaming. PCI Express x1 also outperforms PCI interface with its exceptional high bandwidth up to 500MB/s.

*...no reservations in recommending this machine*

PC Pro - July 2004



19" TFT

## Elite A PCI-X 550

Ultimate Performance PC



- new Intel® Pentium® 4 550 + HT Processor (3.4GHz Prescott 1MB L2 Cache, 800 FSB) Intel Hyperthreading Technology
- Microsoft® Windows® XP Home Edition
- ASUS P5GDC Deluxe PCI Express Mainboard, Audio, GB LAN, 2x FireWire
- 1GB DDR 400 Memory
- 200GB Serial ATA (150mbps) Ultra Fast Hard Drive
- new 128MB ATI RX600 Pro, TV out & DVI PCI Express Graphics
- 19" TFT DVI Flat Panel Monitor
- new Sony Multi-Format 16x Dual Layer DVD Writer\*\*
- Creative Labs Sound Blaster Audigy 2 ZS
- Creative Labs Inspire 7.1 - T7700 Speakers + Subwoofer
- Network Ready Intel 10/100/1000 Giga Ethernet LAN
- Microsoft Works Suite 2004
- Software: Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Plus Elite A Additional Features (see right)



The Elite A PCI-X Series is MESH's latest range of PCs incorporating state-of-the-art PCI-X technologies delivering over 4GB per second upstream/downstream data transfers.

### Elite A Additional Features

- > Midi Tower Case & 475W PSU
- > Internet Ready V.92 56Kbps data/fax/voice modem
- > 3 Year B-to-B, Parts & Labour Warranty (see terms)
- > 3.5" Floppy Disk Drive

### On-Board features include

- > Intel 915P chipset > 800MHz Front Side Bus
- > Supports Dual Channel DDR/DDR2 400
- > 4x SATA, Raid 0 > 6 USB 2.0 ports
- > 1 parallel port > 1 VGA port
- > 1 Audio I/O & 1 RJ-45 jack
- > Slots include 2x PCI-X x1 & 1x PCI-X x16

**£1399** INC. VAT **£1190.71** EX. VAT

### GREAT VALUE UPGRADES

- |   |             |              |
|---|-------------|--------------|
| • 200GB to 250GB Serial ATA Hard Drive  | £50 EX VAT  | £58.75 INC.  |
| • 19" TFT to 20" TFT Flat Panel Monitor | £250 EX VAT | £293.75 INC. |
| • Audigy 2 ZS to Audigy Platinum        | £75 EX VAT  | £88.13 INC.  |
| • Upgrade to Cordless Keyboard & Mouse  | £39 EX VAT  | £45.83 INC.  |

### ★ STAR BUY ★

### MESH Games Bundle 3

- includes Nostromo Speedpad and 3 cutting edge games:
- > Championship Manager Season 03/04
  - > Lock On Air Combat Simulation > XIII
- Add this to the Elite A PCI-X series for only **£39** INC. VAT



## NEW Home Start Service

Save time and get total piece of mind with the MESH Home Start Service

We will send a fully qualified technician to your home/office to:

- Setup and connect the PC & Peripherals
- Power up the PC and 'run-up' the OS
- Configure the OS with required user profiles
- Configure for internet & email
- Setup TV Card (if installed) & install peripherals
- Provide 'power-up' demo and basic Q/A

Delivery and Home Start **£99** INC VAT

- Service provided for 1 hour during office hours Mon-Fri (9am-5pm)

## NEW IIYAMA Widescreen LCD-TV

### 17" IIYAMA Prolite C171WT

- > 17" Widescreen (43cm) LCD TV
- > Multi-source picture in picture
- > NICAM stereo
- > 2.5W speakers
- > Wall mountable

**£399** INC VAT



## ADSL Modem & Network Card

ADSL Modem with Built-In 11g Wireless Router and 54g™ Wireless Desktop Network Card



**£149** INC VAT

All pictures for illustration purposes only  
\*\*Sony Multi-burner R/W all standard formats Except DVD-RAM



The ONLY Windows® - compatible 64-bit PC Processor

Optical Storage Technology by Sony

**Cubex Series Additional Features**

(can exclude special offers and reviewed PCs)

- > Case 200 (W) x 185 (H) x 300 (L), 2.85Kg (W)
- > Front Panel - USB x2, 1394a x1, MIC x1, Line-In x1, 6-in-1 Card Reader
- > Back Panel - USB x2, PS/2, Serial Port x2, LAN Port, Parallel Port, 1394a x1
- > Internet Ready V.92 56Kbps data/fax/voice modem
- > Network Ready 10/100 Ethernet LAN
- > 3 Year B-to-B, Parts & Labour Warranty (see terms)

**On-Board features include**

- > Dual Channel DDR 400 support > 1 S/PDIF out
- > 1 Audio I/O > RJ-45 Jack
- > Slots include 1x PCI & 1x AGP 8x
- > 1x Surround L/R audio Jack + CNTR/LFE

**X-treme Series PCs**

The X-treme Series brings together the latest components on the market with our excellent build quality to produce the ultimate gaming PC experience.

- > Break-neck CPU, awesome 3D gaming & graphics performance, thundering Dolby Digital surround sound, quality TFT monitors, cordless keyboard and mouse - all supplied with joystick and games software.
- Simply gaming heaven.

**X-treme Additional Features**

- > Midi Tower Case & 350W PSU (X-treme FX 53 475W)
- > Network Ready 10/100/1000 Ethernet LAN
- > Logitech Internet Keyboard & Optical mouse
- > Internet Ready V.92 56Kbps data/fax/voice modem
- > 3 Year B-to-B, Parts & Labour Warranty (see terms)

**Games Bundle 3**

X-treme 64 Games Bundle 3 includes Nostromo Speedpad and 3 cutting edge games:

- > Championship Manager Season 03/04
- > Lock On Air Combat Simulation
- > XIII



(Worth over £39 INC. VAT)

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\*\*Sony Multi-burners R/W all standard formats Except DVD-RAM

**MESH Multi-Media Series** >> PCs ideal for the Home/Office/Entertainment User

**CUBEX 64 Style Plus**



The compact Cubex PC features a 6-in-1 Memory card reader compatible with Multimedia card (MMC) SD, Smart media & Memory sticks.



- AMD Athlon™ 64 Processor 3000+ with HyperTransport® Technology
- Microsoft® Windows® XP Home
- ASUS Athlon 64 Mainboard, 1600MHz System Bus, IEEE 1394, SATA0
- 512MB DDR 400 Memory
- 200GB Serial ATA (150Mbps) Ultra Fast Hard Drive
- 256MB NVIDIA GeForce FX 5700LE, TV out & DVI
- 17" TFT Analogue Flat Panel Monitor with built-in speakers
- Sony Multi-Format DVD Writer (8x DVD+/-R)\*\*
- Dolby Digital 5.1 Audio with Soundstorm Technology
- Creative I-Trigue 2.1 3300 Speakers with Subwoofer
- Built-in USB 2.0 6-in-1 Memory Card Reader
- Logitech Cordless Desktop Optical Keyboard and Mouse
- Microsoft Works Suite 2004
- Software: Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Plus Cubex Series Additional Features (see left column)



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**GREAT VALUE UPGRADES**

- 512MB to 1GB DDR 400 Memory £100 EX VAT £117.50 INC.
- 200GB to 250GB Serial ATA Hard Drive £50 EX VAT £58.75 INC.
- 17" TFT to 19" TFT Flat Panel Monitor £150 EX VAT £176.25 INC.
- USB 512MB Pen Drive £79 EX VAT £92.83 INC.

★ STAR BUY ★

**WinFast USB 2.0 TV Tuner**

Watch high-quality TV with stereo sound in full screen. Comes with fully functional remote control.



**£64** INC VAT

*...a cracking system - small, good-looking, excellent monitor*

Computer Buyer - July 2004



19" TFT

**X-treme 64 Pro**  
64-bit Home Entertainment PC



- AMD Athlon™ 64 Processor 3200+ with HyperTransport® Technology
- Microsoft® Windows® XP Home Edition
- Athlon 64 Mainboard, FSB 1600, IEEE 1394, SATA
- 512MB DDR 400 Memory
- 250GB Serial ATA (150Mbps) Ultra Fast Hard Drive
- 128MB ATI Radeon 9800 Pro
- 19" TFT DVI Flat Panel Monitor
- new Sony Multi-Format 16x Dual Layer DVD Writer\*\*
- Creative Labs Sound Blaster Audigy 2 Platinum
- Creative Labs Inspire 7.1 - T7700 Speakers + Subwoofer
- Logitech Cordless Desktop Optical Keyboard and Mouse
- Nostromo Games Bundle - Game pad - Joystick - Games bundle x3
- Software: Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Plus Additional Features (see Matrix A series features)



**£1299** INC. VAT **£1105.11** EX. VAT

**GREAT VALUE UPGRADES**

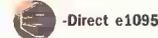
- Athlon™ 64 3200+ to Athlon™ 64 3400+ £50 EX VAT £58.75 INC.
- 512MB to 1GB DDR 400 Memory £100 EX VAT £117.50 INC.
- 19" TFT to 20" TFT Flat Panel Monitor £250 EX VAT £293.75 INC.



19" TFT

**X-treme 64 FX-53 Platinum 939**

Ultimate Performance Gaming



- AMD Athlon™ 64 FX 53 Processor with HyperTransport® Technology
- Microsoft® Windows® XP Home Edition
- ASUS A8V-Deluxe Mainboard, 2000MHz System Bus, GB LAN, IEEE 1394, SATA
- 1GB DDR 400 Memory (PC3200)
- 500GB Serial ATA (150Mbps) Hard Drive (2x250GB)
- 256MB NVIDIA 6800 Ultra with TV out & DVI
- 19" TFT DVI Flat Panel Monitor
- new Sony Multi-Format 16x Dual Layer DVD Writer\*\*
- Sony 52x CD Re-Writer & 16x DVD-ROM Drive (combo)
- Creative Labs Sound Blaster Audigy 2 External ZS Professional
- Creative Labs Inspire 7.1 - T7700 Speakers + Subwoofer
- Nostromo Games Bundle - Game pad - Joystick - Games bundle x3
- Logitech Cordless Desktop Optical Keyboard and Mouse
- ASUS WiFi 54Mbps IEEE 802.11g PCI Card
- Software: Pinnacle Studio 9 SE, Instant CD/DVD, DVD Player
- Plus Additional Features (see Matrix A series features)



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- 19" TFT to 20" TFT Flat Panel Monitor £250 EX VAT £293.75 INC.
- Add Creative 4GB Muvo2 MP3 Player £179 EX VAT £210.33 INC.
- Upgrade to Microsoft Office Professional £199 EX VAT £233.83 INC.

# MESH Notebook Series » Ideal for the user on the move

**BUY NOW**  
**PAY FEB 2005**  
Subject to status see terms

## Tablea Centrino



Portability and Usability

**NEW**  
**NOTEBOOK**

- Intel® Pentium® M 715 Processor (Dothan 90NM/1.5GHz/400MHz/2MB L2 cache)
  - Microsoft® Windows® XP Home Edition
  - 14.1" TFT XGA Active Matrix Touch Panel Display
  - 512MB DDR 400 RAM (2 x 256MB) PC2700
  - 40GB ATA-100 EIDE
  - Integrated 64MB shared Intel Extreme Graphics
  - External USB DVD-ROM/CDRW Combo Drive
  - Tan Rite Pen Software and Stylus
  - Built-in DV Camera
  - Built-in Subwoofer 4x internal speakers & 3D stereo sound
  - Built-in 4-in-1 Card Reader (MMC/MS/SD/MS Pro)
  - Internet Ready Internal 56kbps Fax Modem (V90)
  - Integrated Intel Pro Wireless LAN
- FREE Carry Case • Pinnacle Video Editing Version 9.5E • 2x USB 2.0  
• VGA output • Serial • PS/2 • IrDA • Full size Keyboard • Weight: 2.3Kg  
• 2 Years Back-to-base, Parts and Labour Warranty - see terms  
• Dimensions: 313(W) x 265(D) x 26.5/29.5(H)mm



Front power indicators and ports

Screen Rotation - 90°/180°/270°



Screen rotates to form tablet PC



**£999** INC. VAT **£850** EX. VAT

### GREAT VALUE UPGRADES

- |                                   |            |                    |
|-----------------------------------|------------|--------------------|
| • 40GB to 80GB ATA-100 Hard Drive | £49 EX VAT | <b>£57.58</b> INC. |
| • Add external 3.5" Floppy Drive  | £39 EX VAT | <b>£45.83</b> INC. |
| • USB 512MB Pen Drive             | £79 EX VAT | <b>£92.83</b> INC. |

...offers the best performance balance

PC Plus - May 2004

**15.1"**  
TFT SCREEN

Also Available with 17" screen & 256MB M11 graphics



## Ultima 15.1 - 800FSB

Intel Power, Style & Value



- Intel® Pentium® 4 3GHz + HT Processor
- Microsoft® Windows® XP Home Edition
- 15.1" TFT SXGA Active Colour Screen (1400 x 1050)
- 512MB DDR RAM (2 x 256MB) PC2700
- 60GB ATA-100 EIDE
- Integrated 128MB ATI Radeon Mobility M10
- Sony Combo DVD-ROM & CDRW
- Built-in 4-in-1 Smart Card Reader (supports MMC/SD/SM/MS)
- Built-in DV Camera
- 3D stereo speakers, mic and Dolby Digital 5.1 Output
- Network Ready Internal 10/100/1000 Ethernet LAN
- Internet Ready Internal 56kbps Fax Modem (V90/V92)

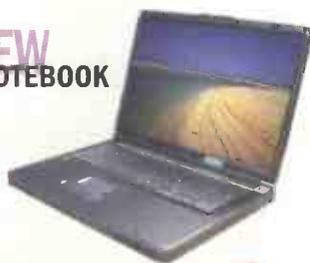


- FREE Carry Case • Pinnacle Video Editing Version 9.5E • 2x USB 2.0
- TV-out • VGA output • FireWire • PS/2 • Parallel • Serial • 1x PC card slot
- IrDA • Windows 98 Keyboard • 3 Year Back-to-Base Warranty - see terms
- Weight: 3.2Kg • Dimensions: 329(W) x 275(D) x 36.5(H)mm

**£999** INC. VAT **£850** EX. VAT

**17"**  
WIDESCREEN

**NEW**  
**NOTEBOOK**



## Pegasus64 3200+

The Ultimate Desktop Replacement



- AMD Athlon 64 3200+ with PowerNow Technology
- Microsoft® Windows® XP Home Edition
- 17" TFT WXGA Active Colour Screen (1440 x 900)
- 512MB DDR RAM (2 x 256MB) PC2700
- 60GB ATA-100 EIDE
- 128MB ATI Radeon Mobility 9700
- Sony DVD-RW & CDRW Burner
- Built-in 4-in-1 Smart Card Reader (supports MMC/SD/SM/MS)
- Built-in DV Camera
- Built-in Subwoofer 4x internal speakers & 3D stereo sound
- Network Ready Internal 10/100/1000 Ethernet LAN
- Internet Ready Internal 56kbps Fax Modem (V90/V92)



- FREE Carry Case • Pinnacle Video Editing Version 9.5E • 2x USB 2.0 • TV-out
- VGA output • FireWire • PS/2 • Parallel • Serial • IrDA • S/P OIF output
- 1x PC card slot • Full size Keyboard • 3 Year Back-to-Base Warranty - see terms
- Weight: 2.8Kg (excluding battery) • Dimensions: 354(W) x 250(D) x 32(H)mm

**£1199** INC. VAT **£1020.43** EX. VAT



The Tablea Centrino Notebook is powered by the Intel Pentium M Centrino processor, while the PowerView runs off of the Pentium 4 Processor with Hyper Threading Technology for improved performance.

All MESH Notebooks include

FREE Carry Case

FREE Pinnacle Video Editing Software V.9SE



Check out the MESH website for the latest offers on the Notebook series, Visit us at...

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ISSUE 10.04

## Police smash gang that hit bookies

A gang said to have extorted thousands of pounds from online bookies has been smashed by British and Russian detectives.

Three men were arrested in Russia following months of collaboration between the National High-Tech Crime Unit and Russia's Ministry of Internal Affairs computer crimes department.

The gang is said to have brought down the bookie sites by swamping them with messages, and then demanded money in exchange for not launching more denial of service attacks.

Gambling is one of the biggest businesses on the web and the gangs are said to have cost sites millions of pounds in downtime.

'Thanks to the response of all the parties involved, we have helped to dismantle a determined group of organised criminals,' said Detective Chief Superintendent Len Hynds, head of the NHTCU.

'The more we work together in the fight against organised crime, the safer the UK will be for business,' he said.

## Ward mobiles

Blanket bans on using mobile phones in hospitals are over the top unnecessary, says the watchdog Medicines and Healthcare products Regulatory Agency (MHRA). It says mobiles can affect some critical equipment, but there is no reason they can't be used in designated areas 'where there is little or no risk'.

## Hard answer

Hard-shelled backpacks with compartments for laptops and PDAs are available at [www.comuta.co.uk](http://www.comuta.co.uk). Prices range from £98 to £125.



# 1 in 3 apps used are stolen

Nearly one in three software products used in Britain is pirated, according to figures from the Business Software Alliance. It claims the figures represent a loss of \$1.6b (£870m).

Analysts IDC estimated the figure from known hardware totals and typical software loads, compared with real software revenues. The figures include games and other consumer software.

The piracy rate for the whole of Europe is even worse at 37 per cent, with the global average running at 36 per cent – a surprisingly low figure considering that it is rare to find legal software in some countries. The BSA itself puts piracy rates in China and Vietnam at 92 per cent.

Mike Newton, UK programme manager for the BSA, said Britain's 29 per cent was worse than it sounded because the UK

market is so large – the fifth biggest in the world. The estimated £870m loss assumes everyone using pirated software could or would pay the market price if they could not get it illegally. But Newton insists most companies don't know they are using more software than they have paid for. 'They are happy to pay for it when they find out because they see the value in it.'

He added: 'The business value of software is underestimated, companies don't understand the value of software to them as a business productivity tool.'

Product activation, which ties software to a PC, has made little impact on the figures because it was not used for enterprise licences, Newton said. But he believed the use of digital-rights management would increase despite fears of alienating users.

## DTI moves against code theft

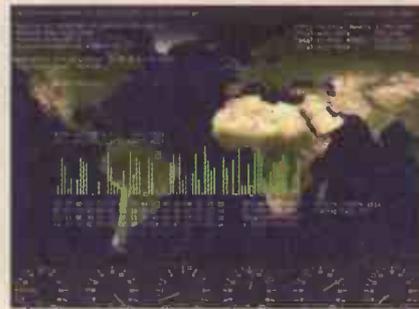
A government move to curb copyright piracy has been welcomed by the Federation Against Software Theft (Fast). The Department of Trade and Industry has set up a Creative Industries IP forum to draw up a

national strategy for the problem. Fast chief executive Geoff Webster said: 'In an increasingly competitive global economy any attack on [Britain's] intellectual capital is an attack on the economy itself.'

## Informative saver

Karalon says it had 50,000 downloads of this screensaver in the few weeks after it was posted. The gauges show processor usage, TCP links, packets per second, active processes and the percentage of real and virtual memory used.

Other information it gives includes packet decodes, network status and the time in your choice of various places in the world. The product costs £11 from [www.karalon.com](http://www.karalon.com), where a seven-day trial is available.



# MS ships upgrades but delays 64bit

Microsoft has released the first service pack (SP1) upgrade for Office 2003, with increased spam controls in Outlook and improved handwriting recognition for tablet PCs. The upgrade was announced as the company prepared to launch Service Pack 2, a major upgrade to Windows XP.

But the 64bit versions of XP and Windows Server 2003 will not ship until the first half of next year, up to six months later than slated. Microsoft said in a statement: 'As is the case with all Microsoft product schedules, the development cycle is driven by quality with a focus on the

needs of customers, rather than an arbitrary date.'

With Office SP1 there come major enhancements to Infopath 2003, the module in enterprise versions that enables the creation of XML-enabled forms for capturing and using structured information. There are new tools for using managed code, digital signatures and enhanced form-sharing via email.

Another service pack release for Onenote improves imports from Word and Outlook. Microsoft said many of the new features were a response to customer demand. Registered

users can get the service pack from <http://office.microsoft.com/home/default.aspx>.

Microsoft also announced a Service Pack 1 for Windows Server 2003, with security and reliability enhancements. This will launch next year at the same time as the 64bit versions of XP and Server 2003.

Microsoft will continue to work with customers to ensure it delivers the highest quality service packs and products with Windows Server 2003 SP1 and Windows Server 2003 for 64bit Extended Systems.

● Upgrade to XP for safety – see page 20

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## Four operators now offer 3G

Britain now has four 3G mobile operators, with T-Mobile and Orange joining 3 and Vodafone.

Both newcomers offer datacards supporting both the Universal Mobile Telecommunications System (UMTS) and GPRS. T-Mobile's passes 128Kbits/sec, which the company says will increase to 384Kbits/sec over the coming months. The Orange card is already rated at 384Kbits/sec.

Brian McBride, managing director of T-Mobile UK, said: 'The switch to 3G is not just a matter of speed; it's equivalent to the move from the typewriter to the PC. 3G datacards give customers Internet access at similar rates to those they experience with high-speed fixed-line internet access.'

T-Mobile's multimedia package costs £199 plus a monthly fee of £70. It includes unlimited data access regardless of whether usage is on 3G, 2.5G or Wifi.

Orange's 3G offering features a number of tariffs from low to high usage, including £75-a-month flat rate for unlimited access plus an £85 start-up cost.

Robert Jaques

## Wifi reaches 3km

Wifi can have a range of 3km using a well-sited aerial without exceeding the limit of transmit power, according to a company providing wireless access in the Derbyshire hills.

The range is a little lower with omnidirectional aerials and a little higher with a well-designed directional aerial, Zycomm chief technology officer Phil Drabble said at the Enterprise Networks show in London last month.

There is little problem with contention from other Wifi users because the area is sparsely populated, he said.

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

## Love in the air

Sex is on the mind of most men using instant messaging (IM) systems, judging by an MSN poll of 50,000 users worldwide. More than two in five said they had used IM to set up dates. More women than men use IM for keeping in touch with family.

# Rogue diallers blocked

**R**egulators have moved to block rogue operators who trick site visitors into downloading software that calls up premium-rate lines. One victim was said to have received a £1,900 bill for a 19-hour call made by his PC.

Now companies providing software to dial premium-rate numbers will need certification from the watchdog Independent Committee for the Supervision

of Standards of Telephone Information Services (ICSTIS).

BT, stung by accusations that it too is making money from the scam, said it would block traffic to offending numbers.

A company statement said: 'For every £100 bill run up by a dialler, BT's share is just £1.85. Most of the rest goes to the operator of the premium-rate number called.'

Many of the scammers are based outside Britain. But an

ICSTIS spokesman said they still face a vetting because they need to deal with a UK operator to reap the premium rates.

BT reckons some 19,000 of its customers have had problems with diallers after having rashly clicked a pop-up ad.

But the ICSTIS spokesman said a minority of problems stemmed from outright fraud. Some came from sites that did not display charges prominently enough.

Others turned out to have been cases of people being billed for calls made by other members their household.

ICSTIS director George Kidd pledged: 'We will only grant permission to those companies that satisfy our stringent requirements. These are currently being finalised.'

Network operators who break the new licensing rules will be reported to Ofcom, warned Kidd. 'Phone companies have the systems to identify suspicious call patterns and can take action before their customers unknowingly run up huge bills,' he said.

## Firms fear to use email

Six out of 10 companies claim they will give up using email if the threat posed by viruses and spam is not contained, according to a survey carried out by Messagelabs. A further 40 per cent said they feel 'worried' by the current email security threat to their business, with only 29 per cent feeling 'optimistic'.

One in five firms thought online fraud such as identity theft and 'phishing' for credit cards will be the greatest threat.

Viruses achieved a similar rating (21 per cent).

The leakage of confidential or sensitive information was rated by 18 per cent as the main issue, with 15 per cent stating that it would be the potential for industrial espionage.

Most companies thought email will merge with other messaging applications in the next few years but only 14 per cent thought it would become completely obsolete.

# Hotspot operators seek to ease billing

Wifi public access operators are seeking a way to give roaming users a single bill for the use of hotspots anywhere in the world.

T-Systems, a division of Deutsche Telekom, has linked 10,000 hotspots into a roaming platform and plans to add half the world's public access points to facilitate billing for travellers.

Paul Simmons, director of global information security at chemicals giant ICI, said last month that corporate use of Wifi would be limited until payment for global roaming access became as easy as that for mobile phones. He also criticised extortionate charges by some operators.

The T-Systems Wifi network is the largest in the world and it is adding hotspots from more than 120 partners worldwide, including stablemate T-Mobile.

'Wifi providers can generate additional revenues by enabling



BT Openzone hotspot in use at the Heathrow Hilton... but multiple operators complicate billing for companies

end users from other providers to roam onto their hotspots,' said Frank Opfer, vice-president of solutions management at T-Systems, in a statement.

Analysts Datamonitor reckon there will be 135,000 hotspots worldwide by the end of 2006, up from 32,000 last year.

But Dean Bublely, founder of Disruptive Analysis, believes there are too many providers. 'What you are likely to see is

some consolidation and a situation similar to cash machines, where most of them have several well-recognised clearing house partners advertised,' he said.

Leon de Beer, a director at Roampoint, which has linked 5,000 hotspots in Europe, said that within a few years, the focus could shift from Wifi to Wimax, which has a greater range.

With VNUnet reports

# Dual-mode handset delay

**T**he launch of handsets that can be used for both landline and mobile links has been delayed until next year.

The phones, the result of a BT project called Bluephone, switch to cheaper fixed-line calls using a Bluetooth wireless link when a host base station is within range.

BT says the project has been delayed to allow partner handset manufacturers to finalise a standard called Unlicensed Mobile Access (UMA) for the purpose.

'We firmly believe this is in the interests of our customers,' said Steven Evans, chief executive of BT Mobile, in a statement. Mobile operators, who have a

Samsung Wifi phone can be used for VOIP or standard calls. The next move is to make mobiles dual mode



big say in handset design, have been accused in the past of discouraging similar moves for fear of losing revenues.

Bluephone will complicate an already bewildering array of choices for phone users. It

will not interoperate with current DECT base stations used in home wireless phones, which use different frequencies and protocols.

One BT paper says that DECT-based dual-purpose phones may also become available, but this is unlikely to be popular with handset manufacturers who will have to support yet another radio technology. There is no reason a base station should not support both Bluetooth and DECT but that still entails replacing existing DECT units.

And Wifi is also becoming integrated with telephony via VOIP. Samsung showed a Wifi phone at Cebit this year that could be used as a standard or VOIP phone.

## Wifi security standard ratified

The IEEE standards body has finally ratified 802.11i, which defines security for Wifi networks – a major issue holding back the technology in big companies.

So long has the process taken that the Wifi Alliance industry body introduced an interim spec called Wifi Protected Access (WPA), which now becomes a subset of 802.11i. The 11i spec differs in requiring the use of the Advanced Encryption Standard.

It will not supersede WPA, which will continue in products not needing industrial-strength encryption. Confusingly 11i applies to devices conforming to the better-known 11a, 11b and 11g Wifi standards, which define the wireless signal. The Wifi Alliance has decided to call it WPA2.

There are home and more robust business versions of the standard. Mark Wagner, global marketing director for Linksys, said his company would launch a number of WPS2 routers and access points this autumn.

## Pay-as-you-go broadband deal

What is claimed to be Britain's first true pay-as-you-go broadband scheme has been launched by a company called Lixus. The deal is that you buy a modem and pay a £70 start-up fee, and you need sign up for only a month, when many providers want you to commit for a year.

You pay 5p per MB for the first 300MB and 2.5p per MB after that; if your total reaches £25 a month, you pay no more.

Lixus also offers a variety of other deals, including SDSL.

## No frills, no thrills

Cheap no-frills access services have boosted broadband uptake throughout Europe – but are often of poor quality, says a report from analysts Jupiter Research. Many people choose the cheapest option, with speeds of 512Kbits/sec or slower, and with data capping or usage charges that make them unsuitable for applications such as voice or video. But Jupiter says the deals are still better value than dial-up services.

## Dodgy chargers alert

Sony Ericsson has recalled one of its phone chargers following a 'limited number of incidents' in Britain when a pressure build-up blew off the top of the casing with the risk of hitting someone.

The fault in the three-pin CST-13 charger may also expose live contacts that could give an electric

shock. The chargers have the ID number BML 162 099/3 R1A on the socket face, along with 'made in Thailand by Delta'.

They were bundled with T68i, T300, T310, T610 phones and a number of accessories, and have also been sold separately.

Sony Ericsson said buyers should stop using the model immediately, unplug it, and call its care centre on 0800 587 6072 to get a free replacement.

# Sony smartphone gets a keyboard

Sony Ericsson has unveiled a range of new business and consumer handsets, including the P910 smartphone which combines the functions of a mobile phone and a PDA offering pay-as-you go email and web browsing.

The tri-band P910, which will be available by the end of September, has a flipdown Qwerty keyboard for emails, and an internal memory of 64MB for corporate applications.

It uses the Symbian v7.0 operating system and UIQ user interface, and supersedes the P900. It will cost about the same.

The P910 supports most mobile email services, including RIM BlackBerry, Smartner, IBM, Extended Systems and Visto.



Above: The P910 with its qwerty keyboard

Left: Star of the East... the Mio 8390

For the youth market, Sony Ericsson unveiled its K500 handset, which includes exclusive gaming content such as a 3D version of Tom

Clancy's Splinter Cell Pandora Tomorrow. The handset has a 1.9in TFT colour screen and 12MB of memory.

Sony Ericsson also said it will release a European version of its Z500 tri-band Edge phone in the fourth quarter of this year, as well as two Bluetooth headsets.

Meanwhile, Taiwanese manufacturer Mio became the latest Far East company to challenge European mobile-phone pioneers such as Nokia on their home ground.

The Mio 8390 smartphone, which uses Microsoft's Windows Mobile 2003 software running on a 200MHz XScale processor, has a 300kilopixel camera that also supports video.

It will be sold in the UK by AGP Global.

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# Time to grow up?

J Mark Lytle on the flourishing market for purposeless gadgets, and the mystery of why Russia's President Putin bought a device that translates doggy barks into Japanese

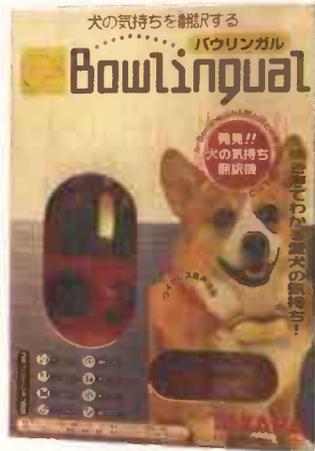
**W**hile it's easy for Westerners to criticise the Japanese for their rampant materialism, it's worth looking past the conspicuous consumption of Gucci, Louis Vuitton and Prada that dominates life here to see the more unusual side of Mammon in Nippon. A perfect example is the abundance of single-theme department stores on a far greater scale than any Occidental equivalent. Six floors of Hello Kitty merchandise? You got it. How about an acre of handicraft products with an annex of glass-blowing goods? No problem.

One of the best speciality stores is a new complex from a company many UK gadgetheads will be familiar with – Takara, the brains behind such works of genius as the Bowlingual dog interpreter and the Yumemi Kobo dream generator. The company's Garage store in Tokyo's Nihonbashi district is a haven for anyone into that very Japanese style of gizmo without much purpose.

Takara makes no bones about its target audience being 30-something men who might still have some growing up to do. Its two-storey facility is packed with everything from retro board games to its latest whiz-bang technology. A recent guided tour yielded a mixed bag of intriguing goodies.

Among the high-end products, the highlight was a scale replica of the old Caterham 7 sports car (originally produced by Lotus in the 1950s), powered not by motor fuel, but by an electric engine. The ¥1.7m (£8,950) Q-Car 7 is part of Takara subsidiary CQ Motors' range of electric vehicles based on the evergreen ChoroQ toy car. Aside from looking stunning, it has a range of 80km and can hit 30kph.

Also prominently displayed were electric vehicles themed on the popular cartoon



Coming to a shop near you...  
a doggy translator

Doraemon, electric motor cycles and battery-assisted bikes. While the CQ Motors range is far from the most advanced electric car line-up on the Japanese market now, it's certainly the most fun.

The less blue sky sections of the store weren't without their share of fun either, including the aforementioned Bowlingual (due out in English in August and, bizarrely, currently being trialled by Russia's President Putin and his two pooches) and a strange electronic device known as Damens Walker.

The raison d'être of the ¥4,000 (£21) device is to take the uncertainty out of the awful hassle that is dating members of the opposite sex. To save you time, Takara has compiled data



Above: Q-car 7... not a toy

Left: Panasonic's Blu-ray new burner

from a nationwide survey and crammed it into a handheld love analyser. Next time you have your eye on someone, no need to get to know each other – just tap in a few key details about them and you'll be told whether or not to bother with the red roses. Who says technology's cold and uncaring? If your Japanese is up to it, there's plenty more where they came from at [www.garage-shop.net](http://www.garage-shop.net).

Away from Takara's gadgety grotto, the summer saw the release of numerous attention-grabbing products from the major electronics players. Panasonic finally made it to market with its first Blu-ray DVD recorder, a device it has been discussing since before Sony was first out the gate with its blue-laser-based unit more than a year ago. The Diga DMR-E700BD retails for around ¥250,000 (£1,315) and records to single-sided, dual-layer discs that can hold up to 50GB each.

As with Sony's effort, the E700BD is intended for recording high-definition TV (HDTV), of which it can manage 4.5 hours per disc. Drop the quality to record gnarly old analogue broadcasts and it'll handle 63 hours. The inclusion of separate tuners for terrestrial digital, analogue and satellite TV make it one of the more versatile DVD recorders available anywhere in the world.

Never one to be ignored, Sony has also been in the news with the introduction of its first hard-drive-based portable music player. Long lambasted for not

even trying to grab a slice of the Ipod's market until now, the company has come in for yet more criticism over its ¥53,000 (£278) Network Walkman NW-HD1 (see review on page 69).

Most of the griping concerns the fact that the HD1 can't play mp3 files, by far the most popular format for compressed digital audio, and forcing users to convert them and jump through the hoops its Sonicstage software presents. While Sony has every right to support its own Atrac3plus format in attempting to encourage interest in Connect, its online music store that uses the format, such a walled-garden approach can only discourage prospective purchasers among the tech-savvy audience.

Where Sony has a chance, however, is with the newcomer yet to commit to either a format or a player. Nonetheless, the branding of the HD1 as a Walkman clearly lends it an edge when it comes to marketing.

## Word of the month

### Terebikko

This is one concept all of us under about 80 can't help but be familiar with – the evils of watching too much television. Japan's Baby Boomer generation was the first to grow up with modern consumer goods including, of course, TV sets or terebi in Japanese. Children (kodomo), in particular, took to the tube with the same relish we did, lapping up anime with a passion.

Naturally, these telly addict kids grew up to be slightly less reserved and traditional than their ancestors and earned the nickname terebikko, denoting a certain kind of distracted product of modern times.

# BBC online archive on the cards

Convergence opens many doors, as Clive Akass found when he visited the BBC's R&D labs

**T**he convergence of computing with communications technology gave us the Internet and shook the movie and music industries to the core. Now the convergence of computing and consumer electronics is about to do the same to broadcasting.

Digital broadcasts, which use less bandwidth than analogue, have already brought many more TV and radio channels, giving more choice but reducing per-programme audiences.

Multimedia broadcasts of web-like content are in their infancy but could add a new dimension to the use of portable devices. And personal video recorders (PVRs) and media centre PCs, which facilitate recording and time-shifting, are changing the way we view TV (see page opposite).

Driving many of the changes has been the BBC, thanks partly to freedom from commercial restraints afforded by the licence fee. Notably it has one of the world's best websites. The first was set up experimentally by research leader Brandon Butterworth at the BBC's R&D Lab at Kingswood Warren, Surrey, in the face of some scepticism.

The BBC's online presence has since reached the point where it is compounding the challenges to traditional programming. It will be multicasting many



Victorian gothic... the BBC's R&D labs at Kingswood

events in the Olympics this year, which is expected to lead to more online coverage of events and add to the already bewildering choice of viewing.

The BBC site enables time-shifting by providing access to some radio programmes up to a week after they are broadcast. The ultimate would be to offer access to the entire BBC archive – and, amazingly, this (or a near equivalent) is on the cards.

The BBC charter is under review and radical ideas are being thrown about. Michael Grade said shortly after being appointed BBC chairman this year that the public owns BBC content and should have access to it for non-commercial use.

He also pointed out that access would be limited by formidable problems over copyright and repeat fees. But the technical issues are already being assessed,

as I found on a visit to the splendid Victorian neo-Gothic mansion that houses the Kingswood R&D labs, where the groundwork was done for many of the developments in UK broadcasting in the past 50 years.

## Millions of gigabytes

BBC engineer Michael Sparks reckons the archive could be stored in 14petabytes (14 million gigabytes), which is not too much to stack on hard disks. Sparks estimates that at today's data densities they would occupy five to eight floors of London's Canary Wharf. With densities likely to increase by orders of magnitude, storage should not be a problem.

The existing content could be transferred, and reformatted if necessary, as part of the refresh cycle all such archives need. It would be a costly business, but

Sparks pointed out: 'We need the archive anyway. The best way to think of it is not as a back-end store for streaming but as a way of modernising the archive.'

Sparks stresses that just because the labs are looking at the idea does not mean it will happen. He said: 'It's not our role to decide whether these things will happen... we have to be there to help the BBC make an informed decision.'

Storage is, of course, not the only technical issue. You need an infrastructure able to deliver the content. One possibility the labs are exploring as part of an EC-funded project called Share It, is to use rights-managed peer-to-peer networking. Instead of loading a server with a request for a file, you find someone else who has downloaded it and get it from them. Sparks raises another intriguing possibility. The main archive has to use a production-quality format, but with high compression it could be packed small enough to fit on a laptop or home server with the data densities of the near future.

This level of storage would not be needed with P2P, which makes the entire network your archive. It's an eerie prospect: what amounts to a national memory bank, spreading itself resiliently through homes and offices across the country.

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As seen in the September issue of PCW group test.

"As a student PC, it scores well and has a good software package" - PCW

# A different way of watching

Metadata will change our viewing habits and bring in true multimedia broadcasting

**T**he cliché that children are better than their parents at programming a video recorder was never more than half true. The user interface of most recorders is risible and only youngsters can be bothered with it, just as it was they who started the texting boom using the equally unsuitable numerical keypad.

Electronic Programme Guides (EPGs) are at last making TV recording as easy as it should be, a matter of simply clicking a listing. But, coupled to computers or PVRs, they mean we can view TV more like we read a book – in chunks and to our own schedule and we can do it on a laptop, a PC or a portable media player. There are even pilot TV broadcasts to handheld PDAs. It's the death of the couch potato, passively taking in anything the TV throws out.

The industry saw much of this coming, and began thinking (or panicking in some cases) about how it should affect content and delivery. One result was a project called TV Anytime (TVA), involving the BBC and other broadcasters across the world, content providers such as Disney and recording rights organisations.

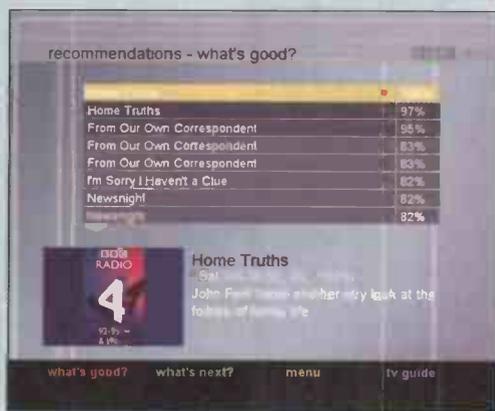
This has produced an XML-based TVA specification for programme metadata, which may not sound very exciting but it could transform our use of television and steer us towards new forms of multimedia communication.

TV metadata, at its simplest, can help you to classify or search for a programme by genre or subgenre. You could tell your PVR to record anything

## Guide to past and future

Electronic Programme Guides will have to be a lot more elaborate to help us navigate the explosion of choice on-air and online. This screenshot is from an experimental platform called Genome, written in Java, for exploring how EPGs can be used in conjunction with TVA metadata.

It lists by genre or, as here, recommends viewing on the basis of what you have watched. That can be done with some PVRs now; but metadata will allow more elaborate searches – taking in past listings and so potentially giving a window on the archive. Researchers are exploring innovative visualisations, and creating web-based and PDA implementations.



from the Olympics, say; or just every hockey event. Metadata also allows you to impose a structure, so that instead of viewing a recording linearly as transmitted, you can take it in book-like chapters.

Kingswood Warren engineers Andrew McParland and Chris Newell took me through a TVA-enabled recording of *Walking With Beasts* that allowed it to be spilt into chapters, or segmented according to the animal featured.

The metadata, which would be transmitted with the programme, also included hyperlinked text that can be wrapped round still and moving images.

## Multimedia book

If and when screens become as pleasant to read as paper, this could lead to a form of multimedia 'book' that exploits the different strengths of text, audio and video. For now, as McParland puts it, the purpose is to provide an open standard that allows people to do interesting things with TV. The content or

service provider provides the metadata but it may be exploited in different ways by various devices or applications.

Programmes and their searchable metadata are associated with a 'Crid' (content resource ID) that can be used to trace several alternative locations or broadcast times. This means, for instance, that if you searched a TVA-enabled listing for a programme that had already been broadcast, you might be given a choice of a repeat time or a web location where the recording is available on demand.

The idea that PVRs will be the death of TV advertising has been turned on its head, McParland said. 'Rather than seeing the forward button as the biggest threat, [advertisers] are seeing the pause button as the biggest opportunity.'

The TVA system would allow people to ask to see a longer version of an ad they are interested in, or to be taken to a website. You could also see it being used for product placements: see famous beauty

in new outfit, click here to see where you can buy the same.

TVA has been submitted to the standards body ETSI, and the DVB organisation is drawing up a spec on how it should be carried on European digital TV signals. The rest of the world, including countries using different TV formats, is likely to use it too.

## Easier searches

Newell points out that the metadata could make video, usually near impossible to index, more easily searchable than the web.

'The reason that search engines are not as good as you'd like them to be is that there is no equivalent system on the web. Not universally, anyway. But for television we have done it in a very detailed way.'

This assumes, of course, that TV companies are willing to put the resources into compiling the metadata. But much of the information is put on file anyway in some way or another during programme production, and it could be collected automatically if the process is standardised in a management system.

It may pay companies to do so. Audiences per broadcast are falling, but recorded programmes have an afterlife from which new revenues may be derived – for instance from ads that update themselves when screened. McParland said: 'TV Anytime is enabling new business models.'

CA

## See our website for more...

Researchers at Kingswood are developing, in a project called Dirac, an open-source format that could eventually challenge the dominance of proprietary formats such as Windows Media by offering an efficient, royalty-free way to deliver video. This screen, from a utility to aid Dirac developers shows the vectors of change in a video still.

There's an interview with Tim Borer, who is leading the Dirac team, in the web version of this special report at [www.pcv.co.uk/news/1157046](http://www.pcv.co.uk/news/1157046).





>> **Plug-in check**

The security risks of iPods and other plug-in solid-state storage are addressed by an encryption tool from Pointsec Mobile Technologies. Pointsec Media Encryption allows network administrators to manage and secure data on removable drives and media across a company without user intervention.

Disknet Pro, the Reflex Magnetics product, offers similar features. Ruggero Contu, client research consultant at analyst Gartner, warned last month that USB or Firewire devices carry valuable information that might fall into the wrong hands.

>> **P2P block**

Aladdin Knowledge Systems has released ESafe Version 4. It blocks unauthorised peer-to-peer file sharing and instant messaging, as well as threats such as spyware, Zip-borne viruses, browser vulnerabilities and rogue HTTP tunnelling.

Meanwhile, Aladdin Systems has changed its name to Allume Systems to avoid future confusion. [www.esafe.com](http://www.esafe.com)

>> **Safe surf**

Ghostsurf 2005 Pro is said to keep your identity safe from thieves and marketers when you surf the web, and it deletes browser history logs, cookies and spyware. It costs £39.99. [www.avanquest.co.uk](http://www.avanquest.co.uk)

>> **Multi-graphics**

Matrox has launched three low-profile PCI graphics cards, the G550, P650 and the QID designed for 2D multi-display systems in finance houses and public displays. [www.matrox.com](http://www.matrox.com)

>> **Spy module**

Spybuddy 3.0 for Windows allows parents and employers to record chatroom and surfing activities of children and staff. It also monitors all Pop3 and SMTP email. It costs from \$49.99 (£27.47) from [www.exploreanywhere.com](http://www.exploreanywhere.com).

# Sony rival for new iPod

Apple unveiled a fourth generation of its iPod music player last month as competitors geared up to launch rival products. The new iPod has a claimed battery life of 12 hours, double that of the original, and is slightly slimmer at 104.1 x 60.7 x 17.47mm.

It also cheaper, at £219 for a 20GB model and £299 for a 40GB, and it has the click-wheel navigation used on the iPod mini. What has not changed, Apple said, is the fact that you have to send the device to a specialised repair unit to have a replacement battery fitted.

There have also been reports of problems with recharging the iPods over poor-quality USB2 ports, which cannot deliver the maximum 500ma current required by the specification. This, of course, is not Apple's fault. The iPod can also use a Firewire port.

Sony, which pioneered the personal music player with the original Walkman, has unveiled its NW-HD1 player, which uses a 1.8in 20GB hard drive measuring just 89 x 62.1 x



Apple's new iPod faces a growing number of competitive products

13.8mm, appreciably smaller than the iPod's and with a longer claimed battery life of between 18 and 30 hours.

It is also being branded as a Walkman and uses Sony's own Atrac3 format, as used by its Connect music download site, which has yet to have the success of Apple's iTunes (see Letter from Tokyo, page 33).

iTunes has just boosted its street cred by signing up three independent labels: Beggars Group, V2 and Sanctuary Records Group.

HP is to launch a rebranded iPod in September, reportedly with a 60GB disk. Also in the pipeline are devices using Microsoft's Portable Media Centre software that will also play videos. Creative Labs, Samsung and Iriver will all launch implementations over the next few weeks.

● A software module called Ppod provides a guide to London loos for iPod users, complete with appropriate soundtracks such as Handel's *Water Music*. It can be found at [www.nykris.com](http://www.nykris.com).



Sony's iPod killer, the NW-HD1, is reviewed on page 69

# Toshiba laptop provides instant TV

Toshiba hired an executive flat with spectacular views over the Houses of Parliament last month to showcase its ideas on convergence in the home.

Star of the show was the Qosmio E10, the first of a notebook range that will

combine the functions of an entertainment centre and laptop. It offers two modes: one as a standard PC running Windows Media Center; the other as an instant-on DVD or CD player and analogue TV set using Linux software.

The machine was also shown screening Freeview digital TV using an exterior box. Andy Bass, UK general manager of Toshiba Information Systems, said future models would have digital TV internally when the modules became small enough to fit on an internal mini-PCI slot.

Also slated for future models is a 17in widescreen (the E10 has a standard 15in bright enough to be viewed in sunlight), and onboard media streaming, allowing you to beam video or TV from the E10 to a larger screen. Again, Toshiba used an exterior box for this demonstration, though the Qosmio already has Wifi 11b/g and Bluetooth 1.1.

On show near the E10 was Toshiba's T91 DLP projector which has a detachable scanner allowing it to display printed documents; a sister product, the TW90, allows content to be projected via a wireless link.

Entry-level price for the 1.8GHz P4-driven E10 is £1,499 inc VAT, and one target market is students who want all their computing and entertainment needs in one box.



Qosmio media laptop... a 17in widescreen version is in the pipeline

# Utilities outguess search engines

**D**ays after Microsoft launched a revamp of its MSN search engine to challenge the dominance of Google (see *PCW*, September p17), an intriguing new battlefield opened up between desktop utilities that aim to beat the giants at their own game.

We reported last year (*PCW*, October 2003 p32) on a useful little client from Gurunet ([www.gurunet.com](http://www.gurunet.com)) that searches from within a Windows application when you Alt & click any keyword. It searches licensed reference libraries for definitions of words or acronyms, and offers results from search engines including Google.

Results tend to be more focused than a straight search engine, because Gurunet takes the immediate context of the

keyword into account. The service costs \$29.95 (£16.27) a year.

Last month a US startup called Blinkx launched a free service that does something similar – although, unless you have highlighted a passage of interest, it takes a whole live window as its context. The service, also called Blinkx, differs from Gurunet in indexing your own local storage (including specified networked disks), as well as searching elsewhere.

It works in the background, looking for content similar to that in your active window, so that results can appear instantaneously on request.

Tiny icons on the title bar offer you a choice of local files, references from news sites, web search engines, products, blogs,

Blinkx... checks references as you write. The small source icons also appear on application task bars

video, and email – only Outlook and Eudora clients are supported at the moment, although Notes is in the pipeline.

Unlike Gurunet, Blinkx does not provide dictionary and encyclopedia searches, and so is not so good for definition-type information. Users of Word 2003 already have this feature with Microsoft's Research panel, although this too is not as good as Gurunet for quick technical look-ups.

But Blinkx, which has a prettier interface, is a free download and well worth the desktop space if you process a lot of information.

● Microsoft's MSN has bought Lookout Software, developers of



an Outlook 2003 add-on providing fast searches of email and other PC files. The purchase should lead to an MSN Search that will increase the relevancy of results by up to 45 per cent, the company said.

Clive Akass

## DrayTek Voice-over-IP Solutions

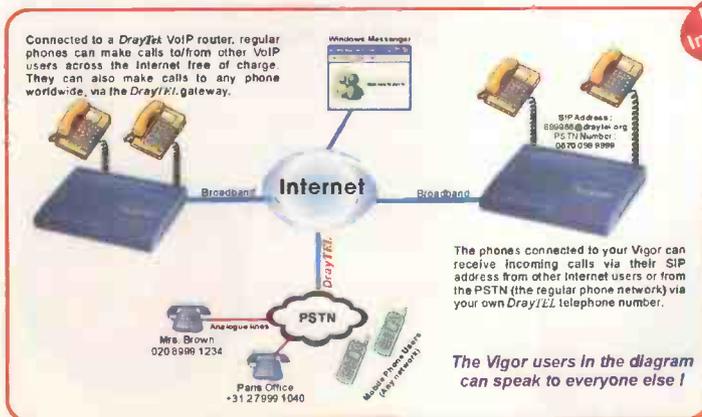
DrayTek's award winning range of broadband routers and firewalls now supports Voice-over-IP (VoIP) facilities, enabling you to make use of your broadband line for voice calls instead of using your regular phone line.

Phone ports on the Vigor routers allow you to plug in a regular telephone and make calls to other VoIP users or, via the DrayTEL gateway, to anyone on a regular telephone line (fixed or mobile). You can receive calls too, either over the internet or via your personal DrayTEL phone number.

DrayTek Vigor routers are available for ADSL, Cable-modem and ISDN users - visit the web site to see the extensive specification of each model and select the ideal router for your own requirements.

As well as VoIP, the Vigor routers also have their regular feature-rich specification: The high performance firewall, with content/URL filtering, DoS protection, time scheduling, plug-in blocking and user-defined filtering all helps keep your network secure.

The Vigor's famous VPN facilities enable easy to set up and secure site-to-site or teleworker tunnels to be linked, featuring 3DES/AES encryption and up to 16 simultaneous VPN tunnels. Wireless LAN (802.11g with WEP/WPA security) means that your portable/wireless devices can access the router facilities just as easily as your wired clients.



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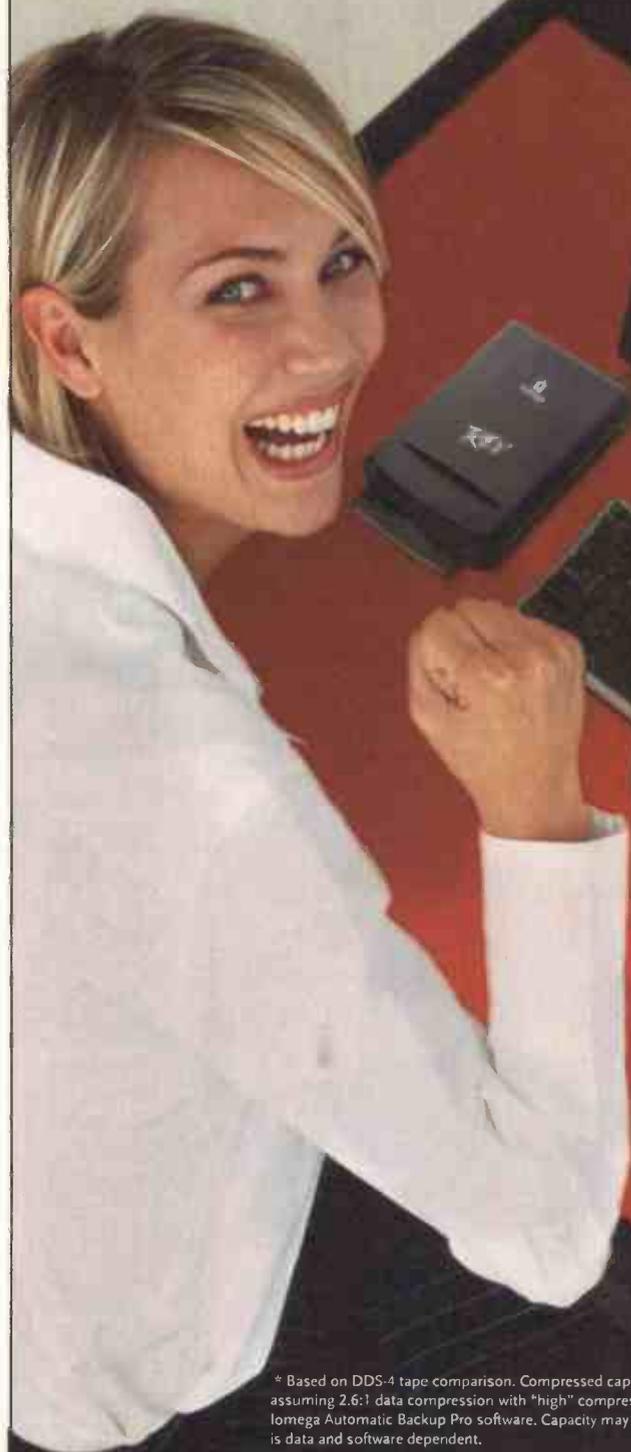
For full details of all models, visit  
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Specification subject to change. Facilities vary with model.

# The waiting is over...

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\* Based on DDS-4 tape comparison. Compressed capacity assuming 2.6:1 data compression with "high" compression on Iomega Automatic Backup Pro software. Capacity may vary and is data and software dependent.

# Get more from PCW

**R**egular PCW web users will have noticed by now that our site has undergone a redesign, with new features added and a much faster download time.

The web is becoming an increasingly important tool for research and news, so we have given greater emphasis to both these

elements in the new-look www.pcw.co.uk but, equally, we wanted to make it easier for people to join our community of readers, so have given more prominence to the forums.

The improvements haven't stopped yet, with a latest news and reviews ticker due soon, and later the ability to comment directly on reviews and downloads and a

MyPCW-type area, where you can save links to individual articles for future reference.

So, for daily news and regular reviews and group tests updates, bookmark [www.pcw.co.uk](http://www.pcw.co.uk). And remember, if you want weekly round-ups of news and reviews delivered to your desktop, sign up for our weekly newsletter, out each Friday.

## The current issue

Details what's in the latest issue, plus with a single click, you'll get an outline of the following month's issue, which we update during the month.

## Reviews

More reviews on our home page, with an improved search facility and direct links to our Best Buys recommended lists and our Pricerunner-driven Best Prices cost comparisons for a massive range of products.

## Group tests

Recently introduced to PCW online, we have made our popular comparative tests easier to find and more extensive than ever.

## Hands on

If you don't buy every issue, then search our archive of Hands on articles from the past few years, available to buy for 99p.

## News

Updated regularly throughout the day, the essential news on the industry and product releases. Click the News tab and you'll find even more news, plus special reports. Plus you can access an RSS feed to get the latest news on your desktop.

## Best Prices

Here you can compare product prices from a large group of online retailers for a huge range of products, checking out the cheapest price before making a purchase with a couple of clicks.

## Forums

Join the PCW community and take part in our forums, where readers discuss the latest happenings in the technology world and seek advice on problems they have encountered.

The screenshot shows the PCW website homepage with a navigation bar at the top containing 'HOME', 'NEWS', 'REVIEWS', 'DOWNLOADS', 'FORUMS', 'HANDS ON', and 'JOBS'. A search bar is located below the navigation. The main content area is divided into several sections:

- THE CURRENT ISSUE:** Features a 'PROTECT YOUR HOME PC' banner and a 'ORDER NOW' button. Below it, there's a section for 'Personal Computing World Out now!' with a 'CD Edition' and 'DVD Edition' button.
- REVIEWS:** Includes a review for 'Via K8T800 Pro' and 'PalmOne Zire 31'.
- HANDS ON:** Features a 'best prices' section and a 'Hands on' section with a 'best prices' sub-section.
- NEWS:** Includes a 'Low-end AMD Sempron chip makes debut' and 'DTI to overhaul extended warranty system'.
- DOWNLOADS:** Includes 'Holding Pattern', 'Postcode Anywhere', 'Seatools', 'DunJax', 'All in One Secretmaker', and 'Blinkx 0.3.98'.
- FORUMS:** Includes a 'DIGITAL EDITION' section for 'Zinio'.
- MORE REVIEWS:** Lists various products like 'Panasonic NV-GS120', 'Thermaltake Silent Pure power 480W', etc.
- GROUP TESTS:** Lists various products like 'Intel motherboards', '9 motherboards put through their paces', etc.



Send your letters to:  
The Editor, PCW, VNU Business Publications,  
32-34 Broadwick Street, London W1A 2HG



Send your emails to:  
letters@pcw.co.uk

# Letters

## Dialup doldrums >

Guy Kewney's column in July's *PCW* really hit the spot for me. I have a friend who runs XP and is badly behind with updates. He's a farmer living about three miles from his old country exchange and the buried cable crosses fields under electric fences. If I pick up his phone the dial tone sounds like Peter Pan's crocodile – tick, tick, tick. His PC gets anything from 7.2Kbits to 21Kbits/sec but it never stays up long enough to download any of the bigger updates. It's OK for email and browsing but not much more.

The Microsoft Service Pack CD is only updated to October 2003 and there have been a few updates since then. What I would like is to be able to download all the XP updates on my PC, write them to CD and use the CD to update his PC. Is that possible and if not, why not? Now we have this mix of broadband and dial-up it would seem to make perfect sense to have a friend with broadband get the updates for for the dial-up users.

Dave McWilliam

**Kelvyn Taylor replies >** It's worth ordering another free Service Pack CD from Microsoft (<http://www.microsoft.com/uk/windowsxp/servicepacks/sp1.mspx>) as they periodically incorporate newer critical updates.

## Bitter tablet >

I keep reading how tablet PCs are not taking off. In fact half my searches for tablet PCs on the Internet seem to lead to articles about what a sales disaster they are.



Tablet PCs seem hard to obtain

But maybe there is a simple explanation... you can't buy them! I've been searching high and low and have had almost no success. You can find one or two online places to buy them; but if you want to walk into a shop and try the product before you hand over your cash, then you can forget it. Maybe if they get the distributors and retailers to play ball there would be more chance of success.

George French

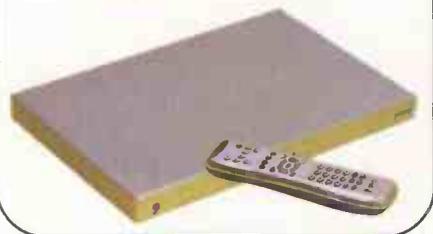
## Cartridges for charity >

It occurred to me recently that many of our readers will have an old mobile phone or printer cartridge tucked away in a drawer at home or at work. What they may not realise is that their unwanted items can benefit the Roy Castle Lung Cancer Foundation.

Old mobiles and empty printer cartridges can be recycled, and the proceeds will be used to help fund vital research into the early detection, diagnosis and treatment of lung

The author of the Letter of the Month will win a Showcenter from Pinnacle Systems. Connecting to your PC via either the included Ethernet cable or an optional wireless PC Card, Showcenter allows you to watch the likes of DivX movies on your TV. You can also listen to mp3s and view pictures stored on your hard drive, while the fully featured remote control means you never have to leave your arm-chair. To find out more about Showcenter head to [www.pinnaclesys.com](http://www.pinnaclesys.com).

**WIN!**



cancer as well as providing support for sufferers and their families. With 38,000 new cases of lung cancer being diagnosed each year and 80 per cent of those diagnosed not surviving longer than 12 months, lung cancer is the biggest cancer killer in the UK. But that's not all. Recycling is environmentally friendly, so you can help the Earth and support a worthwhile cause too.

Please help us continue our vital work with lung cancer sufferers and their families by donating old printer cartridges and



## Letter of the month

### Aggravating aggregators >

When I started using the Internet a few years ago, all was fine. Yahoo or Altavista popped up in front of you, you put in a few keywords and a few seconds later, there was a choice of websites. But for the umpteenth time this very morning, I've searched for something, as I do most days in my job, only to be hit with a barrage of websites that at first sight appear to offer what I want, but when delved into are little more than portals that make the website you wanted in the first place yet another five clicks away.

I've lost count of the number of times I've searched for something legitimate for work, only to be directed to either a shopping website or, more frustratingly, faceless sites that just list more sites and more portals. It's getting silly. I'm sure there are people out there who have decided it's a good idea to cash in on the affiliates programs and now just create pointless websites with lists of other websites on them and a thousand banner ads.

A message to them all if they're listening – we've already got these websites and we don't want any more. I don't need a search engine to find another search site, thanks very much. Yahoo, Alta Vista, Google, Lycos, Ask Jeeves and their ilk do a sterling job finding the things we want, so why foul it up? I'm sure if we removed half of these websites, the Internet would fly, or are all these sites are designed to slow down the surfing of mere mortals like me and railroad us into getting 3Mbits/sec broadband?

So, this is all I ask. No more portals. No more 'click through' websites. All I want is to search and find. Nothing fancy, just to be able to type the name of something I want and find it easily. It's not much to ask, is it?

Robin Bithrey

**Kelvyn Taylor replies >** A sentiment with which we heartily agree – these so-called 'aggregator' sites are making some types of searches less than useless.

mobile phones from home and work. For details call 08712 505 050, go to [www.recyclingappeal.com/roycastle](http://www.recyclingappeal.com/roycastle) or drop your unwanted items in the post to: Roy Castle Recycling Appeal (EL), 31-37 Etna Road, Falkirk, FK2 9EG

Janine Drew

**Faster, faster... >**

In PCW July you published a news article saying NTL had announced they were doubling their broadband speeds with no increase in pricing. As an NTL customer I looked forward to this as its cable broadband is now very expensive against the competition. Yet there is still nothing about this on NTL's website and its customer services are not aware of this change.

I am sure the announcement was good PR for NTL but if it's not happening you should print a correction to put the record straight.

Richard Jones

**Clive Akass replies >** The original announcement was made in April, and NTL tells us that most users will be getting the higher speeds in August and the rest will be upgraded during September and October.

Entry-level 150Kbits/sec links go up to 300Kbits, 600Kbits/sec go to 750Kbits and 1Mbit/sec links go to 1.5Mbits.

**Digital editions >**

We have subscribed to PCW for many years, and my wife and three children enjoy reading it. If we change to the digital (Zinio) edition, will we all still be able to read PCW or will it be locked to a single PC?

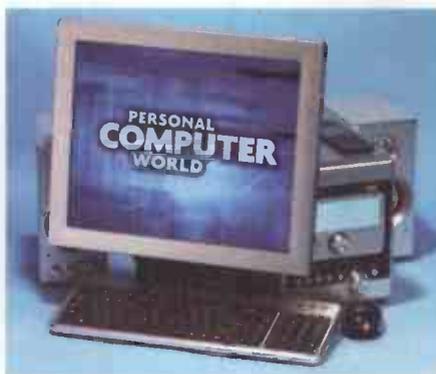
When we buy CDs of back issues, the adverts are omitted, but this is inconvenient when considering new purchases. Will the digital edition include the adverts?

Ben Couzens

**Rob Jones replies >** The PCW Zinio edition contains all the contents, including adverts, found in the print edition. It can't be freely copied to other PCs, but you can download a free second copy via your Zinio account for viewing on another PC. We are, however, investigating options for those readers who might like to be able to download several copies.

**Style victim >**

I've recently moved house and in the new place I've no spare space for my old PC. I would quite like to have a PC in the lounge and hook it up to my TV rather than have a separate monitor. I've considered a standard size PC with Windows XP Media Center, but I



Style is important to PC users these days

don't want wires all over the lounge. Another alternative would be something that can neatly fit under the TV and isn't an eyesore. I would like a machine that can be upgraded, has a DVD burner and works as a personal video recorder, but other than that I'm not a heavy user and don't play PC games.

Any ideas on what I should go for as I'm a bit baffled by the range out there. It must also look half decent and not be too noisy.

Simon

**Kelvyn Taylor replies >** Your dilemma is a common one, but if you turn to page 107, one of the stylish PCs in our group test may fit your needs or give you some ideas.

**Out of tuners >**

I'm very excited about the prospect of owning, buying or maybe building a media centre PC. However there is one important aspect which your reviews seem to ignore and that is the TV tuner card. Many people, like me, enjoy the luxury of a plasma screen, and they are all 16:9 aspect ratio. Almost all the cards that come with prebuilt XP Media Center PCs seem to take their signal from analogue terrestrial, which is 4:3 aspect ratio and therefore useless to me. The only ones receiving 16:9 are digital terrestrial (Freeview) cards.

So, when you review these machines in the future, could you pay more attention to the TV tuner card? Also, some TV tuner cards have hardware mpeg2 compression, with the ability to adjust the data capture rate, so that for example, a three-hour programme can be captured to a file that will fit on a single DVD. Please could you also indicate this as well.

At the moment, I have a Hauppauge PVR250, which will only record in 4:3, but I feed the analogue inputs with the output from a Freeview box, set to 16:9 and this works perfectly. This is not an option for a media centre PC, because the timer on the Freeview box has to be set to change channels, as well as having to set the programme scheduler on the computer which is a pain.

Francis Norton

**Kelvyn Taylor replies >** Several vendors selling XP Media Center PCs do offer the option of a digital (Freeview) TV tuner card at

PCW Zinio replicates the print edition

an extra cost. We'll try and highlight such options when reviewing these in future.

**Router master >**

On your August letters page Mike Wilkinson said he would be moving into a house with a students who all would be stepping on each other's toes with regards to bandwidth usage.

I have found a solution in form of the Linksys WRT54G 802.11g wireless access point/router (around £65), and free customised firmware from Sveasoft ([www.sveasoft.com](http://www.sveasoft.com) - \$20 for a year's updates and technical support). That's just over £10 per head in total.

The Sveasoft firmware allows you to specify hosts or ports that should be given low priority, in addition to its usual functions. I am running it and can do crystal clean VOIP calls even if my daughter is using MSN with video or if I'm downloading the latest Linux Isos.

The Sveasoft software also has support for WDS (Wireless Distribution System) for wireless bridging: my next project will be an 802.11g WRT54GS as my main access point and Internet gateway/firewall, redeploying the WRT54G to the living room next to my digital TV box and using WDS between the two. It'll be easier and cheaper than putting cables in my 100-plus-year-old house.

Ove Hansen

**Kelvyn Taylor replies >** Thanks for the tip, but readers should be aware that Sveasoft custom firmware is not supported by Linksys and installing it could invalidate the warranty.

**Mindbender winners**

The winner of July's crossword was Alan Sherratt of Inverness-shire and Janice Harris of Bournemouth won the brainteaser. No-one got the August crossword correct, and the brainteaser was won by BM Gibbs of Derbyshire.

**Solution to August's crossword**

ACROSS: 7 Stars 8 GPIB 9 eBay 11 Apache 12 Resident 13 Semi 15 Red 16 DDCMP 19 Dingbat 20 App Code 23 Depth 25 Ion 26 Name 28 Bounding 30 Letter 32 IEEE 33 IWay 34 Gnome

DOWN: 1 Step 2 Wrecking 3 Upgrade 4 Abyss 5 Weeded 6 Hawn 10 Beer mat 14 Exile 17 Madam 18 Spindly 21 Constant 22 Gingham 24 Tanker 27 Kiwis 29 Ores 31 Emma

**Solution to August's brainteaser**

I	T	S		C	O	A	T	I
A	R	C	H	A	N	G	E	L
M	E	R	I	T		G	E	L
B	E	A	T	E	R	N	E	
I	P	E	R	E	G			
C	U	P		E	G	G	A	
	P	I	L	L	A	W	L	
H	O	N	E		T	A		
E	N	G	I	N	E	E	R	S

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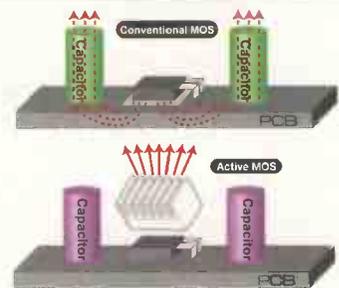
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# A question of copyright

Could international pressure influence UK's copyright laws? Guy Kewney hopes not

**I**t's fairly obvious from my photo, but I don't shave. And while I have no intention of reaching for the razor, I was astonished that the Afghan Government felt it was appropriate to pass a law prohibiting shaving, and to punish blade-using with severe penalties.

I feel equally aghast at the actions of the US Senate in deciding to ban the creation of technology which 'induces' piracy. To induce (says the creator of the Act) means to intentionally induce someone else to break the copyright laws. 'Intent may be shown by acts from which a reasonable person would find intent to induce infringement based upon all relevant information about such acts then reasonably available to the actor, including whether the activity relies on infringement for its commercial viability.'

In the days of music tapes, it became standard to build two drives into tape players. One would be able to record while the other played. It was there to enable you to copy tapes. The question of whether the tape you were copying was one you were entitled to copy was up to you.

Under the Induce Act produced by Orrin Hatch, an American senator, if 'a reasonable person' decided that building this tape player was 'intentionally aiding, abetting, inducing or procuring' the breach of copyright, then the manufacturer of that device would be liable to punishment.

The thing is, of course, I don't live in America or Afghanistan. Laws passed in the Afghan theocracy concern me, of course, as someone who takes an interest in international affairs, and laws passed in America concern me equally. But in the normal course of my life, I don't have to worry about whether I'm transgressing some California statute, nor do I fret about whether trimming my beard short might be regarded as shaving by 'a reasonable person' as defined in Afghan law.

So the other day, when I phoned an American supplier who had been suspected of swindling UK buyers, I recorded the conversation. UK laws allow me to do so in the course of journalistic investigation. There are some restrictions on recording calls from customers without warning them, but generally, you can record your own conversations.

My American friend confirmed the factual basis of the accusations made against him, and I asked him what response he would make when I printed the story. He said he 'hadn't said that', so I told him I had an audio

recording. 'That's illegal under California law' he screamed indignantly. 'Perhaps that's one good reason why I don't live in California,' I said and he hung up.

Now, Arnold Schwarzenegger may be Governor of California - but I still don't expect the Terminator to arrive and confiscate my recording.

Can we be similarly sure that if I write a program to unlock my cellphone, or to transfer Region 1 DVD content onto a Region 2 disc, or buy a device which could send a copy of a piece of copyright music to my Dad, America will accept that this is a matter for the UK legislators? If I copy all the stuff off my Ipod onto my hard disk, using software written in Taiwan, can I be pretty sure American senators won't try to get economic sanctions against the author on the grounds that he's 'inducing' me to break copyright?

The fact is, of course, that technology changes. People listen to music on Ipods today, not on CDs. Inevitably, sales of CDs go down. But looking back, when CDs came in, sales of vinyl went down and nobody

thought it was right to create laws to protect this. Nobody should try to inhibit the mp3 trend just because it's harder to copy-protect them than it was to prevent CD duplication.

If you think I'm being unreasonable, just remember: when video cassette recorders first appeared, American movie makers sued Sony to prevent them from being made and sold.

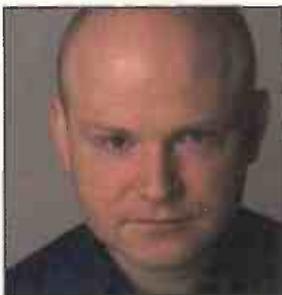
The Supreme Court, in 1984, decided that this was stupid. It said there were 'significant non-infringing uses' for the technology. By one vote: five judges thought it was fair to let Sony sell VCRs, four thought it wasn't.

The point is, it's insane to imagine that US can pass laws prohibiting copyright breaches on the Internet unless, somehow, it thinks it can prevent them across the whole of the web. Not just in California or Utah, where Orrin Hatch resides, or in Afghanistan, but everywhere. And all based on a completely bogus understanding of how technology advances.

Hatch thinks that Sony versus Universal was the wrong decision and should be reversed. He said so. So if you want his definition of 'a reasonable person' then it's a person who thinks that simply owning a VCR is the same as being 'induced' to break copyright.

You don't want to know what he thinks a broadband connection and a PC could do in the mind of a 'reasonable person'. I just wish I had a comfortable feeling that he wasn't going to try to impose his version of 'reasonable' this side of the Atlantic.

**'Nobody should try to inhibit the mp3 trend just because it's harder to copy-protect them'**



gordonl@pcw.co.uk

# Standards hold key to better streaming

Until media streaming devices are compatible, we shouldn't get too carried away, says Gordon Laing

It's shocking how quickly new technologies are considered commonplace. If someone told you their new system sported a dual-layer DVD burner and 256MB video card, you'd be impressed but not bowled-over. And yet such technologies still represent the cutting edge of what's currently available and are often way ahead of the general consumer market. So it's important to remember we're often early adopters without necessarily realising it.

This is illustrated by home media streaming. Ask a member of the public about transporting photos, videos and music to TVs and hifis over a wireless computer network and they'd probably think you were describing witchcraft. But once again it's a concept most PC users are familiar with and many have tried.

Some might even describe it as being mature – as most of the big networking brands have offered home streaming solutions for some time, and many are on their second-generation products. Surely the hard work of defining standards is now complete and, once the big names jump on the bandwagon, home media streaming will become mainstream.

Sadly we're not quite there yet. While many appliances will stream media, it's only when you install second or third units around your home that you realise there's some work to be done.

Every media streaming appliance comes with software that defines the location of photos, music and videos, converts incompatible formats and streams files to the client. Connect a second identical appliance and it should work with the existing software. Buy a different model though and you'll need to install new software, often demanding its own network services and newly defined media folders. Buy a third appliance and you could have a very confused system or, at best, one running unnecessary services.

All streaming appliances want the same thing at the end of the day: to know where to find media collections along with some means to transport them over a network. Ideally this would be standardised, allowing any media appliance to connect to your network and start streaming without the need for software or services. This is something the industry's working on, but how close are we to having it?

This autumn Microsoft should release its Windows Media Connect (WMC) technology, first announced at January 2004's CES show. It's not been revealed how WMC will be delivered, but Microsoft claims to be in discussions with over 50 companies about implementing it.

Intel too has been hard at work with its Networked Media Product Requirements (NMPR), which provides

guidelines on getting media appliances to interoperate; see [www.intel.com/update/contents/it02041.htm](http://www.intel.com/update/contents/it02041.htm). Both WMC and NMPR employ Universal Plug and Play for devices to discover each other's capabilities over a network.

In the longer term, interoperability is hoped to be resolved by new guidelines from the Digital Living Network Alliance (DLNA). The DLNA, which includes names such as Fujitsu, HP, Microsoft, Philips and Sony as founding members, recently announced version 1.0 of its Home Networked Device Interoperability Guidelines. These define which technologies should be used to enable media servers and appliances from different manufacturers to communicate – find out more [www.dlna.org](http://www.dlna.org).

The DLNA hopes member companies will begin marketing products based on these guidelines by the end of this year, while its official certification program should kick off in mid-2005. So in around a year's time, interoperability worries between media appliances should be a thing of the past, but what about the interim? Should new buyers wait for DLNA-compliant devices, or will those supporting WMC or NMPR be sufficient? Equally, what about those who've already invested in media appliances?

Certainly both Microsoft's and Intel's offerings should be sufficient to ensure compliant devices work with each other. Microsoft reckons devices should also be upgradeable to support WMC, and it's testing to ensure WMC will be compatible with devices following DLNA guidelines. Intel says products developed today using NMPR guidelines will only

require a little development to meet DLNA v1. Intel also plans to offer complete DLNA interoperability and add new features with NMPR v2. As for existing devices, you should contact the manufacturer to see if it plans to release updates for WMC, NMPR or DLNA compliance.

Ultimately it boils down to how much you need interoperability. If you only intend to have one media appliance or are happy to stick with identical models, then you should be OK. Like the early days of wireless networking though, you may run into difficulties if you have models from different manufacturers trying to work together. Consequently it's wise to either wait for NMPR/WMC or DLNA-compliant products or only buy those which guarantee an upgrade path.

I'm in no doubt media streaming will be the way forward in the future, but it's important not to get too carried away. Until there's broad support for interoperability and the equivalent of a Wifi certification badge for media appliances, it's crucial to remember it remains very much an early adopter's market.

**'In a year's time, interoperability worries between media appliances should be a thing of the past'**

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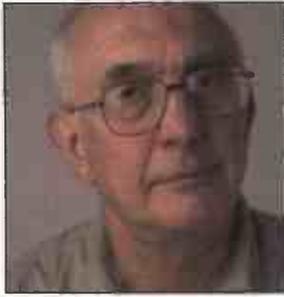


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# Have respect for your customers

Consumer confidence and customer service seem to be a thing of the past, says Barry Fox

**O**n the Planet Consumer Electronics (CE), which is where I originally came from, stuff worked out of the box, went on working for donkeys' years and could be repaired for elephants' years because the manufacturers felt obliged to keep spares available for seven years after production of any model had ceased. There was a thriving market in second-hand kit. Obsolescence was a dirty word.

Planet CE was a happy place, although everything did tend to look a bit beat up, boring and old-fashioned.

Here on Planet IT, where I now live, computer and telecoms stuff seldom works without a fight, the manufacturers bring out new lines before they have fixed the bugs on the last line and the words spare and part go together like chalk and cheese. Second-hand is a dirty word.

Of course, progress is good and some designs, such as the user hostile interface for Motorola Timeport cellphones, are so downright awful that obsolescence comes as a blessed relief.

But, in general, the IT companies show cavalier contempt for their customers, and they are now reaping their unhappy just rewards.

Why else do you think Microsoft and Intel are so desperate to break into the home entertainment market? Research by Forrester shows that one in three desktop PCs is more than five years old. People do not want to replace a PC system that they have finally got working, just to get a few more MHz.

The only way Microsoft and Intel can shift more new stuff is to convince us we need a Media Center PC instead of a new hi-fi and video stack. There's never any mention of the need to ward off viruses and Trojans while watching movies or listening to music, of course.

Business users just loved Nokia's 6310i phone because it's tri-band, very sensitive to weak signals and uncluttered with pointless frills. It worked with the same data leads and hands-free car kits as the 6310, 5110 and previous business phones.

Nokia has now changed the connector blocks for its new fancy phones, to give higher data transfer speeds, but no backwards compatibility.

Most business users don't want a new-generation camera phone with higher transfer rate for Java gaming, FM radio, mp3 playback and polyphonic ring tones, with built-in digital compass, thermometer and torch to drain the battery. They are more interested in replacing what they have dropped, broken, lost or had stolen.

Nokia's spokeswoman initially made all the right noises: 'Nokia is responding to the fact that the time period a person uses the same car (and the hands-free solution) is longer than the time he/she uses the same mobile phone'.

So what replacements can we use with the data connectors and car kits expensively fitted for the 6310? It took me two months and a dozen emails to get a coherent reply from the spokeswoman.

'Unfortunately for the users there are no further mobile phone models - the latest compatible mobile phone was the Nokia 6310i.' And this phone has now been discontinued.

Was it really beyond the wit of Nokia's engineers to design an adapter which lets a new phone plug into an old accessory, or beyond the sense of Nokia's marketing people to continue selling even one phone that works with existing accessories?

Nokia's lack of wit and sense has now created a healthy market for second-hand phones. Just look on Ebay. That should really help reverse Nokia's 5.7 per cent loss of market share over the last year.

While you are online, go over to the Handspring website to find out about how to go about buying accessories for Treo GSM PDAs.

You will be referred to Orange, which sells Treos. But there are no Treo accessories on sale from the Orange site; and Orange shops tell customers to try the Handspring website.

My Epson printer gave up the ghost. Being a wise virgin, I always keep a stock of spare cartridges for when situations like that occur. So I went out to buy a new printer that would take the same cartridges. But there are now none in the Epson range. My hundred quid-plus stock of ink was saved from the bin only because Epson's helpful press people sold me the last compatible printer they had left in the warehouse.

Says a spokesperson for Epson: 'We are very concerned when it comes to offering different cartridges for different products, which inevitably confuses the consumer... Epson has (now) reduced its cartridge portfolio... for most products, we have been able to use the same print head design and the same ink cartridge system.'

Gee that's clever. Almost as clever as selling a new torch that uses existing batteries.

Who, I wonder, will be first on Planet IT to rediscover the revolutionary old Planet CE idea that consumer confidence and customer service sells?

**'IT companies show cavalier contempt for their customers, and are reaping their just rewards'**

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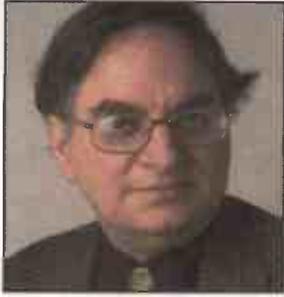
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REAL HARD WARE



clive\_akass@pcw.co.uk

# Computing could aid climate control

With global warming becoming an increasing threat, we can aid research with our PCs, says Clive Akass

**T**he recent furore over the flawed intelligence that led to the invasion of Iraq overshadowed an astonishing series of statements by the Government's chief scientific adviser, Sir David King, to the effect that there is good evidence of a far greater threat than despotism or terrorism.

Global warming may not seem as immediately frightful as the prospect of suicide bombers on the tube, but Sir David believes it presents the biggest danger for 5,000 years. And far from being some vague peril of the future, it could affect people alive today.

Evidence such as the melting of polar ice is put down to rising atmospheric levels of greenhouse gases, including carbon dioxide (CO<sub>2</sub>). Analyses of polar ice cores show an alarming correspondence between historic CO<sub>2</sub> levels and global temperatures, and that levels today are the highest for something like half a million years.

The case for complacency was put recently by that bulwark of the establishment *Private Eye*, in a critique of the eco-disaster movie *The Day After Tomorrow*. Someone writing under the name 'Boffin' pointed out that historically there have been dramatic changes in global temperature with no changes in the CO<sub>2</sub> level.

He failed signally to cite a time when there was a dramatic change in the CO<sub>2</sub> level with no corresponding climate change. And, like powerful lobbies such as the US oil industry, he expected us to be reassured by the fact that earth has been 'far, far warmer in the distant past', when there was no ice at the poles and sea levels were hundreds of feet higher than today.

Sir David pointed out that melting on this scale would be the death of London and many of the world's other major cities, not to mention a multitude of smaller coastal towns, and he takes the possibility seriously enough to propose that the capital should start boosting its defences now.

You don't have to see much further than the front of your nose to realise that we have reason to fear climate change, whether or not it is caused by us spewing out greenhouse gases. Global conditions have been relatively stable over the past 8,000 years, which is almost certainly why civilisation emerged when it did.

Previous fluctuations are terrifying – and that's just counting the common ones, not once-in-a-billion-year events like a thermal runaway caused by the catastrophic release of trapped methane hydrates under the sea floor. We live in a landscape sculpted by quite recent glaciation,

the patterns of which shaped human prehistory. Just 140 lifetimes ago (10,000 years), in a period known as the Younger Dryas, average temperatures in southern Britain dropped to -8°C, falling to -20°C in winter.

It is true that fluctuations such as this are like long-term seasons, small matters as far as the global ecosystem is concerned. But in human terms, they may be catastrophic because changes can happen quickly. The Younger Dryas started when temperatures dropped about 10°C in the space of a few decades and it ended just as abruptly. It lasted approximately 1,300 years.

Scarily, it seems to have been linked to changes in the flow of the Gulf Stream, the current that warms Britain by carrying water up from the tropics. This is a focus of concern today because polar melting is decreasing the salinity of the northern oceans and changing the thermal dynamics of the oceanic circulation – the Gulf Stream could potentially stop very quickly and its warming effect disappear, leading to Britain's climate becoming more commensurate with its 60° latitude.

So, paradoxically, global warming could make Britain colder, or not. There are so many variables that nobody knows for sure what will happen, which brings me to my reasons for writing about this in a computer magazine.

Modelling the Gulf Stream's dynamics and other aspects of global warming, as part of the global thermohaline circulation system, is the latest application of distributed computing

in the style pioneered by the Seti organisation, which uses spare computing power on desktop PCs across the world to sift radio-telescope data for signs of extra-terrestrial intelligence.

No climate model is going to be more accurate than the weather forecasts, and we all know how good they are: imprecise, sometimes wrong, but good enough to make them worthwhile. And the Climate Prediction project is backed by Oxford University, The Rutherford Laboratory and the Open University and has government funding. You can participate by downloading an 8MB client from [www.climateprediction.net](http://www.climateprediction.net).

There is, as my colleague Kelvyn Taylor points out, something ironic about burning yet more PC power to investigate global warming. My feeling is that there is little we can do now to prevent the immediate effects of greenhouse gases, if only because of a lack of political will across the world – but the more we understand climate change, the better we will be able to figure out ways of dealing with it.

'There is something ironic about burning yet more PC power to investigate global warming'



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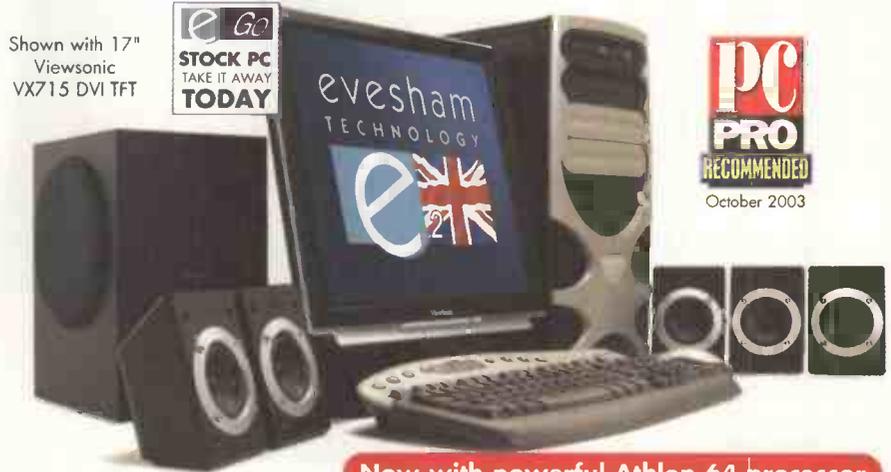
10/100 network connection - v92 56k modem - Firewire port - 6xUSB2.0 - Tool free case (Xpider or Sleek) 453x222x495mm - Microsoft Works 7.0 - Pinnacle Instant CD/DVD SE, Studio9 SE and DVD player software - eTrust EZ Antivirus software including 3 months virus updates - 3 year warranty (2 years on-site, 1 year RTB) **Floppy drive is optional**

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- Multi Format DVD writer (8x)
- NVIDIA 7.1 channel surround sound audio (on-board)
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- 16x DVD-ROM drive
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- Creative Inspire P580 5.1 speakers
- Internet keyboard with rechargeable wireless optical mouse

10/100 network connection - v92 56k modem - 6xUSB2.0 - Tool free case (Xpider or Sleek) 453x222x495mm - Microsoft Works 7.0 - Pinnacle Instant CD/DVD SE, Studio9 SE and DVD player software - eTrust EZ Antivirus software including 3 months virus updates - 3 year warranty (2 years on-site, 1 year RTB) **Floppy drive is optional**

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### Evolution Ultra

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10/100 network connection - v92 56k or ADSL modem - Firewire port - 6xUSB2.0 - Black tower case 470x205x522mm - Microsoft Works 7.0 - Pinnacle Instant CD/DVD SE, Studio9 SE and DVD player software - eTrust EZ Antivirus software including 3 months virus updates - 3 year warranty (2 years on-site, 1 year RTB) **Floppy drive is optional**

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# Reviews

EDITED BY CHRIS CAIN

EXCELLENT ★★★★★ VERY GOOD ★★★★ GOOD ★★★ BELOW AVERAGE ★★ POOR ★

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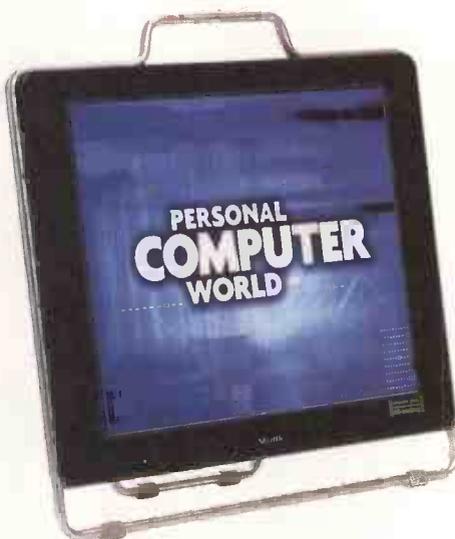
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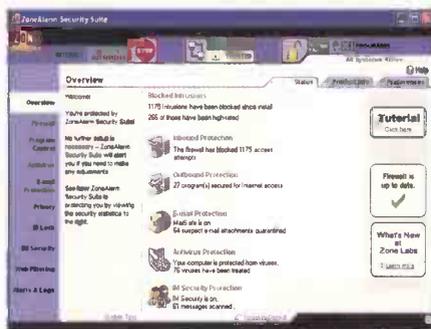
PAGE 69

We take a look at this stylish 17in Shuttle monitor with good image quality



PAGE 68

Check out Microsoft's new eye-catching designer mouse



PAGE 86

Read our review of Zone Labs effective new Zonealarm Security Suite

Summer is traditionally a time of few product releases, but this month has seen plenty of exciting new arrivals.



In keeping with our test of designer PCs on page 107, we got our hands on the latest notebooks for those who want to look good on the move. Acer's Athlon64-based Ferrari 3200 proves that you can have both style and substance, offering outstanding performance and features along with its sleek appearance. On the other side of the fence, Apple's next-generation Powerbook G4 improves the specification available to mobile Mac users.

Other interesting systems on trial include Dell's excellent Axim X30 Wireless Pocket PC, combining Intel's new X-Scale PXA270 processor with Wifi and Bluetooth networking at an affordable level. Carrera's latest PC came with an intriguing – and slightly disappointing – Geforce 6800LE graphics card, while Evesham presented us with a machine based around the new Socket 939 version of the AMD Athlon64. We also lift the cover off Shuttle's latest barebones XPC SB81P, featuring the Intel's 915 chipset and support for 775-pin Pentium 4 processors.

Shuttle impressed us again with the launch of its new 17in flat-panel monitor. Although expensive, the eye-catching XP17 is certain to gain an army of admirers. This month also saw Microsoft join forces with acclaimed designer Philippe Starck to deliver the ultimate in mouse chic, and we have the first DV camcorder with 2.2megapixel still facilities from Canon.

Those looking to build a better system may want to check out the latest motherboards from Albatron and Via, while gamers should hop over to page 77 for reviews of the HIS X800 ST Excalibur IceQ II and Crucial's Radeon X800 Pro.

Elsewhere, Philips and Iomega are doing their best to make storage more interesting, with a dual-layer DVD writer and the Rev removable hard disk system. However, neither is as exciting as Sony's Network Walkman NW-HD1. With excellent audio quality and an outstanding battery life, will this be the product to topple Apple's iPod?

No review section would be complete without the latest software and here you'll find reviews of Zonealarm Security Suite, Xara! and Cyberlink Power2go, among others. Finally, we take a visual tour of Windows XP Service Pack 2 and explain why this is a must-have update for all users.



**Sony NW-HD1**  
 Could this new digital music player pose a challenge to the Ipod? We find out on page 69



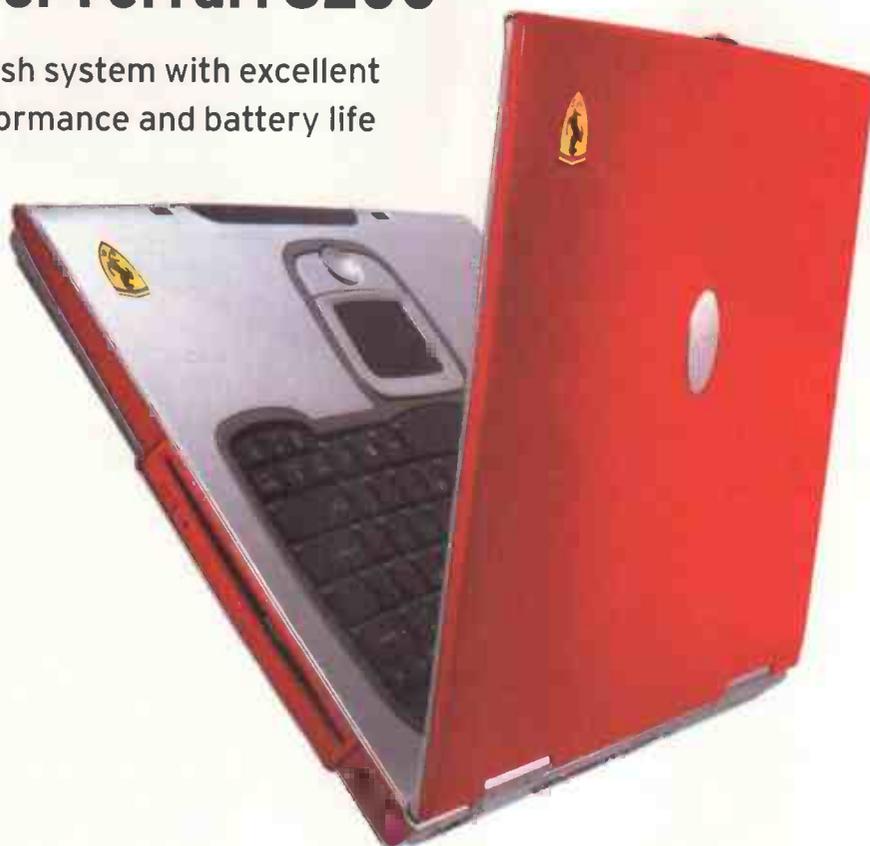
**Mini round-up**  
 We check out seven pocket-sized and high-capacity external hard drives on page 70



**NOTEBOOK PC**

# Acer Ferrari 3200

Stylish system with excellent performance and battery life



If none of the designer desktops in our group test tickle your fancy, how about the ultimate in stylish notebooks? Built to the highest specifications, in conjunction with Ferrari, and finished in the familiar bright red, Acer's latest offering is guaranteed to make others green with envy.

From the Ferrari crest on the palm rest to the picture of the F1 pit team in the Bios, everything about the 3200 exudes style. The keyboard is angled at 5° to provide a more comfortable typing position than traditional notebooks. The touchpad has a four-way cursor pad in addition to the standard mouse button equivalents and four programmable shortcut buttons run along the top of the keyboard. You also get a matching optical mouse. It's

3kg, but fully featured and some will enjoy the kudos of carrying this notebook around.

Inside, things are even more interesting. The engine is a 1.59GHz Athlon64 2800+ processor, backed by 512MB of DDR memory, while an ATI Mobility Radeon 9700 with 128MB of dedicated Ram handles graphics. The impact of the latter was instantly apparent in our tests, with the Ferrari achieving a creditable 65 frames per second (fps) in Unreal Tournament 2003. Moreover, a 3Dmark 2003 score of 3,161 is the highest we've seen from a notebook, making this an ideal machine for anyone who wants to do more than just word processing on the move.

The system comes with an 80GB hard disk and a slot-loading DVD-writer, capable of

handling all current formats of recordable CDs and DVDs. The 15in screen, at 1,400 x 1,050 pixels, is better than many desktop displays. A standard VGA socket at the back of the notebook can be used to mirror the display for presentations, or expand your Windows Desktop onto a second monitor.

The Ferrari's communications capabilities are first class. Along with the usual 56K modem there's an RJ45 socket for Gigabit Lan, 802.11g wireless networking, infra-red and

Bluetooth. There's also a switch on the side to quickly disable the Wifi capabilities – handy when using the system in sensitive areas such as planes. Four USB sockets are sensibly arranged side by side, which should mean none are blocked when using larger connectors on items such as USB keys. A mini-Firewire socket rounds everything off.

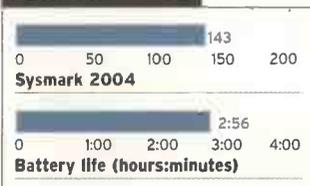
Given the power on offer we expected the worst when it came to battery life, but were pleasantly surprised – the Ferrari 3200 lasted nearly three hours in our tests. This is nothing compared to the latest Centrino models but excellent when you consider the performance.

Alas, nothing is perfect. Acer's software bundle is enough to get you going but doesn't include any kind of office suite. Given the growing popularity of the open-source Open Office, this is disappointing. In addition to the hardware-specific utilities, there is Cyberlink PowerDVD, NTI CD-Maker and a trial of Norton Antivirus.

Acer's warranty is only for one year but it is an International Travellers' deal, which covers you for use overseas.

Tim Smith

**PERFORMANCE**



**DETAILS**

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**PRODUCT INFORMATION** Acer  
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**SPECIFICATIONS**  
 Windows XP Professional • AMD Athlon 64 2800+ • 512MB DDR-Ram • 80GB hard disk • DVD writer (DVD-R/-RW/+R/+RW/Ram) • 128MB ATI Mobility Radeon 9700 • 15in display • 3kg • 330 x 272 x 31 mm (w x d x h)  
**PROS** Excellent performance and battery life  
**CONS** Limited software bundle  
**VERDICT**  
 The ultimate notebook for the style conscious

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★



**BAREBONES SYSTEM**

# Shuttle XPC SB81P

A diminutive basis for a powerful PC



Shuttle has been at the forefront of the small form factor (SFF) PC revolution and, unlike many of its competitors, has stuck with the concept. Bringing its product line bang up to date, the XPC SB81P features Intel's 915 chipset and the new 775-pin processor socket.

The new case is a little longer and taller than previous models; the extra height is taken up by a 6-in-1 memory card reader, which has been moved from its usual position. This move is due to a radical redesign in the drive bay cage that allows you to fit an impressive three hard drives into the SB81P. The standard drive bay takes either a floppy drive or a hard drive, while two remaining drives are cleverly mounted across the top of the drive cage.

At the heart of the SB81P is Shuttle's FB81 motherboard, based around Intel's 775-pin CPU socket and a combination of Intel's 915G and ICH6R chipsets. Although this provides the latest Intel integrated graphics, there's also a 16x PCI Express (PCX) graphics slot for upgrading if you need to. The ICH6R means you get an integrated Raid controller that supports Raid 0 and Raid 1 arrays.

Although the 915 chipset offers support for DDR2 memory, Shuttle has opted to go with DDR1. The two supplied Dimm

slots provide support for up to 4GB of DDR400 or 333 memory.

Shuttle's CPU cooler has been redesigned to take into account the heat generated by the latest Prescott processors. Now at the front of the case, it has a two-fan cooling system. This, combined with two case fans, make the system slightly noisier than previous models, but nowhere near as loud as you'd expect.

Offering plenty of features, the SB81P could be the basis of a very powerful desktop system.

Simon Crisp

**DETAILS**

RRP £265 (€225.53 ex VAT)

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**PRODUCT INFORMATION**

Shuttle [www.shuttle.com](http://www.shuttle.com)

**SPECIFICATIONS**

Socket 775 for 533/800 FSB Intel Pentium 4 • Intel 915G/ICH6R chipsets • Integrated Intel GMA 900 graphics • 2 DDR1 memory slots • 16x PCx graphics slot • Audio support 7.1 • 6-in-1 card reader • 1 PCI slot • 1 serial, 1 VGA • 4 USB2, 2 PS/2, 2 S/PDIF out, 1 S/PDIF in, 2 6-pin Firewire, Ethernet  
**PROS** Excellent design and build quality

**CONS** Pricier than other SFF PCs; a bit noisier than previous models

**VERDICT**

The feature-rich SB81P shows that Shuttle hasn't lost its edge

**BUILD QUALITY** ★★★★★

**FEATURES** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★

**ATHLON 64 PC**

# Evesham Axis Dominator

A fast and affordable all-rounder



Evesham's Axis 64 Dominator is based around the new Socket 939 version of the Athlon 64 processor. It isn't as impressive as the Axis 64 38 Ultra reviewed last month, but it does have a strong specification.

At the heart of the system is MSI's K8N Neo 2 motherboard, with an Athlon 64 3500+ clocked at 2.21GHz. This isn't particularly fast, but AMD has designed improvements into the processor's architecture to boost performance. A score of 4,455 was produced in PCmark 2004, but the PC refused to run through our Sysmark test suite.

The rest of the specification includes 512MB of fast DDR 400 memory and a 200GB hard drive; plenty of room for applications, documents, images and music. A Sony DRU-700A dual-layer DVD drive stores up to 8.5GB on a single disc.

As with the Carrera Octan reviewed on page 57, an Nvidia Geforce 6800 handles the graphics. However, a score of 9,100 in 3Dmark, shows the

difference between this and the LE version in that system. In real-world tests, the system managed 96.77 frames per second (fps) in Unreal Tournament.

Multimedia fans will like the 19in Viewsonic VX910 TFT monitor. This is a good display with a 16ms response time, so you're less likely to experience ghosting or distorted images in fast-moving games or movies.

This isn't the fastest PC we've seen, but Evesham has put together a solid package to appeal to those who want a good all-round, affordable PC.

Rory Reid

**DETAILS**

RRP £1,299 (€1,105 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Evesham 0870 160 9500

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

**SPECIFICATIONS**

Athlon 64 3500+ (Socket 939) • 512MB DDR400 • 200GB hard disk • Nvidia Geforce 6800 • Windows XP Home • Creative Inspire T7700 or Altec Lansing 2.1 speakers

**PROS** Dual-layer DVD; large monitor

**CONS** Not many extras

**VERDICT**

A good all-round PC that should appeal to a variety of users

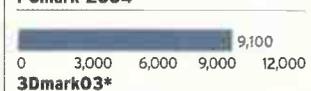
**PERFORMANCE** ★★★★★

**FEATURES** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★

**PERFORMANCE**



\* Tested at 1,024 x 768 in 32bit colour

**NOTEBOOK**

# Apple Powerbook G4

A portable you'll want to show off



**R**ecently introduced along with its updated G5 desktops, Apple's new Powerbooks offer more for the mobile Mac user. This top-of-the-line model boasts a sexy 17in widescreen and a 1.5GHz PowerPC G4 processor, roughly equivalent to the latest Pentium 4 and Athlon chips.

Our review machine came fitted with 2GB of Ram and a Radeon 9700 graphics chip supported by 128MB of dedicated memory, as used in Acer's Ferrari 3200 reviewed on page 55. This ensured excellent performance but pushed the price up by over £800 – standard models come with a more-than-adequate 512MB of main memory and 64MB of video Ram.

Along with OSX, Apple bundles its iLife suite, which includes iMovie for working with digital video, iPhoto for picture editing and iGarageband for music creation. Connectivity is also well catered for with 802.11g Wifi, Bluetooth, Gigabit Ethernet, two USB2 ports, Firewire 400 and 800 ports, a PC Card slot, S-video and DVI outputs and a 56K modem. Given this, it's impressive that the whole lot fits into a case just 1in thick – complete with an 80GB hard disk and DVD writer.

Battery life is good, giving around four hours of light use (office tasks, for instance) on a full charge. The 1,440 x 900

display is sharp with excellent contrast. The widescreen format also means that there is plenty of room below the keyboard to rest your hands while typing.

Of course, a notebook of this size is hardly the most portable of computers. It's great for working, presentations, watching films or just showing off, but for most of us the equally capable, smaller, and much cheaper, 12in- or 15in-screen models make more sense.

**Anthony Dhanendran**

**DETAILS**

**RRP** £2,759.01 (£2,348.09 ex VAT)  
Basic: £1,949 (£1,658.72 ex VAT) with 512MB Ram and 64MB graphics

**BEST PRICE**  
[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION** Apple  
0800 039 1010 [www.apple.com/uk](http://www.apple.com/uk)

**SPECIFICATIONS**  
Mac OSX Panther • 1.5GHz PowerPC G4 • 2GB DDR333 Ram • 80GB Ultra ATA100 hard disk • Superdrive (DVD-R and CD-RW) • 128MB ATI Mobility Radeon 9700 graphics • 17in 1,440 x 900 widescreen • 3.1kg • 390.2 x 250.9 x 20.6mm (w x d x h) • 1yr warranty  
**PROS** Fast; plenty of memory and excellent connectivity  
**CONS** Size

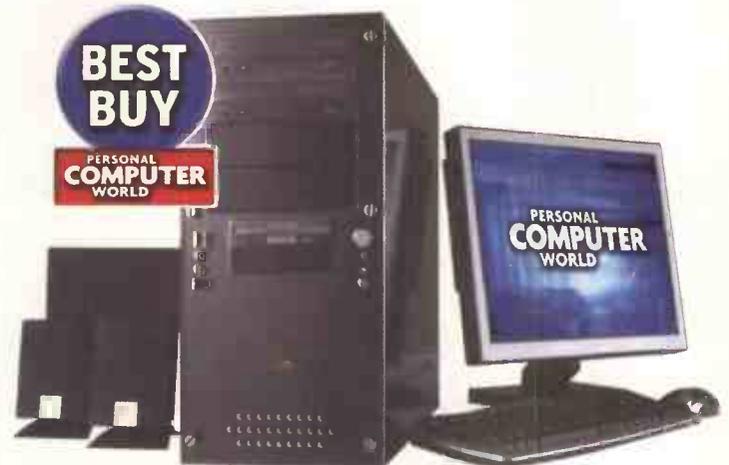
**VERDICT**  
Apple has packed a remarkable amount into its latest Powerbook

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

**ATHLON 64 PC**

# Carrera Octan 64/6800

Solid system with a 19in TFT, under £1,000



**Y**ou won't see many PC systems under £1,000 that include a 19in TFT as standard, particularly a screen such as the excellent Sharp LL191. With a street price of around £480, it's not cheap. But, as high-quality monitors don't guarantee an impressive system performance, we were keen to see how Carrera justified the rest of the Octan's £938 price tag.

It uses the AMD Athlon 64 3000+ and a Sysmark 2004 result of 156 shows the PC is no speed demon. However, given that it's backed by 512MB of Ram, we don't think many users would complain about its performance.

The 128MB Geforce 6800 LE graphics card returned a 3Dmark03 score of 6,808, which may concern gamers. A 120GB 7,200rpm hard drive takes care of storage, while optical drives come in the form of a Sony eight-speed dual-format DVD writer and a standard CD-RW drive.

Carrera seems confident the Octan 64/6800 Special will stand the test of time and has included

a five-year warranty. The first three years of this are on-site, and the final two are return to base on a labour-only basis.

With decent, but not amazing performance, the selling point of this system is the 19in Sharp monitor. However, if you're thinking of buying this PC, it's important to note that most 19in TFTs have the same maximum resolution of 1,280 x 1,024 as 17in models. So while the size of the display is slightly bigger, you won't be able to fit any more information on the screen.

**Will Stapley**

**DETAILS**

**RRP** £938.83 (£799 ex VAT)  
**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION**  
Carrera 0871 222 3456  
[www.carrera.co.uk](http://www.carrera.co.uk)

**SPECIFICATIONS**  
AMD Athlon 64 3000+ • 512MB Ram • 120GB hard disk • Sony DVD-RW • Nvidia Geforce 6800 LE 128MB • 19in Sharp LL191 TFT • 5.1 surround sound speakers • Windows XP Home • Microsoft Works 7.0

**PROS** 19in TFT; good DVD drive  
**CONS** Only average performance

**VERDICT**  
Although the Octan's 19in TFT is impressive, sacrifices have been made on processor and graphics power

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

**PERFORMANCE**



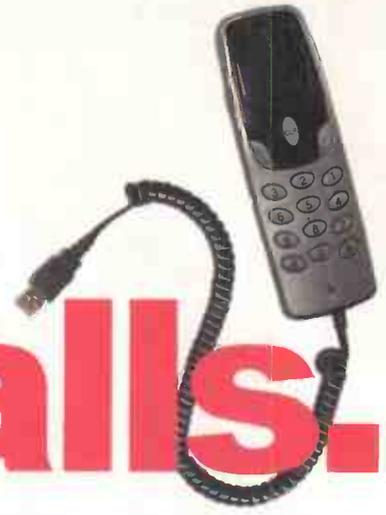
\* Tested at 1,024 x 768 In 32bit colour

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## TABLET PC

### Motion Computing M1400

Good features, but poor storage capacity



Coming hot on the heels of the M1300, Motion Computing's M1400 is its latest offering in the Tablet PC market. With a sturdy and well-designed case, it features everything you'd expect along with a few extras.

The system sports an Intel Pentium M 1.1GHz processor and 256MB of Ram, while graphics are taken care of by an Intel 855 integrated controller. The performance isn't fantastic, but it's what we expected from a tablet at this price.

We had no problems with usability and, although the stylus is comfortable and easy to use, if you need a break from the pen you can use the desk stand and attach the mobile keyboard.

We did have a couple of concerns though, the biggest worry being the 20GB hard drive. Although in most cases you won't be installing the same amount of software as you would on a desktop PC, you might soon have to start uninstalling applications to reclaim space. Indeed, the

drive's low capacity meant we couldn't install Sysmark 2004.

The other worry is the battery life. We were hoping the M1400 would last longer than the two hours, 45 minutes that our battery benchmark returned.

The M1400 has some interesting features, but the 20GB hard drive really holds it back. However, if you feel this is adequate storage space then, aside from the slightly disappointing battery life, the M1400 is worth considering

Will Stapley

#### DETAILS

RRP £1,536.33 (£1,299 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Motion Computing

02476 311 685

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

**SPECIFICATIONS**

Intel Pentium M 1.1GHz • 256MB of Ram • 20GB hard disk • Fingerprint reader • 802.11b/g • Intel integrated graphics • 12.1in XGA TFT • Mobile keyboard • Desk stand • 1.5kg

**PROS** Good features; easy to use

**CONS** 20GB hard drive;

battery life

**VERDICT**

The M1400 is well designed and has some interesting features, but the 20GB of storage space is limiting

**PERFORMANCE** ★★★★★

**FEATURES** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★

#### PERFORMANCE



\* Tested at 1,024 x 768 in 32bit colour

## NOTEBOOK

### Gigabyte N601 G-Max

Multimedia-savvy desktop replacement



The N601 G-Max is a desktop replacement notebook aimed at users looking for good multimedia functionality. Specifically, it includes a panel that allows direct control of audio-visual applications, making it easy to control playback and volume.

The N601 can play audio CDs without the need to load Windows. Unfortunately it doesn't use a dedicated media-only operating system to do this, so is unable to play video or display images in this mode.

The N601's strongest asset is its impressive 15.4in widescreen display. This wider aspect ratio allows you to display more columns in a spreadsheet and watch DVDs without a border around the picture.

Below the surface, the N601 isn't quite as impressive. Our review model came with a mobile Pentium 4 1.6GHz processor and just 256MB of Ram, so it wasn't the fastest performer. However, it chugged through standard office applications and scored 2,952 in PCmark 2004. Sadly, it wouldn't

run our Sysmark tests. On a more positive note, the N601's 64MB ATI Mobility Radeon 9600 graphics processor came in with 2,425 in 3Dmark 2003. This gives it a similar level of performance to many desktop PCs, so you should be able to play games at their default settings without jerky frame-rates.

The rest of the N601's specification is commendable. It has an SD card reader, three USB slots and both mini and full-sized Firewire ports. If you're after a replacement for your desktop PC and aren't hung up on speed, the N601 is a good choice.

Rory Reid

#### DETAILS

RRP £1,197 (£1,019 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Gigabyte [www.giga-byte.com](http://www.giga-byte.com)

**SPECIFICATIONS**

Intel Pentium M 1.6GHz • 15.4in widescreen TFT display • 256MB of DDR Ram • 40GB hard disk • Slot-loading DVD/CD-RW • 64MB ATI Radeon 9600 graphics • 3.05kg • Windows XP Home • PowerDVD 5, Roxio Basic VCD

**PROS** Widescreen; AV control panel

**CONS** Only 256MB of Ram

**VERDICT**

An attractive replacement for a mid-range desktop PC

**PERFORMANCE** ★★★★★

**FEATURES** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★

#### PERFORMANCE



\* Tested at 1,024 x 768 in 32bit colour



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SKU: 118498



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- ▶ 128MB AGP, TV-Out
- ▶ OpenGL, DirectX
- ▶ RGB, S-Video, Retail

**£32**  
inc. VAT

SKU: 120245



### Maxtor<sup>®</sup> Maxtor OneTouch 300GB

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inc. VAT

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### SAMSUNG Samsung 17" Syncmaster 710V

- ▶ TC099, 1280x1024 / 75Hz
- ▶ 16.7 million colours
- ▶ 0.264mm dot pitch

**£233**  
inc. VAT

SKU: 300905



### PC Kit XP2500+ XP2500+, EPOX EP-8KMM3i 256MB, CD-R/RW 40GB HD, floppy, Q-Tec tower

**£199**  
inc. VAT

SKU: 301141



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- ▶ 1.8" TFT display active matrix

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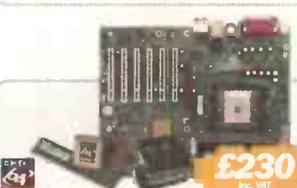


### Western Digital Western Digital Raptor WD740GD

- ▶ 74GB S-ATA, 8MB cache
- ▶ 1000RPM, 150Mbps
- ▶ 3 years warranty

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inc. VAT

SKU: 122429



### Upgrade Kit XP2800+ XP2800+, EPOX EP-8KDA3J 512MB DDR DIMM Cooler Master CPU fan

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inc. VAT

SKU: 115204



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- ▶ Tray, BURN-Proof
- ▶ Microsoft Win98SE/2000/ME/XP

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SKU: 300264



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- ▶ 480x234, 650g

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inc. VAT

SKU: 300389



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**SAMSUNG**

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▶ 16.2million colours  
▶ 0.294mm Dot Pitch

£499 inc. VAT

SKU: 123855



**MSI**

**MSI MEGA Stick 256MB MP3-Player**

▶ USB, FM radio, voice rec.  
▶ WMA, MP3, ADPCM  
▶ 12h playback, 29g

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SKU: 122999



**TwinMOS**

**TwinMOS USB2.0 Mobile Disk IV 256MB**

▶ High speed flash drive  
▶ 4 PIN USB type A  
▶ Plug & Play

£30 inc. VAT

SKU: 301339



**LITEON**

**Lite On DVD recorder Dual Layer Retail**

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▶ PIO 4, DMA 2 and Ultra DMA mode 2  
▶ DVD±RW drive

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SKU: 301673



**intel.**

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▶ Sony floppy drive, Q-Tec case

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▶ 32MB RAM, Bluetooth

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▶ Static IP routing  
▶ Firewall protection

£60 inc. VAT

SKU: 300889



**MEDION**

**Medion MIM2030**

▶ ATI9700, Pentium M 1.6GHz  
▶ 2x256MB, 80GB HD,  
▶ DVD+ recorder WLAN XPH

£1,099 inc. VAT

SKU: 123892



**SAPPHIRE**

**Sapphire Radeon 9800SE 128MB**

▶ AGP8x DirectX9.0, OpenGL2.0  
▶ Multiple monitors support  
▶ TV out, Full-Retail

£88 inc. VAT

SKU: 123702



**PC Kit Intel P4 3.0GHz**

▶ P4 3.0GHz, DVD±RW,  
▶ ATI9800PRO, 160GB HD  
▶ 512MB, sony floppy, Q-Tec case

£545 inc. VAT

SKU: 301152



**SAMSUNG**

**Samsung 17" LCD Syncmaster 710N**

▶ 12ms response time  
▶ 16.2 million colours, DVI  
▶ 1280x1024 / 75Hz

£266 inc. VAT

SKU: 300904



**SAPPHIRE**

**Sapphire Radeon X800PRO**

▶ 256MB GDDR3 AGP8x  
▶ DirectX9.0, OpenGL2.0  
▶ DVI-I, TV-Out, Full-Retail

£266 inc. VAT

SKU: 300413



**AMD**

**Upgrade Kit AMD 64 3200+**

▶ AMD 64 3200+, K8T NEO-FSR  
▶ 512MB DDR DIMM  
▶ Fan included

£310 inc. VAT

SKU: 118126



**Best Buy**

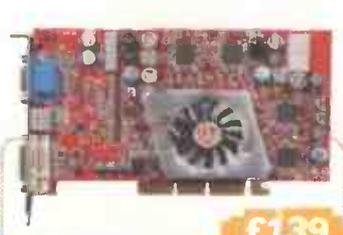
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**DV CAMCORDER**

## Canon MVX30i

A tiny DV camera that takes good stills too



**T**he first thought we had as we unpacked the Canon MVX30i was 'wow'.

Small and light, with a smart silver case, this DV camcorder is certainly eye-catching.

Priced at over £1,000, the MVX30i is clearly aimed at those who take their video seriously. There's a 10x optical zoom and footage can be saved either to mini DV tape, or in mjpeg format onto a Secure Digital (SD) card. The 2.5in screen is clear and crisp.

Tested in a variety of lighting conditions, the picture quality was superb and backed by good, clear sound. Colours were vibrant, video remained relatively shake-free – even at high zoom – focus was fast and sharp, and there was little evidence of grain during playback.

But the ace up the sleeve of the MVX30i is that it also acts as a 2.2megapixel stills camera. Once again, the colours were vibrant and the pictures sharp. While most dedicated digital cameras would produce better pictures, if you just want a compact replacement the MVX30i does a good job. You'll need a new SD card though, as the supplied 8MB one only holds about six photos on the best-quality setting.

For all its great picture quality and stylish design, this camcorder is fiddly to use. It feels as if it was designed for small hands, because to use the

telephoto lens or take photos we had to either operate it with two hands, or rest the base of the unit in the centre of the palm of one hand and attempt to zoom using the pinkie.

While the MVX30i produces lovely video and photos, we would have preferred more thought to have gone into usability. Moving the telephoto operation a little higher so that it was located more naturally where the fingers rest, for instance, would have been good.

**Rob Jones**

**DETAILS**

**RRP** £1,049 (€892.76 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION** Canon

0800 616 417 [www.canon.co.uk](http://www.canon.co.uk)

**SPECIFICATIONS**

Mini DV tape, mpeg4, Motion jpeg EX • 1,632 x 1,224 (jpeg) • CCD: 1/3.4in interlace • 10x optical zoom, 200x digital zoom • Focal length: 4.7-47mm • Max aperture: f1.8 • Image stabiliser • 2.5in LCD screen • 8MB SD card • 470g • 53 x 107 x 101mm • Firewire, USB2

**PROS** Great video and stills picture quality; good looking

**CONS** Fiddly to use; bottom loading

**VERDICT**

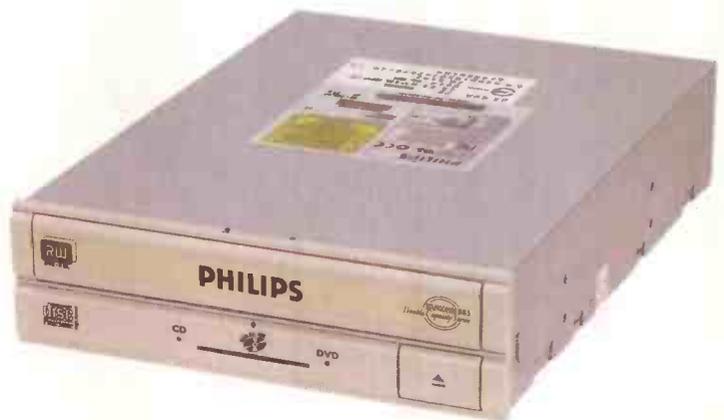
**If you can get past the fiddly zoom, this is a great camera backed by the best DV stills imaging we've seen to date**

<b>PERFORMANCE</b>	★★★★★
<b>FEATURES</b>	★★★★★
<b>VALUE FOR MONEY</b>	★★★★★
<b>OVERALL</b>	★★★★★

**INTERNAL DUAL-LAYER DVD WRITER**

## Philips DVDRW885K

8.5GB DVD recording hits the home



**A**lthough dual-layer DVDs (DVD+R9) have been produced commercially for some time now, Philips' latest drive is the first we've seen to bring this facility to the home market. You don't quite get double the 4.7GB storage capacity of a standard disc, but at 8.5GB it's a big improvement nevertheless.

There are some drawbacks though, the major one being that currently you can only write to dual-layer media at 2.4-speed. When we burned 7.1GB of data to a disc the process took just over 44 minutes to complete. Furthermore, the drive is only able to write to DVD+R/RW media. Philips plans to provide the drive with DVD-R/RW support via a firmware upgrade in September, but at present you'll have to do without it.

Another issue with dual-layer DVDs is the current lack of availability of the media, which is consequently driving up prices. Indeed, Philips saw fit to include a note in the packaging of the DVDRW885 explaining the situation. At time of going to press we found DVD+R9 blanks on sale for around £7.50 each – standard DVD+Rs were available at just 89p each. This is a pretty big price jump considering you're paying over eight times more for dual-layer media and only getting double

the capacity. However, we anticipate that costs will soon be driven down as this new media becomes more popular. Dual-layer rewriteable media isn't currently available, but the drive will happily rewrite to single-layer DVDs.

If you have a desperate need to burn 8.5GB DVDs, the Philips DVDRW885 will get the job done. However, it's slow and, until September at least, you can't write to DVD-R/RW media of any sort.

**Will Stapley**

**DETAILS**

**RRP** £100 (€85.11 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION** Philips

01483 293 327

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

**SPECIFICATIONS**

Write: 2.4x dual-layer DVD+R, 8x, 4x DVD+R/RW, 24x 10x CD-R/RW • Read: 40x CD-Rom, 12x DVD-Rom • 2MB data buffer • Internal Atapi • Nero Burning Rom 6

**PROS** Dual layer; good price

**CONS** Expensive media; currently no DVD-R support

**VERDICT**

**It's good to see the emergence of dual-layer DVD writing, but expensive media limits its appeal at present**

<b>PERFORMANCE</b>	★★★★★
<b>FEATURES</b>	★★★★★
<b>VALUE FOR MONEY</b>	★★★★★
<b>OVERALL</b>	★★★★★

## PDA

### Dell Axim X30 Wireless

The latest technology at an affordable price



Dell's Axim X5 PDA, launched almost 18 months ago, made the price of a Pocket PC affordable. The X3 introduced a slimline design, and now the X30 Wireless adds the latest technology.

The X30 looks identical to the X3, but a major difference is that it's powered by Intel's latest XScale PXA270 processor. This is the first embedded CPU to incorporate the Wireless MMX (WMMX) instruction set, designed to improve multimedia, 3D and encryption/decryption performance. Our top-of-the-range review model had a 624MHz chip, but an entry-level 400MHz non-WMMX PXA255 machine and mid-range 312MHz PXA270 system are also available.

The PDA is very responsive, with little lag when using the on-screen character recognition, and video playback is smooth. The screen is sharp and bright, and almost readable in strong sunlight. This said, the slim but uninspiring slab-like design offers no concessions for left-handed users – the asymmetric casing is uncomfortable to hold and the jog wheel is in an awkward position. Right-handers will find it much more usable.

The system includes both Wifi (802.11b) and Bluetooth, and you can manage the former with the Dell Wlan utility or the free Odyssey client – we found Odyssey slightly easier. There's a

dedicated button on the front panel for disabling the wireless functions, in addition to the usual four navigation buttons and four-way control paddle.

The X30 Wireless comes with a USB docking cradle (easy to slot the X30 into, but not quite as easy to remove it) and a USB sync cable. There's space in the dock for charging a spare battery.

At this price and with this processor, the X30 Wireless is a bargain and a welcome addition to Dell's range of Pocket PCs.

Kelvyn Taylor

#### DETAILS

RRP £269.75 (€229 ex VAT)

#### BEST PRICE

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

PRODUCT INFORMATION Dell

0870 152 4649 [www.dell.co.uk](http://www.dell.co.uk)

#### SPECIFICATIONS

Windows Mobile 2003 Second Edition

• Intel PXA270 624MHz • 64MB Ram •

64MB Rom • 3.5in transfective TFT

240 x 320 pixels, 65,000 colours •

Single SD/SDIO/MMC slot •

Headphone, infra-red, Wifi, Bluetooth

• 139g • 77.2 x 14.9 x 122.4mm • USB

cradle and USB sync cable

**PROS** Fast processor; great price;

Wifi and Bluetooth

**CONS** Not particularly stylish

#### VERDICT

**Its powerful processor and aggressive pricing make this a sensible choice**

PERFORMANCE ★★★★★

FEATURES ★★★★★

VALUE FOR MONEY ★★★★★

OVERALL ★★★★★

## REMOVABLE HARD DRIVE

### Iomega Rev

Fast and portable, but not economical for all



The Rev is Iomega's latest attempt to recapture the glory days of the highly successful Zip drive. The concept is simple. Take a fairly ordinary 2.5in hard disk, remove the heads and place them inside an external USB drive.

The result is a unit that operates much like the Zip or Jaz, in that the stripped-down hard disks (cartridges) can be bought separately for around £44 each and used as removable media.

Special credit must be given to Iomega for overcoming the problems associated with removable hard disks. Dust particles can easily become jammed between the head and platter (disk) sections, as the space between the two is very small. Iomega gets around this problem by using a special locking mechanism, generating internal airflow and using filters to capture loose particles.

Installation and setup is fairly painless thanks to the Rev's USB connectivity. The device allows you to read disks without any special configuration, but you'll have to install drivers before you can write data.

The Rev's performance is on a par with external hard disks. We backed up 4GB of data in around four minutes. Unfortunately, the claimed maximum 90GB capacity with compression for each cartridge is a little optimistic. Mpeg movie files, for

example, already have a high rate of compression, so don't expect Rev cartridges to store much more than 35GB.

Whether the Rev is suitable for your needs depends very much on how you plan to use it. If all you require is a single backup device, a standard USB hard drive can offer more storage for less money. If you have several PCs and need to store backups to several discrete volumes, the Rev could be the ideal solution.

Rory Reid

#### DETAILS

RRP £280 (€231 ex VAT)

#### BEST PRICE

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

PRODUCT INFORMATION Iomega

[www.iomega-europe.com](http://www.iomega-europe.com)

#### SPECIFICATIONS

USB2 • 35GB native capacity per

removable disk • 90GB compression

with included software • Media data

transfer rates of 12.7 to

25.4Mbytes/sec (buffer to/from

media) • 13ms average seek • Drive

letter access • Bootability • 30-year

shelf life for disk (estimated) •

400,000-hour MTBF (estimated)

**PROS** Fast data access; portable

**CONS** Can work out expensive

#### VERDICT

**Works well as a removable hard drive, but may not be economical for some users**

PERFORMANCE ★★★★★

FEATURES ★★★★★

VALUE FOR MONEY ★★★★★

OVERALL ★★★★★

**DIGITAL CAMERA**

# Fujifilm Finepix A340

4megapixel camera for the novice snapper



**D**espite its 4megapixel sensor, the new Finepix A340 Zoom is aimed squarely at the entry-level digital camera market.

There's no denying that Fujifilm has done a good job in making the camera look attractive. Its silver case gives a good first impression, although we have our reservations about the sliding lens cap: it's all too easy to scrape it against the lens when turning the camera off.

In terms of usability we didn't have any major issues with the menu system, mostly because there isn't much to play with. In auto-shooting mode you can select the resolution and activate a self-timer. Manual mode gives you just two more options in the form of exposure compensation and a selection of preset white balance options; there's no manual white balance setting.

Tests produced mixed results. We were impressed with the Finepix A340's colour handling, particularly in well-lit outdoor shots, but indoor performance was less pleasing. Image noise was especially noticeable in low-light conditions, while the flash struggled to illuminate entire scenes. In addition, the automatic exposure occasionally produced dubious results with both indoor and outdoor images.

While the 4megapixel sensor sounds attractive, it's worth remembering that 3megapixel

CCDs are capable of high-quality 6 x 4 photos and even acceptable A4 prints. The greater resolution gives you more freedom to crop images, but for standard size photos you won't really notice a quality increase. You may be better served by a 3megapixel camera with a greater range of features.

The Finepix A340's limited features place it firmly in the point-and-shoot category. Those interested in creative shooting should look elsewhere.

**Will Stapley**

**DETAILS**

**RRP** £189 (€160.85 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION** Fujifilm

01234 245 383 [www.fujifilm.co.uk](http://www.fujifilm.co.uk)

**SPECIFICATIONS**

4megapixels • 1/2.7in CCD • 2,272 x 1,704 • 3x optical zoom • 38-114mm (35mm equivalent) • 2-1/2,000sec shutter speed • F2.8-4.8 • ISO 100 • 10cm macro • 1.5in LCD • 10fps 320 x 240 video • XD Picturecard (16MB included) • 104.1 x 61.5 x 31.3mm (w x h x d) • 145g

**PROS** Easy to use; good colours

**CONS** Poor indoor performance; lack of features

**VERDICT**

**A good point-and-shoot model, but performance isn't great and it has limited features**

<b>PERFORMANCE</b>	★★★★★
<b>FEATURES</b>	★★★★★
<b>VALUE FOR MONEY</b>	★★★★★
<b>OVERALL</b>	★★★★★

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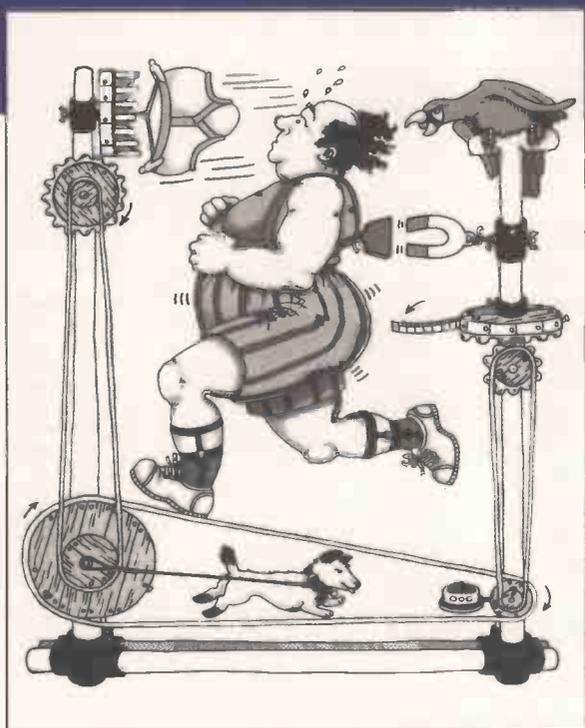
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MOUSE

Microsoft Optical Mouse

Designer mouse with great performance



To most PC users, a mouse may be just a mouse, but there are those who insist on having exactly the right rodent. There's certainly plenty of choice available, from ergonomic models that cradle the hand to optical mice with no balls, and battery-powered wireless wonders. Those looking for the ultimate in desktop chic will want to get their hand on Microsoft's latest, developed in conjunction with internationally acclaimed designer Philippe Starck.

While we're not sure about it being 'an artistic bridge that helps people connect with the technology they use every day', the Optical Mouse by Starck is definitely different. Separated by an orange or blue illuminated stripe, the left and right buttons run almost the entire length of the body, allowing you to click with the side of your hands as well as the tips of your fingers. What look like additional buttons on the side, however, are just simple grips.

The mouse-wheel features the same stepping as used in older Intellimouse designs, offering more tactile feedback than newer models, but sadly it doesn't include a tilt mechanism for horizontal scrolling. If you've never had a mouse with this feature, chances are you won't miss it, but it would have been a useful addition.

Despite our initial fears about the hemisphere design, Starck's mouse proved remarkably comfortable to use in either hand and as accurate as any other Microsoft device. Multiple testers agreed that it glided across the desk more easily than traditional mice. There's no software to install, so it really is plug and play. Even the box looks good.

Simple and stylish, the Optical Mouse by Starck is an excellent choice for both PC and Mac users.

Chris Cain

DETAILS

RRP £39.99 (£34.03 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Microsoft 0870 601 0100

[www.microsoft.com/uk](http://www.microsoft.com/uk)

**SPECIFICATIONS**

PC: Windows 98/ME/2000 or XP

Mac: Mac OS • USB port

**PROS** Stylish, comfortable and suitable for both left- and right-handed users

**CONS** No horizontal scrolling support

**VERDICT**

Given the whole style thing we're surprised this isn't a wireless model, but Starck's mouse is an eye-catching product that works extremely well

**PERFORMANCE** ★★★★★

**FEATURES** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



Acer recommends Microsoft® Windows® XP Professional.

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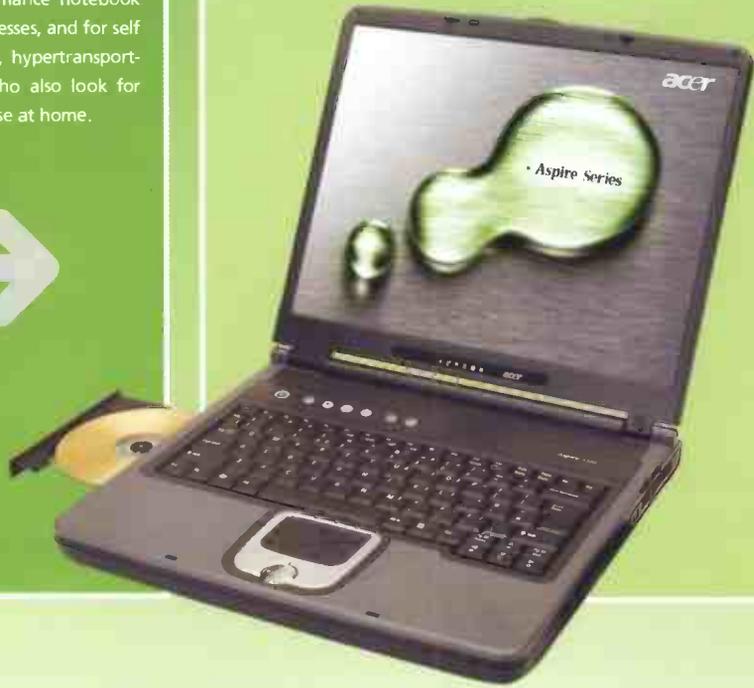


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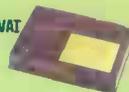
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- 64MB SDRAM, 32MB NAND Flash Memory, SD (SDIO)/MMC Slot, Bluetooth, 3.5" transreflective TFT



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Intel® Pentium® M Processor 1.50GHz  
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Entry Level P

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1300 Ansi lumen  
34db noise, 2.2K  
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Intel® Pentium® 4 Processor 3.40GHz  
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6-in-1 Card Reader, Modem/LAN,  
DVD-RW Super Multi-Drive,

- Intel® Pentium® 4 Processor up to 3.40GHz
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- 56Kbps modem
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- 80GB or 120GB Ultra ATA-100 Hard Disk drive
- CD-RW+DVD Combo Drive or DVD-RW Super Multi-Drive\*
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ATI with 3D AGP Dynamic  
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**599** INC VAT  
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XGA resolution,  
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DLP, XGA (1024x768) resolution, 1100 Ansi lumen brightness,  
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PD521

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## Prestige Line

### AL 1502bm - TFT LCD 15"

▲ SMART UPGRADE

Upgrade your PC with a small and smart format multimedia LCD, the Acer AL1502BM. With the support of a rapid response rate and high level of brightness, you can work or be entertained for as long as you wish, with no strain to your eyes. The modern interface opens up the benefits of the latest LCD technologies offering ergonomics and speed of information. The AL1502BM is the ideal interface for users requiring a small format with a bright and colourful performance.

## Value Line

### AL 1711s - TFT LCD 17"

▲ VISION FOR PC PERFORMANCE

Upgrade your PC system with a sleek and black 17" design, which is a reliable solution to render the ergonomic benefits of LCD technology. The slim and compact design liberates the workplace transforming the computing area into a modern work or entertainment area. The Acer AL1711s is the ideal solution for the home or office PC users requiring a smart interface with a broader view.

## Office Line

### AL 1921ms - TFT LCD 19"

THE NEXT GENERATION OFFICE

The AL1921ms delivers to the performance driven work environment all of the ergonomical and technological advantages required for high levels of efficiency in parallel with the flexibility to integrate into any modern work environment. The sophisticated 19" LCD integrates all of the advanced panel features, like a broad viewing angle and a high contrast level for crisp and clean imaging. The AL1921ms is the next generation office solution, typically serving corporate professionals like traders, bankers or engineers with the objective of optimizing a long-term performance, work comfort and maximizing the office space.

Pricing Effective From 5th August 2004 till 4th September 2004

## Acer Monitor LCD An Exceptional Point of View

Acer AL1502bm

£241 INC VAT  
£205 EX VAT

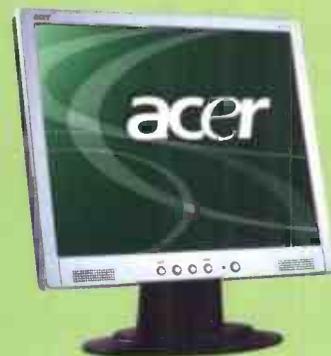
- 15" TFT LCD
- Resolution 1024 x 768
- Brightness 250 cd/m<sup>2</sup>
- Contrast Ratio 350:1
- Viewing Angle 140°
- Internal Power Supply
- Response rate 25ms
- Black and Super Slim design
- ISO 13406-2 compliant
- 3 year warranty
- TCO '99



Acer AL1711s

£293 INC VAT  
£249 EX VAT

- 17" TFT LCD
- Resolution 1280 x 1024
- Brightness 250 cd/m<sup>2</sup>
- Contrast Ratio 400:1
- Viewing Angle 140°
- Internal Power Supply
- Response rate 25ms
- Silver and Super Slim design
- ISO 13406-2 compliant
- 3 year warranty
- TCO '99



Acer AL1921ms

£445 INC VAT  
£379 EX VAT

- 19" Multimedia TFT-LCD
- TCO '99
- Resolution 1280 X 1024
- 16.7M
- Viewing Angle 170°
- Brightness 300 cd/m<sup>2</sup>
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- Response time 25ms
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- Super Slim design
- Speakers





Acer recommends Microsoft® Windows® XP Professional.

August 2004



# Ferrari 3200 Exclusive Passion

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- ATI® Mobility™ Radeon™ 9700 with 128MB
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- 1 Year collect and return (including International Travellers Warranty)

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Acer MP3 Flash Stick 128MB or 256MB, Flash Stick with MP3, WMA player with FM Radio and Voice recorder function, LCD Display, 5 Band Equalizer incl. AAA Battery and Earphone

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### Acer USB 2.0 Flash Stick 128MB/256MB/512MB

Available in 128MB or 256MB or 512MB, USB 2.0/1.1 support, 9 MB/s read speed, 5MB/s write speed, no extra driver required (except Win98)

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**17IN MONITOR****Shuttle XP17**

A stylish screen, with good image quality



**A**vailable from mid-September, Shuttle's 17in flat-screen monitor is designed to accompany its range of XPCs. The company's small form factor PCs are modern looking and increasingly being presented as media centres or gaming machines – see page 56 for a review of the latest model.

The XP17 follows the same trend; it's stylish and designed to be portable, with an aluminium handle and optional shoulder carry bag for easy transport. While you wouldn't want to lug it around for lengthy periods, its size and weight do make it easy to carry.

Although you can easily adjust the screen's angle, there's no swivel or height adjustment. The display can be set at 30, 45 and 60° and viewed in landscape or portrait modes. It's housed in tempered anti-glare glass and forgoes the usual plastic surround in favour of high-impact aluminium tubing, which helps set off the monitor's good looks. The same glass frames the viewing area, coloured either black or silver.

We were impressed by the overall image quality. The screen was bright and clear, the anti-glare was effective, and the 16ms response time coped well with a variety of moving images.

The monitor features VGA and DVI inputs, a native

resolution of 1,280 x 1,024 and comes with the usual function buttons, which are located under the unit so can be a little awkward to use.

We liked this monitor; its picture quality is good and its stylish design pleasing to the eye. But at £450 it is expensive for what you get and there are good, cheaper alternatives. It's also not widescreen, has no inbuilt speakers and some might not like the lack of swivel or height adjustment.

**Rob Jones**

**DETAILS**

**RRP** £453 (£386 ex VAT)  
**Carry bag:** £33 (£28 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Shuttle  
<http://eu.shuttle.com>

**SPECIFICATIONS**

17in • Tempered glass, anti-glare coating • SXGA 1,280 x 1,024 75Hz • 16ms response • Analogue RGB, DVI, 140° vertical/horizontal viewing angle • 450:1 contrast ratio • 4.3kg, 422 x 434 x 64mm (w x h x d) • 260cd/m<sup>2</sup>

**PROS** Good screen; anti-glare; looks

**CONS** No swivel or speakers; price

**VERDICT**

**A clear, bright screen that goes well with the latest Shuttle PCs. It's just a bit expensive**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

**DIGITAL MUSIC PLAYER****Sony NW-HD1**

Could this pose a challenge to the Ipod?



**W**hen Sony announced its latest Network Walkman at the 25th anniversary party for the original hip hifi, it was seen as an attempt to dethrone the Ipod. However, it was also universally criticised for not being able to play mp3 files. With the player due to hit these shores any time now, we got our hands on the Japanese model.

At first glance the magnesium alloy case is far more appealing than Apple's latest offering, although its small green and black screen is barely adequate. Thankfully the interface is straightforward, though less intuitive than the Ipod, and manipulated through a good click controller and buttons for volume, display mode and menu jumping.

The main accusation critics have levelled at the HD1 concerns the use of its proprietary Atrac3plus encoding, rather than the more popular mp3. Sony claims its system offers comparable sound quality, yet in a file only half the size.

In tests our ears support the quality claim, but the huge issue remains that few people have collections in the format. Sony's solution of sorts is to enable its Sonicstage music library software to convert other formats to Atrac3plus before shuttling music to the 20GB drive in the HD1. While

this sounds OK in theory, conversion of one lossy compression format to another does produce noticeable loss of fidelity. Besides, storing two versions of each song on your PC is hardly desirable.

On the positive side, a battery life that we rated at over 25 hours per charge beats the Ipod hands down, while Connect, Sony's new online music store, integrates well with Sonicstage and has a decent selection of music starting at 79p per track.

**J Mark Lytle**

**DETAILS**

**RRP** Estimated at £299.99 (£255.31 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Sony Style 020 7365 2947  
[www.sony.co.uk](http://www.sony.co.uk)

**SPECIFICATIONS**

20GB HDD • USB2 • Headphones/Line out • 110g • 89 x 13.8 x 62.1 mm • 30-hour claimed battery life • Sonicstage 2.1 • Atrac3plus encoding

**PROS** Excellent sound quality; great battery life

**CONS** No native mp3 playback

**VERDICT**

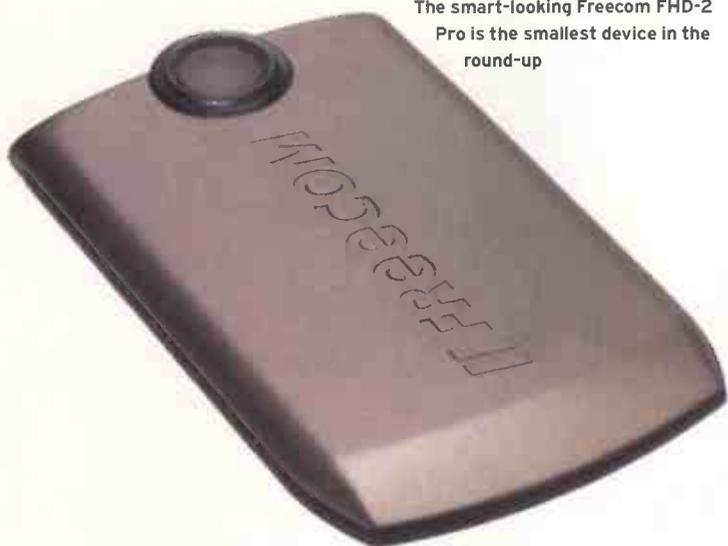
**An excellent player that is stylish and easy to use, with a great battery life. However, the lack of native mp3 support makes it difficult to recommend**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

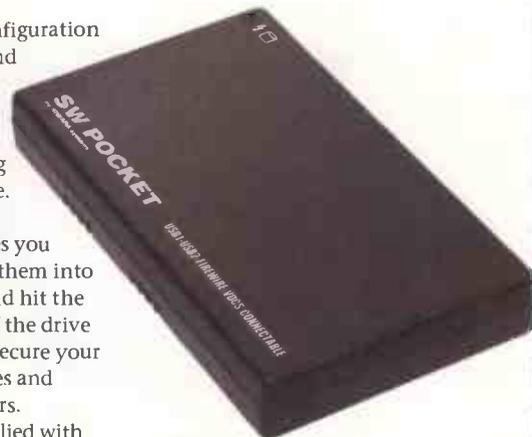
## MINI ROUND-UP

# External portable hard drives

We review the latest pocket-sized and larger capacity external hard drives



The smart-looking Freecom FHD-2 Pro is the smallest device in the round-up



Siwara's SW Pocket is light and easily portable, with good software

While USB disk keys have become a practical alternative to Zip drives and CD writers for moving data around, even the largest models can't compete with a good external hard disk. No doubt fuelled by the rise of Apple's iPod, the size and shape of portable units has rapidly decreased over the past few years, while storage capacities and data transfer rates have increased dramatically.

Whether you are replacing tape technology for backups, moving large images around, transporting your mp3 music library between systems or even producing home movies, external portable hard drives are becoming popular. We look at the latest

pocket-sized models and some larger capacity options.

### POCKET-SIZED STORAGE

**Freecom FHD-2 Pro 20GB**  
Housed in a scratch-resistant aluminium case, Freecom's FHD-2 Pro is the smallest device in our round-up. It stands out from the crowd thanks to a striking circular button at one end, used to quickly synchronise data between the drive and your desktop PC.

As with the other pocket drives, the Freecom can be powered via USB. A separate power supply can be used if the unit can't draw enough juice from your system. Our review unit came with a 20GB Toshiba drive, but 40GB and 80GB versions are also available.

Installation and configuration are straightforward, and the bundled software uses Microsoft's Briefcase technology to make synchronising data as easy as possible. Once you've finished working with your files you simply drag and drop them into the relevant folders and hit the button on the front of the drive to sync. You can also secure your data by encrypting files and compressing the folders.

The Freecom is supplied with Autorun, a utility that lets you set an application to start as soon as the drive is connected, and Acronis True Image, for creating drive backups in a similar way to the Norton Ghost or Drive Image. However, the latter is a cut-down edition that prevents you creating images across a network.

Unfortunately, while its spin speed and buffer size were on a par with other drives, the Freecom turned out to be the poorest performer in the group. That said, there's no denying that it's a functional and smart-looking product that comes complete with useful software.

### Siwara SW Pocket

While its industrial square design won't win any awards for style, Siwara's SW Pocket is the lightest drive on test and should appeal to those who value sheer portability over aesthetics. The ridged black plastic exterior incorporates air vents on the underside to help keep the hard

disk cool. Our USB2 review model was fitted with a 20GB 2.5in IBM Hitachi Travelstar drive, but 40GB, 60GB and 80GB models are available.

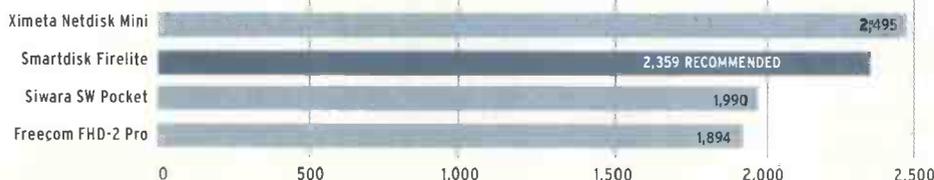
One thing making the Pocket different from other drives is its custom mini-centronics connector, which places some of the electronics outside the unit. From a manufacturing point of view, this allows for simpler and smaller devices, and the ability to sell both USB and Firewire versions simply by bundling a different cable. In theory, you could also buy one version and convert it to the other simply by swapping leads. The downside is that, should you lose the cable, getting a replacement may be more difficult than usual.

The drive is hot swappable and doesn't require any special drivers; once connected, a single red LED indicates activity. It can draw power from the host, but a separate power supply is included in case your system isn't meaty enough.

Siwara includes a good range of software, from formatting and partitioning tools to backup software, but by far the most interesting is SW VDC, allowing you to use the drive as a virtual CD tower. In terms of speed, the Pocket wasn't the fastest drive on test, but its performance will be adequate for most purposes.

## Lab results for portable hard drives

### PCmark04 HDD



It is expensive per gigabyte, but while other drives may offer more bang for your buck, we were impressed with the Pocket's range of software and portability.

### Smartdisk Firelite

Designed to be both durable and portable, the Smartdisk Firelite is housed in a curved magnesium alloy case that fits comfortably in the palm of your hand. In theory, as well as defending it against knocks, the metal helps prolong the life of the drive by dissipating heat away from it.

The Firelite is quiet and only gets slightly warm to the touch during operation. Our review unit came with a 80GB Fujitsu hard drive, but Smartdisk offers 40GB or 60GB capacities for those who don't need as much storage.

The unit can be powered from the host via USB, as with our model, or Firewire, depending on your configuration. An additional PS/2 power adapter cable is also provided. If this combination fails to provide enough juice you'll need to purchase an external power supply from Firelite. A small switch at the rear flicks between host power and the external power adapter. You'll also need to buy this if you're using a 4pin Firewire port, or when daisy-chaining Firewire peripherals.

Surprisingly, the USB models aren't bundled with any software. Firewire drives ship with Smartdisk Tools, but this is only for Mac users.

In tests, the Firelite proved a good performer, outpacing both the Freecom and the Siwara, and it boasts one of the lowest costs per gigabyte. However, its low price is reflected in the lack of software included with the drive.

The Smartdisk Firelite is a good performer at a reasonable price

## Higher-capacity alternatives



### Buffalo Linkstation Network Storage Centre

While networking can be a scary experience for some, Buffalo's supplied literature allows for relatively easy configuration of the Linkstation Network Storage Centre. The compact unit features a stylish white-and-silver design and is supplied with a stand for vertical operation. We looked at the 120GB version, but the drive also comes in 160GB and 250GB capacities.

Buffalo's software lets you connect to and configure the drive using a web browser-based interface. Password-protected configuration pages allow you to assign a name, create shared folders and set up security, and you can elect to share folders with both Mac and Windows users.

USB2 ports on the front and the back provide the option to add another external hard disk, and you can schedule both full and incremental backups of the Linkstation's shared folders to it. A built-in print server also allows you to connect a USB printer. Four LEDs on the front panel display network activity, drive errors, power and drive capacity, while the rear houses a 10/100 Ethernet port, a switch to toggle this between MDI and MDIX settings, the second USB2 port and a reset button. There's also a vent for the Linkstation's fan, which runs with a minimum of noise. The power supply is built

into the unit, cutting down on clutter.

Overall, the Linkstation offers a good set of features for the price and is a quick and easy way of adding extra storage space to a small home or office network.

### Freecom Classic Hard Drive

The Classic Hard Drive from Freecom is available in four versions – 80GB, 120GB, 160GB or, as reviewed here, a 250GB model. The drive is also the lightest and most portable on test, despite the need for an external power supply, and offers the cheapest cost per gigabyte. However, it does lack the versatility and features of some others here.

Thanks to a lack of cooling fans the unit is extremely quiet and a small stand can be used to position it vertically. The drive doesn't require any special drivers and a USB connection makes for easy installation. The Classic Hard Drive is also hot swappable, allowing it to be connected or disconnected while the computer is running.

As with the FHD-2, the unit is supplied with Freecom's Personal Media Suite software, allowing you to compress and encrypt your data automatically. You also get Freecom's Autorun for Windows, which can be configured to run a specific program on connection.

A combination of good software and competitive pricing make the Classic Hard Drive a solid choice for high-capacity mobile storage.



### Ximeta Netdisk Office

As with its smaller cousin, the Netdisk Office is designed primarily for small offices that require shared storage space.

The Office is essentially a combined hard disk and eight-port Fast Ethernet Switch, allowing it to connect either to a Lan or directly to a PC via USB2. If you choose the latter option, you'll need to install software onto each system requiring access to the drive.

The case houses air vents on one side to keep the drive cool, though the unit also features a noisy fan. Furthermore, the lack of an internal power supply makes it a little cumbersome.

In addition to Windows and Mac OS support, the drive offers beta support for Redhat Linux. Only one user can read or write data at a time when using a mixed-mode environment but, if everyone is using Windows XP or 2000, you can have simultaneous multi-user read/write access.

The unit is only available in a 250GB version and comes with an aggregation utility that enables multiple Netdisks to form a single virtual Netdisk. Drive mirroring is also supported, providing users with an added layer of protection.

Overall, the Office offers a cost-effective alternative to either a network-attached storage (Nas) solution or server for small networked environments.



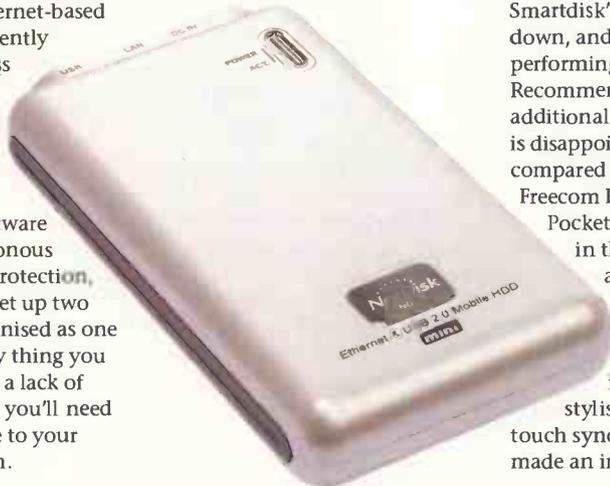
## Ximeta Netdisk Mini

Although the Ximeta Netdisk Mini is by far the largest and heaviest portable drive here, it comes complete with both USB and Ethernet connectivity. As its name suggests, the latter makes it particularly good for use with networks.

The Netdisk uses Ximeta's patented Network Direct Attached Storage (NDAS), which enables it to be connected directly into an Ethernet-based network. It transparently allows users to access the drive using the installed software on each PC without any IP addresses or networking knowledge. The software also allows asynchronous mirroring for data protection, and it's possible to set up two Netdisks to be recognised as one large drive. The only thing you should be wary of is a lack of support for hubs, so you'll need to connect the drive to your network via a switch.

With a 5,400rpm spin speed and large 8MB buffer, the internal Samsung-branded hard drive put in an excellent performance in our speed tests. However, at 258g, it's the least portable, and requires two USB ports to draw enough current unless you use the supplied power adapter. You'll also need the latter if you plan to

**The Ximeta Netdisk Mini comes with both USB and Ethernet connectivity**



connect the drive via Ethernet. Considering its versatility, the Netdisk is well priced and costs £4 per gigabyte. However, its unique technology may only be attractive to a niche group of users.

## Verdict

Typically, it's difficult to recommend a single portable drive, as each has its own advantages and disadvantages. On a pure cost-per-gigabyte level, Smartdisk's Firelite wins hands down, and as one of the top performing units it deserves a Recommended award. Its lack of additional software and features is disappointing, especially when compared to those offered by the Freecom FHD-2 and Siwara SW Pocket, but even factoring in the cost of these it's still a winner.

Although the Freecom FHD-2 was the poorest performer in our speed tests, its stylish design and one-touch synchronisation certainly made an impression. It is easy to

use and ideal for those who are constantly editing files on the move. Meanwhile, the Netdisk Mini was by far the most versatile, as well as being the best performer. What's more, it is competitively priced. Unfortunately, its weight and slightly excessive power requirements push it out of the limelight.

This leaves the Siwara SW Pocket. While it doesn't come cheap, it is the lightest drive on test, and excellent software makes it stand out from the crowd.

If you're after something with more storage space and don't need such easy portability, the higher-capacity alternatives each provide a distinct function. The Freecom Classic Hard Drive is an ideal choice if you're after a low-cost-per-gigabyte unit, while the Buffalo model adds additional functionality for small offices as a print server. Finally, the Netdisk provides an alternative to a high-cost NAS appliance.

Alex Arias

MANUFACTURER	POCKET-SIZED STORAGE				HIGHER-CAPACITY ALTERNATIVES*		
	FREECOM	SIWARA	SMARTDISK	XIMETA	BUFFALO	FREECOM	XIMETA
PRODUCT	FHD-2 PRO	SW POCKET	FIRELITE	NETDISK MINI	NETWORK STORAGE CENTREHD-HIZOLAN	CLASSIC HARD DRIVE	NETDISK OFFICE
Price inc VAT (ex VAT)	£104 (£88)	£246 (£210)	£198 (£169)	£189 (£160)	£240 (£204)	£199 (£169)	£309 (£262)
URL	<a href="http://www.freecom.com">www.freecom.com</a>	<a href="http://www.hki-systems.co.uk">www.hki-systems.co.uk</a>	<a href="http://www.smartdisk.com">www.smartdisk.com</a>	<a href="http://www.ximeta.com">www.ximeta.com</a>	<a href="http://www.buffalo.co.uk">www.buffalo.co.uk</a>	<a href="http://www.freecom.com">www.freecom.com</a>	<a href="http://www.ximeta.com">www.ximeta.com</a>
Telephone	01423 704 700	0845 644 5333	01252 530 960	0800 692 9292	0870 162 4970	01423 704 700	0800 692 9292
Cost per gigabyte	£4.40	£10.50	£2.11	£4	£1.70	68p	£1.05
Hard drive manufacturer	Toshiba MK2023GAS	IBM Hitachi Travelstar 80GN	Fujitsu MHT2080AT	Samsung MP0402H	N/A	N/A	N/A
Capacity	20GB	20GB	80GB	40GB	120GB	250GB	250GB
Spin speed (rpm)	4,200	4,200	4,200	5,400	N/A	7,200	7,200
Buffer size (MB)	2	2	2	8	N/A	N/A	8
USB2	✓	✓	✓	✓	✓	✓	✓
Firewire model	✗	✓	✓	✗	✗	✗	✗
Ethernet 10/100 BaseTX	✗	✗	✗	✓	✓	✗	✓
Size (mm) w x d x h	80 x 130 x 19	73 x 128 x 18	84 x 129 x 18	80 x 140 x 24	170 x 185 x 62	204 x 118 x 35	129 x 215 x 50
Weight (g)	163	155	174	258	1,385	872	1,252
Backup software	✓	✓	✗	✓	✓	✓	✓
Additional software	✓	✓	✗	✓	✗	✓	✓
Warranty (years)	2	2	2	2	2	2	2
<b>SCORES</b>							
Ease of use	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance	★★★★★	★★★★★	★★★★★	★★★★★	N/A	N/A	N/A
Features	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

\* We used PCmark04 to determine the performance of the pocket drives over a USB2 connection. This was not used to test the performance of the higher-capacity alternatives, as these varied in connectivity and are primarily designed for sharing over an Ethernet network connection, and are therefore not directly comparable.



TL795A- 17" TFT-LCD



TL995A- 19" TFT-LCD

RELISYS: as seen by Andy Warhol

## state of the art

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**RELISYS**

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**MD**  
[www.microdirect.co.uk](http://www.microdirect.co.uk)

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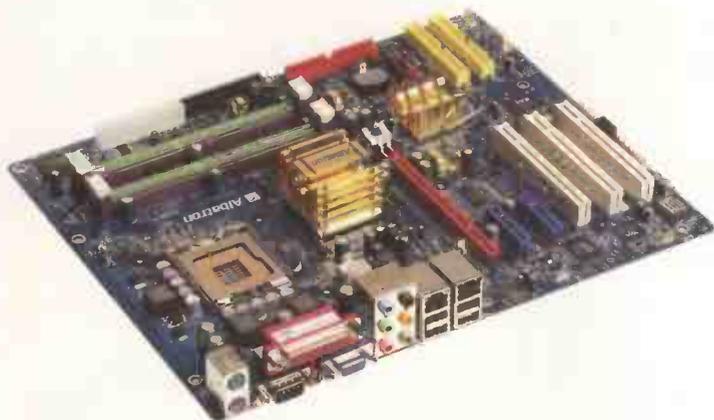
3 years on-site UK warranty as standard.  
Stockists available online at [www.iiyama.co.uk](http://www.iiyama.co.uk)

\*Excl VAT

**INTEL 915 MOTHERBOARD**

# Albatron PX915G

Overflowing with great features



**A**lbatron's PX915G Pro is the first motherboard we've seen that features the G version of Intel's 915 Express chipset. This includes the new Media Accelerator 900 (GMA 900), designed to provide the next level of integrated graphics performance.

The board centres around one of Intel's new 775-pin sockets, supporting Prescott Pentium 4 processors with 533 or 800MHz front-side bus (FSB) speeds. The northbridge and southbridge chips are passively cooled, which should cut down on noise.

The 915 chipset can use either DDR1 or DDR2 memory solutions. Albatron has gone for DDR1, with the four Dimm slots taking a maximum of 4GB of either DRR400 or DDR333 in a dual-channel configuration.

Intel's GMA 900 may be a leap up from previous generations of integrated graphics chips, but it's still no match for anything other than an entry-level graphics card. It's DirectX9-compliant, but relies on the processor to help with functions such as vertex

shading. It also uses a whopping amount of memory – up to 32MB for graphics and an extra 96MB while running a game. There is an empty 16x PCI Express (PCX) slot for upgrading though.

The PX915G Pro comes with two ATA133 ports that can be configured as a Raid setup or standard ATA ports, and another single ATA100 port. There are also four Sata (Serial ATA) ports, but as the board comes with an ICH6 southbridge these can't be configured into a Raid array.

Simon Crisp

**DETAILS**

**RRP** £105.73 (£89.99 ex VAT)  
**BEST PRICE**  
[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION**  
 Discount Computer Supplies 0800 298 2623 [www.dcs-online.biz](http://www.dcs-online.biz)  
**SPECIFICATIONS**

Socket 775 (533 & 800MHz FSB) • Intel 915G northbridge, ICH6 southbridge • 4 Dimm slots • 16x PCX slot • Two 1x PCX slots • 10/100 and Gigabit Ethernet • 4 Sata ports • 4 USB2 ports (4 more on expansion plate) • 2 PS/2 ports • Serial, parallel and VGA ports • 7.1 audio

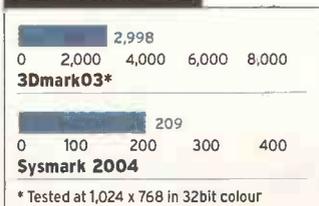
**PROS** Well-featured motherboard  
**CONS** Integrated graphics still no match for expansion cards

**VERDICT**

**A stable and well-featured motherboard**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

**PERFORMANCE**



**MINI-ITX MOTHERBOARD**

# Via Epia MII1200

Good integration, shame about the graphics



**A**long with developing chipsets for Intel and AMD systems, Via has been improving the features, performance and connectivity of its Epia Mini-ITX motherboards.

The MII1200 uses the latest Via Nehemiah C3 processor, the CSP. The board also features Via's Padlock Advanced Cryptography Engine (ACE) and an integrated Cardbus controller.

The CSP is a 0.13micron chip, running at 1.2GHz with 64KB of full-speed Level 2 cache. Instead of the AMD 3DNow instruction set, the new chip supports Intel's SSE instructions. This, along with a full-speed floating-point unit (FPU), should improve 3D performance.

The board features a Random Number Generator and with Padlock ACE there's extra performance for data encryption and decryption. It can encrypt or decrypt data at a rate of 12.8Gbits/sec and ACE supports all three AES key sizes – 128, 196 and 256bit in hardware.

Both the Via Apollo CLE266 northbridge and the VT8235 southbridge sit under a passive double heatsink. The CLE266 houses a single Dimm slot for up to 1GB of DDR266 memory and an integrated S3 Unichrome graphics chip. This provides just rudimentary 3D performance as it's primarily a 128bit 2D graphics engine optimised for multimedia playback. It also has

an integrated mpeg2 decoder. The southbridge brings support for Ultra ATA133, 10/100Base-T Ethernet, six USB2 ports and 5.1 multichannel audio.

The back panel of the MII1200 shows just how much you can get on a small platform. Including the card reader there are 15 ports: two PS/2, serial, VGA, Lan, two USB2, S-video, RCA (which can switch between composite video or S/PDIF audio port), three audio and a single Firewire port.

Simon Crisp

**DETAILS**

**RRP** £151.58 (£129 ex VAT)  
**BEST PRICE**  
[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION**  
 Mini-ITX.com [www.mini-itx.com](http://www.mini-itx.com)  
**SPECIFICATIONS**

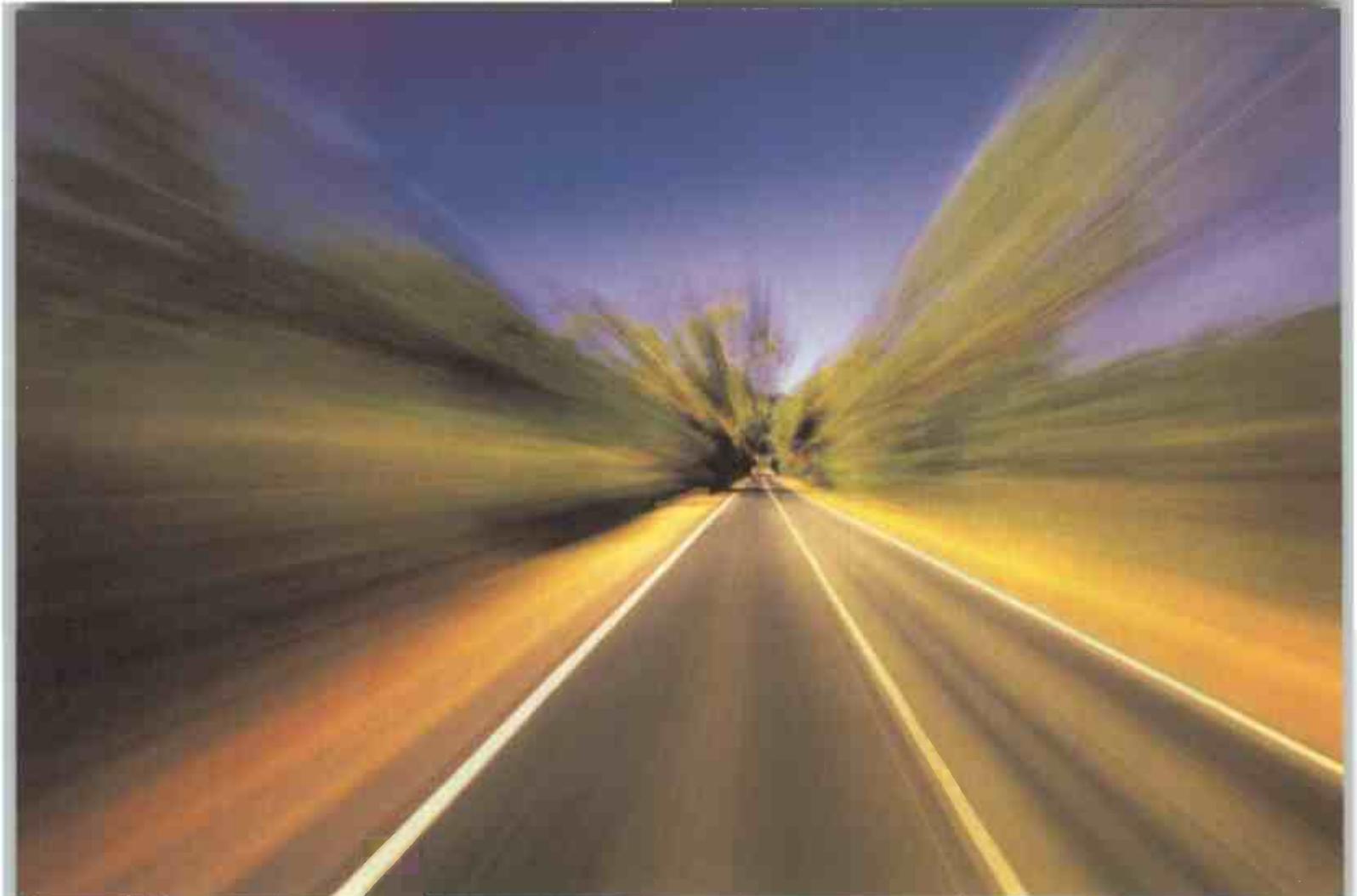
1.2GHz Via CSP processor • 64KB Level 2 cache • Intel SSE instructions • Padlock Advanced Cryptography Engine (ACE) • S3 Unichrome graphics • 1 Dimm slot • 2 PS/2, 1 serial, VGA, Ethernet, 2 USB2, composite video/S/PDIF, S-video, 1 Firewire port

**PROS** Amazing amount of integration on a mini motherboard  
**CONS** Poor performance

**VERDICT**

**If you're not worried about games or other graphically intensive applications, the MII1200 is worth considering**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★



# Increase the *speed* and performance of your computers...

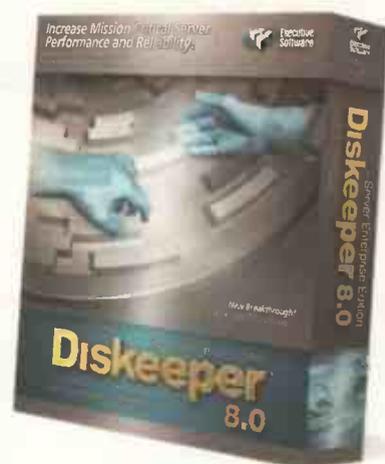
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**GRAPHICS CARD**

## Crucial Radeon X800 Pro

A cracking card but it's slightly pricey

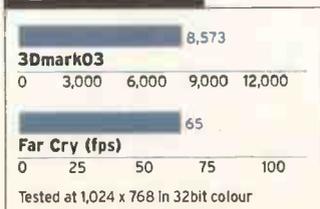


**B**est known for its high quality and keen memory pricing, Crucial recently launched a line of ATI-powered graphics cards. The Radeon X800 Pro sits at the top of the range, aimed at high-end gamers wanting to upgrade.

While not quite as powerful as the XT version in the HIS Excalibur (see right), the card's X800 Pro chip is impressive. Its 510MHz core boasts 12 parallel pipelines that deliver a fill rate of 6gigapixels/sec, which translates into smooth animation even at high resolutions and fast frame rates. The Pro supports 3Dc compression and Videoshader HD for video encoding and decoding and DVD playback.

This is all combined with 256MB of GDDR3 memory, a 400MHz Ramdac and AGP 8x support. There are also DVI and TV-out connections along with a VGA port, and the card can output resolutions up to 2,048 x 1,536 pixels.

**PERFORMANCE**



The Radeon put in an impressive performance during our tests, with a score of 8,573 in 3Dmark03 and a consistent 65fps in Far Cry at 1,024 x 768. This matches the HIS, but performance drops off at higher resolutions. Although a very good card, it is more expensive and slightly slower than the impressive Sapphire Radio X800 Pro tested in the August issue. You do, however, get S-video-to-component video and composite leads, and a DVI-to-VGA adapter.

**Chris Cain**

**DETAILS**

**RRP** £309.01 (£262.98 ex VAT)  
**BEST PRICE**  
[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION**  
 Crucial Technology 0800 013 0330  
[www.crucial.com/uk](http://www.crucial.com/uk)  
**SPECIFICATIONS**  
 ATI X800 Pro, 510MHz core • 256bit quad-channel GDDR3 interface • DirectX9 • 256MB GDDR3 memory • 400MHz Ramdac • AGP 8x/4x • VGA, TV-out and DVI-I connectors • Driver CD • PowerDVD 5  
**PROS** Performance; TV-out; DVI  
**CONS** No bundled games  
**VERDICT**  
 Although it doesn't quite match the price/performance of Sapphire's version, the Crucial Radeon X800 Pro is a cracking graphics card

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

**GRAPHICS CARD**

## HIS Excalibur X800 XT

A distinctive card with fast performance



**T**he Excalibur X800 XT IceQ II is based around ATI's Radeon 420 core; the company's most advanced graphics technology for the home PC. Unlike its predecessor, the R360, this runs at 520MHz and has a higher transistor count, so more calculations can be performed simultaneously.

The X800 XT has four 64bit memory controllers and 16 pixel pipelines, double the number found on previous generations.

Some may argue that Nvidia's Geforce FX 6800 Ultra is a better option – it uses the same number of pixel pipelines and is compatible with the forthcoming DirectX 9.0c specification. ATI has ignored this for now and installed its 3Dc compression technology, which allows for complex graphics with less of a strain on the resources.

In tests, ATI seems to have its priorities right. The Excalibur's 3Dmark03 score of 11,681 was marginally lower than the last 6800 Ultra card we reviewed, but it's the fastest we've seen in real-

world tests. Under Far Cry, the X800 XT chip notched up 64.91 fps, some 9fps more than the Nvidia card and frame rates stay high as resolutions are scaled up.

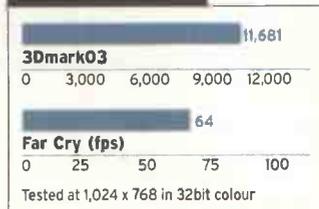
The X800 is highly distinctive. HIS says its enormous heatsink and fan produce 40 per cent less noise and 30 per cent better cooling than ATI's standard reference design. All users will benefit from its quiet operation, and enthusiasts could extend the capabilities with overclocking. With outstanding performance at a good price, this card is hard to beat.

**Rory Reid**

**DETAILS**

**RRP** £365 (£310 ex VAT)  
**BEST PRICE**  
[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION**  
 Ebuyer 0870 467 0753  
[www.ebuyer.com](http://www.ebuyer.com)  
[www.hisdigital.com](http://www.hisdigital.com)  
**SPECIFICATIONS**  
 Graphics core: 256bit • Memory interface: 256bit • 16 parallel pixel pipelines • 256MB (560MHz) GDDR3 memory • 520MHz VPU  
**PROS** Fast; quiet; good price  
**CONS** Enormous fan may reduce expansion space  
**VERDICT**  
 The fastest graphics card we've seen in terms of real-world performance

**PERFORMANCE**



**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

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  - ▶ Windows 2000
  - ▶ Windows XP
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  - ▶ Microsoft Outlook
  - ▶ Lotus Notes
  - ▶ Web mail
- AES, Triple DES and Blowfish Encryption Algorithms
- RSA Algorithm in DESkey Token for key exchange
- Storage for up to 64 encryption keys per Token
- 2kB secure user memory
- Clipboard encryption for any text, or program
- Compressed Secure Archives
- Encrypted offline folders



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### ▼ Thermaltake Hardcano 12 fan monitor

Fitting into a 5.25in drive bay, Thermaltake's Hardcano 12 is a sophisticated combination fan controller and temperature sensor. It comes with four fan controllers – a button on the front panel is used to control speeds – and four thermal probes, all of which can be connected up to warning sounds and lights.

An LCD screen, showing the current fan speeds and temperature of wherever the probes have been placed, dominates the front of the unit.

**RRP** £45 (£38.29 ex VAT)

**PRODUCT INFORMATION** [www.komplett.co.uk](http://www.komplett.co.uk)

★★★★★



### ▲ Spire Whisper Rock IV

Made from aluminium and featuring a copper core, Spire's Whisper Rock IV works with Athlon XPs up to 3200+ and offers high performance at a remarkably low price. With a noise level of 21dBA, the ball-bearing fan can shift some 28 cubic feet of air per minute to keep things cool. At just £7 it's excellent value.

**RRP** £7 (£5.95 ex VAT)

**PRODUCT INFORMATION** [www.komplett.co.uk](http://www.komplett.co.uk)

★★★★★

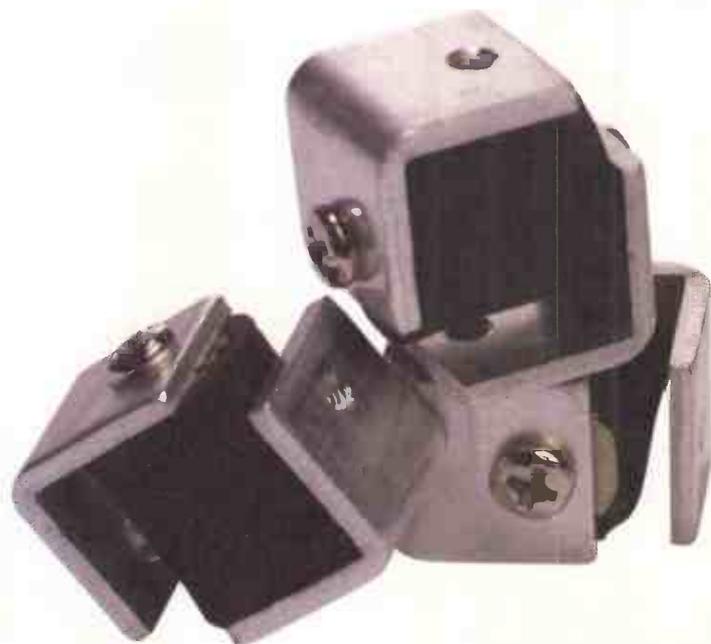
### ▼ Glacialtech Igloo Silentbreeze 462 II (Golden Edition)

Suitable for Athlon XPs up to 3000+, the 24-carat gold-plated version of Glacialtech's popular Silentbreeze 462 II certainly stands out from the crowded world of CPU coolers. The unit offers a near-silent ball-bearing fan, spinning at 2,200rpm, with a rated noise level of just 20dBA.

**RRP** £12.49 (£10.63 ex VAT)

**PRODUCT INFORMATION** [www.pcnextday.co.uk](http://www.pcnextday.co.uk)

★★★★★



### ▲ QuietPC Anti-vibration hard disk mounts

If you're one of those people who suffer from an excessively noisy hard disk, these anti-vibration mounts from QuietPC offer a cheap and easy route to a quieter life. The downside is that you'll have to move the drive into a 5.25in drive bay, but given the potential for noise reduction, it's a price worth paying.

**RRP** £10.57 (£9 ex VAT)

**PRODUCT INFORMATION** [www.quietpc.com](http://www.quietpc.com)

★★★★★

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tune in to [www.dabs.tv](http://www.dabs.tv)

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### Laptop PCs

quicklink	ACER	£ inc VAT
330CPW	TravelMate 244Lc Celeron 2.6GHz Combo	548.72
36C6PW	TravelMate 8002LCI Centrino 1.5GHz Combo	1107.98
36C7PW	TravelMate 8003LMI Centrino 1.6GHz DVD+RW	1269.98
36C9PW	TravelMate 8006LMI Centrino 2.0GHz DVD+RW	1649.99
APPLE		
360PPH	iBook G4 1.0GHz 256MB 40GB 14" TFT Combo	887.12
360NPW	iBook G4 1.2GHz 256MB 60GB 14" TFT Combo	1059.87
360WPW	PowerBook G4-1.33 256MB 60GB 12" TFT Combo	1122.12
360SPW	PowerBook G4 1.33GHz 256MB 60GB 12" TFT SuperDrive	1291.32
360VPW	PowerBook G4 1.33GHz 256MB 60GB 15" TFT Combo	1379.99
360RPW	PowerBook G4 1.5GHz 512MB 80GB 15" TFT SuperDrive	1721.37
360TPW	PowerBook G4 1.5GHz 512MB 80GB 17" TFT SuperDrive	1902.32
HP		
37P7PW	zV5215EA Ath3000+ 256/40 XPH	799.00
37XCPW	zV5230EA P4 2.8GHz 512/40 XPH	998.99
37XFPW	zV5255EA Ath3200+ 512/40 XPH	998.99
37P6PW	zV5275EA P4 3.2GHz 512/80 XPH	1298.99
37P8PW	zV3350EA PM 1.6GHz 512/80 XPH	1298.99
37PCPW	zV7255EA P4 3.0GHz 512/80 XPH	1399.00
TOSHIBA		
3531PW	Satellite Pro A40 Celeron 2.8GHz 256MB	703.82
3761PW	Tecra A2 Celeron M 330 1.4GHz	938.98
3522PW	Satellite Pro M50 Pentium-M 1.6GHz 256MB	1157.37
SONY		
36VJPW	Vaio K215B Cel2.8GHz 512MB/40G	821.32
36VHPW	Vaio K215B P4 2.8GHz 512MB/40G	999.99
3576PW	Vaio A115B Centrino 1.5GHz	1173.82
36VFPW	Vaio K215S P4 2.8GHz 512MB/60	1170.99
36V7PW	Vaio K215Z P4 3.0GHz 512MB/60	1239.00
358RPW	Vaio A195HP Centrino 1.6GHz	1408.82
35WUPW	Vaio A117S Centrino 1.7GHz	1558.99
36P5PW	Vaio S1XP Centrino 1.7GHz	1629.99
35CNPW	Vaio TR5MP Centrino 1.1GHz	1599.99
35WLPW	Vaio A197VP Centrino 1.7GHz	1695.99
36P4PW	Vaio X505VP Pentium-M 1.1GHz	1795.99
35WMPW	Vaio A197XP Centrino 1.8GHz	1949.99

### Desktop PCs

quicklink	APPLE	£ inc VAT
37KPPW	PowerMac G5 1.8GHz DP 256MB 80GB SuperDrive	1429.98
385YPW	PowerMac G5 2.0GHz 512MB 160GB SuperDrive	1878.82
37WZPW	PowerMac G5 2.5GHz DP 512MB 160GB SuperDrive	2207.82
HP		
37P7PW	dx2000 MT Cel 2.53 256/40 XPP	364.25
37PJPW	a610 Cel 2.53GHz 256/80 XPH	399.99
37PKPW	t640 Cel 2.66GHz 256/80 XPH	450.00
37PLPW	t660 P4 2.8GHz 512/160 XPH	649.99
37PNPW	t680 Ath64-3200+ 10GB/200 XPH	849.99
37PMPW	M1080 P4 3.2GHz 512/200 XPH	1050.00
FUJITSU-SIEMENS		
36D1TS	Scaleo L Cel 2.8GHz 256MB Combo Win XP Home	317.25
34B1TS	Scenic P P4 2.6GHz 256MB CD Win XP Pro	445.99
379WFW	Scaleo 600 AIX AMD 3000+ 512MB	471.98
36P0TS	Scenic P300 P4 3.0GHz 1GB DVD/CD-RW Win XP Pro	655.99
IBM		
310KPW	Thinkcentre A30 Cel 2.4GHz CD-ROM	365.98
34RPW	Thinkcentre S50 P4 2.8GHz CD-ROM	586.99
310SPW	Thinkcentre A50 P4-3.0GHz Combo	708.99
SONY		
383JPW	Vaio R560Z P4 3.2GHz 512/160G	789.99
383KPW	Vaio R560A P4 3.4GHz 512/200G	989.99
22VPPW	Vaio R250ZP P4 3.2GHz HT 512MB	879.98
304KPW	Vaio V1 P4 2.8GHz 512MB 160G	929.99
3487PW	Vaio W2 P4 2.8GHz 512/160GB	1189.99
372LPW	RA104 Home Entertainment Server	see web

### Handheld PCs

quicklink	HP IPAQ	£ inc VAT
380JPW	IPAQ rz1700	176.23
2NC2PW	IPAQ H1940	211.48
2NCVFW	IPAQ H2210	234.98
2T9HPW	IPAQ H4150	265.31
380KPW	IPAQ rx5715	351.32
380MPW	IPAQ h6340	417.12
2NCXFW	IPAQ H5550	428.87
380LPW	IPAQ 4700	440.62
PALM		
3180PW	Zire 21	70.50
34W9PW	Zire 31	99.99
34WBPW	Zire 72	185.00
257VPW	Tungsten E	131.60
257TPW	Tungsten T3	269.99

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31JBPW	Coolpix 3200	155.99
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2Q81PW	Mju 400	196.08
34R8PW	C-765UZ	267.01
34CHPW	C-808WZ	593.42
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2LKVPW	Optio S	168.41
388HPW	Optio S41 (Grey)	278.05
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228LPW	AMD Athlon 64 3000+ 512KB S754	160.00
3612PW	AMD Athlon 64 3200+ 512KB S754	199.01
3613PW	AMD Athlon 64 3400+ 512KB S754	299.00
3674PW	AMD Athlon 64 3500+ 512KB S939	375.00
3676PW	AMD Athlon 64 3700+ 512KB S754	525.00
	<b>MOTHERBOARDS</b>	
37F5PW	Gigabyte GA-BANXP-D Intel 925X Socket 775 ATX	164.00
37FTPW	Gigabyte GA-8GPNXP-Duo Intel 915P Socket 775 ATX	162.00
36M1PW	MSI 925X Neo Platinum Intel 925X Socket 775 ATX	133.00
36M2PW	MSI 915G Neo2 Intel 915G Socket 775 ATX	112.00
	<b>GRAPHICS CARDS</b>	
2NXVPW	Sapphire Radeon 7000 VO PCI 32MB	28.00
30LVPW	ASUS GeForce FX5700 DVI VO 256MB	110.00
31PPPW	Connect 3D Radeon 7000 VO AGP 32MB	19.51
359BPW	Connect 3D Radeon X800 Pro 256MB	284.01
35F5PW	Gainward CoolFX 6800Ultra "GS" DVI VO 256MB	575.01
37JYPW	MSI GeForce PC5750 DVI VO PCI-X 128MB	106.01
30F4PW	MSI GeForce FX5900XT DVI VIVO AGP 128MB	149.00
	<b>HARD DRIVES</b>	
10M5PW	Western Digital 80GB UDMA100 7200rpm 2MB 3.5"	44.00
2PHFPW	Hitachi 120GB UDMA100 7200rpm 8MB 3.5"	62.51
2FZYPW	Seagate 160GB UDMA100 7200rpm 2MB 3.5"	65.51
29LXPW	Maxtor 200GB UDMA133 7200rpm 8MB 3.5"	88.01
20K4PW	Hitachi 40GB UDMA100 4200rpm 2MB 2.5"	66.00
2WQWPW	Hitachi 60GB UDMA100 5400rpm 8MB 2.5"	99.01
2VDGPW	Maxtor 120GB External USB2 7200rpm	106.01
	<b>OPTICAL DRIVES</b>	
37KVPW	LiteOn SHOW-1213-S IDE DVD+-R/RW Dual Layer	68.01
36VTPW	LG GSA4120B Retail IDE DVD+-R/RW/RAM 12x	72.51
36HPPW	NEC ND-2510A OEM IDE DVD+-R/RW 8x	54.00
2ZD6PW	NEC ND-2500A OEM IDE DVD+-R/RW 8x	45.00
36HKPW	Plextor PX-712A RP IDE DVD+-R/RW 12x	99.51
37JQPW	Plextor PX-712SA SATA DVD+-R/RW 12x	130.00
30QLPW	Pioneer DVR-107 OEM IDE DVD+-R/RW 8x	55.00

quicklinx	SOFTWARE	inc VAT
2CGKPW	Adobe Acrobat v6 Professional Windows	370.12
2GBJPW	Adobe Acrobat v6 Standard Windows	240.87
33F5PW	Adobe Creative Suite Standard Windows	774.33
25V9PW	Adobe Photoshop CS v8 Windows	504.07
320TPW	Adobe Photoshop Elements v2	49.97
33S2PW	Ahead Nero v6 Inc Nero Power Pack	57.57
2HRQPW	Dantz Retrospect Backup Software	76.38
2TB5PW	Intuit Quicken XG 2004	52.87
2F9QPW	Jasc Paint Shop Pro v8	76.37
2PWBPW	Macromedia DreamWeaver MX 2004 Win/Mac	363.07
25SVPW	Mcafee VirusScan v8 Home	29.37
25T4PW	Mcafee VScan Home/Personal FireWall	45.82
2NDQPW	Microsoft AutoRoute 2004	41.12
2RYWVW	Microsoft Office 2003 Professional	381.87
2PWNPW	Microsoft Office 2003 Parent, Student & Teacher	99.96
2FTBPW	Microsoft Visual C++ .NET 2003 Standard	88.12
2L5PW	Microsoft Windows XP Home Edition Upgrade	82.24
2L6PW	Microsoft Windows XP Professional Full Version	238.53
2L7PW	Microsoft Windows XP Professional Upgrade	163.32
23XDPW	Net Nanny v5	24.67
308KPW	Pinnacle Studio v9 Windows	52.87
25Z9PW	PowerQuest Partition Magic v8	52.88
2C7TPW	Roxio Easy CD/DVD Creator	38.78
2F5FPW	Scansoft Dragon Naturally Speaking Prof v7	111.62
3430PW	SuSE Linux v9.1 Professional	52.87
2PQRPW	Symantec Norton AntiVirus 2004	37.59
2P5PPW	Symantec Norton Antivirus 2004 Upgrade	24.67
2P5RPW	Symantec Norton AntiVirus Pro 2004	45.82
248BPW	Symantec Norton Ghost 2003	37.59
2P5YVW	Symantec Norton Internet Security 2004	45.83
2P5ZPW	Symantec Norton Internet Security 2004 Upgrade	29.37
2P5VW	Symantec Norton Internet Security Pro 2004	57.57
2510PW	Symantec Norton SystemWorks/Pers FW Bundle	56.99
2LWDPW	Symantec PC Anywhere	146.87
338TPW	TomTom Navigator GPS Software	103.99
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2CS5PW	Belkin 54G PCI Adaptor Card	31.72
25MCPW	Belkin Bluetooth USB Adapter	43.47
31P3PW	Belkin Bluetooth USB Printer Adapter	52.87
2CS8PW	Belkin 802.11g Wireless Cable/DSL Router	50.52
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2D13PW	Linksys Wireless-G PCI Card	37.60
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248NPW	Logitech Cordless Desktop Navigator	45.82
2G83PW	Logitech Cordless Desktop MX	75.00
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## OPERATING SYSTEM UPDATE

# Windows XP Service Pack 2

We give you a guided tour of some of SP2's major new features

**C**alling XP Service Pack 2 a new version of Windows XP may be exaggerating a little, but it's certainly much more than the average collection of patches we're used to seeing.

This 264MB monster (or 100MB if you install it via Windows Update) not only fixes bugs in the OS, but also adds brand new functionality both to core services and applications such as Internet Explorer and Outlook Express.

We've been using the beta Release Candidate 2 (RC2) for some time, and generally we're impressed. It seems pretty stable and has not yet created any major problems with the PCs we've installed it on. All the screenshots here were taken

using build 2156 of RC2, so it's possible that some details may be changed by the time of the final public release version.

Microsoft's focus with SP2 is security, security and security – many of the changes are deep in the inner workings of XP and won't immediately be obvious to users. They could cause some problems for existing applications, so as ever it's wise to do a full system backup before installation.

In this overview we've concentrated on giving you a visual tour of the major new features – the technical changes are covered in great depth on the Microsoft website ([www.microsoft.com/technet/prodtechnol/winxpro/maintain/sp2chnqs.mspx](http://www.microsoft.com/technet/prodtechnol/winxpro/maintain/sp2chnqs.mspx)) if you're

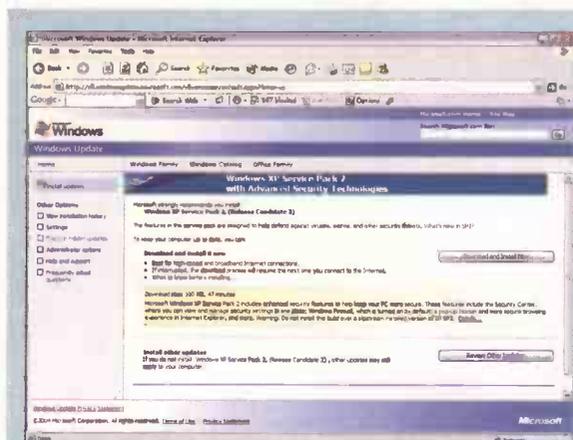
interested. We plan to do a more in-depth look at the underlying technology in a future issue.

There are a couple of features not illustrated here, such as the addition of plain text email formatting to Outlook Express, but we've tried to cover as many of them as possible within the available space. The behaviour of Internet Explorer has also been changed, for example, to prevent malicious websites hiding the navigation bar or spawning multiple pop-ups.

Overall we believe SP2 is a genuinely worthwhile update – many of the features are well overdue, but 'better late than never' is a phrase that's becoming familiar to most Windows users.

**Kelvyn Taylor**

▶ After installation, the first thing you'll see is the new Security Centre that gives you easy access to your firewall, automatic updates and Internet settings. The anti-virus settings can't be changed from here, though. Security Center can be opened from Control Panel



▲ Service Pack 2 is at least a 100MB download. Before you download it you'll be prompted to install the new Background Intelligent Transfer Service (BITS), which speeds up future patch downloads by only downloading files that have changed

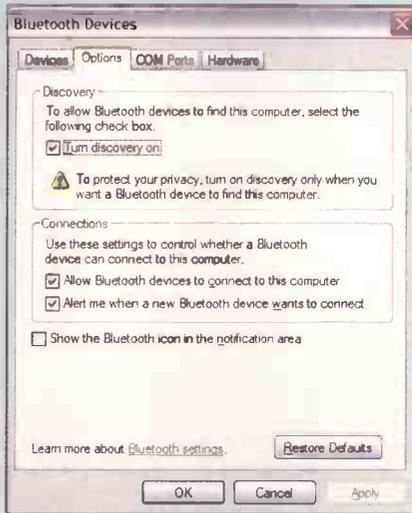
▶ If the publisher of an executable program can't be determined, Windows will now warn you before it lets you run it. This feature checks whether the program has a digital signature, something that many valid programs don't have at the moment. It's another welcome security feature in SP2



▶ Bluetooth users will be very happy to see this screen. Service Pack 2 adds native support for Bluetooth – this screen shows the Options tab found when you double-click the new Bluetooth applet in Control Panel.

We found it worked well using an unbranded USB Bluetooth dongle, with drivers being found automatically.

The control panel lets you configure discovery settings and connections to other Bluetooth devices. You can also set up Bluetooth COM ports



▶ Adding a Bluetooth device is made simple with the new Add Bluetooth Device wizard. SP2 also adds support for six standard Bluetooth profiles including Personal Area Networking and Dial-up Networking

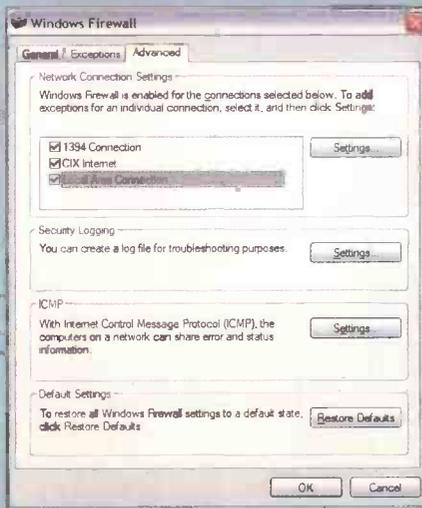
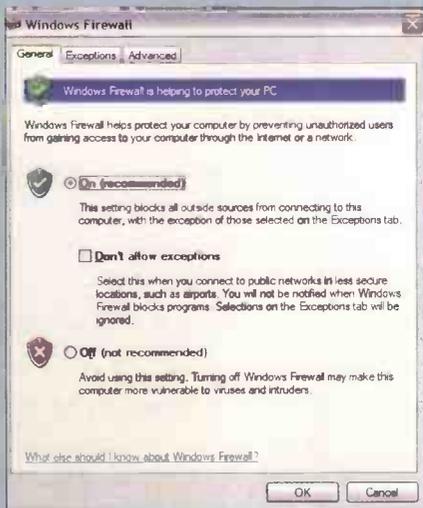


▶ As well as providing access to the new Security Center, icons for the Firewall, Automatic Updates, Bluetooth and a new Wireless Network wizard have been added to the Windows Control Panel



▶ If the firewall detects a program trying to accept incoming network traffic, you'll get this dialogue box that lets you block or unblock programs

▶ The new Windows Firewall (which is an IPv6 firewall) is enabled on all network connections by default. You can add exceptions to allow individual programs to accept incoming Internet traffic. The firewall uses stateful packet inspection to determine whether network traffic is allowed or blocked: if an incoming network packet has not specifically been asked for by a program on the Exceptions list, it will be blocked

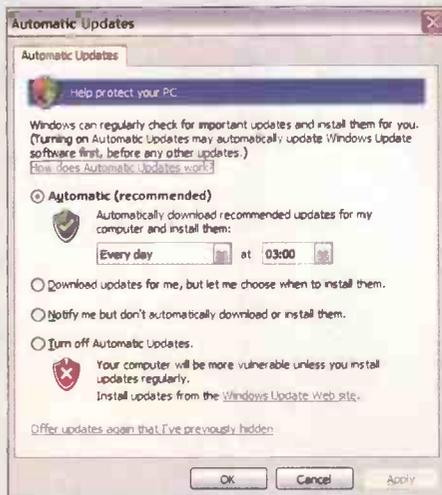


▶ In the past, administration of the firewall for multiple network connections was far too complicated. Now you can control the firewalls on each of your network connections from a single tab in the firewall configuration screen. Each network connection can have its own separate settings and Exceptions list, so for example your dial-up connection can be configured more securely than a local peer-to-peer Firewall connection

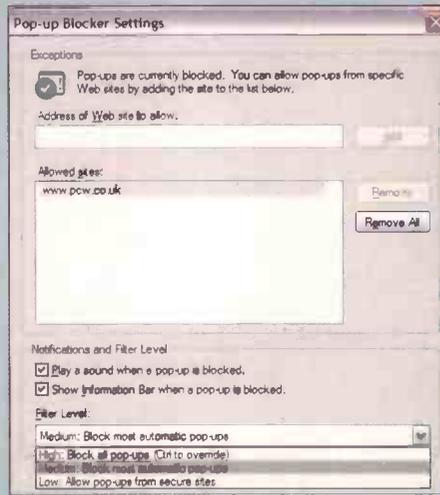
► The Automatic Updates control has had a visual makeover, but the only new functionality is the ability to unhide updates you've chosen to hide on the Windows Update site.

This 'hide' feature is new for the Windows Update version 5 website and is useful for reducing visual clutter.

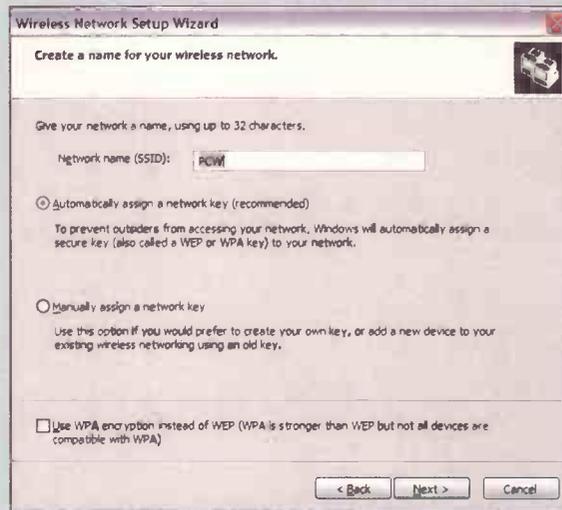
Microsoft plans to eventually offer Office updates via Windows Update



◀ At long last Microsoft has added a pop-up blocker to Internet Explorer. You can customise its behaviour, and a small Information Bar appears in the browser (below the toolbar) when something is blocked. It also blocks any automatic file downloads not initiated by a mouse click, but clicking on the Information Bar lets you temporarily override this behaviour



▲ It's easier to control and monitor Browser Helper Objects (BHOs) that have been installed in your browser, courtesy of the Internet Explorer Add-on Manager. This should help prevent malicious controls taking over your browser

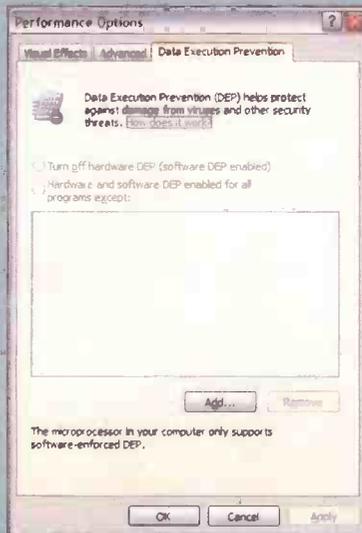


▲ The Wireless Network Setup wizard greatly simplifies the setup of a wireless network in XP. You can also save your network settings to a USB Flash drive, making it much easier to add and configure new wireless clients

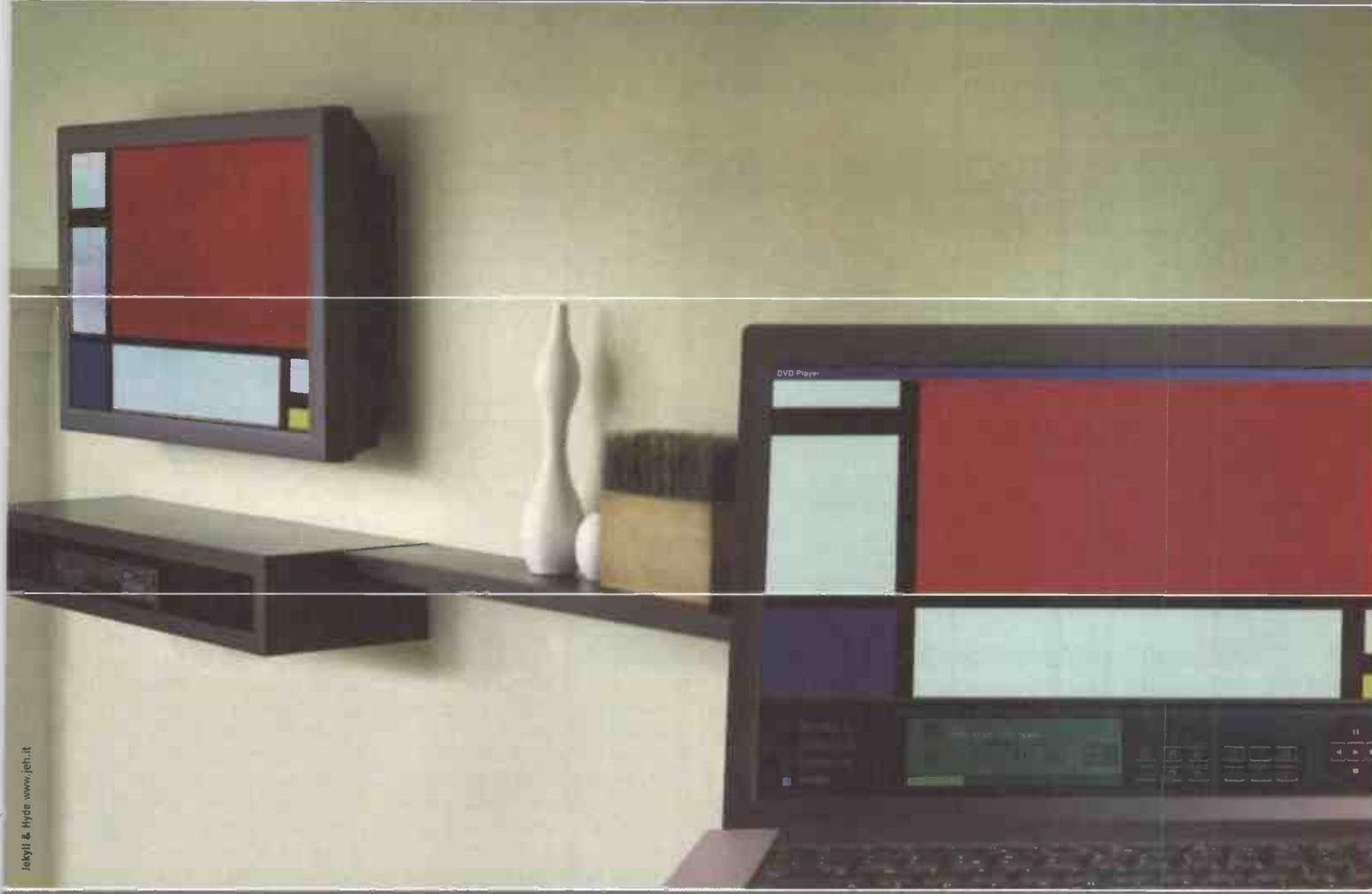
► If you use an AMD Athlon 64 or Opteron processor, or an Intel Itanium, Windows can take advantage of their hardware Data Execution Protection features. This is a hardware capability that can lock areas of memory to prevent executable code running in those areas.

It's intended to prevent certain types of virus behaviour whereby a virus takes over memory areas belonging to valid programs and runs malicious code instead.

As you can see from the screen, our Intel Pentium 4 doesn't support this feature



▲ You can now let Windows Update automatically search for device drivers when you add a new piece of hardware, a boon for older devices



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INTERNET SECURITY

# Zone Labs Zonealarm Security Suite

A well-rounded package with Zonealarm Pro 5 at its heart



Zonealarm Security Suite's homepage is clear and concise and provides easy access to all its settings

unattended. It should also be pointed out that disabling the firewall turns off the inbuilt anti-virus protection – something that needs to be borne in mind if temporarily turning it off in

Dynamic web content filtering allows parents to be confident that their children won't be subjected to pornography and other inappropriate content, although such filtering can only be applied across the board and not on a per-user basis.

All the settings are accessed through a single interface and context-sensitive help is displayed at all times. Installation provides an informative security tutorial, and password protection is available to stop unauthorised users from changing any of the settings.

A single PC connected directly to the Internet is very vulnerable, but ZASS is a mature security product that provides comprehensive protection against all current threats. It has plenty to offer new and experienced users alike and, priced at a shade under £40 with a year's worth of updates and discount offers for users of rival suites, we have no hesitation in recommending it.

Andy Gibbons

We've seen a wealth of updated Internet security suites in recent months, but one company notable by its absence has been Zone Labs. That's all about to change, though, with the launch of the Zonealarm Security Suite (ZASS) – a fully integrated security suite designed to protect against online threats in all their forms.

In addition to its renowned firewall, the suite provides protection against viruses, Trojans, spyware, inappropriate web content, information theft and, uniquely, a number of safeguards for users of instant messaging (IM) services. In fact, the only real glaring omission is the lack of any kind of email spam filtering.

At its heart is Zonealarm Pro. Now at version 5, this is a time-tested and proven firewall with a number of new features to improve its effectiveness and ease of use. Chief among these is Automatic Program Control, which uses a fingerprinting technique to identify applications before making a recommendation as to whether Internet access should be granted or denied. It certainly removes any guesswork when faced by an

access request from a cryptically named Windows service or other unfamiliar program.

Additionally, Boot-time protection ensures the firewall is functioning before any Windows networking components are loaded, protecting the PC early in the boot process and preventing any malware from phoning home during this crucial window of opportunity.

Anti-virus protection comes courtesy of Computer Associates' award-winning Etrust engine. Automatic updates ensure that its definitions are always current and alerts can even be raised if an application attempts to send a large number of emails within a user-defined period – a good indicator of potential worm activity.

Despite this, there's no requirement to use the inbuilt anti-virus protection. During installation you can opt to continue using one of the big-name anti-virus products and ZASS will unselfishly monitor it and sound an alert if it becomes disabled or its definitions aren't up to date.

The program is by no means the quickest when performing a full system scan, although this would normally be done when

order to resolve a compatibility issue, for example.

When browsing web pages, it's difficult to ignore the Privacy Advisor; a small window that pops up with an alert whenever it blocks a third-party cookie or other potential privacy infringement. As there are very few websites that don't use any of these technologies to some extent, this particular alert rapidly becomes rather irritating, especially as it takes the focus away from the active window. Thankfully, it's a simple matter to turn it off without affecting its functionality.

Protection when using IM clients such as MSN Messenger, AOL Instant Messenger and Trillian is an area that security products are only just beginning to address, and here ZASS is well equipped. As well as controlling access to all of the popular IM clients on an individual basis, it can block IM spam (spim), file transfers and strip out executable URLs. Messages are encrypted by default, although correspondents will need to be using either ZASS or the Imsecure utility, available as a free download from Zone Labs.

DETAILS

RRP £39.95 (€34 ex VAT) for downloadable product

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Zone Labs

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

**SYSTEM REQUIREMENTS**

Windows 98SE or greater • 233MHz Pentium-class processor or greater • 128MB of Ram • 20MB of hard disk space

**PROS** First-class security features; excellent integration all round

**CONS** No email spam filter; in-built anti-virus dependent on firewall being active

**VERDICT**

A few minor niggles aside, Zone Alarm Security Suite is a well-priced and effective solution to the ever-present online security threat

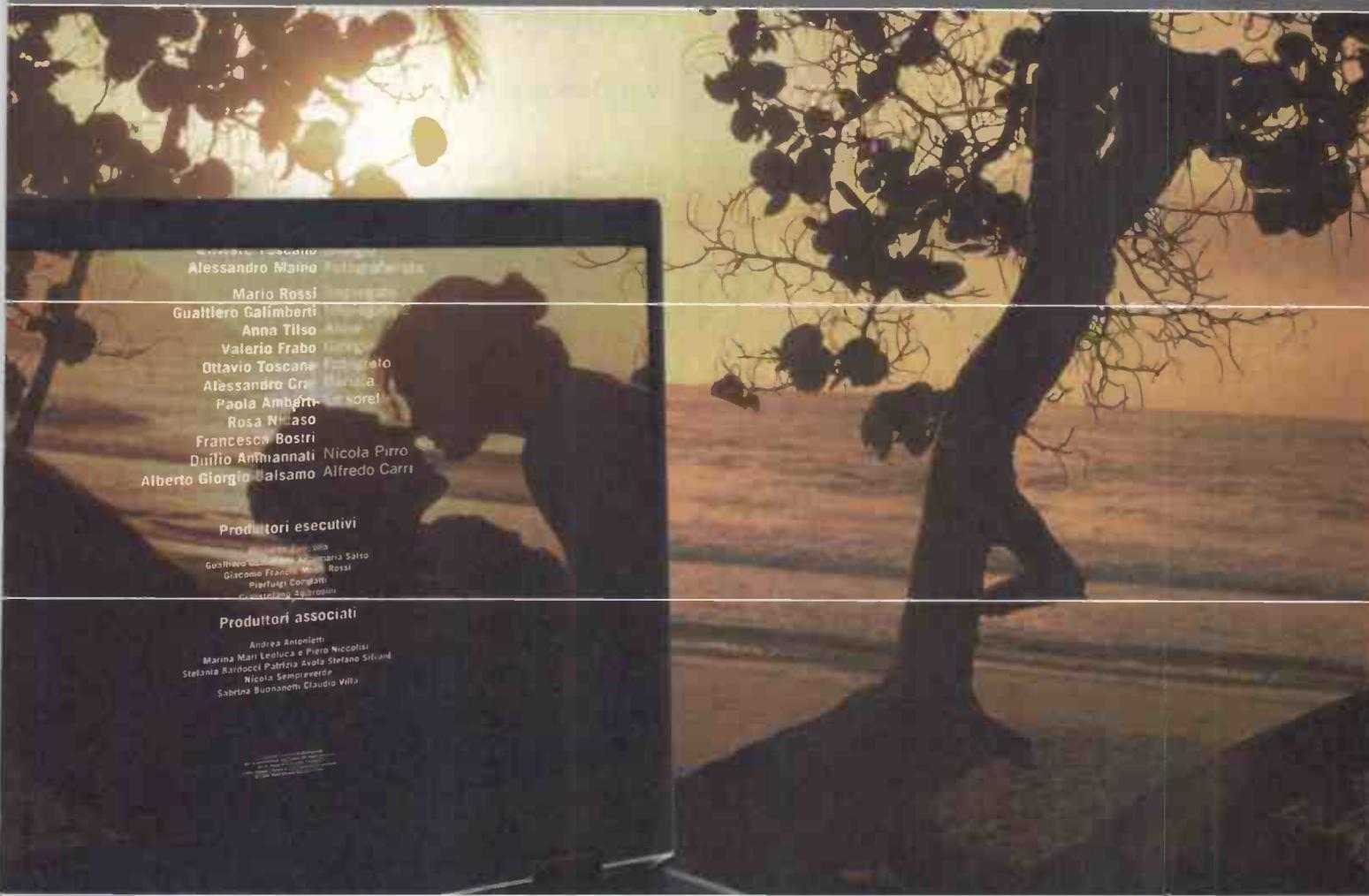
**EASE OF USE** ★★★★★

**FEATURES** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★

www.asus.com



## ASUS M6700NE Series: let it direct your emotions.

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For work, for pleasure, for passion. Three good reasons for choosing the ASUS M6700NE, an extremely high-performance niche model that combines the power of the Intel® Centrino™ mobile technology and the integrated ATI Mobility Radeon 9700 Pro card with the innovative 15.4" monitor with 16:10 screen. Without forgetting the lightness of the design and the convenience of a long-life battery, capable of guaranteeing maximum portability. For those who seek the best at work and during their leisure time. ASUS wishes you happy viewing.

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- 1 GB DDR SDRAM
- Hard Disk 50GB / 5400
- ATI Mobility Radeon 9700 Pro 64MB DDR
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- Media 8x24x30
- Intel® PM965 / 970 / 960 on board
- 2x USB 2.0 / FireWire / S/PDIF / S/M/S Pro
- 2x IEEE 1394 / FireWire on board
- Integrated Webcam
- Dimensions and weight: 354 x 273 x 22.34 mm - 2.7 Kg
- 2x External ports optional

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- Intel® 802.11gB Processor / 2x DUAL
- DVD Dual
- £ 1,559 EX VAT
- £ 1,832 INC VAT

### > M6726NE-UP

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- Intel® Pentium® M Processor 1.60GHz
- 512MB DDR SDRAM / HDD 60GB
- DVD Dual
- £ 1,199 EX VAT
- £ 1,409 INC VAT

### > M6746NE-UP

- Intel® Centrino™ Mobile Technology
- Intel® Pentium® M Processor / 755
- Cache Intel 800Gh / 2x DUAL
- DVD Dual
- £ 1,279 EX VAT
- £ 1,503 INC VAT

### > M6706NE-BP

- Intel® Centrino™ Mobile Technology
- Intel® Pentium® M Processor 1.50GHz
- Cache Intel 800Gh / 1GB / 80GB
- DVD Dual
- £ 1,069 EX VAT
- £ 1,256 INC VAT



## ACCOUNTING

### Quickbooks Simplestart

Low-cost easy-to-use accounting package



The Simplestart home page mimics a frames-based web page so most users will feel instantly at home

Simplestart is a spanking new low-cost addition to Intuit's stable of Quickbooks business accounting applications. It's aimed squarely at start-up businesses and established traders with simple accountability needs who have never used accounting software before, though basic familiarity with Windows is assumed.

When you fire up Simplestart for the first time it quizzes you for basic information about your business and, armed with this, it creates a company file. At this point there's nothing to stop you inputting live data but you'd be wise to hold off for a quarter of an hour, which is all it takes to work through seven interactive tutorials. Once you start using the program there's a natural-language help system you can turn to for advice and information, plus 30-day access to an online support service.

The home page graphically depicts the flow of money through your business, and acts as a visual menu. From here you can invoice customers, process payments received, pay bills and record expenses. VAT, tax and trading reports are constantly updated as you enter each item, so your financial position can be viewed at any time.

One quibble is that it's a one-size-fits-all solution, so cash traders who don't need to record every item sold and might only want to record total daily takings still have to issue a sales receipt without a customer's name on it just to get their sales into the system. But for sole traders who issue invoices, it works like a dream.

Paul Wardley

#### DETAILS

RRP £79.95 (£68.04 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Intuit 0845 450 7220

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

**SYSTEM REQUIREMENTS**

Windows 98/ME/2000/XP • 200MHz

Pentium II or equivalent • 64MB of

Ram • 230MB of hard disk space •

Internet Explorer 6.0

**PROS** Fast, flexible and easy to learn

**CONS** Does not handle stock control or payroll

**VERDICT**

The words 'easy' and 'accounting' don't sit well together, but Quickbooks Simplestart does an impressive job of dragging them into line

**EASE OF USE** ★★★★★

**FEATURES** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★

## INTERNET ACCESS

### Net2roam Netaway

Worldwide net access at local call rates

Cheaper notebooks mean more of us can enjoy computing on the move, but getting online when abroad can still prove awkward. Wifi is great, but only if you can find a local access point, while Internet cafés are usually crowded and force you to use someone else's system, and dialling back to an ISP in the UK is expensive.

With a pay-as-you-go service that works across 105 countries, Netaway provides dial-up Internet access at 8p per minute. You pay for the local call to the ISP, but in most cases it will still be far cheaper than dialling home. You use your own system, software and email accounts – just install the dialler and change the name of your outgoing email server. You don't even need to change it back when you return.

The initial package price includes five hours of online credit, which can be topped up online or over the phone. The minimum top-up is 150 minutes for £12 and the credit sits on your account until you use it. Buying time in bulk reduces costs to 6p per minute.

Following a few teething troubles with busy signals and connection breaks, everything worked as advertised during tests in Belgium and France. But

it's surprising how quickly five hours of surfing and emailing goes with a 56K connection. The hassle and cost of international phone adapters should also be factored in.

Although we'd obviously like an even cheaper service, the convenience of Netaway makes it a handy tool. The service can also be used with a PDA or Mac.

Chris Cain

#### DETAILS

RRP £24.99 (£21.26 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Net2roam 08707 511 111

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

**SYSTEM REQUIREMENTS**

Windows 98/NT/2000/ME/XP • 486

processor or higher • 8MB of Ram •

CD-Rom drive • 12MB hard disk space •

Internet-compatible modem and cable •

Modem and power adapters for

specific countries

**PROS** Easy to set up; uses existing

accounts; reduces your call costs

**CONS** Dial-up speeds; lack of

phone adapters

**VERDICT**

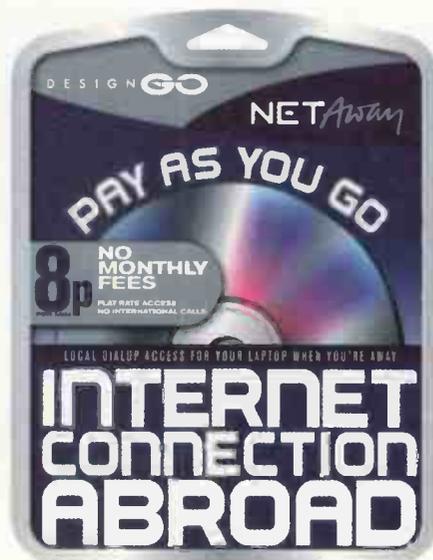
Netaway provides a no-fuss and more affordable way of getting online abroad

**EASE OF USE** ★★★★★

**FEATURES** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



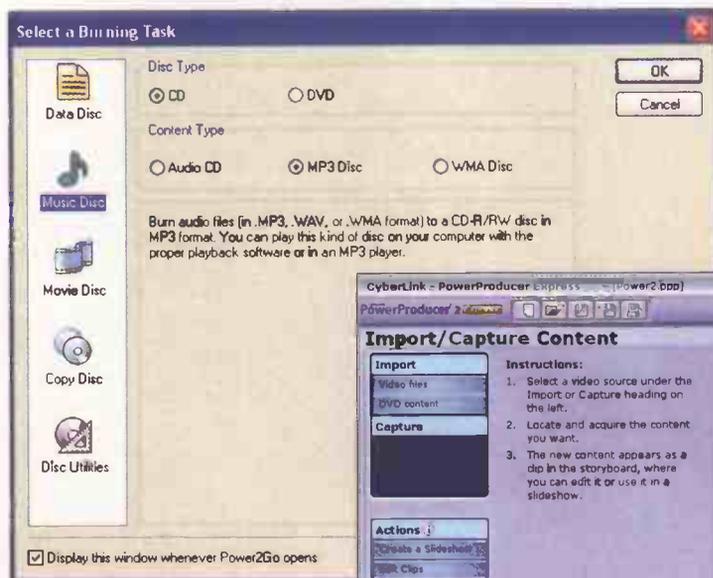
Netaway boasts some 15,000 access numbers, covering just about everywhere from Algeria to Zimbabwe



## CD- AND DVD-BURNING

# Cyberlink Power2go 3

A low-cost solution with easy-to-use features



Left: Power2go provides a series of tools for creating and duplicating data, audio and video discs

Below: Along with Power2go you also get Powerproducer Express, an entry-level DVD authoring program



There's no shortage of CD- and DVD-burning software available these days, and Cyberlink's Power2go doesn't really provide any special features that you can't find elsewhere. However, it is cheap, fairly easy to use and provides all the tools you need for creating data, audio and DVD-Video discs.

Unfortunately, things get off to a bit of a bad start. The installer begins by asking you to enter the name of your company, always a bad sign in a product aimed at home users. It then gives you two options labelled 'Make CD/DVD' and 'Burn data/Music', and tells you that you're installing something called DVD Solution 1.0. Needless to say, we were a bit confused by this point, so we just carried on and installed everything on offer.

Eventually we discovered that Power2go is in fact a bundle that contains two separate programs. There's Power2go itself, which provides the main options for burning data and audio discs, and Powerproducer Express, a simple authoring tool for creating DVD-Videos. As for 'DVD Solution 1.0' – your guess is as good as ours.

The most notable feature of Power2go is that it works in two modes. After installation you'll find a group of four buttons sitting in the lower right-hand corner of the Windows Desktop. These buttons allow you to use the program's 'Express' mode. There's one button for creating data discs, one for audio discs, and one for copying existing discs. The idea is that you simply drag and drop any files from the Desktop onto the relevant button and the program will automatically burn these onto a disc in a suitable format. The one exception is the fourth button, used to create video discs, which launches the Powerproducer program.

Express mode certainly isn't the 'unique' feature that Cyberlink seems to think it is, but it's handy for beginners who just want to jump in and start making their own discs as quickly as possible.

If you want a bit more control over the burning process, you can launch the

full Power2go program. This starts by presenting you with a similar set of disc creation tools but selecting one takes you into a series of additional windows that provide more detailed options.

The program's interface is functional rather than elegant, and looks a bit confusing at first. The screen for creating data discs is the worst, as it's split into four different sections. However, it soon becomes apparent that the upper half of the screen simply displays the contents of your hard disk in the same manner as the Windows Explorer. You use this to locate the files you need and then just drag them into the lower half of the screen. One useful touch is the display running across the bottom of the screen that keeps track of the size of your files and warns you when you've got enough to fill your target media.

At this point you're not committed to burning your disc, and can save a set of files as a 'project'. This acts as a list of

files that you can recall at a later date when you decide you're ready to burn.

The audio features are straightforward, simply asking you to specify whether you want to create a standard audio CD, or use mp3 or wma files instead.

The other main feature is the Powerproducer Express program. This is a very simple DVD-authoring tool that allows you to import video clips and prepare them for use on a DVD-Video. There's a reasonable selection of styles for creating menu screens, although the ready-made artwork tends to be a bit cheesy – pictures of hearts or shots of Paris for the 'romance' section, for example.

The installation process is a bit of a mess, and the interface isn't exactly a work of art, but Power2go does provide a good all-round suite of tools for creating your own CDs and DVDs. And, at well under £50, it's also pretty good value for money.

Cliff Joseph

### DETAILS

RRP £40.53 (£34.49 ex VAT)

#### BEST PRICE

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

#### PRODUCT INFORMATION

Cyberlink

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

#### SYSTEM REQUIREMENTS

Windows 98SE, ME, 2000 or XP • 800MHz processor or above • 256MB of Ram • 1GB hard disk for creating CDs or 5GB for DVDs  
**PROS** Comprehensive set of features for creating CDs and DVDs

**CONS** Confusing installation; interface could be clearer

#### VERDICT

Power2go offers no features that make it stand out from its many rivals, but its low cost could just swing your choice

#### EASE OF USE

★★★★★

#### FEATURES

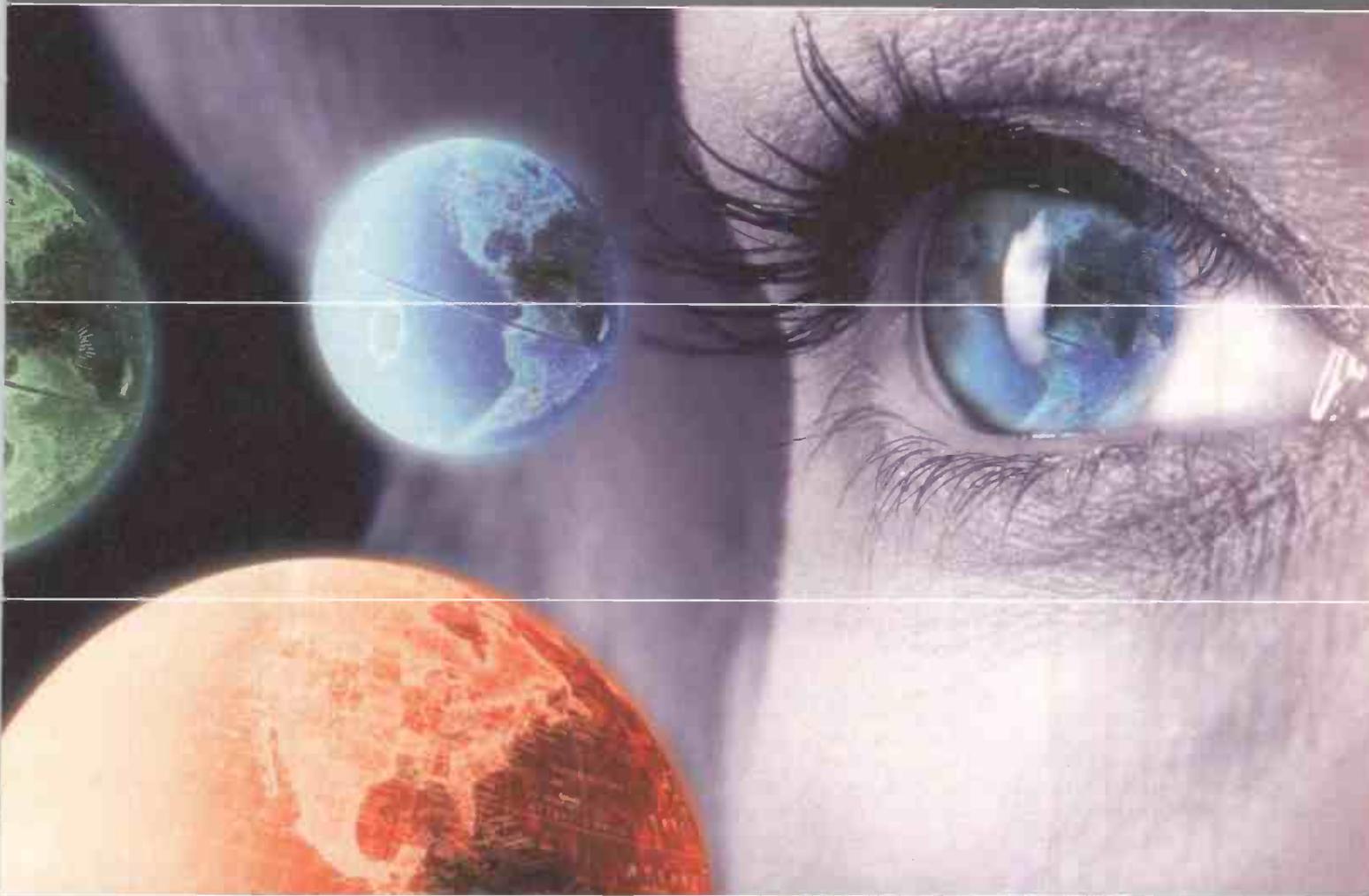
★★★★★

#### VALUE FOR MONEY

★★★★★

#### OVERALL

★★★★★



## ASUS opens undiscovered horizons

The new ASUS EXTREME series VGAs with 16x PCI Express standard provide you with incredible performance and quality of images never seen before.

Incredible power. Image quality. Unique functions. ASUS over clocking software features. Dedicated driver. ASUS web cam. Exclusive layout and design. Advanced cooling system. The list of ASUS VGAs advantages are endless, as are the world of possibilities and experiences that you will be discovering. See the difference of new ATI and NVIDIA GPU integrated on the new ASUS EXTREME (PCI Express) and AGP8X series VGAs : their power will take you to new game and new 3D graphic experiences ! And thanks to ASUS Game Face Live you can share the fun of gaming with 8 friends in videoconference windows that you can move and re-size as you like during on-line games!



<p><b>ASUS Extreme EAX600XT HTVD £162+VAT</b></p> <p>Radeon X600XT PCI Express 16x 128 MB DDR3 128bit 740MHz Memory clock 500MHz Engine clock 400MHz Ramdac TV Out, Video In, DVI ASUS GameFace</p> <p>ASUS VideoSecurity ASUS SmartDoctor ASUS HyperDrive Cyberlink PowerDirector Pro Cyberlink MediaShow ASUS DVD Ulead Cool3D+PhotoExpress Deus Ex: Invisible War</p>	<p><b>ASUS Extreme EN5900TD £155+VAT</b></p> <p>NVIDIA PCX5900 PCI Express 16x 128MB DDR3 256bit 700MHz Memory clock 375MHz Engine clock 400MHz Ramdac TV Out, Video In, DVI, 2a VGA ASUS GameFace</p> <p>ASUS VideoSecurity ASUS HyperDrive Cyberlink PowerDirector Pro Cyberlink MediaShow ASUS DVD Deus Ex: Invisible War Battle Engine Aquila Gunmetal, Game pack</p>	<p><b>ASUS AX800XT TVD £359+VAT</b></p> <p>Radeon X800XT AGP 8x 256MB DDR 256bit 1.12GHz Memory clock 520MHz Engine clock 400MHz Ramdac TV Out, Video In, DVI, 2a VGA ASUS Webcam bundle</p> <p>ASUS GameFace ASUS VideoSecurity Bundled software: Cyberlink PowerDirector Pro Cyberlink MediaShow ASUS DVD Deus Ex: Invisible War Counter Strike: condition 0</p>	<p><b>ASUS V9999 ULTRA DELUXE £359+VAT</b></p> <p>NVIDIA FX6800 256MB DDR 256bit 1 GHz Memory Clock 400MHz Engine Clock 400MHz Ramdac DVI, TV Out ASUS GameFace ASUS SmartCooling</p> <p>ASUS VideoSecurity Bundle Software: Deus Ex Counter Strike, MediaShow PowerDirector Bundle Hardware: ASUS AGP8X ASUS Webcam bundle</p>

## VOICE OVER IP

### On Instant On4

Make free calls over the Internet



The latest VOIP service from On4 offers excellent voice quality, and is available as a free download with simple registration

On4 is the latest voice over IP (VOIP) service from relatively new company On Instant. If you've heard of Skype, you'll be familiar with the idea – using secure peer-to-peer Internet connections to talk to (or send voicemail or text messages to) other On4 users.

The free download is around 6MB and registration only requires basic personal details. After installing and logging on, you are presented with the main On4 screen, which is uncluttered and self-explanatory. From here you can search for contacts worldwide or send emails to friends to get them to join up. You can set your privacy level so only the contacts in your address book can call you, or you can let any On4 user get in touch.

Audio setup is implemented poorly at the moment – there's no built-in audio wizard or online help to tell you how to do it – but On Instant told us it is rectifying this. On4 works with any microphone/speaker setup or USB headset, but we had to fiddle about with Windows' audio settings to get our USB handset to co-exist with our PC's speakers. A human operator is always on hand to help.

Voice quality is superb, with little discernible lag and none of the cracks and pops usually associated with VOIP traffic. Video calls aren't offered, but you can add a photo to your caller ID.

On4 in its current incarnation is an interim release. Version 2 is imminent, with a totally revised client and extra services such as conference calling and eventually the ability to call landlines or mobile phones. But as it's free, try it and see what you think.

Kelvyn Taylor

#### DETAILS

**RRP** Free download  
**PRODUCT INFORMATION**  
 On Instant 01534 746 533  
[www.on4.com](http://www.on4.com)

**SYSTEM REQUIREMENTS**  
 Windows 2000/XP Home/Pro • 128MB • 5MB hard disk space • DirectX 8 or later • Soundcard • Headset, speakers/microphone or USB hand/headset

**PROS** Great voice quality; voicemail  
**CONS** Poor audio setup and navigation  
**VERDICT**  
 Well worth trying out, especially if you have a lot of overseas contacts

**EASE OF USE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

## ONLINE MEETING TOOL

### Citrix Go To Meeting

Organise your meetings with ease

Organising meetings is one of the dreary bits of business. Citrix Go To Meeting intends to make life simpler by providing a service that lets you notify participants of meeting times, and share your screen with them, via a secure connection. There's the usual chat room, with the ability to send messages to everyone or just one other person, and you can automatically send meeting schedules via Outlook.

When someone receives a meeting invitation they just need to click on a short URL and if the software's not already installed on their PC it's downloaded – simple. There's no net-based audio or video though. Instead, Citrix sets up a teleconference on its server, and tells participants what number to dial and which code to enter when the call is answered. At the moment it's a US call, but a European-based service should be available soon.

So far, so good. With a personal account you can have meetings of up to 10 people as often as you like, and only the organiser needs to subscribe. Corporate accounts (for five or more organisers) allow up to 25 participants and add reporting options too.

Unfortunately, that's about it. Sure, there's integration with

popular instant messaging applications to send invitations, but there's no file transfer facility, shared whiteboard, or videoconferencing. So, it's the scheduling features and the teleconferencing that you're really paying for. Only people where they demonstrate using a PC will find Go To Meeting worth the money.

Nigel Whitfield

#### DETAILS

**RRP** £27 per month (personal); Corporate from £110 per month  
**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION**  
 Citrix

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

**SYSTEM REQUIREMENTS**  
 300MHz Pentium • Windows 95 or later • 64MB memory • Internet connection • Java-enabled web browser

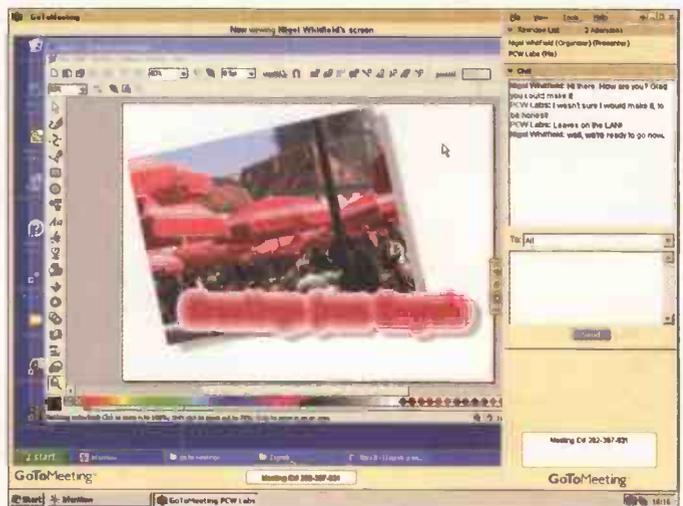
**PROS** Simple to use; quick and easy to set up

**CONS** A fairly basic solution

#### VERDICT

The teleconferencing is useful, but the software doesn't offer much more than Microsoft's own Netmeeting

**EASE OF USE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★



Go To Meeting lets other users share your desktop via a secure connection, but it has no whiteboard or file transfer features



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Cooler overclocking and quieter operation



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**AI NET2**

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- >RAID 0, 0+1, RAID 5
- >1xPCIe16x, 2xPCIe 1x, 3xPCI
- >High Definition Audio 7.1 Channel
- >1x PCIe GB-LAN, 139b/a, 8xUSB, WiFi-g
- >ASUS Ai NOS, Ai Net2, Hyper Path2, Stack Cool

£ 155+VAT

**> P5GD1**

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- >Intel 915P/ICH6R
- >800MHz FSB
- >DDR 400 Dual Channel
- >100x1+133x2+SATAx4
- >RAID 0, 1, 0+1
- >1xPCIe16x, 3xPCIe 1x, 3xPCI
- >High Definition Audio 7.1 Channel
- >1x.PCie GB-LAN, 8xUSB
- >ASUS Ai NOS, Ai Net2

£ 97+VAT

**> P5GDC Deluxe**

- >Socket 775 Prescott
- >Intel 915P/ICH6R
- >800MHz FSB
- >DDR2 600/533/400 Dual Channel
- >100x1+133x2+SATAx4
- >RAID 0, 1, 0+1,RAID5
- >1xPCIe16x, 3xPCIe 1x, 3xPCI
- >High Definition Audio 7.1 Channel
- >1x PCIe GB LAN, 1394a, 8xUSB
- >ASUS Ai NOS, Ai Net2, stack cool

£ 112+VAT

P5AD2 Premium



P5GD2 Premium



P5GD1



P5GDC Deluxe



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512kbps from £19.99  
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Crikey, 512Kb broadband for only £19.99. That's up to 10 times faster than dial up (not the 3 or 5 times faster services other broadband providers may offer). You think that's surprising? Wait until you see the rest of our prices. In fact, Broadband from BT is now the cheapest it's ever been. Blimey. To get connected, call us on 0800 328 9041 or visit us at [bt.com/getbroadband](http://bt.com/getbroadband)

Free modem and  
Free connection when  
you buy online.

[bt.com/getbroadband](http://bt.com/getbroadband)

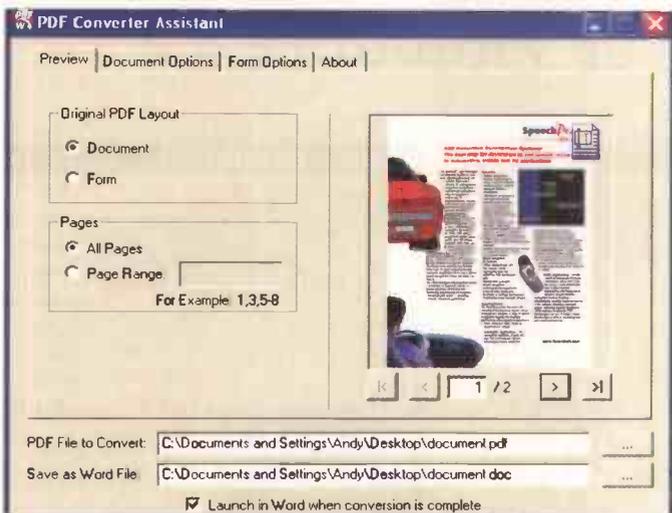


More power to you

**PDF CREATOR/CONVERTER**

# Scansoft PDF Converter 2

Create and edit pdf files in a jiffy



The new PDF Converter Assistant can be used independently of Word and provides easy access to its configurable options

**P**DF Converter Professional 2 from Scansoft addresses the two most common tasks faced by those working with Adobe's portable document format (pdf) files – creating pdfs from scratch and extracting content from existing files.

Installation provides two quite separate applications and activation is required before either becomes functional. The first, PDF Create 2, allows you to output pdf files in any print-capable Windows application. Or you can drag and drop files into PDF Create 2's own application window. The latter allows more than one file to be processed at a time and multiple document types can be merged into a single pdf.

PDF Converter 2 is essentially a plug-in for Microsoft Word and has been blessed with a number of new features since we looked at its predecessor in January. Notable among these are an easier to use front end and improved form handling.

The obvious test for such a package is to convert a Word document into a pdf and back again. We did just this with a reasonably complex form and the resultant pdf was perfect. The conversion back to Word

format was almost as impressive with just a few minor bullet point and box anomalies that were easy to correct.

In other tests it fared well, with multi-column and picture-heavy documents. For general office document and form use, both elements of the package impressed us greatly with their ease of use and accuracy.

Andy Gibbons

**DETAILS**

RRP £59 (£50.21 ex VAT)  
**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION**  
Scansoft 0870 870 8085  
[www.scansoft.co.uk](http://www.scansoft.co.uk)

**SYSTEM REQUIREMENTS**  
Windows 98 SE or greater • Pentium-class processor • 64MB of Ram • 80MB hard disk space • Microsoft Word 97 or greater

**PROS** Copes well with complex forms; excellent Office integration  
**CONS** Converter can struggle with graphics-heavy documents

**VERDICT**  
A well-priced and easy-to-use solution for those needing to create and work with existing pdfs

**EASE OF USE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★

**ILLUSTRATION**

# Xara X1

A fast, straightforward graphics package

**X**ara has a long history of producing versatile graphics packages and X1 is the company's latest flagship product. Designed for vector graphics editing, it lets you create artworks from scratch or add elements such as text to photographs and other images.

Xara touts speed as one of the main benefits of its package, and it certainly seems nippy, with no long delays when you open or save large images. All the effects that you might want to apply are rendered in real time. There are none of the dialogues and panes you'll see cluttering up the screen in other programs; add a drop shadow, for example, and you drag it around to get the angle and distance you want. The same is true of things like bevels, embosses or picture skews.

There are excellent transparency tools, which you can use alongside feathering and cutouts to combine images, but we did find that working out how to create a mask for an image was fiddly – and not helped by a system of selection that seemed to make it harder than it should be to pick up a path we'd just drawn.

The help, fortunately, gives excellent explanations of how

to perform tasks that might not be obvious from the menus and once you've got the hang of how the tools work, there's little doubt that Xara X1 lets you create and edit graphics quickly and effortlessly. Whether you're combining photos or creating original artworks, it's well worth a look and is less intimidating than many other applications.

Nigel Whitfield

**DETAILS**

RRP \$179 (Download and CD)  
**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)  
**PRODUCT INFORMATION**

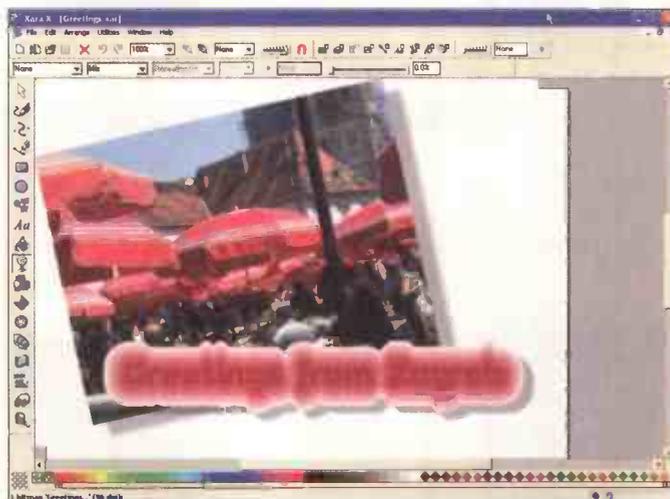
Xara  
01442 350 000  
[www.xara.co.uk](http://www.xara.co.uk)

**SYSTEM REQUIREMENTS**  
Windows 98 or higher • Pentium processor • 64MB memory • 20MB hard disk space

**PROS** Fast and very flexible  
**CONS** Selection of objects sometimes awkward

**VERDICT**  
A fast and straightforward illustration and drawing program, whether you're creating original work or manipulating photos

**EASE OF USE** ★★★★★  
**FEATURES** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★



Adding effects to text and images in Xara X1 is done in real time – what you see is exactly what you get

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# Best Buys

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PERSONAL COMPUTER WORLD

YOUR GUIDE TO TODAY'S TOP PRODUCTS >>

## MID-RANGE PC

Carrera Octan 64/6800

REVIEW October 2004, p57 RRP £938.83

(£799 ex VAT) **PRODUCT INFORMATION**

Carrera 0871 222 3456 [www.carrera.co.uk](http://www.carrera.co.uk)



At under £1,000, this Carrera offering might not be the fastest in terms of processor power and graphics performance, but it does feature a Philips 19in TFT – quite an achievement at this price.

## HIGH-END PC

Intellect Prodesk Kube 3400/64S

REVIEW October 2004, p109 RRP £1,938

(£1,650 ex VAT) **PRODUCT INFORMATION**

Intellect 0870 1225 590 [www.intellect.uk.com](http://www.intellect.uk.com)



With an Athlon 64 3400+ and an ATI Radeon X800 Pro, Intellect's Prodesk Kube 3400/64S has a solid specification. What's more, it's also one of the most stylish small form factor PCs we've ever seen.

## MEDIA CENTER PC

Hi-Grade DMS 3000

REVIEW October 2004, p109 RRP £2,899

(£2,468 ex VAT) **PRODUCT INFORMATION**

Hi-Grade 0870 1225 590 [www.hi-grade.com](http://www.hi-grade.com)



The reason for the high price tag of this Media Center PC is the whopping 30in Relisys LCD TV screen. Housing a range of entertainment features, it's the ultimate Media Center PC.

## FULLY-FEATURED NOTEBOOK

Asus M6B00N

REVIEW September 2004, p48 RRP £1,996

(£1,699 ex VAT) **PRODUCT INFORMATION**

Asus [www.asus.com.tw](http://www.asus.com.tw)



Asus returns to the notebook market with this powerful 2GHz Intel Dothan processor driven model. With 1GB of Ram, 15.4in screen and a large 80GB hard drive, it's no wonder the price is high.

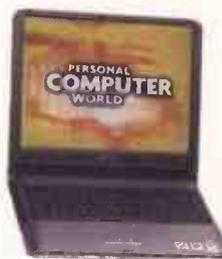
## MID-RANGE NOTEBOOK

Sony VGNA115B

REVIEW September 2004, p47 RRP £1,299

(£1,105.53 ex VAT) **PRODUCT INFORMATION**

Sony 08705 424 424 [www.sony.co.uk](http://www.sony.co.uk)



With a stylish Sony design, the VGNA115B features an impressive 15in display, 1.5GHz Pentium 4 M processor with 512MB of Ram, and a Radeon 9200 that allows it to run a few games.

## BUDGET NOTEBOOK

NEC Versa M500

REVIEW July 2004, p120 RRP £799

(£680 ex VAT) **PRODUCT INFORMATION**

NEC 0870 010 6329 [www.nec.co.uk](http://www.nec.co.uk)



If you're not bothered about playing games, but want to be able to make use of wireless technology and stray from the mains for over three hours, the NEC Versa M500 is well worth a look.

## TABLET PC

AJP T200C

REVIEW August 2004, p48 RRP £1,173.82

(£999 ex VAT) **PRODUCT INFORMATION**

AJP 020 8208 9700 [www.ajp.co.uk](http://www.ajp.co.uk)



The T200C is a convertible notebook combining the features of a traditional laptop with the flexibility of a tablet PC. It includes a digital camera, DVD rewriter and costs just £999 ex VAT.

## PROJECTOR

Infocus X2

REVIEW September 2004, p51 RRP £799

(£680 ex VAT) **PRODUCT INFORMATION**

Infocus 08000 286 470 [www.infocus.com](http://www.infocus.com)



It might be a bit on the heavy side, but considering the price tag of just £799, the Infocus X2 impressed us a great deal. Colours were well represented and text was superbly crisp.

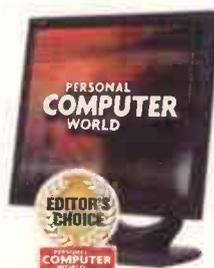
## 17IN FLAT-PANEL MONITOR

Philips 170B4BB

REVIEW December 2003, p135 RRP £374

(£318.30 ex VAT) **PRODUCT INFORMATION**

Philips 020 8781 8372 [www.consumer.philips.com](http://www.consumer.philips.com)



Giving excellent results with the Windows default colour profiles, the Philips 170B4BB flat-panel monitor automatically detects whether it is connected to an analogue or digital input.

**PDA**

**Palmone Zire 72**

REVIEW September 2004, p106 RRP £199

(£170 ex VAT) **PRODUCT INFORMATION**

Palmone 0118 974 2700 [www.palmone.com/uk](http://www.palmone.com/uk)



We weren't expecting much from the Zire 72, but were pleasantly surprised by its excellent picture quality, the 1.2megapixel camera and great performance.



**POCKET PC**

**HP Ipaq H4150**

REVIEW September 2004, p102 RRP £275

(£235 ex VAT) **PRODUCT INFORMATION**

HP 0845 270 4222 [www.hp.co.uk](http://www.hp.co.uk)



The Ipaq H4150 from HP is not only an attractive device, but it's also got bags of processor power. What's more, the price tag is lower than we expected, making it a great all-round Pocket PC.



**MULTIFUNCTION DEVICE**

**Lexmark X5150**

REVIEW October 2003, p122 RRP £149

(£126.81 ex VAT) **PRODUCT INFORMATION**

Lexmark 0870 444 0044 [www.lexmark.co.uk](http://www.lexmark.co.uk)



Good software and easy setup make this a very attractive device. Photo quality is excellent with no graininess. Print speeds are a little slow but a good control panel makes up for this.



**MP3 PLAYER**

**Philips HDD060**

REVIEW May 2004, p48 RRP £169

(£143.83 ex VAT) **PRODUCT INFORMATION**

Philips 0870 900 9070 [www.philips.co.uk](http://www.philips.co.uk)



Stylish and small, this mp3 player has a 1.5GB hard disk and can keep going for 10 hours. The only drawback is that you have to use the Philips Java utility to transfer music to it.

**LASER PRINTER**

**Oki B4300N**

REVIEW February 2004, p124 RRP £349

(£297.02 ex VAT) **PRODUCT INFORMATION**

Oki 01753 819 819 [www.oki.co.uk](http://www.oki.co.uk)



Bursting with features while being able to cruise along at an impressive speed, the very reasonably priced B3400N from Oki can produce some excellent quality printouts.



**INKJET PRINTER**

**Canon Bubblejet I990**

REVIEW August 2004, p118 RRP £299

(£254.47 ex VAT) **PRODUCT INFORMATION**

Canon 0800 616 417 [www.canon.co.uk](http://www.canon.co.uk)



The 1990's print head houses 5,376 nozzles, allowing it to fire more ink at the page in one go. It's still not the fastest inkjet we've seen, but it delivers excellent results.



**SPEAKERS**

**Altec Lansing FX6021**

REVIEW September 2004, p54 RRP £199.95

(£170.17 ex VAT) **PRODUCT INFORMATION**

Euro Tech 0870 460 6060 [www.alteclansing.co.uk](http://www.alteclansing.co.uk)



If you don't have room for a full set of 5.1 speakers, this 2.1 set delivers surprisingly good results. Thanks to the six 1in micro drivers in the two satellites, sound is incredibly crisp.

**HIGH-END SPEAKERS**

**Creative Gigaworks S750**

REVIEW April 2004, p48 RRP £330

(£280.77 ex VAT) **PRODUCT INFORMATION**

Creative [www.creative.com](http://www.creative.com)



Coming with a wireless remote control, 210w sub-woofer and seven satellites at 70w each, these THX-certified speakers from Creative can completely immerse you in sound.



**SOUND CARD**

**Creative Audigy 2 Platinum EX**

REVIEW May 2003, p76 RRP £189

(£160.85 ex VAT) **PRODUCT INFORMATION**

Creative <http://europe.creative.com>



This feature-filled card and external unit provides 24/96 recording, 6.1 sound and loads of software, including Cubasis VST 4.0 CE for music makers, and Ulead Videostudio SE DV for movie buffs.



**ATHLON MOTHERBOARD**

**BioStar K8VHA-Pro**

REVIEW July 2004, p131 RRP £61.49

(£52.34 ex VAT) **PRODUCT INFORMATION**

BioStar 01952 461 141 [www.biostar.com.tw](http://www.biostar.com.tw)



It might lack the bells and whistles of the more expensive Athlon 64 boards, but if you're building a powerful AMD system on a budget, it represents great value for money and gets the job done.



**PENTIUM 4 MOTHERBOARD**

**Chaintech Zenith 9CJS**

REVIEW June 2004, p107 RRP £139.96

(£119.13 ex VAT) **PRODUCT INFORMATION**

Holly Computers 01375 397 220 [www.hollycomputers.co.uk](http://www.hollycomputers.co.uk)



This Prescott-ready board has a dual Lan feature that allows it to function as a network router with Lan support. Despite the high price, it's great value for money and comes with remote control.



**GRAPHICS CARD**

**HIS Excalibur X800 XT IceQ II**

REVIEW October 2004, p77 RRP £365

(£310 ex VAT) **PRODUCT INFORMATION**

Ebuyer 0870 467 0753 [www.ebuyer.com](http://www.ebuyer.com)



If you're addicted to speed, this latest effort from HIS is the fastest graphics card we've seen in terms of real-world performance. Featuring ATI's Radeon 420 core, it's a real scorcher.

**New**

## DIGITAL VIDEO CAMERA

Panasonic NV-GS120

REVIEW July 2004, p59 RRP £540 (£459.57 ex VAT)

PRODUCT INFORMATION Panasonic 08705 357 357

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



Not only does the NV-GS120 shoot stunning videos and house a 10x optical zoom, but it also has a still shot resolution of 1,536 x 1,152 allowing you to take some decent photos as well.

## DIGITAL CAMERA

Kodak Easyshare DX6490

REVIEW January 2004, p144 RRP £215

(£183 ex VAT) PRODUCT INFORMATION

Kodak 0870 243 0270 [www.kodak.co.uk](http://www.kodak.co.uk)



With a 4megapixel CCD and 10x zoom, the Easyshare DX6490 delivers quality results with the minimum of fuss. Perfect for beginner and intermediate digital photographers.

## HIGH-END DIGITAL CAMERA

Canon Powershot Pro1

REVIEW July 2004, p62 RRP £999

(£850.21 ex VAT) PRODUCT INFORMATION

Canon 08705 143 723 [www.canon.co.uk](http://www.canon.co.uk)



This well-designed 8megapixel prosumer digital camera is loaded with features, including a 7x optical zoom and remote control. It also takes stunning photos.

## DVD-RW

Teac DV-W50DK

REVIEW April 2004, p66 RRP £97.51

(£82.99 ex VAT) PRODUCT INFORMATION

Microwarehouse 020 8906 9111 [www.teac.co.uk](http://www.teac.co.uk)



It might not be the fastest available, but with a low price tag and the ability to burn both DVD+R and DVD-R formats this DVD-RW will suit those who aren't bothered about speed.

## MEDIA CREATION SOFTWARE

Roxio Creator 7

REVIEW June 2004, p73 RRP £69.99

(£59.57 ex VAT) PRODUCT INFORMATION

Roxio [www.roxio.co.uk](http://www.roxio.co.uk)



With the ability to edit photos, create home movies and burn CDs, Roxio Creator 7 houses a wealth of features and is also very easy to use. What's more, it comes at a very competitive price.

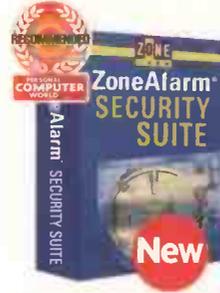
## PC SECURITY SOFTWARE

Zone Labs ZoneAlarm Security Suite

REVIEW October 2004, p86 RRP £39.95

(£34 ex VAT) PRODUCT INFORMATION

Zone Labs [www.zonelabs.com](http://www.zonelabs.com)



This is a well priced and effective security package for those who don't want to spend a fortune. With excellent integration and ease of use, the only thing missing is a spam filter.

## OFFICE SOFTWARE

Microsoft Office Professional 2003

REVIEW May 2004, p150 RRP £459 (£390.64 ex VAT)

PRODUCT INFORMATION Microsoft 0870 501 0100

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



This office suite includes a host of features, including a revamped version of Outlook. There are cheaper options available, but Microsoft's Office 2003 is the clear market leader.

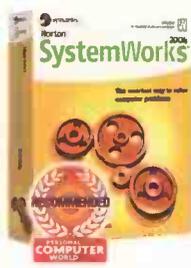
## PC MAINTENANCE SOFTWARE

Norton Systemworks 2004

REVIEW March 2004, p68 RRP £64.99

(£55.31 ex VAT) PRODUCT INFORMATION

Symantec 01628 592 222 [www.symantec.co.uk](http://www.symantec.co.uk)



If you want to keep your PC healthy and safe from harm, Norton Systemworks 2004 certainly gets the job done, and at the reasonable price of a penny short of £65 to boot.

## ECOMMERCE SOFTWARE

Actinic Business 7

REVIEW July 2004, p81 RRP £938.83

(£799 ex VAT) PRODUCT INFORMATION

Actinic 0845 129 4800 [www.actinic.co.uk](http://www.actinic.co.uk)



If you're looking to set up an ecommerce site, Actinic Business is definitely worth a look. With a wide range of advanced features and an easy-to-understand interface, its high price tag is justified.

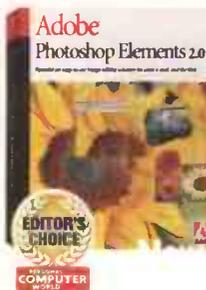
## IMAGE-EDITING SOFTWARE

Adobe Photoshop Elements 2

REVIEW August 2004, p107 RRP £76

(£64.68 ex VAT) PRODUCT INFORMATION

Adobe 020 8358 5857 [www.adobe.co.uk](http://www.adobe.co.uk)



Providing all the tools most home users would ever need, Photoshop Elements 2 from image giants Adobe incorporates that all-important mix of raw power, ease of use and value for money.

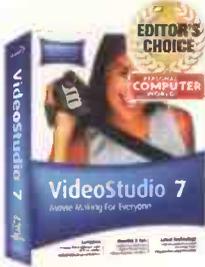
## VIDEO-EDITING SOFTWARE

Ulead Videostudio 7

REVIEW February 2004, p145 RRP £60

(£51.06 ex VAT) PRODUCT INFORMATION

Ulead 01327 844 880 [www.ulead.co.uk](http://www.ulead.co.uk)



With a comprehensive feature set, powerful tools and full DVD authoring capabilities, Videostudio 7 is the perfect choice for both beginners and advanced users.

## MUSIC CREATION SOFTWARE

Steinberg Cubasis VST 5

REVIEW March 2004, p67 PRICE £59.95

(£51.02 ex VAT) PRODUCT INFORMATION

Pinnacle Systems [www.pinnacle.com](http://www.pinnacle.com)



This sound-editing tool takes a bit of getting used to, but with a huge range of plug-in effects and a decent collection of virtual instruments, you'd be hard pushed to find a better package at this price.



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- Share your home movies

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- Connect to your office with virtual private networking

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- Static IP address
- Spam filtering
- Virus scanning
- 24/7 technical support
- One of the UK's cheapest 2 Mbps
- Connect remote workers with virtual private networking
- Connect up to 30 office PCs
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or call **0870 888 3430**

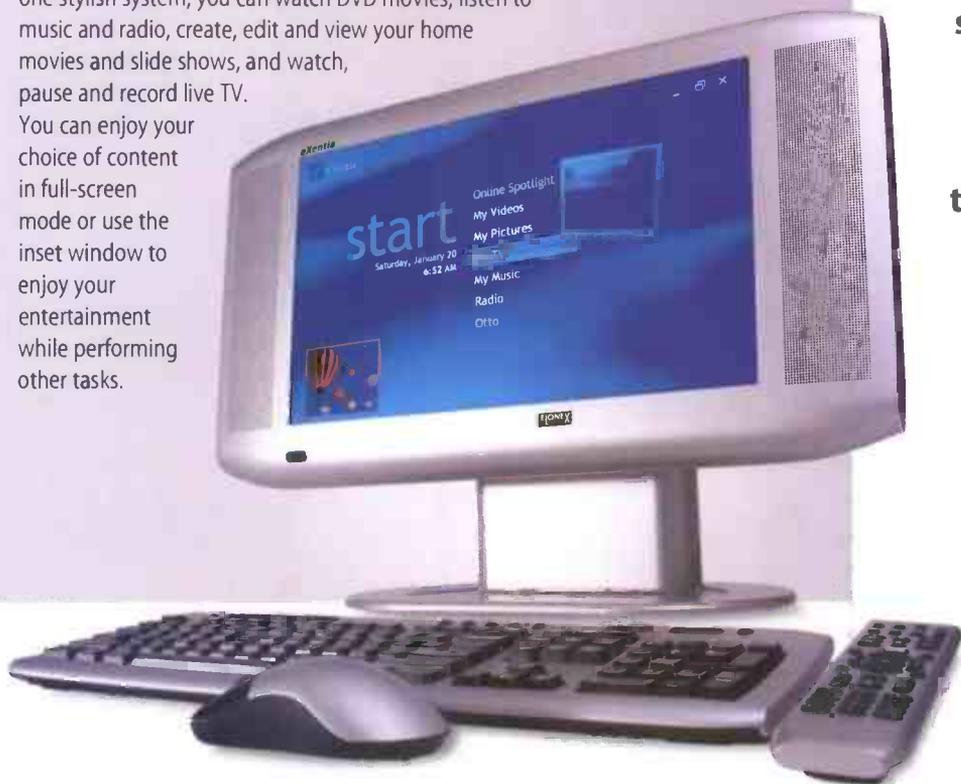
# Multi-tasking. Multi-talented. eXentia.

Intense computing, web browsing, downloading, e-mail, games, home movies, music and much more. The Intel® Pentium® 4 Processor with HT Technology turns the eXentia into a multi-purpose powerhouse that handles all your PC favourites, providing an extra punch when performing two tasks at once.

**Elonex recommends Microsoft® Windows® XP Media Center Edition.**

The amazing eXentia from Elonex is the world's first integrated system designed and built around Microsoft's latest Media Center Edition of Windows XP.

eXentia combines all your entertainment experiences in one stylish system, you can watch DVD movies, listen to music and radio, create, edit and view your home movies and slide shows, and watch, pause and record live TV. You can enjoy your choice of content in full-screen mode or use the inset window to enjoy your entertainment while performing other tasks.



**“If you want a PC that won't look out of place in your living room but will still give you all the functionality you need, then you'll want to check out the Elonex eXentia”**

PC Answers – July '04.

Elonex has been a direct service provider and manufacturer of personal computers, servers and mobile PCs since its inception in 1986. Elonex has a presence in all major IT sectors and is an approved supplier to central government, local authorities, emergency services, health and defence establishments, educational institutions and corporations.

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Elonex, based on the Intel®  
Pentium® 4 Processor with  
HT Technology delivers  
the performance to  
power all your home  
entertainment choices.

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eXentia, it's a new dimension in computing and entertainment.

**It's a DVD Player**



**It's a DVD Recorder**



**It's a Digital Photo Library**



**It lets you Time Shift Live TV**



**It's got a Programme Guide**



**It Schedules your Television**



**It's a Music Jukebox**



**It Runs Quiet, Plays Loud**



**It's an FM Radio**



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# "Buy it and love it, we did"

Windows XP Made Easy - issue 76.

## It's a Hi-Fi Stereo System



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## It's a PC Games Machine



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- Perform all your demanding computing tasks with ease thanks to great performance delivered by the latest PC technology.
- Surf the web on a highly specified multimedia system.
- Share files, printers and other devices with fast wireless connection.

# eXentia - gold, silver or black, whichever you choose, it's the best

## eXentia Gold

"The media savvy PC  
with WOW factor"

Home Cinema Choice - August '04



### eXentia Gold Technical Specifications

<b>Processor</b>	Intel® Pentium® 4 Processor 3.0GHz with HT Technology
<b>Operating System</b>	Microsoft® Windows® XP Media Center Edition
<b>Memory</b>	512MB
<b>Hard Drive</b>	200GB
<b>Optical Drive</b>	DVDRW +/- multiformat
<b>Graphics</b>	ATI RADEON 9600 with 128MB RAM
<b>Screen</b>	17" WSXGA (1280 x 768) Widescreen LCD TFT
<b>Audio</b>	Sound Blaster Compatible, AC97 Compliant, Hi-Fi sound system with sub woofer, 5.1 ready
<b>Input / Output</b>	Modem, Network, TV antenna. Digital audio in/out, analogue audio in/out, sub woofer-out, S-video in/out, composite video in, Infrared out, Wireless controller, 4 x USB2, memory card reader
<b>Remote Controller</b>	Media Centre compliant IR
<b>Keyboard</b>	Wireless multimedia RF
<b>Mouse</b>	Wireless optical scroll mouse RF
<b>Communication</b>	Modem 56K v.92
<b>Wireless Network</b>	Built-in 802.11g 54Mbps
<b>Security</b>	Kensington Lock Slot
<b>Warranty</b>	3 year - Collect & Deliver

From  
**£1499** Including VAT

### Features of the eXentia

- Heat pipe Technology - noise under 26dec.
- CDRW/DVDRW Combodrive +/- multiformat (can be used for playing CDs & DVDs, copying & backing up DVD files & movies, and producing your own video DVD disks)
- Completely Wireless - IR, RF & built in 54 mps
- Multiple Flash memory card reader - reads from digital cameras, camcorders, PDAs and MP3 players
- Transfers to and from all types of memory cards
- Comes complete with Remote control, wireless keyboard and mouse
- Double the luminar of any TFT screen making picture quality second to none
- Sub woofer on the back, with options of adding speakers making this the centre speaker for surround sound
- Output for adding a plasma, or bigger LCD screen
- Broadband and Analogue internet options
- Designed by Intel, as the ultimate Media Centre Digital home unit
- And much, much more...

# Iver or bronze - t's an absolute winner.

## eXentia Silver



**"This is a proper lifestyle PC. It looks stunning, and is a first-rate entertainment system and gaming platform"**

Stuff - February '04

### eXentia Silver **Technical Specifications (as Gold specification but with)**

<b>Processor</b>	Intel® Pentium® 4 Processor 2.60GHz with HT Technology
<b>Operating System</b>	Microsoft® Windows® XP Media Center Edition
<b>Memory</b>	512MB
<b>Hard Drive</b>	120GB
<b>Optical Drive</b>	DVDRW +/- multiformat
<b>Graphics</b>	ATI RADEON 9200 with 128MB RAM

From

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EDITED BY: KELVYN TAYLOR &amp; RICHARD HUNT

# Born-again video tapes

Tape and film degrade each time you play them, but there is a way to convert your analogue memories into digital format. We show you how

**V**ideo collections often contain treasures that are well past their use-by date, as neither VHS tapes nor reels of Super-8 are suitable for the long-term storage and retrieval of film material.

Every time they are used their life expectancy declines. Even a single play mechanically reduces the picture quality, virtually unnoticeably – but over many cycles the degradation becomes obvious. The consequences range from loss of colour and sound to physical tears in the tape.

The prospect of not being able to view your videos in the long term is obviously unattractive. You can easily make copies of the tapes by using another video recorder, but by the time you make a third-generation copy, the picture quality will be noticeably worse than in the original.

Digitising your videos is the answer. The idea is simple and comprises three stages: transfer the analogue recording to a PC using a TV card, digital video converter box or DV camcorder, process it to enhance the quality, and save it on DVD or CD.

Optical media don't suffer from degradation via physical contact during playback, unlike mechanically read VHS or Super-8 tape. This means that, even after repeated playback, the picture quality on DVD copies remains as good as the original (optical media longevity is still a thorny issue, however).

In addition, the original and its digital copy are effectively identical. Each generation is as good as the first. And CDs and DVDs have further advantages: they're easier to handle and take up less space than VHS tapes.





So how do you digitise analogue films without paying someone to do it? In the following pages we'll explain each of the three stages of digitising your videos: capture, restoration and burning to CD or DVD.

Transferring the original video data to a PC is only half the story. Often the analogue sources are damaged, with a lot of noise, washed-out colours and picture interference. Once digitised, you can clean up the material using simple tools.

The best bit is that you don't even have to buy expensive, specialised software. Some powerful freeware or shareware programs are available that will help keep your costs down to a minimum. Of course, if don't mind spending more money there are lots of dedicated hardware and software solutions available, and we'll touch briefly on some of these as well.

## Digitising VHS on a budget

There are several methods of transferring analogue video recordings to a PC, but the cheapest way is to use a TV tuner or all-in-one graphics card with an S-video and/or composite video input. With a fairly powerful CPU – at least 1.5GHz – you can transfer analogue video to the PC in real time and at DV quality (a data rate of 3.6Mbytes/sec). Budget-priced but capable TV cards such as the Pinnacle PCTV Rave/PCI TV cost around £40, or an ATI All-in-Wonder Radeon can be picked up for under £150.

However, if using this method the analogue sound track has to be captured separately using the line-in input of the soundcard (or onboard sound chip). If you're using a DV

## 'Even freeware programs feature digital image-processing and easy-to-use video-editing tools'

camcorder, both the sound and video data are transferred via the Firewire interface.

Alternative methods that save computer resources are more expensive. A suitable DV camcorder with a composite or S-video input (these start from around £300 with a Firewire interface) or a specialised video-capture card or converter box (about £150 with a USB or Firewire interface) can be used to offload the capture process from your PC. These devices convert the analogue video stream internally, so you just connect them to S-video input from your VCR or camcorder (you'll need a Scart to S-Video adapter or composite video if your VCR doesn't have an S-Video output). The video is converted directly to DV format and streamed to your PC. This takes the strain from the CPU, and enables smooth video conversion on under-powered PCs. DV camcorders are especially versatile; just like converter boxes, capture cards or TV cards, camcorders can record VHS via the S-video input. As we'll show later, you can also use them to copy Super-8 films.

To convert Super-8 films, you need first to record them off a screen using a DV camcorder (see Digitising Super-8 films). All DV camcorders have a DV-out socket that can be used to transfer recorded video material to the PC. Except on low-priced models, this connector is bidirectional and serves both as an input and output port.

DV converter boxes, which have either USB or Firewire connectors, convert analogue video material to the DV format. The larger the converter's maximum data throughput, the higher the quality of the captured video. This means if you're buying a USB model you should look



DV converters convert analogue video internally, reducing CPU use

for one with a USB2 interface which, at 480Mbits/sec, is nominally 40 times faster than USB1.1's 12Mbits/sec bandwidth.

USB1.1 models are adequate for transferring VHS material in real time without noticeable degradation. However, with DV material the slow data transfer rate leads to a visible reduction in picture quality. Only USB2 models can transfer DV streams without obvious loss of quality. If all your PC's PCI slots are already in use, then DV camcorders and DV converter boxes can be an effective external video-capturing solution.

## Codecs and programs

Using the right software and video codec is vital for good results. When it comes to video editing, Virtualdub (<http://sourceforge.net/projects/virtualdub>) is a great choice. This piece of freeware performs better than many commercial programs.

The choice of codec (an algorithm for compressing and decompressing multimedia files) is important because it determines the audio and video quality of the digitised material. In hardware capture devices, the codec is embedded in the hardware, whereas if you're using a budget TV card the compression is done in software – this is why you'll need a higher powered PC if you choose this route.

Most codecs offer you a choice of the amount of video compression to use – the less compression, the higher the quality but the greater the file size. You should choose the compression based on the original source material.

For example, the Super Video CD (SVCD) format (576 x 480 pixels, mpeg2 encoding) is OK for medium-quality archiving of VHS recordings. But for archiving DV or DVD films (720 x 576 pixels), neither Video CD (VCD, 352 x 288, mpeg1) nor SVCD resolutions are sufficient.

For such higher quality source material, it's best to keep the original data rate if possible. The disadvantage is that even a 60-minute mpeg2 video encoded at 0.8Mbytes/sec needs 2.8GB of storage.

Regardless of the digital format you use, videos should be captured with as high a data rate as possible. Remember you can reduce the quality later, but you can't improve it.

Virtualdub is a powerful alternative to commercial video-editing software. It works with most current codecs and gives access to a large range of video-processing filters (also free) via its import function. See the table opposite for details. In this feature we'll concentrate on using Virtualdub.

Commercial video-editing solutions that offer a comparable range of features include Magix Video 2.0 and programs from Ulead (DVD Powertools, DVD Movie Factory), Serif (Movieplus, DVD Plus), Pinnacle (Studio 9) and Dazzle (DVD Complete). In some ways these are easier to use than Virtualdub, but they are really intended for high-quality source video and are only suitable to a limited extent for use as restoration tools.

In principle, all software codecs will produce good-quality images if the right settings are used. However,

Video codecs don't take up much disk space

Name	Size	Type	Date Modified
huffyuv.dll	33 KB	Application Extension	23/08/2000 17:00
huffyuv.inf	2 KB	Setup Information	24/08/2000 01:29
readme.txt	1 KB	Text Document	23/08/2000 17:07

if the film is to be further processed on the PC, you need a codec that allows frame-by-frame editing. The most suitable candidate for this is DV, a codec with a data rate of 3.6Mbytes/sec, which is used by camcorders.

Professional video-editing systems make use of the DV codec for PC-based editing. The commercial Motion-jpeg (mjpeg) codec also supports frame-by-frame editing. Files created with this codec take up only 25 per cent of the space of those created with DV.

Virtualdub doesn't support mpeg2 files natively, only avi; you need to use the utility DVD2AVI to save the mpeg2 source file as a new file with the extension .d2v, and then use the Vfpiconf utility to save this as an avi file. Both Vfpiconf and DVD2AVI can be downloaded from [www.doom9.org](http://www.doom9.org).

An alternative to DV, mjpeg and mpeg2 is Huffuyv ([www.divx-digest.com/software/huffyuv.html](http://www.divx-digest.com/software/huffyuv.html)). This free lossless codec also compresses videos in real time even on slow 500MHz PCs. However, you'll only get around a 50 per cent file size reduction with this codec.

Virtualdub supports the DV codec, but works using the older Video for Windows standard. After installing the codec and modifying the Registry as detailed below it will open Type 2 DV-AVI files, which have separate audio and video streams.

In Type 1 DV-AVI files, audio and video data are combined in a single stream. Type 1 movies will have to be converted to Type 2 before they can be opened.

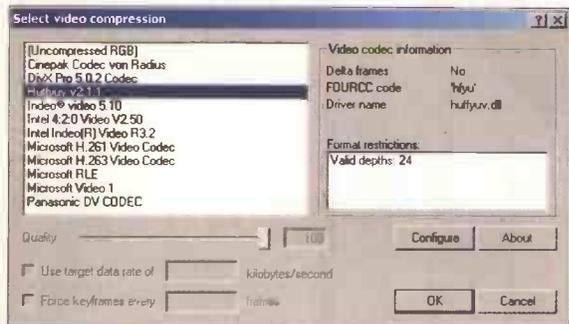
A suitable piece of software for this job is Pure Motion's Edit Studio ([www.editstudio.com](http://www.editstudio.com)). You can obtain a DV codec from several sources. One can be downloaded from [www.mainconcept.com](http://www.mainconcept.com) for \$49 (£27).

There is also a free Panasonic DV codec available, which you can download from [www.bokova.lv/~daliv/video/download/codec](http://www.bokova.lv/~daliv/video/download/codec). This Video for Windows-compatible software is installed in two steps. If you're using Windows 2000 or XP, copy the 259KB file pdvcodec.dll into the Windows System32 folder. Next, create and import a Registry file with the following contents:

```
Windows Registry Editor Version 5.00
[HKEY_LOCAL_MACHINE\SOFTWARE\
Microsoft\Windows NT\CurrentVersion\
```



**The freeware program Virtualdub supports a wide range of video codecs**



```
drivers.desc]
"pdvcodec.dll"="Panasonic DV Codec"
[HKEY_LOCAL_MACHINE\SOFTWARE\
Microsoft\Windows NT\CurrentVersion\
Drivers32]
"vidc.dvdsd" = "pdvcodec.dll"
[HKEY_LOCAL_MACHINE\SYSTEM\
CurrentControlSet\Control\3
MediaResources\icm\vidc.dvdsd]
"Description"="Panasonic DV Codec"
[HKEY_LOCAL_MACHINE\SYSTEM\
CurrentControlSet\Control\
MediaResources\icm\vidc.dvdsd]
"Driver" = "pdvcodec.dll"
```

(Key: ✓ code string continues)

These settings will then allow Virtualdub to process Type 2 DV files without problems.

## Faster, faster

An incorrectly configured PC will put the brakes on the most capable capture hardware, so here we show you which settings need adjusting for optimal performance.

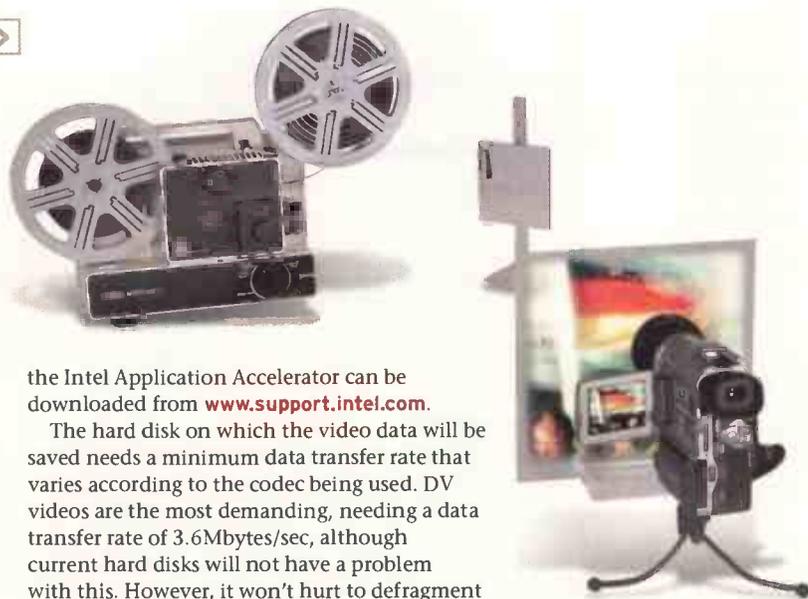
You'll find that the saying about the faster the processor the better is particularly true if you use a TV or graphics card with an S-video input for video capturing. You should have at least a 1.5GHz processor, but external capture devices such as DV camcorders and DV converters put much less strain on the CPU and a 500MHz chip will suffice.

So you don't strain the processor, the motherboard's southbridge should be controlled with the most up-to-date busmaster drivers. These allow data to be transferred from Ram to the hard disk and vice versa. If you haven't installed the busmaster drivers, the processor must do the work.

You can get drivers for boards with Via chipsets from [www.viaarena.com](http://www.viaarena.com). For motherboards with Intel chipsets,

## Overview of Virtualdub filters

FILTER NAME	DESCRIPTION	DOWNLOAD ADDRESS
Antiflicker	Minimises picture flicker	<a href="http://neuron2.net">http://neuron2.net</a>
Chroma noise reduction	Noise reduction	<a href="http://freevcr.france.com/freevcr/virtualdub/cnr-en.html">http://freevcr.france.com/freevcr/virtualdub/cnr-en.html</a>
Deflicker	Minimises picture flicker	<a href="http://neuron2.net">http://neuron2.net</a>
Delogo	Removes static elements such as TV channel logos	<a href="http://neuron2.net">http://neuron2.net</a>
Deshaker	Reduces picture shake	<a href="http://home.bip.net/gunnart/video">http://home.bip.net/gunnart/video</a>
Flaxen's filters	Picture stabilisation and sharpening, noise minimisation and chrominance adjustment	<a href="http://neuron2.net">http://neuron2.net</a>
Noise reduction/Cropping filter	Noise reduction	<a href="http://neuron2.net">http://neuron2.net</a>
Radial luminance correction	Darkens hotspots	<a href="http://web.tiscali.it/minomala/virtualdub/filters.htm">http://web.tiscali.it/minomala/virtualdub/filters.htm</a>
RGB adjustment filter	Adjusts red green and blue proportions	<a href="http://neuron2.net">http://neuron2.net</a>
Smart smoother high quality	Softens and smoothes images	<a href="http://neuron2.net">http://neuron2.net</a>
Spotremover	Removes flecks and scratches	<a href="http://konstant.freeshell.org">http://konstant.freeshell.org</a>
Temporal cleaner	Minimises colour noise	<a href="http://home.earthlink.net/~casaburi">http://home.earthlink.net/~casaburi</a>
Video denoise filter	Noise reduction	<a href="http://www.risingresearch.com/en/denoise/index.shtml">www.risingresearch.com/en/denoise/index.shtml</a>
White balance	Adjusts colour nuance, colour saturation, brilliance, contrast and white balance	<a href="http://neuron2.net">http://neuron2.net</a>



the Intel Application Accelerator can be downloaded from [www.support.intel.com](http://www.support.intel.com).

The hard disk on which the video data will be saved needs a minimum data transfer rate that varies according to the codec being used. DV videos are the most demanding, needing a data transfer rate of 3.6Mbytes/sec, although current hard disks will not have a problem with this. However, it won't hurt to defragment your hard disk and work out the average transfer rate with a suitable benchmark utility, such as that included with Virtualdub.

An hour's worth of high-quality DV material needs about 12.7GB of storage (3.6Mbytes/sec). Video capturing demands large amounts of free hard disk space.

The type of hard disk used – EIDE or SCSI – doesn't matter. A few years ago SCSI hard disks were regarded as indispensable for video-editing work, because the performance of EIDE disks was not up to the job. Improvements in EIDE performance mean there is no longer any reason to prefer a SCSI disk over its EIDE counterpart. If anything, the opposite is true; because of the price per megabyte relationship, EIDE hard disks are better value than SCSI disks. In order not to lose performance, DMA (Direct Memory Access) mode has to be activated and the corresponding chipset driver installed.

NTFS is preferable to the Fat32 file system when it

## 'It won't hurt to defragment your hard disk and work out the average transfer rate with a suitable benchmark utility'

comes to saving and editing the video stream. It gives greater data security than Fat32, and the way data is organised means that access times are shorter on an NTFS partition. As with video editing, file sizes are normally large, so NTFS is the better choice. Windows NT, 2000 and XP use NTFS as standard. Windows 95, 98 and ME use Fat16/Fat32 by default and can only be made to access NTFS partitions using commercial accessories.

### Digitising Super-8 films

To transfer Super-8 films to a PC, you need a DV camcorder and it requires a greater effort than transferring a video recording. With a specially prepared projection screen, you can even improve the picture quality. The best method is to film the images projected onto a back-projection screen with a Super-8 projector using a DV camcorder (see picture above). Ideally, the projector and the camera should be set up to avoid parallax, almost on a straight line, to avoid distortion during recording. For the best results, turn off the camcorder's autofocus, or it will continually refocus in response to changes in picture and brightness. Adjust the white balance manually, and set the camera's exposure to a value in the range 1/50 to 1/60.

The closer the camcorder is to the screen, the better the recording will be. You might have to experiment to find the

Special projector screens are available to capture Super-8 films, with as little loss of quality as possible, using a DV camcorder. The illustration shows a Super-8 film back-projected on to a glass screen

ideal distance between the projector and screen. If possible, project the image onto a proper back-projection screen.

To record the sound track, connect the projector's Din audio output socket to the camcorder's line-in input.

Super-8 projector lamps often cause small circular light patches (hotspots) to appear on the screen. Apart from this, the film seldom appears grainless. Some help is offered by plastic sheets that are placed in front of the screen – you can buy these from specialist video shops.

Better quality can be achieved by using a product such as Video Optik Brähler's Glasscreen, which has a projection surface made of two sheets of glass with paraffin between them to remove graininess ([www.video-optik.de](http://www.video-optik.de)) or Hama's Video Transfer Telescreen ([www.hama.co.uk/product.asp?productid=579&sectionid=155](http://www.hama.co.uk/product.asp?productid=579&sectionid=155)), which costs around £50.

You can also try getting rid of hotspots with software such as Virtualdub's Hotspot filter: this darkens the centre of the frame while the Radial Luminance brightens the frame at the edge of the screen.

If Super-8 films recorded with a camcorder show signs of flicker in the camera's display, the cause is a lack of synchronisation between the projector and camera picture refresh rates. Camcorders use a refresh rate of 50 frames per second (fps) whereas Super-8 projectors deliver a frequency of only 18-24fps. To get rid of picture flicker, the camcorder and projector refresh rates need to be set at a whole-number ratio. Projector refresh rates of 16 2/3 (three-blade shutter) or 25 (two-blade shutter) give an ideal ratio of 1:3 and 1:2 respectively. If the projector cannot be set exactly to one of these frame rates, try to make at least a rough adjustment.

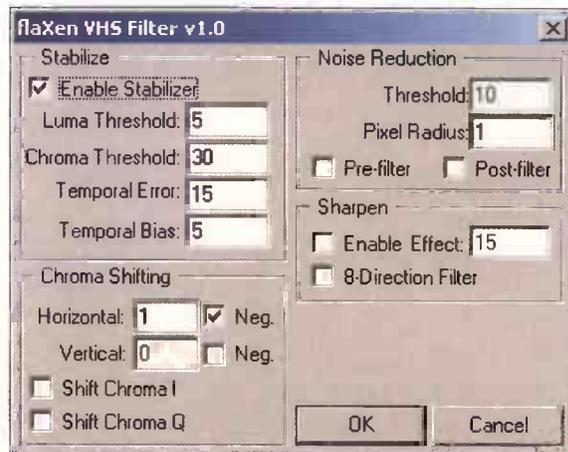
Some flicker will remain visible on the camcorder monitor even at 16 or 24fps, either with a three-blade or two-blade shutter. The picture will also be darker, but in practical terms this makes no difference.

If the flicker can't be removed, use the Deflicker Filter in Virtualdub to equalise the individual frames' differences in brightness, effectively removing the flicker.

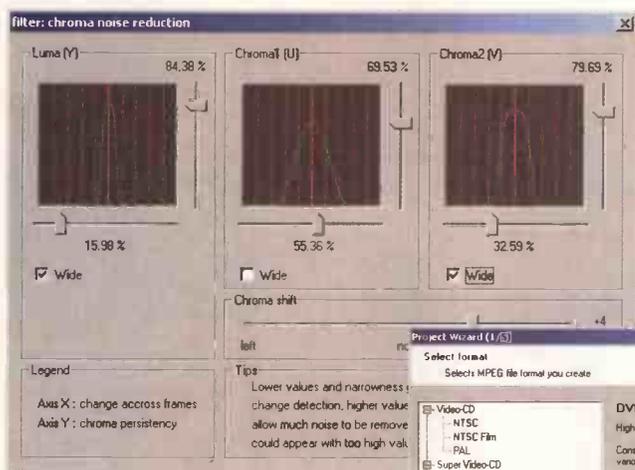
### Recording films

One of the most effective video-restoration tools is free. Virtualdub enables you to rework and polish up analogue recordings. To transfer analogue videos using Virtualdub use File, Capture avi to open the capture menu. Choose the video source using Video, Source. You can select Tuner or S-video. Tuner records using the PC's TV tuner card and S-video captures using the graphics or TV card's S-video input.

Before you can work on the material captured from DV camcorders using Virtualdub, there are two more hurdles: capturing via the Firewire interface is not possible with Virtualdub and, because of the old Video for Windows interface, the program only recognises DV movies in Type 2 DV-AVI format (see Codecs and programs above).



The flaxen filter offers numerous picture quality optimisation features



Annoying picture noise can be minimised in Virtualdub using the Chroma noise reduction filter

With Windows XP, Microsoft provides free DV-editing software, Movie Maker, which you can download from [www.microsoft.com/windowsxp/moviemaker/downloads/moviemaker2.asp](http://www.microsoft.com/windowsxp/moviemaker/downloads/moviemaker2.asp). You can use Movie Maker to save DV material transferred by camcorders in the DV-AVI format.

Commercial programs such as Ulead Media Studio 6 will do the same thing. Ulead's free DV Converter can convert the DV-AVI formats from Type 1 to Type 2 or vice versa.

You can choose which codec to use from Virtualdub's Compression menu item (under File, Capture avi). You need to have installed the codec on the system first. To record the video material in high quality using Virtualdub, make sure you set the resolution (Format menu) as high as possible.

Take care though; in general, capturing should not be carried out at full Pal resolution (768 x 576 pixels), but at DV or DVD-compliant resolution (720 x 576 pixels). This is because if the source format and the capture format do not have the same dimensions, the size has to be recalculated in a processor-intensive operation. In the case of conversion from Pal to DV this reduces the resolution, causing a loss of quality.

If the resolutions are the same to start with, however, the conversion is much quicker, as Virtualdub simply converts the video from one codec to another. If picture dimensions have to be recalculated as well, the conversion takes five times longer.

## Restoration

The quality of Super-8 films that have been copied over is usually poor: the video picture is often spoiled by noise, flickering, washed-out colours and shakiness. VHS films that have been copied over often need restoration work too, and this is one of Virtualdub's specialities.

This freeware program has a large number of filters for improving the film material's picture quality and it performs better than some commercial software. Magix Video 2.0, for example, is designed for editing high-quality source material and is suitable for restoration only to a limited extent.

A large selection of free Virtualdub filters is available for download at <http://neuron2.net>. You can add them to Virtualdub using the Video, Filters, Add menu command. A selection of the filters is described in the table on page 103. As there are often several filter solutions to the same problem, the filters mentioned here are just examples.



Tmpegenc converts video files to VCD, SVCD or DVD format

When you are restoring a film, the order in which you apply the filters can make a real difference to the final picture quality. First, remove large irregularities such as flickering, noise and shakiness, for which you can use the Deflicker, Noise reduction/Cropping filter and Deshaker.

Afterwards, it's a matter of fine tuning. For example, you might use the Temporal cleaner filter to minimise colour noise. Washed-out and shifted colours can be refreshed with the Chroma noise reduction filter. On VHS tapes recorded from TV, the channel's on-screen logo is often annoying and it can be removed with the Delogo filter. Finally, use White balance to adjust brightness and contrast as well as the white balance.

## Saving videos on DVD

Tmpegenc ([www.tmpegenc.net](http://www.tmpegenc.net)) is a great tool for converting edited DV videos into DVD-compliant mpeg2 format. Its mpeg2 encoder is a 30-day trial version bundled with the download. Virtualdub saves movie data in an avi file. However, it uses avi files only as a container format to hold the DV stream. If the avi file is loaded into Tmpegenc, the program recognises the underlying format.

Tmpegenc uses any installed video codec to convert not only between avi and DV but also asf, DivX, mpeg, mov, wmv, Xvid and other formats. Tmpegenc includes templates for DVD, VCD and SVCD. By default, the program starts with an easy-to-use wizard that guides you through all the settings. These can also be adjusted manually by clicking on the Settings button.

Before clicking the Start button to begin the conversion, you have to specify the audio and video data sources. Use Video source to select the movie file to convert. If the video material is in DV, Huffiyuv or mjpeg format, the video and audio tracks are already linked, so you don't have to specify a separate audio source. The output file will be a single mpeg2 file with the mpeg file extension.

Finally, to create a DVD disc you need some authoring software. This transforms the mpeg2 file into the correct file structure for burning to a DVD+/-R/RW disc and lets you add features such as menu controls and backgrounds.

DVD recorder manufacturers often bundle an authoring program with their drives, for example Pinnacle's Movie Studio 8 (about £40) is included with the Teac DV-W50E and Traxdata RW 1100 four-speed drives. Sony's multifunction DRU-500A includes Sonic My DVD.

For absolute beginners, Cyberlink's Power Producer Gold is an easy-to-use program that can be downloaded from [www.gocyberlink.com](http://www.gocyberlink.com) for \$49.95 (£27).

Standard software such as Nero Burning Rom or Easy CD Creator cannot use an mpeg2 file generated by Tmpegenc as the source for a DVD. If you can put up with slight reduction in quality, use Tmpegenc to create files in VCD or SVCD format. Nero Burning Rom and Easy CD Creator have no problems with these formats. In contrast, VCD or SVCD quality is fine for archiving Super-8 film material.

Digitising your old video content doesn't have to cost a fortune, and once you've mastered the basics it can be a very satisfying hobby.

## Useful web addresses

[www.virtualdub.org](http://www.virtualdub.org)  
Free video-capturing and editing software

[www.digital-digest.com](http://www.digital-digest.com)  
All about digital video



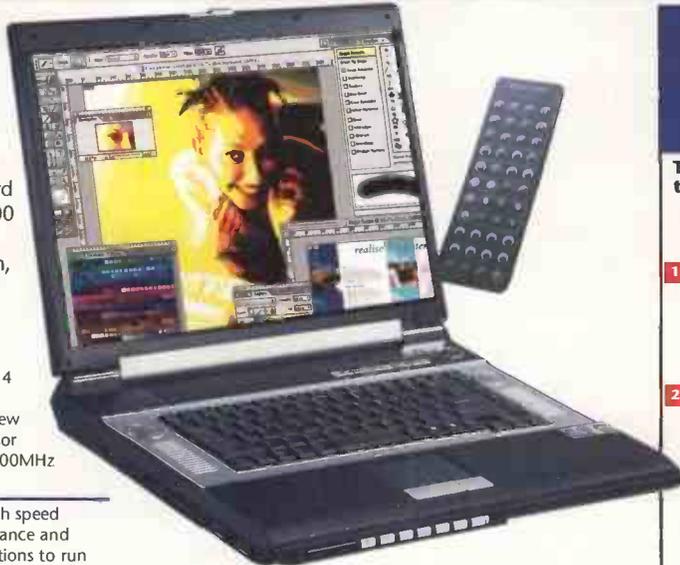
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# PCs with attitude

WORDS: RORY REID TESTING: VNU LABS PHOTOS: BRUCE MACKIE

Catering for a more style-conscious user has become an important issue for PC vendors, so with this in mind we tested nine designer machines and some stylish accessories

**W**hen a PCW competition winner almost turned down a free PC because the case didn't match the décor in his lounge, we felt it was time to investigate the growing number of computers designed to impress on the outside as well as on the inside.

For this month's PC group test we've stepped into the role of fashion critics and will be looking at designer PCs for the style-conscious user. Everyone has different tastes, so in order to get a broad range of submissions, we left the brief completely open to interpretation.

We asked vendors to submit PCs that don't use traditional computer cases. Beige boxes were automatically banned in favour

of those with unusual designs that users won't want to hide away under a desk. All price restrictions were removed in order to get as varied a range as possible.

We also stipulated that entries should be more than just a pretty face. Inclusions such as TV tuners, large displays and effective speakers were welcomed – as were any other components that enhanced the aesthetic appeal. Peripherals and extra gadgets were also good additions so you'll find the odd mp3 player or wireless keyboard has been included to jazz up the overall specification.

We assessed the features, performance and value for money provided by each PC, but great emphasis was placed on style. Whatever your tastes, we think you'll enjoy the variety on offer over the next few pages.





## Demonite Xtreme 64/6800

**E**agle-eyed readers will notice that the Xtreme 64/6800 from Demonite has a brand new chassis design. It felt a bit flimsy but for the most part, it's very attractive, with curves, a good front-panel and cleverly designed air vents.

The Demonite case is a Raidmax Titan 901-2 model, with a striking space-age design. It won't appeal to everyone though. The bottom half of the PC has an insect-like appearance, complete with acrylic bug-eyes.

The overall look is more subtle on our blue review sample, but users with more daring tastes can go for the striking yellow or ruby cases. Whichever you choose, the Neovo E-191 monitor is very complementary, but is far less dramatic than the base unit.

Demonite has attempted to match the striking exterior with equally impressive components. The Xtreme 64/6800 uses the MSI FIS2R motherboard, which received a Highly Commended award in our July group test. It also uses one of the fastest processors in the group; an Athlon 64 3700+ clocked at 2.41GHz. Unsurprisingly, this helped the Demonite achieve an overall Sysmark score of 199.

The PC features dual-format DVD-rewriting capabilities and, thanks to a pair of 250GB hard drives, the highest storage capacity of the group.

Graphics performance was also impressive. The Demonite's Geforce 6800 Ultra graphics card ran circles around the competition with a huge 3Dmark03 score of 12,496.

The Xtreme 64/6800 is best suited to users who want the latest PC components. In this group test, where the emphasis is on aesthetic appeal, it also does very well, although if you want an unobtrusive design you should look elsewhere.

### DETAILS

**RRP** £2,113 (£1,799 ex VAT)

### BEST PRICE & PRODUCT INFORMATION

Demonite

0871 222 7222

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

**PROS** Fast graphics; attractive case

**CONS** Case isn't as sturdy as it looks; bulky

### VERDICT

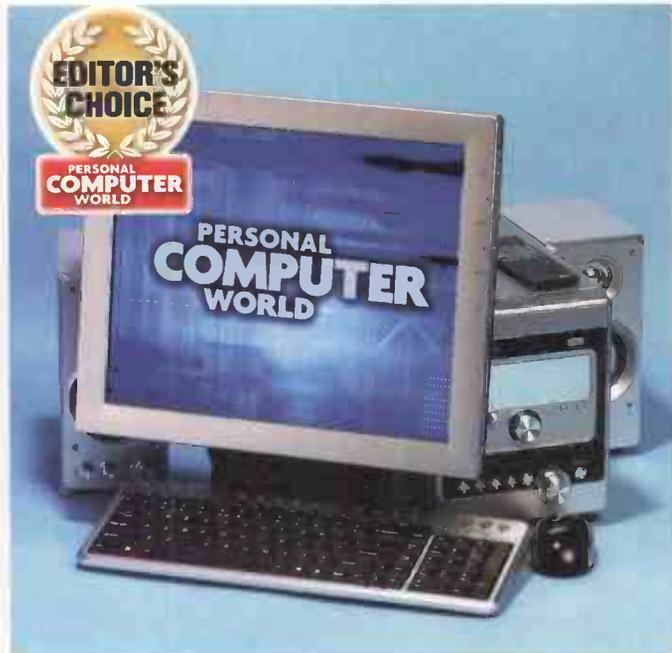
**The Demonite Xtreme 64/6800 is a fast system, but its bulky design might not suit all tastes**

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



## ECS EZ-Buddie D21S14-3

**T**he EZ-Buddie D21S14-3 is the most unusual looking model in this group. It resembles the original EZ-Buddie PC, but thanks to some new additions, such as the matching EZSP-20 speakers, this latest version looks more like a modern hi-fi than a computer.

One of the machine's strongest points is the fact that it can be used in one of two modes. The first of these is the standard PC mode where the EZ-Buddie can be used like an ordinary computer. Perhaps more exciting though is the entertainment mode, which uses a second hard disk partition that boots to a stripped-down multimedia-only Linux-based operating system.

From here, you can watch DVDs or look at images stored on a memory card without the need to load Windows XP – it also plays audio files and CDs, but this wasn't implemented in our early review model.

All this can be controlled via an infra-red remote, but there are also buttons mounted directly on the front panel of the PC. Files can be transferred for viewing through the integrated memory card reader tucked away towards the left side of the unit. USB2 and Firewire ports are located on the opposite corner.

ECS has attempted to keep the price of the EZ-Buddie 2 to a

minimum by using the motherboard's integrated graphics chip. This makes it entirely unsuitable for playing newer 3D games, but there is an AGP slot available should you wish to upgrade to something more substantial.

A 200GB hard drive has been included, but we would have preferred to see a slightly smaller drive in exchange for a DVD-rewriter to back up any recordings from the built-in TV tuner card.

Despite this, the D21S14-3 is arguably the most attractive PC here, and potentially one of the most versatile. As a result it wins our Editor's Choice award.

### DETAILS

**RRP** £1,291 (£1,099 ex VAT)

### BEST PRICE & PRODUCT INFORMATION

ECS 0870 120 5372

[www.ecs.uk.com](http://www.ecs.uk.com)

**PROS** Very stylish; TV tuner; separate multimedia OS

**CONS** Integrated graphics; no DVD burner

### VERDICT

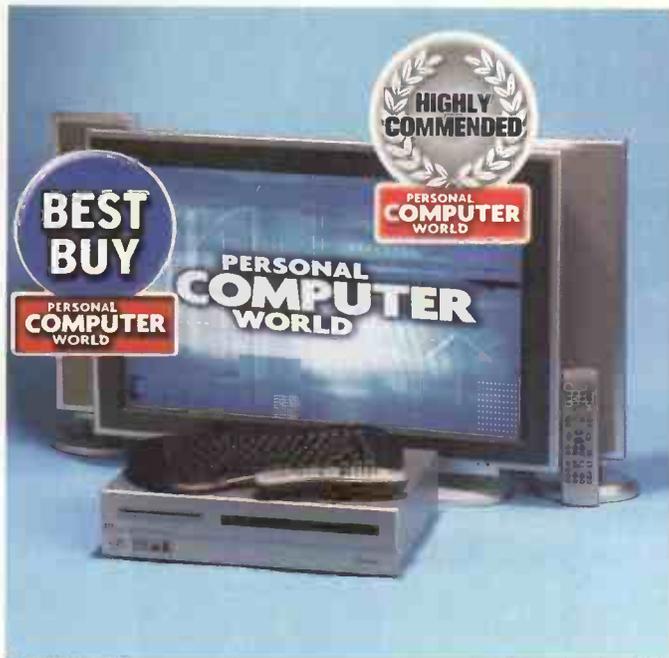
**Not the best choice for gamers, but if you want a stylish small form factor PC, the EZ-Buddie 2 is an ideal solution**

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



## Hi-Grade DMS 3000

**T**he only Windows Media Center PC in our group, the DMS 3000 is housed in a desktop-style chassis that resembles a conventional VCR or DVD player. As a result it should blend into most people's living rooms. It's powered by a 3GHz Pentium 4 processor and 512MB of memory on an Asus P4-P800-VM motherboard.

The DMS 3000 has a 200GB hard drive. It's a far cry from the 500GB of disk space provided in the Demonite submission, but it's enough to store around 60 hours of video recorded at the highest quality setting.

Like all Windows Media Center PCs, you can watch, pause, rewind and record terrestrial analogue television, FM radio and access all multimedia files in your PC via an easy-to-use menu. Hi-Grade has opted for the two-speed Matsushita UJ815A DVD-Ram drive. This is capable of writing DVD-R and DVD-Ram discs at two-speed and DVD-RW media at single speed, but it's incompatible with DVD plus-rated recordable and rewriteable media.

What sets this submission apart from its rivals is its 30in Relisys RLT3000 LCD TV. This huge display dwarfs all other monitors on test by at least 11in. This makes using the PC as a multimedia entertainment system tremendously gratifying,

as the image quality is superb and the overall look is impressive.

The LCD TV is great for movies but may not be ideal for hardcore gaming enthusiasts due to its 1,280 x 768 maximum resolution. Our experience with it was positive however, as there was very little ghosting and the size certainly enhanced the playing experience.

All this doesn't come cheap of course. The package costs £2,899 inc VAT, but the display alone costs £1,999 from Amazon, so it could be just the reason to upgrade both your PC and television at the same time. Hi-Grade wins a Highly Commended award for this PC.

### DETAILS

**RRP** £2,899 (£2,468 ex VAT)

#### BEST PRICE & PRODUCT INFORMATION

Hi-Grade  
020 8532 6100  
[www.higrade.com](http://www.higrade.com)

**PROS** Large display; attractive

**CONS** No support for

DVD+R/RW

#### VERDICT

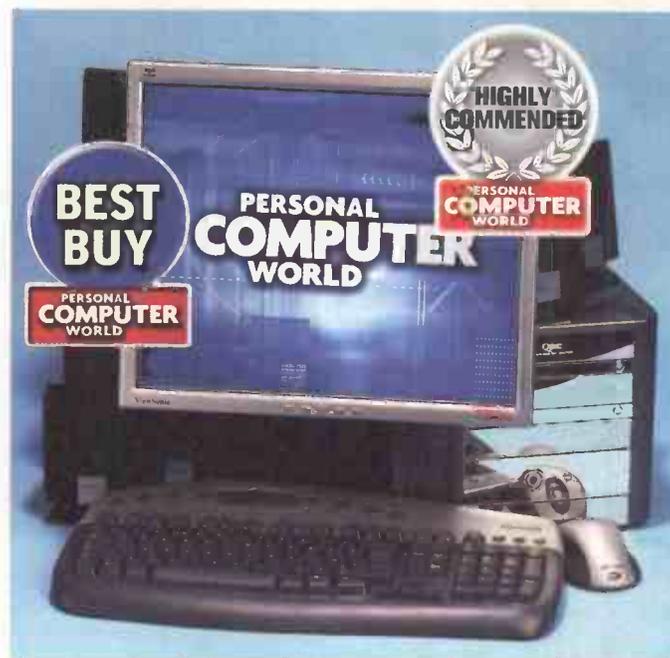
**If you want to upgrade to an LCD TV as well as get a new Media Center PC, the DMS 3000 is an ideal choice**

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



## Intellect Kube 3400/64S

**I**ntellect isn't that well known for providing unusual-looking PCs, so we were interested to see how it interpreted our Designer PC brief.

The Prodesk Kube 3400/64S impressed us straight away thanks to its use of the Soltex Qubic EQ3801 chassis. It looks similar to many small form factor PCs, but the mirrored front panels give it a much more stylish look.

Its small size belies its strong specification. Intellect has used an Athlon 64 3400+ CPU along with 1GB of PC3200 SD-Ram. This combination draws a solid performance from the Soltex SL-B9A-FGR motherboard, which uses a fairly modern Nforce 3 250 chipset.

Unlike its larger rivals, the Prodesk Kube 3400/64S is unable to accommodate more than a single 3.5in hard drive. We didn't expect to see a large amount of storage, but were pleasantly surprised to find an enormous 400GB Hitachi Deskstar hard drive. Unusually for a small form factor PC, the Prodesk Kube 2400/64S has two optical drive bays, both of which are put to use. The first is occupied by an LG GSA 4120B – the only tri-format DVD rewriter of the group. The second houses an unbranded CD/DVD-Rom drive.

The positive list of inclusions extends to the graphics card – an often overlooked area of small form factor PCs. Intellect has used a Hightech Excalibur X800 Pro, which is enough to run the most demanding of games at high resolution.

A Black Gold TV tuner has been included, so you'll be able to watch digital terrestrial television provided you live in an area with a strong enough signal.

At £1,938, the Prodesk Kube 3400/64S isn't cheap. But if you want a very well-specified PC in a quiet and attractive case, this Highly Commended winner could be just the ticket.

### DETAILS

**RRP** £1,938 (£1,650 ex VAT)

#### BEST PRICE & PRODUCT INFORMATION

Intellect  
08701 225 590  
[www.intellect.uk.com](http://www.intellect.uk.com)

**PROS** Large hard disk; attractive

**CONS** No upgrade potential

#### VERDICT

**Intellect's Prodesk Kube 3400/64S has a solid specification and is one of the most stylish small form factor PCs we've seen**

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★





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- 128MB DDR Video RAM & DirectX 9 support
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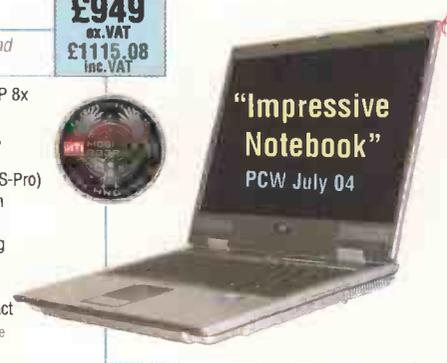
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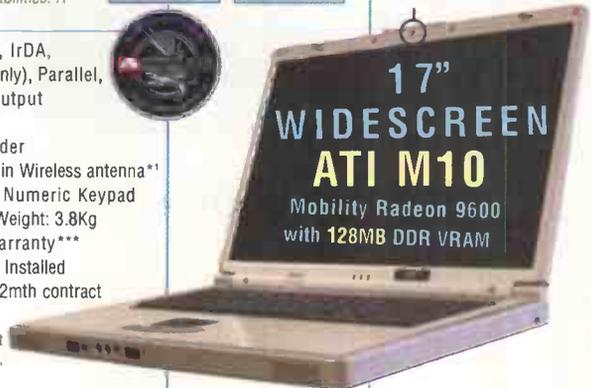
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- ATI Mobility Radeon M11 with Integrated AGP 8x
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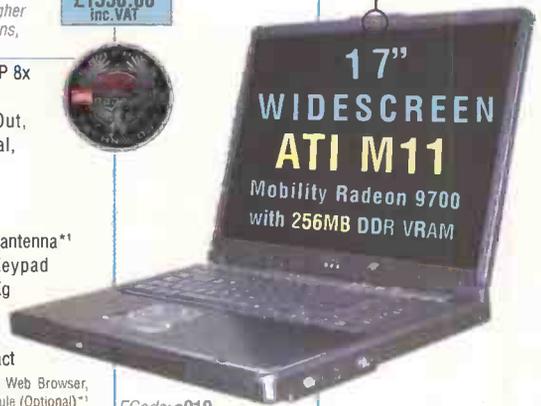
17" Widescreen	Pentium 4 3.0GHz	512MB RAM	80GB HDD	DVD-RW/CD-RW	ATI M11	256MB VRAM	Optional 2ND HDD	RAID 0 RAID 1 SUPPORT
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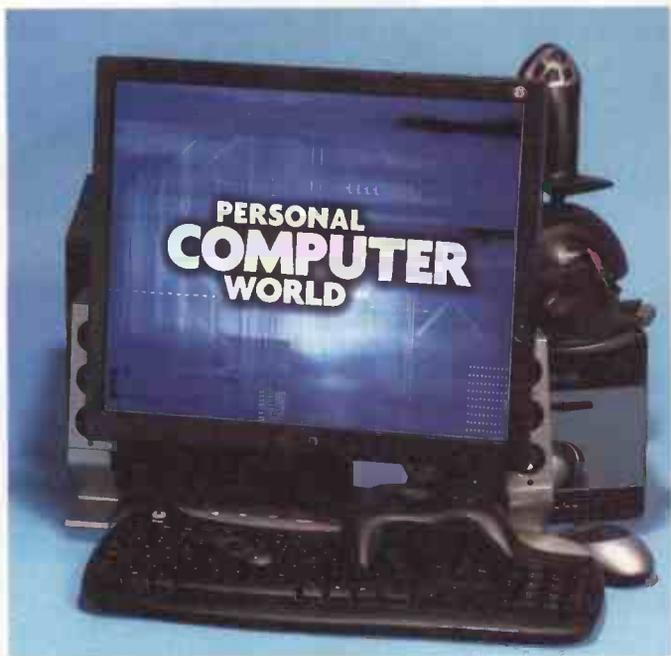
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## Mesh Cubex 64 3700+ X-Cite

**T**he Cubex 64 3700+ X-Cite is the latest Mesh offering to be based on a Shuttle X barebones system. This particular model is by no means the most attractive in the range, but it's well equipped considering its size. It's marginally smaller than the Intellect, so it can only accommodate a single optical drive – in this case a Sony DW-U18A multifunction DVD burner.

Like most of the PCs in the group, the X-Cite has a TV tuner card. This can decode digital Freeview channels and makes a good accompaniment to the Sony SDM-S94 19in TFT monitor. It has the same maximum resolution as the 17in screens seen elsewhere, but watching DVD movies on this display is slightly more fulfilling. The two extra inches go a long way.

A Radeon X800 Pro powers the graphics subsystem. This should please most gamers, since there are only a few titles that can push this card to its limit. Its 3Dmark03 score of 9,594 is a far cry from the 12,496 notched up by the Demonite, but there aren't many graphics cards that can compete with a Geforce 6800 Ultra.

The X-Cite uses an Athlon 3700+, one of the fastest processors of the group. We

expected it to provide better performance than the Intellect Kube, since that uses a slower 3400+ CPU and shouldn't gain much advantage from having 1GB of memory. The benchmark results put the two on very even ground, which suggests the X-Cite has more performance bottlenecks than the Intellect machine.

The Cubex is one of the lowest-priced submissions, so if you want a rounded specification without the luxuries provided elsewhere, it's ideal. It also works well as a multimedia PC, but it's not really anything out of the ordinary in its styling.

### DETAILS

**RRP** £1,761 (£1,499 ex VAT)

**BEST PRICE & PRODUCT INFORMATION**

Mesh

0870 046 4747

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

**PROS** Small; fast CPU

**CONS** Not as attractive as others

**VERDICT**

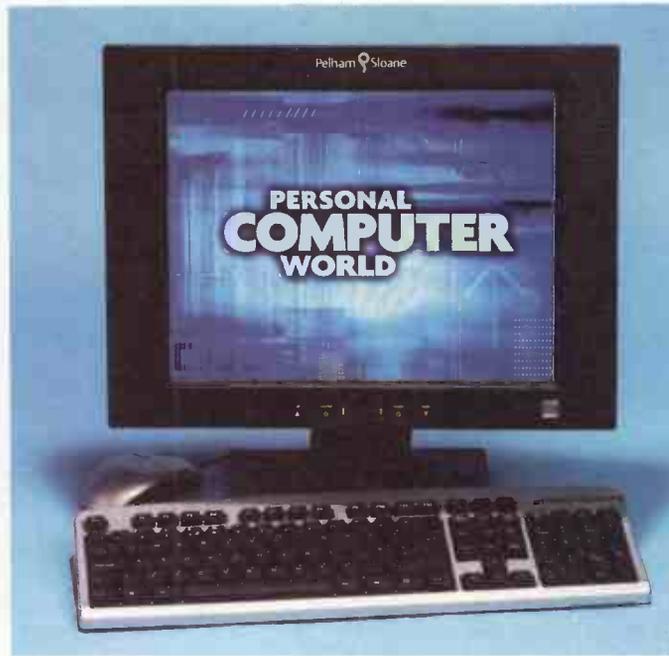
The Cubex is a great example of what can be done with a Shuttle X foundation, but isn't as attractive as we'd have liked

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



## Pelham Sloane PS1500

**T**he Pelham Sloane PS1500 is an all-in-one PC that could save you a considerable amount of space. Parts that are usually found inside a base unit are integrated directly in its 15in TFT screen.

It sits on a revolving base, so you can easily swivel the display around 360°. There is also a vertical tilt option, but we were disappointed at the lack of any on-screen display to help manually adjust the contrast or brightness.

The PS1500 is based on the diminutive Commell LV-670-LVDS motherboard, which uses Intel's ageing 845G chipset. This is fitted with a Pentium 4 2.4GHz processor and 256MB of PC2100 Ram, the lowest specification of the group.

Unsurprisingly, the PS1500 achieved the lowest benchmark scores. It will happily run any modern application without struggling noticeably, but its integrated Intel Extreme Graphics processor means it is not best suited to demanding 3D programs. Likewise, its 40GB hard drive is dwarfed by many others in the group, but the PS1500's target audience (business or style-conscious users) are unlikely to use it all up in a hurry.

Where the PS1500 excels is in its simple but attractive design. It has everything you'd expect

to find on a modern PC, including Ethernet, USB and Firewire ports, and even an integrated DVD-Rom drive tucked away towards the left side of the screen.

Pelham Sloane is able to customise the PS1500 to individual tastes, so if a higher specification is essential, optional extras such as a faster CPU, touch-sensitive screen or wireless network card can be installed at extra cost.

Our standard review model doesn't feature all the bells and whistles of the top-spec PCs elsewhere in the group, but its clever design makes it one of the most attractive PCs here.

### DETAILS

**RRP** £1,434 (£1,221 ex VAT)

**BEST PRICE & PRODUCT INFORMATION**

Pelham Sloane

020 7349 2090

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

**PROS** Compact; attractive

**CONS** Not for the real

performance enthusiasts

**VERDICT**

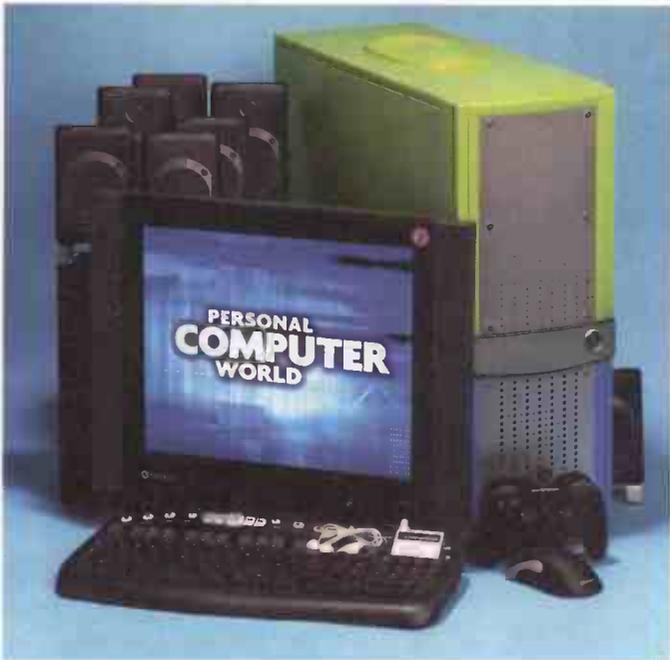
It isn't the fastest here, but what it lacks in performance, the Pelham Sloane PS1500 makes up for in style

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



## Scan 3XS AMD 64-Series

**T**his special edition 3XS AMD 64-Series from Scan isn't designed for shy and reserved PC users. It has an audacious paint job that fades from lime green at the top of the case to aquamarine at the bottom. We weren't particularly impressed by this combination, but it could appeal to those with matching home décor.

Unfortunately this design is limited to the first 10 buyers, so if you're slow off the mark, you'll have to make do with the standard Casetek 1018SA chassis. This is no bad thing though, since the plain silver unit looks better alongside the black Neovo S-17C monitor.

Scan has obviously put a lot of thought into the exterior, but it was the internal layout that impressed us the most. The unit has been painstakingly assembled with neatly arranged cables and liberal use of white lighting to aid visibility. This gave the 3XS 64-Series the lowest internal temperature of the group, which should aid performance and prolong the life of its components.

Scan's reasons for ensuring excellent airflow are obvious considering the 3XS uses the fastest processor of the group. An Athlon 64 3800+ is installed alongside 1GB of PC3200 SD-Ram on a Gigabyte motherboard that uses the

Athlon 939 chipset. This gave the 3XS the fastest core performance.

Gamers will be pleased at the inclusion of an Nvidia Geforce 6800 GT graphics card. It isn't quite as fast as the 6800 Ultras in the Demonite or Systemax PCs, but it did well during testing. Scan has also included a bounty of extras including a 128MB Joybee mp3 player and XFX Dualshock gamepad.

The 3XS is easily the most powerful computer of the group. Its unusual custom spray-job makes it a definite 'designer' entry, but whether its garish colours will alienate conservative buyers remains to be seen.

### DETAILS

**RRP** £2,179 (£1,855 ex VAT)

**BEST PRICE & PRODUCT INFORMATION**

Scan

0870 755 4747

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

**PROS** Very quick; well-built

**CONS** Questionable colour scheme

**VERDICT**

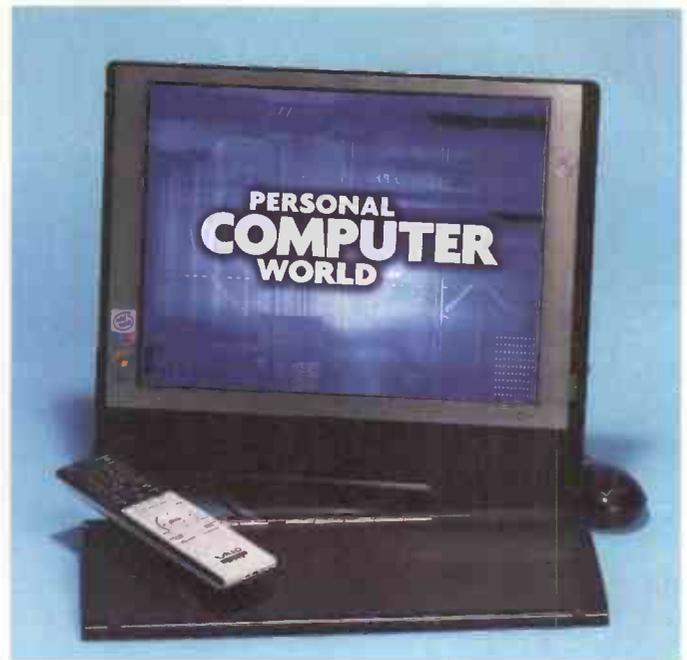
The 3XS offers the best performance of the group and a generous number of extra features

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



## Sony PCV-V100

**T**he Sony PCV-V100 is the second of our two all-in-one PCs. Whereas Pelham Sloane has gone for a more understated look, the V100 uses Sony's distinctive contemporary styling. The thick black and silver bezel makes an attractive frame for the 15in LCD screen. The rear section is arched slightly, and leads to a jutting bottom section that houses the power supply.

Inside, Sony has used a 2.4GHz Pentium 4 CPU and 512MB of PC2700 Ram. Like the Pelham Sloane PC, only 40GB of storage is provided, but this could present more of a problem in the V100, as it has been designed with a multimedia focus. It has a Gigapocket TV tuner, but the lack of disk space means you have to be frugal with the amount of video you record, plus there's only a CD-RW drive rather than a DVD burner.

The V100 uses the Sis chipset's integrated graphics processor, and so is not best suited to playing games. Its size limits the number of available graphics card options, but being small is no longer an excuse considering the graphics advances we've seen in portable machines.

The V100 has a good number of I/O ports, including four

USB ports. Being a Sony PC, the proprietary Ilink connector is used instead of Firewire. There is a Type II PC Card slot for laptop-style expansion and a Memory Stick reader so you can transfer multimedia files to and from compatible Sony devices. Input is handled by a wireless keyboard and a particularly stylish mouse.

Opinions at PCW are divided on whether the V100 is more attractive than the Pelham Sloane P51500. The latter has a simple, elegant design and takes up less space, but the Sony PCV-V100 will appeal to those who prefer a more modern look to their machine.

### DETAILS

**RRP** £1,173 (£999 ex VAT)

**BEST PRICE & PRODUCT INFORMATION**

Sony

0870 240 2408

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

**PROS** Small and stylish

**CONS** Poor performance; no DVD burner included

**VERDICT**

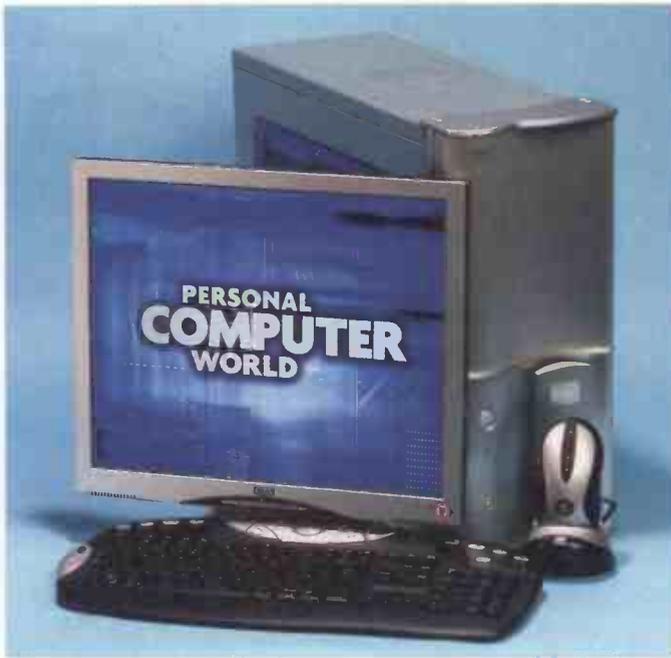
A distinctive and eye-catching PC that should appeal to the more style-conscious multimedia lover

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★



## Systemax Insomnia 6002

**T**he oddly named Insomnia 6002 is a good example of why computer modding is becoming more popular. It uses the heavy-duty Coolermaster TAC-T01 Wavemaster case – a sturdy aluminium offering that has an attractive yet understated design. It has a blue light behind the protruding front panel, an internal neon strip and a swing-door with magnetic catch.

This masks a Sony DVD DW-U18A dual-format DVD writer that supports both plus and minus media, paired with a Samsung DVD reader.

There are top-mounted USB ports, but no multimedia card reader. Instead, Systemax has installed a Coolermaster Musketeer – a 5.25in device that controls the speed of the case fan and monitors your sound pressure and internal temperature. This could come in handy for overclockers, but for most users it will probably just serve as something that increases the PC's visual appeal.

Below the surface, the Insomnia 6002 uses an Athlon 3500+ processor, 1GB of PC3200 SD-Ram and an Nvidia Nforce 3 250 chipset motherboard. Despite having a faster CPU than the similarly equipped Intellect Prodesk Kube, its core performance was marginally

slower. The Insomnia makes up for this with faster hard disk performance, courtesy of two 120GB drives in a striped Raid configuration.

Graphics are provided by an Nvidia Geforce 6800 Ultra. This resulted in some of the best performance scores in the group. While the 19in CTX 5962G flat-panel monitor fits the overall look of the PC, it isn't best suited to being viewed from extreme angles.

The Insomnia is a very capable and well-specified PC, but it is not the most stylish. It can, however, be commended, particularly if you want strong gaming performance.

### DETAILS

**RRP** £1,761 (£1,499 ex VAT)

### BEST PRICE & PRODUCT INFORMATION

Systemax  
0870 727 2110  
[www.systemaxpc.co.uk](http://www.systemaxpc.co.uk)

**PROS** Graphics performance; printer

**CONS** Not the best looking PC

### VERDICT

The Insomnia 6002 offers good performance and has a strong feature list, but is not the most stylish entry

**FEATURES/STYLE** ★★★★★

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL** ★★★★★

## Must-have accessories

**Harman Kardon HKTS 11**  
<http://international.harman-kardon.com> £600 (£510.64 ex VAT)  
The HKTS 11 has a 10in subwoofer that pumps out 200w of bass. Its five satellite speakers have an attractive silver finish making the perfect addition to your entertainment system.



**Canon Pixma IP4000**  
[www.canon-europe.com/pixma](http://www.canon-europe.com/pixma) £129 (£109.79 ex VAT)  
This new breed of printer was first unveiled at Pierre Cardin's home in the south of France. It's not just a pretty face though; the Pixma range boasts photo-lab quality printing, 25 pages per minute performance and has an a duplex unit and Pictbridge direct photo printing.



**Gyration Ultra Optical Mouse**  
[www.gyration.com](http://www.gyration.com) £131.98 (£108 ex VAT)  
This gives you mouse-like cursor control without requiring a flat surface. Just wave it at the screen and you'll be able to control your PC. The advanced version has a 7.6m range, so you can use it in large rooms. The Ultra Cordless Optical Mouse is also rechargeable, so you won't have to worry about batteries.



**Sony DSC-T1**  
[www.sony.com](http://www.sony.com) £399 (£288.51 ex VAT)  
One of the best looking cameras we've seen. The DSC-T1 is very small, yet able to take pictures of up to 5 megapixels in quality. It has a large 2.5in viewfinder and a 3x optical zoom, so you can get in closer to your subjects.



**HP Scanjet 4670**  
[www.hp.co.uk](http://www.hp.co.uk) £180 (£153.19 ex VAT)  
It seems like an obvious idea, but the 4670 is the only vertical standing see-through scanner. It allows you to look through the see-through scanning window to 'frame' and place items where you want them and has an attractive, compact design.



**Fujitsu 40GB Handydrive**  
Pocket Sized HDD  
[www.fel.fujitsu.com](http://www.fel.fujitsu.com) £119 (£101.27 ex VAT)  
The Handydrive lets you take your data on the move. If you've got a large collection of videos you want to share with a friend, just copy the files to the Handydrive and transfer them using its USB connection.



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**1000GB** srp £609 (£715.58 inc VAT)

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- Compatible with Windows Backup Utility

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**60GB MobileDrive USB2.0 or FireWire** srp £101 (£118.68 inc VAT)  
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- Optional BlueEye provides hardware calibration of E19 & E22
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**19" Electron19 Blue CRT** srp £229 (£269.08 inc VAT)  
**22" Electron22 Blue CRT** srp £439 (£515.83 inc VAT)

**NEW!**

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- USB 2.0 Flash Memory storage device & watch
- 3 year battery life with Japan Movement
- Ships with USB extension cable
- Water resistant, shockproof and anti-static
- Transport your files between home and work, while never losing another USB key. The LaCie DataWatch is simple to use and allows you to easily transfer your audio files, presentations, spreadsheets or documents. Wherever you go, you'll be able to easily share files between Macs/PCs

**LaCie DataWatch 256MB USB2** srp £53 (£62.28 inc VAT)  
**LaCie DataWatch 128MB USB2** srp £32 (£37.60 inc VAT)  
**8in1 Memory Card Reader/Writer USB2.0** srp £9 (£10.58 inc VAT)  
**Data Bank 1.8" HDD USB2.0 20GB** srp £100 (£117.50 inc VAT)  
**Data Bank 1.8" HDD USB2.0 40GB** srp £138 (£162.15 inc VAT)

E&OE July 2004

LaCie products are available from leading resellers - visit [www.lacie.com/uk/wheretobuy](http://www.lacie.com/uk/wheretobuy)

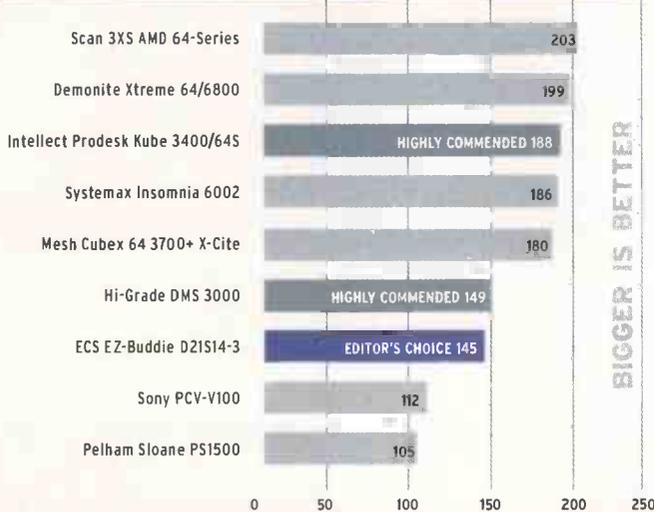
LaCie UK Ltd, 46 Gillingham Street, London, SW1V 1HU - Email: [info.uk@lacie.com](mailto:info.uk@lacie.com) [www.lacie.com/uk](http://www.lacie.com/uk)



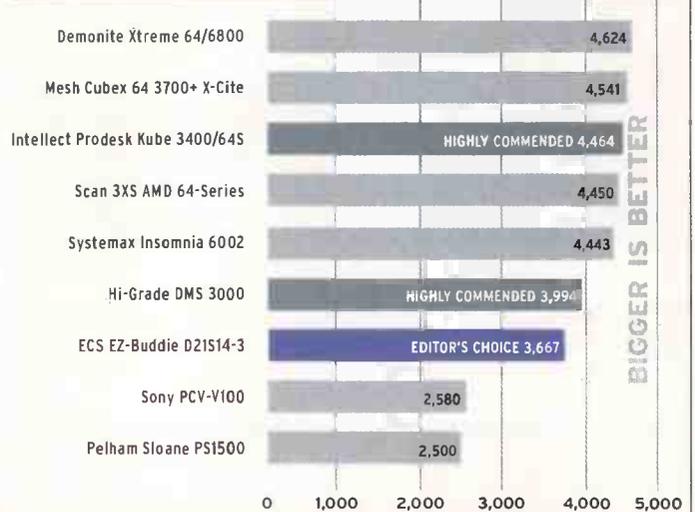
## Lab results



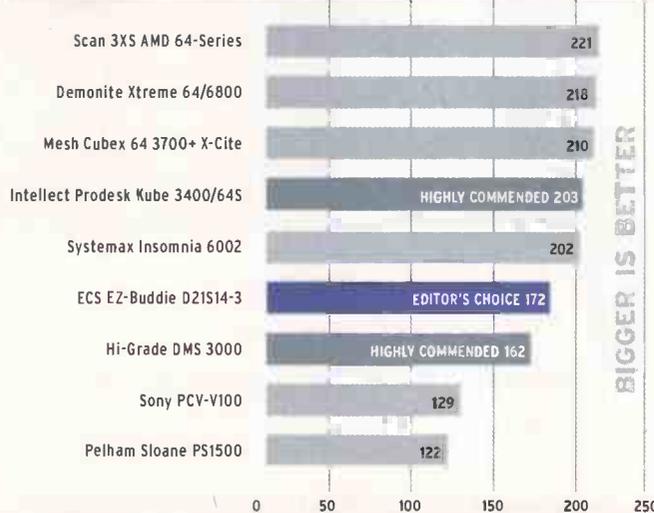
### Sysmark 2004



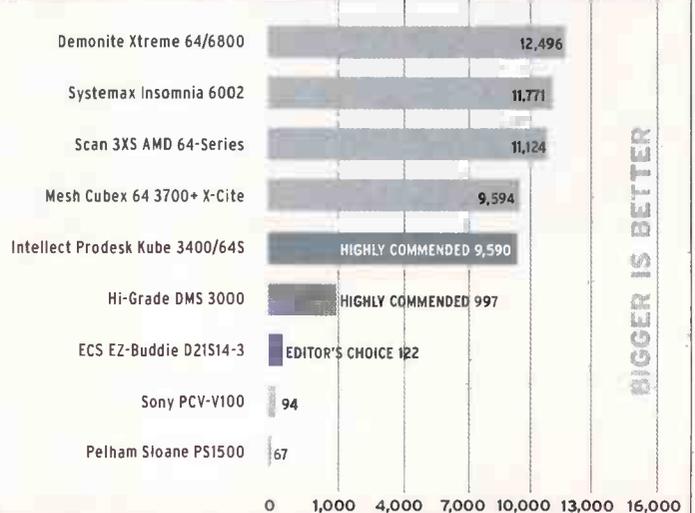
### PCmark 2004



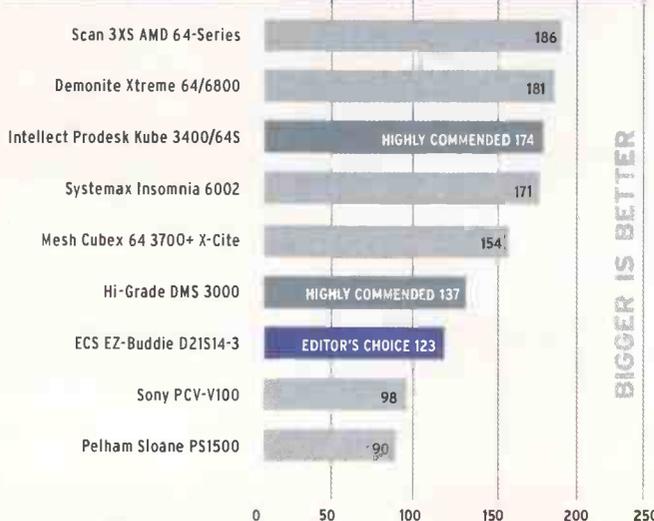
### Sysmark 2004 Internet content creation



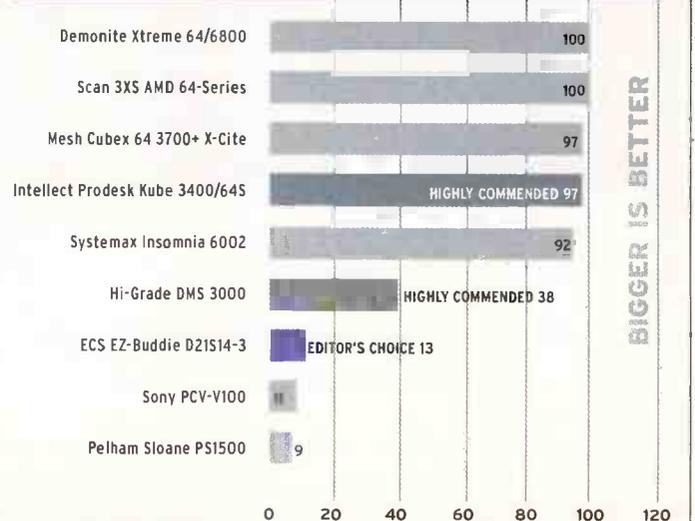
### 3Dmark03 (1,024 x 768 at 32bit)



### Sysmark 2004 office productivity



### Unreal Tournament (fps) (1,024 x 768)



Please see page 12 for an explanation of how we tested the PCs





# 3.4GHz 15.4" Notebook with PCTV Media Centre

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Intel Pentium 4

Intel Pentium 4 Processor 3.4GHz with HT Technology. The Tiny Mediabook MS 3.4 based on the Intel® Pentium® 4 processor with HT Technology delivers the performance to power your home entertainment. New "Prescott" high performance version with 1024k cache.

**1024MB**  
DDR RAM

Massive 1Gigabyte of high speed DDR RAM increases performance and allows multiple applications to run at the same time - double the size of other notebooks!

**80GB**  
HARD DISK

Massive 80GB hard disk (double that of normal notebooks) provides enormous capacity for large amounts of photos, music albums, videos and other files.

**128MB**  
ATI 9700

ATI Mobility Radeon 9700 graphics card built-in with dedicated 128MB DDR memory and DirectX 9 support - handles video editing with ease and allows you to play the latest 3D games in style.

**DVD-Rw**  
MULTIFORMAT

Multiformat DVD burner drive handles all popular formats. Make your own music, photo or movie CDs or DVDs and copy virtually any DVD or CD for backup purposes. Also acts as a DVD drive allowing you to watch the latest movies.

**15.4"**  
SCREEN

Ultra high definition 15.4" TFT widescreen display with superb brightness, high contrast ratio, and dual display facility.

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WIRELESS

Built-in 802.11b wireless module and antenna allows you to connect wirelessly to the Internet and other computers in the house or office. Hotspot compatible with hotels, airports, universities, restaurants - access the Internet and your office on the move!

**4-in-1**  
CARD READER

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**Massive Connectivity**

With SVGA-out (projectors), 10/100 ethernet for broadband and networking, Parallel, Infra Red, Audio, Mic. Also includes PCMCIA, Firewire, USB2.0 x 4, TV-out - see opposite.

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**2.1 Sound System**

Play music on your notebook on 2.1 speaker system consisting of subwoofer and dual satellites.

**Audio DJ**

Play CDs and listen to music without even switching the notebook on!



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- Dimension 358x269x39mm; 3.8Kg

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- Microsoft Works 7 - Six integrated applications for wordprocessing, spreadsheet, graphics, filing, address book, calendar etc.
- Microsoft Windows XP Home Edition

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- Cyberlink PowerProducer 2 Gold: full-feature authoring package allows you to copy DVDs.
- Cyberlink Power2Go: powerful and easy to use data burning suite. Create your own CDs and DVDs.
- Cyberlink Music Match: play back audio music and copy to CDs.

(Model N2916)

▷ TOP QUALITY SOFTWARE INCLUDED



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## Table of features

		 <b>EDITOR'S CHOICE</b> BEST VALUE COMPUTER WORLD	 <b>HIGHLY COMMENDED</b> BEST VALUE COMPUTER WORLD	 <b>HIGHLY COMMENDED</b> BEST VALUE COMPUTER WORLD
MANUFACTURER	<b>DEMONITE</b>	<b>ECS</b>	<b>HI-GRADE</b>	<b>INTELLECT</b>
MODEL NAME	<b>XTREME 64/6800</b>	<b>EZ-BUDDIE D21S14-3</b>	<b>DMS 3000</b>	<b>PRODESK KUBE 3400/64S</b>
Price inc VAT (ex VAT)	£2,113 (£1,799)	£1,291 (£1,099)	£2,899 (£2,468)	£1,938 (£1,650)
Telephone	0871 222 7222	0870 120 5372	020 8532 6100	08701 225 590
URL	<a href="http://www.demonite.com">www.demonite.com</a>	<a href="http://www.ecs.uk.com">www.ecs.uk.com</a>	<a href="http://www.higrade.com">www.higrade.com</a>	<a href="http://www.intellect.uk.com">www.intellect.uk.com</a>
HARDWARE SPECS				
Processor	AMD Athlon 64 3700+, 2.41GHz	Intel Pentium 4 3.26GHz	Intel Pentium 4 3GHz	AMD Athlon 64, 2.21GHz, 3400+
Memory quantity and type	1GB PC3200 DDR SD-Ram	512MB PC3200 DDR SD-Ram	512MB PC3200 DDR SD-Ram	1GB PC3200 SD-Ram
Occupied/spare memory Ram slots	2/1	2/0	1/3	2/0
Max memory in this config	2GB	512MB	3.5GB	1GB
Max memory supported by mbd	2GB	2GB	4GB	2GB
Hard disk	2 x Hitachi Deskstar S722, Sata/150	Western Digital WDC WD2000BB-22FTA0	Western Digital WDC WD2000BB-22FTA0 Ultra-ATA/100	Hitachi Deskstar HDS72404KLSA80 7,200rpm
Hard disk size	2 x 250GB	200GB	200GB	400GB
Motherboard	MSI K8T Neo FIS2R	ECS 865G-M Deluxe PF2	Asus P4-P800-VM	Soltek SL-B9A-FGR
Chipset	Nvidia Nforce 3 250	Intel 865G	Intel 865G	Nvidia Nforce 3 250GB
EXPANSION & I/O				
No of 3.5/5.25in bays	5/5	1/1	2/0	1/2
No of free 3.5/5.25in bays	2/3	0/0	0/0	0/0
No of PCI/shared	4/0	1/0	3/0	1/0
No of free PCI/shared	3/0	0/0	0/0	0/0
No of USB2/Firewire	8/1	6/2	3/1	6/2
No of serial/parallel/PS/2	1/1/2	1/0/2	0/0/0	1/1/2
MULTIMEDIA AND OTHER INFORMATION				
Primary optical drive	Sony DVD-Rom DDU1612	Toshiba SD-R1312	Matshita UJ815A	LG GSA 4120B
Primary optical drive speed	DVD-Rom: 16x 40x	DVD: 12x, CD: 32x 10x 40x DVD-Rom/CD-RW	DVD-RW: 1x 1x, DVD-Ram: 2x, DVD-Rom: 8x, CD: 16x 8x 24x DVD-RW/DVD-Ram	DVD+RW: 12x 4x 16x, DVD-RW: 8x 4x 16x, DVD+R DL: 2.4x, DVD-Ram: 5x, CD-RW: 40x 24x 40x
Secondary optical drive	NEC DVD-RW ND-2510A	N/A	N/A	JLMS XJ-HD165H
Secondary optical drive speed	DVD+RW: 8x 4x 12x, DVD-RW: 8x 4x 12x, DVD+R DL (Dual layer): 2.4x, CD-RW: 32x 16x 40x	N/A	N/A	DVD-Rom: 16x 48x
Soundcard	Nvidia MCP2-S	Intel 82801EB ICH5 - AC97	Intel AC97(5.1 S/PDIF/coax digital out)	C-Media CMI8738/C3DX
Speakers	Creative Itrigue 3300	EZ Buddie EZSP-20	Relysis RLT3000 speakers	Creative Inspire 6700
Graphics card	Nvidia Geforce 6800 Ultra	Intel 82865G	Nvidia Geforce FX 5200	Hightech Excalibur X800 Pro
Chipset	NV40	Intel 82865G	Geforce FX 5200	R420
Memory and type	256MB	64MB Dynamic Memory	128MB	256MB
Monitor	AG Neovo E-191	ECS EZ17B	Relysis RLT3000 LCD TV	Viewsonic VP171s
Monitor size	19in	17in	30in	17in
Max resolution	1,280 x 1,024	1,280 x 1,024	1,280 x 768	1,280 x 1,024
Misc hardware/modem	Asus 6-in-1 card reader, Intel 536EP V.92 modem	TV tuner	ATI Ehome Wonder (Philips TV card), V.92 modem, Wifi card 80211g wireless Lan	Hauppauge WinTV Express 756, Mitsumi floppy drive/card reader, Microsoft Wireless Optical Desktop Elite, Cyberlink Powercinema 3
Bundled software	Microsoft Windows XP Home Edition, Microsoft Works Suite 2004, Cyberlink DVD Solutions,	Adobe Reader, PC-Cillin, DirectX, Win-Cinema	Panda Antivirus, Ability Office, Sonic Prime Time,	Microsoft Office 2003 Basic Edition, PC-Cillin 2004, Cyberlink Powercinema 3
Standard warranty*	3yrs on site, 2yrs RTB	1yr RTB	2yr C&R	3yrs on site
SCORES				
Features/Style	★★★★★	★★★★★	★★★★★	★★★★★
Performance	★★★★★	★★★★★	★★★★★	★★★★★
Value for money	★★★★★	★★★★★	★★★★★	★★★★★
Overall	★★★★★	★★★★★	★★★★★	★★★★★

\*RTB = return to base, C&R = collect and return

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**3XS AMD 64-SERIES**

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

AMD Athlon 64 3700+ 2.39GHz

Intel Pentium 4 2.4GHz

AMD 3800+ 2.4GHz

Intel Pentium 4 2.4GHz

AMD 3500+ 2.21GHz

512MB PC3200 DDR SD-Ram

256MB PC2100 DDR SD-Ram

1GB PC3200 DDR SD-Ram

512MB PC2700 DDR SD-Ram

1GB PC3200 DDR SD-Ram

2/0

1/0

2/2

1/0

2/2

512MB

256MB

3GB

512MB

2GB

2GB

1GB

4GB

1GB

2GB

Maxtor 6 Y200MO  
7,200rpm, SATA/150

Maxtor 6E040LO 40GB,  
7,200rpm, Ultra-ATA/133

2 x Maxtor 6Y120M01, 7,200rpm,  
Ultra-ATA/133

Seagate ST380011A

2 x Samsung SPI203N

200GB

40GB

240GB

40GB

2 x 120GB

Shuttle FN85

Commell LV-670-LVDS Flex-ATX

Gigabyte GA-K8NSNXP-939

Sis 651

MSI K8N Neo 2

Nvidia Nforce 3 150

Intel Brookdale-G i845G

Nvidia Nforce 3 Ultra

Sis 650/651

Nvidia Nforce 3 250

2/1

0/0

6/4

1/0

5/4

0/0

0/0

4/2

0/0

2/2

1/0

1/0

5/0

0/0

4/0

0/0

1/0

4/0

0/0

4/0

4/2

2/1

6/2

4/0

6/1

1/1/2

1/1/2

2/1/2

0/0/0

1/1/2

Sony DVD-RW DW-D18A

Toshiba SD-C2402

Plextor DVR-PX712A

Matshita USDA 750

Sony DVD DW-U18A

DVD-RW: 4x 8x 12x, DVD-RW: 2x 8x  
12x, CD-RW: 24x 40x 40x

DVD-Rom: 8x 24x

DVD-RW: 8x 4x 16x, CD-RW: 48x 24x  
48x, DVD+RW: 12x 4x 16x

DVD-Rom: 8x max,  
CD-R/W/RW: 8x 4x 24x

DVD+RW: 4x 8x 12x, DVD-RW: 2x 8x  
12x, CD-RW: 24x 40x 40x

N/A

N/A

Plextor CD-R W5224A

N/A

Samsung DVD Rom SD-6160

N/A

N/A

CD-RW: 52x/24x/52x

N/A

DVD-Rom: 16x 48x

Nvidia MCP2

Intel 82801DB(M) ICH4(-M) - AC97

Creative Audigy 2 ZS

Sis 651

Realtek ALC655

Creative Itrigue 3300

Integrated

Creative SB0350 Audigy 2 ZS

Integrated

Videologic ZX 5750 7.1

Radeon X800 Pro

Intel 82845G

Nvidia Geforce 6800 GT

Sis 315

Nvidia Geforce 6800 Ultra

R420

Intel 845G

NV40

Sis 650

NV40

256MB

Shared

256MB

Shared

256MB

Sony SDM-S94

15in XGA TFT LCD

Neovo S-17C

Sony PCV-V100

CTX S962G

19in

15in

17in

15in

19in

1,280 x 1,024

1,024 x 768

1,280 x 1,024

1,024 x 768

1,280 x 1,024

Integral 6-in-1 memory card  
reader, Black Gold Digital TV/Radio  
tuner, Sony 128MB Microvault,  
Belkin Nostromo Speedpad

Optional wireless PC Card,  
touchscreen, 2.6GHz  
maximum processor

Benq Joybee 120, XFX Executioner  
game controller, V.92 modem

Wireless keyboard & mouse

V.92 modem, Cooler Master  
Musketeeer, Logitech wireless  
keyboard & mouse

Windows XP Home, MS Works 7,  
Pinnacle Studio 9, Instant CD/DVD,  
Intervideo Win DVD, Cyberlink  
Powercinema, games bundle

Microsoft Windows  
XP Professional,  
Cyberlink PowerDVD

Microsoft Windows XP Home,  
Microsoft Works Suite 2004,  
Ahead Nero, games selection

Adobe Premiere LE, Photoshop  
Elements, Works 7, Age of  
Empires II, Moodlogic 2.5 trial

Windows XP Home,  
Work 2004

2yrs on site (UK);  
1yr RTB (parts & labour)

1yr on site

1yr on site

1yr on site

3yrs on site

★★★★★

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★★★★★

Vendors of group test products are only obliged to sell them at the prices quoted here (which include delivery and credit card surcharges) for the life of this PCW issue. They may also change components under certain circumstances.

# Ultimate Widescreen Thin & Light Notebook



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Large 80GB hard disk (double that of most notebooks) provides massive capacity for large amounts of photos, music albums, videos and other files.

**128 MB ATI 9700**

Latest ATI Mobility Radeon 9700 Pro graphics card built-in with dedicated 128MB DDR memory and DirectX 9 support – handles video editing with ease and allows you to play the latest 3D games in style.

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Multiformat Panasonic DVD burner drive handles all popular formats. Make your own music, photo or movie CDs or DVDs and copy virtually any DVD or CD for backup purposes. Also acts as a DVD movie player.

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Ultra high definition 15.4" WXGA TFT screen, superb brightness, high contrast ratio, and dual display facility (1280x800).

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- ✓ PCMCIA Type II card slot with cardbus
- ✓ S-Video TV-out connections for large screen TVs
- ✓ 56K Modem including telephone cable.
- ✓ 6 Cell Li-ion long life (normally 2.5 hrs) battery
- ✓ Ergonomic keyboard, Glide pad and 4 direction scroll
- ✓ SVGA-Out (projectors), 10/100 Ethernet for Broadband, Networking, Audio and Mic
- ✓ Dimension 355x250x32mm; 3Kg. Model (N2917)

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**£899**

Intel Pentium M725, Intel Centrino Technology, 512MB, 15.4" TFT, DVD-Rw, 40GB, 128MB ATI 9700 graphics Wi-Fi, card reader



# Editor's Choice

**D**ue to the nature of this group test, judging the winners has been extremely difficult. Each of our vendors has their own interpretation of what constitutes a designer PC, as do most users. The level of performance and features offered by each entry varied tremendously, so deciding whether it was components or looks that mattered most depends on an individual's needs.

We were impressed with most of the submissions – particularly the Systemax Insomnia 6002. It has been a while since Systemax supplied a PC as part of a PCW group test, but the 6002 maintained the company's record of providing competitive machines. For £1,761, you get a very well-specified computer with one of the fastest processors of the group. We're not entirely convinced the design of the chassis will have a broad appeal, but it is undoubtedly a PC that gamers in particular should appreciate.

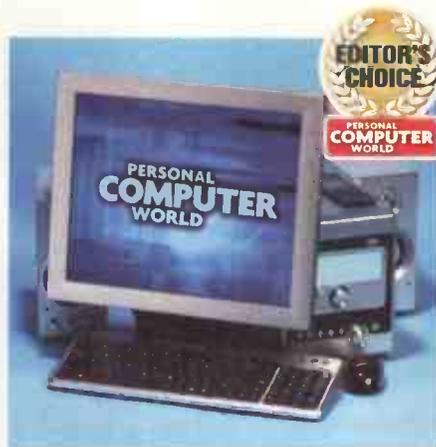
The Scan 3XS AMD 64-Series was also a strong entry. If the main focus of this group test had been performance, it would be a strong contender for Editor's Choice. Unfortunately its green and blue colour-scheme wasn't very appealing to us. It might appeal to users with brightly coloured homes or those who want a PC that goes completely against the grain, but we don't believe it was attractive as other entries.

**'You'll be able to position the ECS in any room without it looking out of place'**

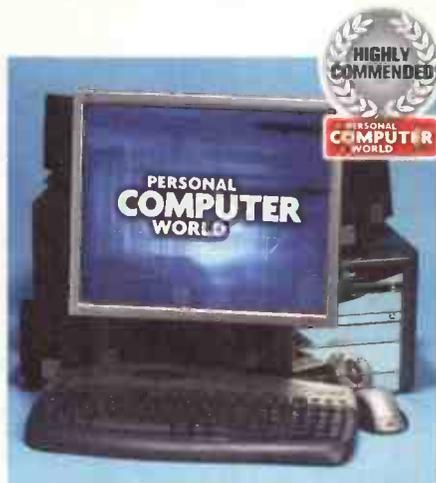
Special mention must go to the Pelham Sloane P51500 and Sony V100. These were very well-designed PCs that should appeal to fashion-conscious users looking for a system that takes up minimum space. The fact that the P51500 had the lowest specification of the group is significant, but if you want a PC that does all the basics, it works surprisingly well.

## The winners

The winner of our first **Highly Commended** award is the **Intellect Prodesk Kube 3400/64S**. We were particularly impressed by its use of the Soltek Qubic EQ3801 chassis. It had the best performance of all our small form factor



ECS EZ-Buddie D21S14-3



Intellect Prodesk Kube 3400/64S



Hi-Grade DMS 3000

entries. It is also one of the quietest PCs of the group by far, which makes it ideal for use as a multimedia system, since you can happily watch movies without intrusive fan noise.

The Black Gold TV tuner was a thoughtful addition, but by including a huge 400GB hard drive, Intellect has given users the ability to record up to 400 hours of video directly to the PC. The inclusion of a tri-format DVD drive means that if you happen to run out of disk space, you'll be able to keep a backup of your recordings using all three DVD formats.

The second **Highly Commended** award goes to the **Hi-Grade DMS 3000**. It's been a while since we featured a Hi-Grade PC in a group test, but this entry holds its own against the competition. It can't compete with the graphics performance offered by other machines, but the 3GHz processor and 512MB of Ram make effective partners.

If you want a PC that you want to put in the living room, the DMS 3000 is a great choice. This is because it uses Windows Media Center, which lets you watch, record, rewind or pause live television. More significantly it also includes the enormous 30in Relisys monitor and accompanying speakers. This combination doesn't come cheap, but considering the monitor alone costs £1,999 from Amazon, the DMS 3000 is good value for money.

This month's **Editor's Choice** award goes to the **ECS EZ-Buddie D21S14-3**. It uses the latest EZ-Buddie chassis and offers definite advantages over its predecessor. It inherits the same problems we saw in the original design, namely some performance bottlenecks, but it has many features that make up for the shortfall.

First, it looks more like a home hifi than a PC, so you'll be able to position it in virtually any room without it looking out of place. Its custom-designed speakers go a long way to improving its looks, but they also sound surprisingly good considering their small size.

As with previous EZ-Buddies, this one features an analogue TV card, so you'll be able to watch television and listen to the radio. ECS has included a very handy feature where you can watch DVDs and browse through your digital pictures without fully booting to the main operating system. This isn't a new idea, but it is particularly useful when you don't need full Windows functionality but just want to watch a movie.

Ultimately our choices were based on personal taste, but we're sure that whichever system you choose, you won't be embarrassed to give it pride of place in your home.

# UK's Most Powerful Notebook For £859†

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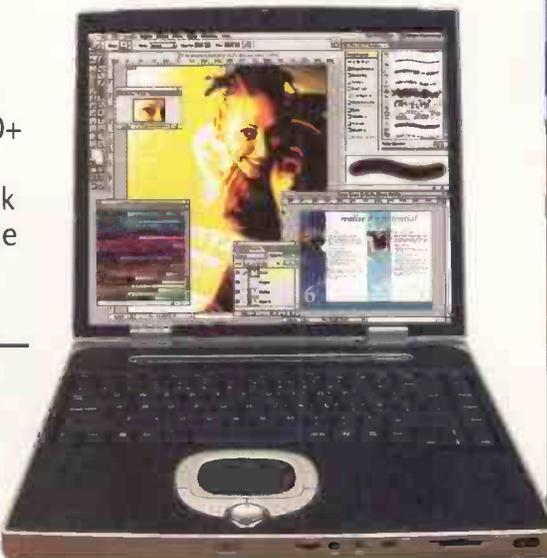
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512MB of high speed DDR RAM increases performance and allows multiple applications to run at the same time – double the size of other notebooks!

**60GB HARD DISK**

Large 60GB hard disk (double that of normal notebooks) provides massive capacity for large amounts of photos, music albums, videos and other files.

**128MB ATI 9600**

Superb ATI mobility Radeon 9600 graphics card built-in with dedicated 128MB DDR memory and DirectX 9 support – handles video editing with ease and allows you to play the latest 3D games in style.

**DVD-Rw Multifformat**

Multifformat DVD burner drive handles all popular formats. Make your own music, photo or movie CDs or DVDs and copy virtually any DVD or CD for backup purposes. Also acts as a DVD movie player.

**15" XGA screen**

Ultra high definition 15" TFT XGA screen, superb brightness, high contrast ratio, and dual display facility.

**WI-FI Wireless**

Built-in 802.11b Wireless module and antenna allows you to connect wirelessly to the Internet and other computers in the house or office. Hotspot compatible with hotels, airports, universities – access the Internet and your office on the move!

**4-in-1 Card Reader**

Multi-format memory/flash card reader and writer with support for SD, SM, MMC and MS memory cards. Use with digital cameras and printers.

**MASSIVE CONNECTIVITY**

With SVGA-out (projectors), 10/100 ethernet for broadband and networking, Parallel, Infra Red, Audio, Mic. Also includes PCMCIA, Firewire, USB2.0 x 4, TV-out – see opposite.

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- ✓ PCMCIA Type II card slot with cardbus
- ✓ S-Video TV-out connections for large screen TVs
- ✓ 56K Modem including telephone cable.
- ✓ 12 Cell Li-ion long life (normally 2.5 hrs) battery
- ✓ Ergonomic keyboard, Glide pad and 4 direction scroll.
- ✓ Dimension 332x285x37mm; 3.6Kg. Model (N2912)

#### PLUS MICROSOFT\* SOFTWARE

- ✓ Microsoft Windows XP
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- ✓ Microsoft Works 7 – Six integrated applications

#### PLUS CYBERLINK POWER SUITES\*\*

- ✓ Cyberlink PowerDVD 5 with DivX, the world's no.1 DVD software player.
- ✓ Cyberlink PowerProducer 2 Gold: full-feature authoring package allows you to copy DVDs.
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- ✓ Cyberlink Music Match: play back audio music and copy to CDs.

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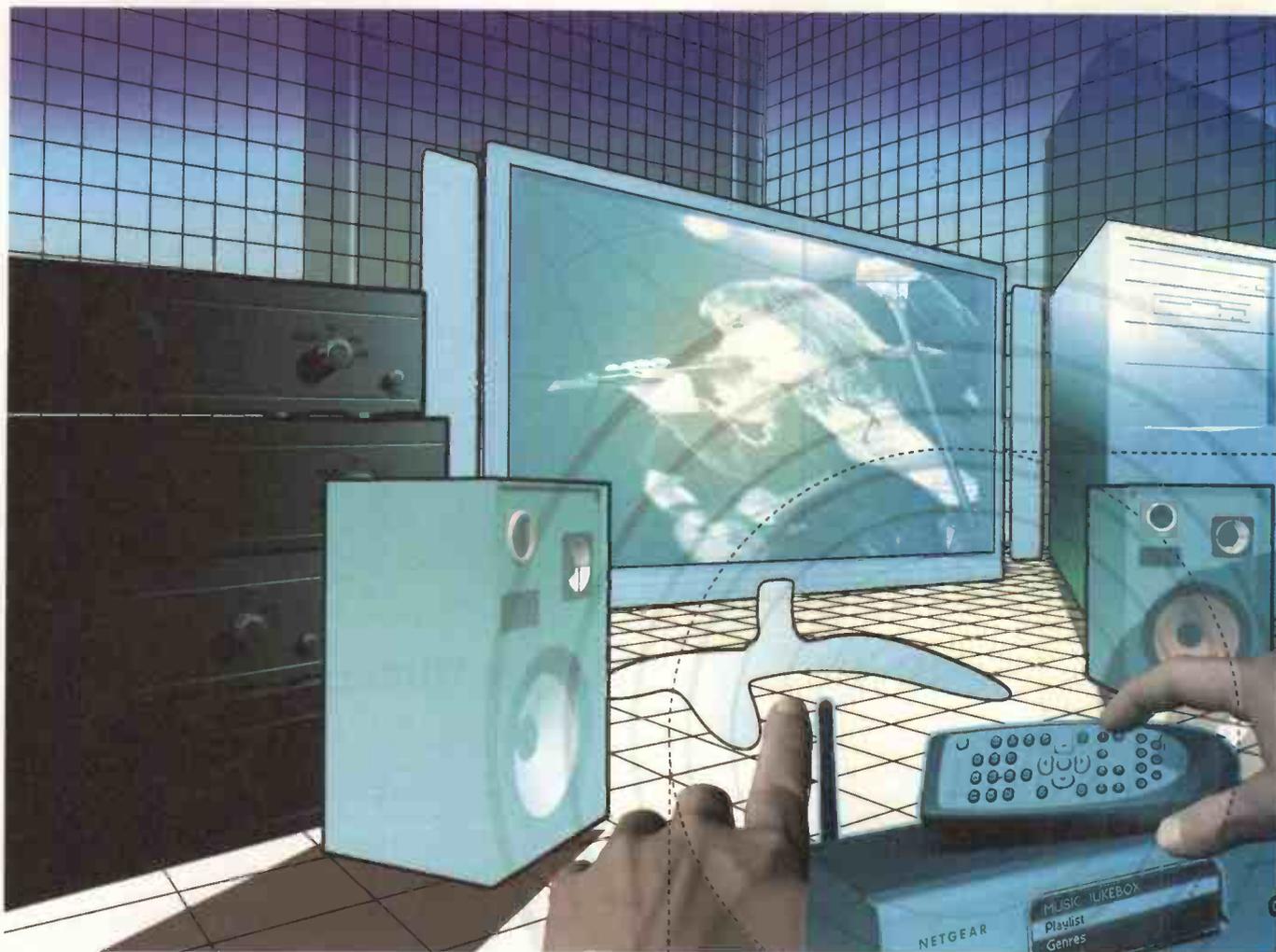


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# Freedom to roam

WORDS: WILL STAPLEY PHOTOS: BRUCE MACKIE ILLUSTRATION: VINCENT FRASER

Streaming is still relatively new but is rapidly gaining in popularity, as it lets you enjoy your digital media collection away from the PC. We test six devices that will expand your horizons

**A**s more and more people start to build up digital media collections on their PCs, there is a growing demand for devices that allow you to listen to your mp3 collection through your hifi and view digital photos and movies on your television set.

A wireless link between your PC and a streaming device is obviously preferable as your TV and hifi will probably be in a different room to your computer. Despite this, all the products in this group test also offer a wired option.

We've rounded up six of the latest media streaming devices to appear on the market

and put them through their paces in a real-world environment. We were hoping to include Apple's Airport Express, but the company was unable to supply one. The products on test here vary a fair amount in the features they offer. While some are all-singing, all-dancing video, audio and photo streamers, others limit their capabilities to just audio streaming. With each product we were looking for a range of features, good overall performance, ease of use and, most importantly, value for money.

So, if you want to unleash your digital media collection, read on and find out how to free it from the confines of your computer. >



## Hauppauge MediaMVP

In terms of style, the Hauppauge MediaMVP struggles a little. The design is uninspiring and, when compared against some of the competition in this group test, the MediaMVP looks a bit bland.

Looks aren't everything, of course, but once the MediaMVP was up and running we found the on-screen menu system to be similarly disappointing. Even though the menus look very simple, it was still reasonably difficult to navigate around the various options.

Unlike the other models in this group test, the MediaMVP doesn't house any form of wireless connectivity, either built in or as an upgrade option. However, if you have the appropriate kit, you can hook it up to a wireless network using a network bridge.

Relying on a wired Ethernet connection, the MediaMVP doesn't have any trouble streaming audio, images or video. Both mpeg1 and mpeg2 video can be streamed through the MediaMVP, but when it comes to listening to music it can only handle mp3 files. Apart from the Ethernet port, the only other output on the MediaMVP is a Scart socket.

Coming in a fair bit cheaper than its wireless competitors, the MediaMVP has a clear price advantage. Should you have no

desire for wireless options, it's a simple piece of kit that gets the job done. While there will be people who don't want a wireless network, we feel that the very nature of these devices means they're likely to be placed a fair distance from your PC, which results in a large amount of Ethernet cabling. So if you're considering this device, don't forget to factor this in.

With a disappointing and frequently frustrating interface, the MediaMVP seems a bit rough around the edges. If you can afford to splash out a little more, you'd be better served by some of the other wireless entries this month.

### DETAILS

RRP £99.99 (£85.10 ex VAT)

#### BEST PRICE

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

#### PRODUCT INFORMATION

Hauppauge

020 7378 1997

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

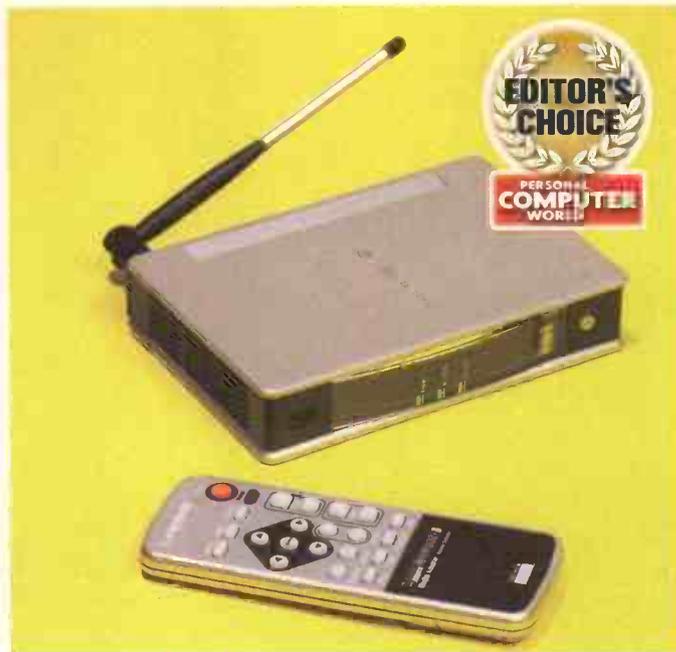
**PROS** Relatively cheap

**CONS** No wireless option; limited compatibility

#### VERDICT

**It's rough around the edges, but the MediaMVP is worth considering if you can't stretch your budget**

FEATURES	★★★★★
PERFORMANCE	★★★★★
VALUE FOR MONEY	★★★★★
OVERALL	★★★★★



## Linksys Wireless-B Adaptor

Housed in a neat-looking case, the Wireless-B Media Adaptor from Linksys should have no problem blending in with your stereo. You can't stream video with this Linksys device, but it does allow you to play mp3 and wma audio files and stream a range of still image formats.

As the name suggests, the Wireless-B Media Adaptor uses the 802.11b wireless standard to broadcast music and images. You can also hook it up as part of a wired network thanks to the Ethernet port. Fit the bundled aerial to the back of the unit and you can boost the performance of the 802.11b signal.

If there's one thing that sets this product apart from the other models in this group test, it's the interface. Aside from the initial setup screen, which can be a little daunting at first, it's a joy to navigate through. The menu screens are clear and attractive and there are no delays between selecting options. You can get to grips with it in seconds. It's something a few of the other devices could benefit from.

The integrated 802.11b wireless standard is obviously more than capable of streaming the likes of mp3s and images. When displaying pictures, you can either hook the unit up to your TV via a standard composite

video connection or using a higher quality S-video link.

As far as audio is concerned, it is slightly let down by the fact that there's no digital output. Unless you've got an expensive set of speakers, though, you're unlikely to notice a huge difference in output quality. There's also no Internet radio feature, which is surprising considering there are so many online radio stations now.

In short, the Wireless-B Media Adaptor does exactly what it sets out to do. The lack of video streaming will be enough to put some people off, but the excellent user interface allows for almost effortless control.

### DETAILS

RRP £138.65 (£118 ex VAT)

#### BEST PRICE

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

#### PRODUCT INFORMATION

Linksys

0800 068 0327

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

**PROS** Performs very well; good interface

**CONS** No video streaming or Internet radio

#### VERDICT

**An intuitive interface and good performance makes this Linksys effort an excellent choice**

FEATURES	★★★★★
PERFORMANCE	★★★★★
VALUE FOR MONEY	★★★★★
OVERALL	★★★★★



## Netgear MP101

**T**he Netgear MP101 differs from the devices we've looked at so far in that it only streams audio. If you want to stream movies or still images, you'll have to look elsewhere.

Since the MP101 only streams audio files there's no need for it to use the speedy 802.11g standard, so the 802.11b version is included instead. Like the other 802.11b products on test here, if you have an 802.11g network the MP101 will still be compatible with it. An Ethernet port is also supplied, should you want to hook it up to a standard wired network.

Setting up the unit was easy enough, although it took a few attempts to get the wireless feature working. The large display on the MP101 is easily navigated with the remote, and it provides information such as artist name and genre during playback. In terms of style, we would have preferred to see a more attractive font for the display and perhaps a different colour, but it's not something that would dissuade us from buying the MP101.

The software side of things is taken care of by the Media Server application. Scanning the hard disk for compatible media was no problem at all when we first installed it, the simple, easy-to-understand interface impressed us.

The MP101 can handle both mp3 and wma audio formats, while variable bit rate (vbr) files are also accepted. However, audiophiles will be disappointed by the fact that its outputs are only analogue RCA audio jacks. Since this device is solely for audio streaming, we expected some digital options.

The MP101 from Netgear is an attractive audio streaming device that's both easy to use and set up. The asking price of £139 might seem like a lot, especially as it can only play music files, but with the overall design and build quality, we feel that you're getting good value for money.

### DETAILS

**RRP** £139 (£118.30 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Netgear

01344 397 021

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

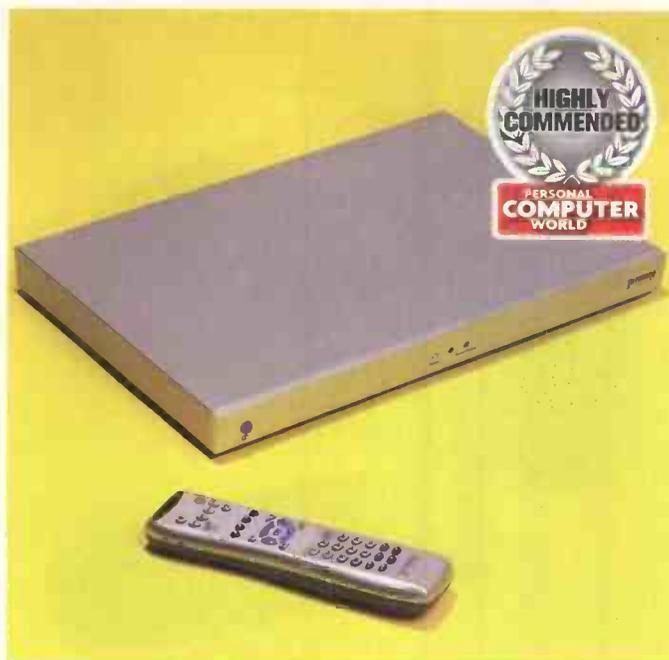
**PROS** Good performance; well designed

**CONS** Just streams audio; only analogue output

**VERDICT**

**Easy to both set up and use, the MP101 performs well and comes at a decent price**

<b>FEATURES</b>	★★★★★
<b>PERFORMANCE</b>	★★★★★
<b>VALUE FOR MONEY</b>	★★★★★
<b>OVERALL</b>	★★★★★



## Pinnacle Showcenter

**T**he Showcenter stands out from the rest of the devices here thanks to its large case, but the simple, stylish design will sit well next to your other AV equipment.

The case accommodates the huge range of digital and analogue output options at the rear, as opposed to an abundance of circuitry inside the unit. Pinnacle doesn't provide built-in wireless connectivity with the Showcenter but it does house a PC Card slot, allowing you to upgrade it should you wish. With a frustratingly small number of compatible wireless cards (see Pinnacle's website for the list), it's highly unlikely that you already own one that will work. You'll probably end up buying Pinnacle's own £29 offering.

The cumbersome remote control has more than its fair share of buttons and, although the menu system looks good, it can be tricky to navigate.

With the ability to stream video as well as audio, the Showcenter oddly doesn't make use of the faster 802.11g wireless standard, instead sticking to the slower 802.11b version. However, the Showcenter excels at decoding both basic DivX and Xvid movies. What's more, the 802.11b connection is able to cope with transferring these movies seamlessly. If the

Showcenter comes across a format it can't play it will convert it first. We tested this and got some unsatisfactory results, so we suggest using a different conversion tool, such as Dr DivX ([www.divx.com](http://www.divx.com)). Obviously, the 4.5Mbits/sec won't handle standard DVD movies, so you'll need the wired Ethernet connection for these.

The Showcenter left us with some mixed feelings. Give the interface a total redesign and include 802.11g as standard, and you'd have a decent device on your hands. That said, it's one of the best in this group test and, hopefully, we'll see it mature over time.

### DETAILS

**RRP** £199 (£169.36 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Pinnacle 01895 442 003

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

**PROS** Good compatibility; a range of outputs

**CONS** No wireless as standard; tricky to use

**VERDICT**

**Setup and ease of use could be improved, but at the moment it's one of the better audio and video streaming devices**

<b>FEATURES</b>	★★★★★
<b>PERFORMANCE</b>	★★★★★
<b>VALUE FOR MONEY</b>	★★★★★
<b>OVERALL</b>	★★★★★



## Slim Devices Squeezebox

**L**ike the Netgear MP101, the Squeezebox from Slim Devices serves purely as an audio streaming device. The Squeezebox is far smaller than the MP101, though, and the stylish black casing looks great. There is also a dual-line, scrolling LCD screen on the front for artist and track information to be displayed.

The setup process was painless and even the wireless connection settings were reasonably easy to sort out. The menu controls took a little while to get the hang of, but we were soon whizzing round the various options. What concerned us a little was that no software installation CD had been supplied. Instead, you're instructed to go to Slim Devices' website to download it. While this ensures you're using the latest version, it does mean you need an Internet connection.

Unlike the MP101, this device is capable of outputting sound in both analogue and digital format. Along with the standard RCA sockets, both optical and coax S/PDIF connections are provided. If you're picky about sound quality and have a decent set of speakers it's something that could prompt you to forget about the MP101 and opt for the Squeezebox instead.

The Squeezebox also comes up trumps in the compatibility

stakes. Not only is it capable of playing a variety of audio formats, including mp3 and wma, it will happily run on a number of different platforms. PC, Apple, Linux and even Sun computers will be able to link up with the Squeezebox.

Of course, all these benefits come at a price. The Squeezebox is currently on the market at just under £200. Combine this with the fact that it only handles audio and it does start to seem a little expensive. However, the wide range of compatibility and the digital audio output options make this the audio streaming unit for those who are serious about their music.

### DETAILS

**RRP** £199 (£169.36 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

Multi-task Computing

0871 250 5619

[www.multitask-computing.co.uk](http://www.multitask-computing.co.uk)

**PROS** Easy to use; audio compatibility

**CONS** Reasonably expensive

**VERDICT**

**At just under £200, it's a lot to pay for an audio-only device, but for serious audiophiles it's a great choice**

**FEATURES** ★★★★★  
**PERFORMANCE** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★



## SMC EZ-Stream

**T**he EZ-Stream from SMC has a sleek design and won't take up much space. It won't seem quite so attractive, though, when you come to browse the on-screen menu system. Not only is the EZ-Stream difficult to control using the remote, but we were often left with a system that wouldn't respond to anything except a sharp yank of the power cord. Furthermore, the overly simplified remote doesn't even feature a volume control, which is surprising with a device such as this.

Once you've got your head around the menu system, the SMC performs adequately in a wired environment, but not so well when using its wireless capabilities. While the 802.11g wireless connection seems like an impressive inclusion – indeed, it's the only device in this group test to house the 54Mbps/sec wireless standard – it simply didn't deliver the performance we expected. All too often we were confronted with video that frequently dropped frames. The EZ-Stream is capable of streaming both mpeg1 and mpeg2 video files, but there's no support for any form of DivX or the likes of Xvid movies.

We didn't have any real issues with audio playback. Sound quality was good, although with only analogue RCA outputs

you're never going to achieve the same level of quality you'd get from a digital output.

Analogue video output is a different matter, and the composite video connection never gave an amazingly sharp picture. Photos in particular looked far less impressive than on a PC monitor.

Overall, we were disappointed with the EZ-Stream. There are too many factors – such as the poor wireless video streaming and limited file compatibility – holding it back. What's more, priced towards the top end of the models in this group test, it's very hard to recommend this over similar products.

### DETAILS

**RRP** £195 (£165.96 ex VAT)

**BEST PRICE**

[www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

**PRODUCT INFORMATION**

SMC 0871 277 9802

[www.smc-europe.com](http://www.smc-europe.com)

**PROS** Acceptable on a wired network

**CONS** Expensive; poor wireless performance

**VERDICT**

**With a high price tag, confusing menu system and substandard performance, this effort from SMC is difficult to recommend**

**FEATURES** ★★★★★  
**PERFORMANCE** ★★★★★  
**VALUE FOR MONEY** ★★★★★  
**OVERALL** ★★★★★



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Since Tiny.COM re-launched at the beginning of the year, the company has made a big impact on the consumer PC market by offering high spec PCs at the UK's lowest prices. Below is an interview with Steve Black, Tiny.COM Web Channel Manager, about the demand for high-spec low-cost PCs and customer feedback.



Tiny.COM Sales Desk



**Steven Black**  
Tiny.COM Web Channel  
Manager

**Q:** What has happened to Tiny PC Sales since the re-launch of Tiny as Tiny.com?

**SB:** Customers like the concept whereby we cut out all unnecessary costs and deliver the best specs at the lowest prices. In many cases

identical spec systems are over £300 lower cost than many other major suppliers. On these models sales have increased four fold.

**Q:** How many visitors is the Tiny.COM website attracting?

**SB:** On average we get over 70,000 unique customers to the site every week and this figure has been gradually increasing every week.

**Q:** The 'Specials' section on the Tiny.COM website offers some fantastic deals. What has the response been like for these models?

**SB:** The 'Special' deals have all been an unprecedented success. I believe that this is simply because they thrash any other UK deals, including those done by the likes of Aldi and Lidl. As they are only available for a limited period, people rush to the site to get their orders in. We are often inundated with orders when the deals first go live!

**“On average we get over 70,000 unique visitors to the site every week”**

**Q:** How have you been able to cope with the demand?

**SB:** To some extent, we have been a victim of our own success, and on occasions we have struggled to keep up with customer demand. There have been instances where we have not been able to deal with customer enquiries promptly and we apologise to any customers who have not been able to get through to order the latest Tiny.COM deal. However, we are now increasing our sales team further to ensure that all sales enquiries are answered promptly and efficiently and also to continue to confirm details of all orders placed with customers.

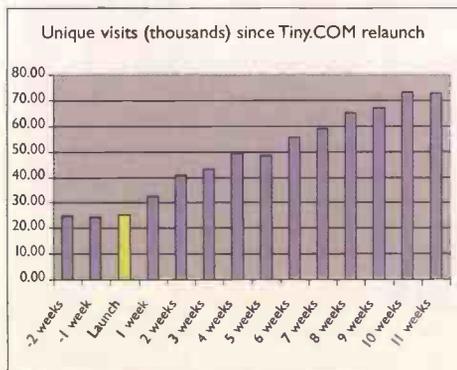
**Q:** What are the main issues raised by customers?

**SB:** Overall, customers like the specs and prices and the fact that they can choose the level of support they need, as opposed to everyone having to pay the same price for inclusive support. There were long delays on one particular notebook offer in May but this was resolved. Now over 92% of the products are shipped within the web advertised lead-times, which we are continuing to improve.

We received a large number of requests from customers who wanted to be able to place their orders in a retail environment, face to face. We have now struck a deal with our partner company "The Computer Shop" who have 130 stores nationwide, to allow customers to place orders via their stores. This is still a direct sale, as product is shipped directly from the factory to the customer's home, thereby cutting depreciation and stocking costs. By doing this we are able to extend our low cost direct model to retail customers.

**Q:** What's the secret of Tiny.COM's low prices?

**SB:** The whole philosophy of the company is to keep overheads and unnecessary costs to a minimum. We don't advertise on TV and we don't have our own retail stores. This way, we can use the money we save to provide much higher specification systems at the UK's lowest prices. Basically, we make savings and pass these directly on to the customers.



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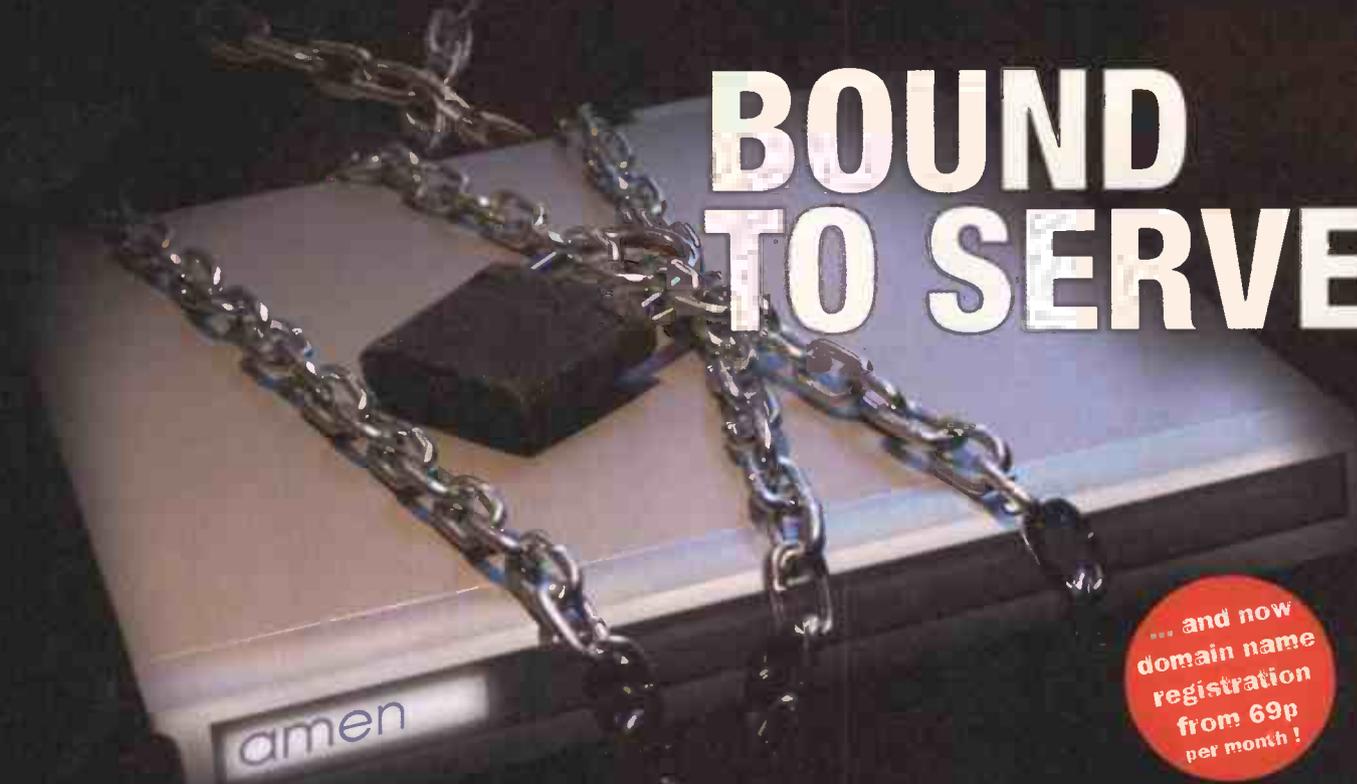
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## All you need to start streaming

In this example, we've illustrated how you could set up a wireless media streaming network using products that have received glowing reviews in *PCW*. The use of a wireless access point is optional, and you can do without it completely by using a simple wireless ad-hoc network.

### WIRELESS ACCESS POINT

Belkin 54g Wireless AP £54.99  
Review: [www.pcw.co.uk/Products/Hardware/115676](http://www.pcw.co.uk/Products/Hardware/115676)

### WIRELESS MEDIA STREAMING DEVICE

Linksys Wireless-B Media Adapter £138.65  
Review: Editor's Choice in this group test

### SPEAKERS

Creative Gigaworks £329

TV Relisys RLT3000 £1,999

Review: Included in the Hi-Grade entry in this month's PC group test (page 109)

PC Systemax Insomnia 6002 £1,761 (Requires wireless network adapter)  
Review: See page 114 in this month's PC group test

Review: [www.pcw.co.uk/Products/Hardware/1154433](http://www.pcw.co.uk/Products/Hardware/1154433)

## Table of features

For the best streaming appliance prices go to [www.pcw.co.uk/bestprices](http://www.pcw.co.uk/bestprices)

						
MANUFACTURER	HAUPPAUGE	LINKSYS	NETGEAR	PINNACLE	SLIM DEVICES	SMC
MODEL NAME	MEDIAMVP	WIRELESS-B MEDIA ADAPTOR	MP101	SHOWCENTER	SQUEEZEBOX	EZ-STREAM
Price inc VAT (ex VAT)	£99.99 (£85.10)	£138.65 (£118)	£139 (£118.30)	£199 (£169.36)	£199 (£169.36)	£195 (£165.96)
Sales telephone	020 7378 1997	0800 068 0327	01344 397 021	01895 442 003	0871 250 5619	0871 277 9802
URL	<a href="http://www.hauppauge.co.uk">www.hauppauge.co.uk</a>	<a href="http://www.linksys.com">www.linksys.com</a>	<a href="http://www.netgear.co.uk">www.netgear.co.uk</a>	<a href="http://www.pinnaclesys.com">www.pinnaclesys.com</a>	<a href="http://www.multitask-computing.co.uk">www.multitask-computing.co.uk</a>	<a href="http://www.smc-europe.com">www.smc-europe.com</a>
Image/video streaming	✓/✓	✓/x	x/x	✓/✓	x/✓	✓/✓
Audio streaming	✓	✓	✓	✓	✓	✓
Internet radio	x	x	✓	✓	✓	✓
Image formats	jpeg, gif	jpeg, gif, bmp, tif	N/A	jpeg, bmp, gif, png	N/A	jpeg, bmp
Audio/video formats	mp3/mpeg1, mpeg2	mp3, wma/N/A	mp3, wma/N/A	mp3/mpeg1, mpeg2, mpeg4-avi, Xvid	mp3, wma, pcm, aac, flac, ogg/N/A	mp3/mpeg1, mpeg2
Operating systems	Windows 2000/XP	Windows XP	Windows 98, ME, 2000, XP	Windows 2000/XP	Windows 98 and above, Mac OSX/10.1, Linux, BSD, Solaris	Windows 98, ME, 2000, XP
Wireless	N/A	11Mbps/sec (802.11b)	11Mbps/sec (802.11b)	11Mbps/sec (802.11b)	11Mbps/sec (802.11b)	54Mbps/sec (802.11g)
Wep encryption	N/A	64bit or 128bit	64bit or 128bit	64bit or 128bit	64bit or 128bit	64bit or 128bit
Ethernet	✓	✓	✓	✓	✓	✓
Wired RCA/Composite	x/x	✓/✓	✓/x	✓/✓	✓/x	✓/✓
S-video/Scart/S/PDIF	x/✓/x	✓/x/x	x/x/x	✓/✓/✓	x/x/✓	x/x/x
Weight	250g	370g	620g	2.56kg	350g	320g
Dimensions (w x d x h)	160 x 144 x 37mm	50 x 160 x 190mm	271 x 221 x 44mm	430 x 292 x 41mm	216 x 117 x 48mm	7 x 16.2 x 16.7mm
SCORES						
Features	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value for money	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

# Editor's Choice

There's absolutely no doubt that a large number of home users want to make more use of the music, photo and movie collections on their PCs, and if it can be done wirelessly, all the better. After looking over the six devices in this group test, however, we were left with mixed feelings about the whole idea of audio and video streaming in its present state.

The problem we have is that of usability. Take the SMC EZ-Stream, for instance. Even if you're well versed in wireless networking, or just plain old Ethernet networks, we expect that you would still have a few problems setting it up. You'd be able to do it after a bit of trial and error, but it's not an easy task.

We feel that these products shouldn't be purely the playthings of hardcore network gurus. Everyone should be able to free up their digital media collection using devices such as these. The sad fact is that people with little or no networking experience will have a tough time setting up most of these products. The poorly designed interfaces and instability of some of the devices on test only exacerbates the problem.

Nevertheless, media streaming is still relatively new and it always takes a while for

**'We were left with mixed feelings about streaming in its present state'**

new ideas to develop into products that can be used by everyone. In time, hopefully, we'll see the whole business of wireless networking being simplified, through both operating systems and the wireless devices themselves, so that literally anyone can set up a wire-free network.

## The winners

Choosing a winner for this group test was a particularly difficult task, not least because all the devices had a variety of features. While some were only capable of streaming audio, there were others that managed to cope with both image and video streaming too. So, before you decide which product to buy, you should first determine exactly what you'll be using it for. If you're not planning on streaming video, you could end up saving a fair bit of cash if you opt for an image and audio-only model.



Linksys Wireless-B Media Adaptor



Pinnacle Showcenter



Netgear MP101

The Editor's Choice award has gone to the product that performed well in what it set out to do, had a price tag that reflected its features and, above all, was easy to use. We felt the **Wireless-B Media Adaptor** from **Linksys** stood out among the competition and is a worthy recipient of the **Editor's Choice** accolade. What impressed us most was its ease of use. Of course, you still have to get your head around the whole issue of wireless networking, which can be tricky if you're a **newcomer** to this technology, but the Linksys did its best to make things easier for you. The menu system was well thought out and it took very little time to get used to it.

Despite its successes, the Wireless-B Media Adaptor still has its issues. Although you get the S-video option, there's no digital audio output and the lack of an Internet radio feature was a strange omission. Hopefully, a firmware upgrade will sort this out. Finally, this Linksys effort can't stream video of any sort, so if you want to watch movies you'll have to choose a different product.

Our first **Highly Commended** award has to go to the **Pinnacle Showcenter**. While we have our reservations about its difficult, and sometimes downright frustrating, menu system, it's the only device in this group test that offers such a wide range of audio and video outputs. It is also able to decode the likes of Xvid movies, allowing it to stream them successfully over the 802.11b wireless connection. Don't forget that the Showcenter doesn't come with integrated wireless capabilities as standard, so you'll have to add the cost of a wireless PC Card to the £199 price tag.

There was no doubt in our minds that either the Netgear MP101 or Slim Devices Squeezebox should pick up an award, but the problem was deciding which one we should give it to. The Squeezebox is a highly impressive piece of kit that's both easy to use and well featured. It's also capable of working on a number of different platforms and playing a wide range of audio formats through a digital output.

Nevertheless, in the end it was the **Netgear MP101** that just about managed to scoop the second **Highly Commended** award. It doesn't feature the same level of compatibility as the Squeezebox, nor can it match its digital output options, but what it does manage to do is offer a decent audio streaming solution at a good price. If you want the best in audio quality, go for the Squeezebox, but we feel that the MP101 offers what most home PC users will be after at a lower price.

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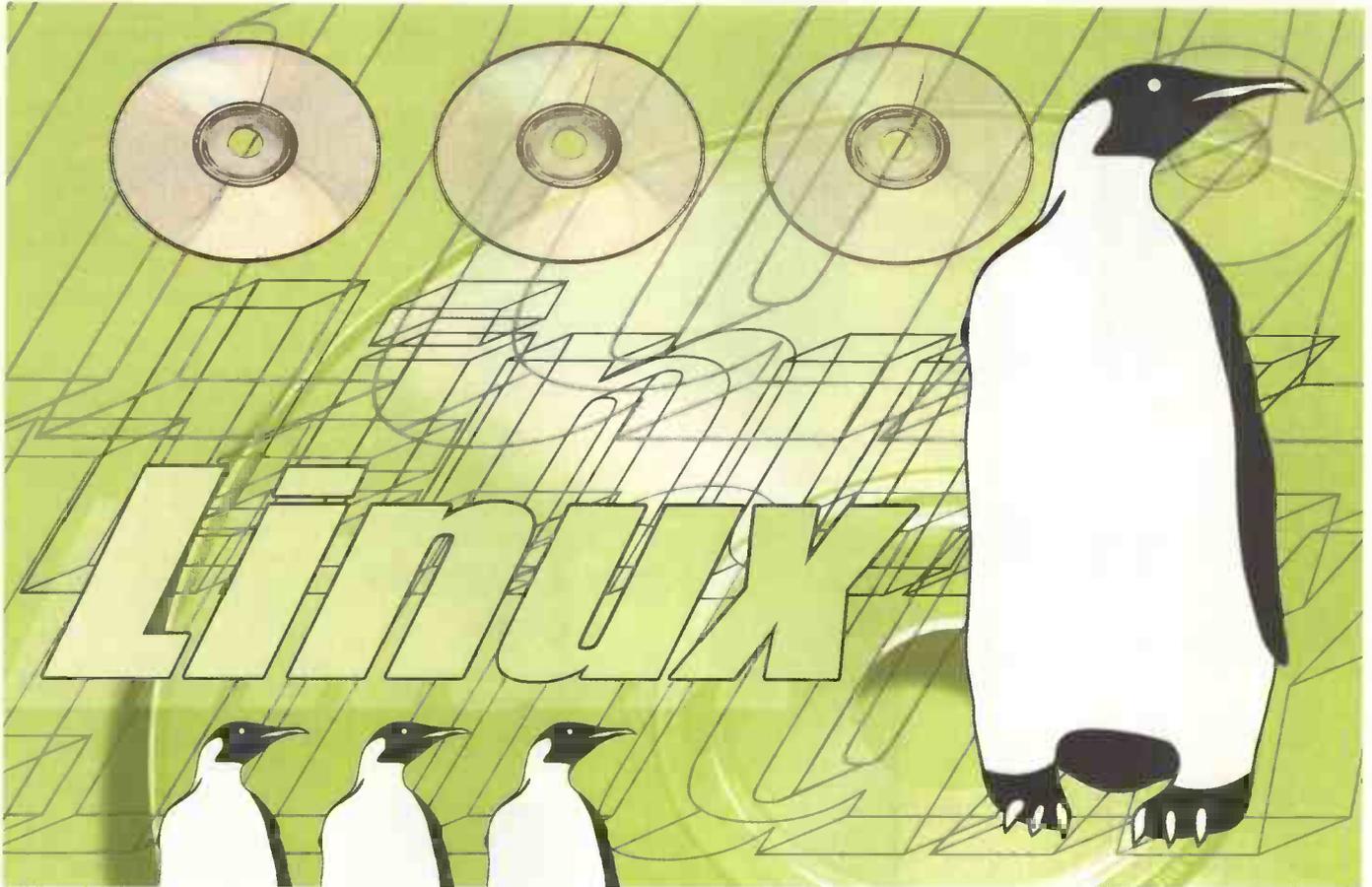
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Editor's Choice

If you're unsure about installing Linux on your hard drive you could try out a 'live' distribution that runs directly from CD. One of these nine options could be the answer

# Linux live and kicking

WORDS & TESTING: CRAIG PATERSON

**D**ipping a toe in Linux waters can be a daunting prospect. Friendly installers on major distributions take the edge off, but there's still plenty lurking beneath the surface to trip up the unsuspecting new user.

For many potential Linux converts a hard disk install is too much of an investment. In response to this problem, there are now several 'live' distributions that can be run directly from CD. There's no need to install anything – just set your PC to boot from the CD drive and go. The operating system loads from CD and sets up a temporary Ramdisk in system memory to hold the necessary dynamic files. Though various live options target different markets, most

offer more or less automatic network configuration and a graphical desktop environment with supplied office suites, browsers and applications.

There's also mileage in live distributions for the experienced user. It's possible to customise some live variants, burn them to a fresh CD and use them as a portable, instant personalised Linux environment with a writeable home directory stored on a USB memory key. A read-only OS is invaluable for kiosk applications and administrators investigating security breaches.

Using a CD isn't a free ride: running applications is much slower than from a hard disk, and customising and updating the environment means building a new CD image. However, live distributions have



Knoppix's KDE desktop is cleanly presented and there's an impressive bundle of applications

used was a 1.1GHz AMD Duron with 256MB of Ram and a 52-speed CD-Rom drive.

In all the distributions the performance of running applications was fine, and the bottleneck was always slow boot and load times from CD-Rom. We wouldn't, however, recommend running any of the full-size distributions with less than 256MB of Ram.

### Knoppix 3.3

The best known (and perhaps most mature) of all live Linux distributions is Knoppix from Klaus Knopper. Knoppix rapidly gained attention when introduced because it actually worked. The theory of using read-only media and a Ramdisk to run Linux is easy enough to grasp, but Knoppix went a step further with powerful hardware detection and automatic configuration.

Knoppix stumbled on our test machine with the Nforce motherboard chipset, but booted fine on other systems, dropping into the crisp Knoppix-themed KDE 3.1 desktop.

About 2GB of software is crammed into the 700MB Knoppix image, and is decompressed on the fly as required. It's impressive and makes for a full-featured working environment. Everything from the boot loader to the desktop is cleanly presented.

The default desktop environment is KDE, and both KOffice and Open Office are included for office work, plus Konqueror and Mozilla for web browsing. Other software ranges from the MySQL database platform, including server, to a digital planetarium.

Documentation for users and would-be customisers is strong, with a well-developed user community. Knoppix's Debian roots show through with the omission of some packages considered 'non-free' by the Debian GNU/Linux project, but overall it's a coherent distribution. The hardware detection isn't head and shoulders above the alternatives, but anyone considering a live Linux setup should take Knoppix for test drive.

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### Gnoppix 0.6.0-rc2

Despite the similar names, Gnoppix and Knoppix aren't part of the same project. They are, however, from the same evolutionary tree. Like Knoppix, Gnoppix is based on the Woody build of Debian GNU/Linux, but instead of KDE uses Gnome (and only Gnome) as its desktop environment.

Booting into Gnoppix is fairly quick, and the hardware detection does a fair but not impressive job; our display defaulted to only 1,024 x 768 and, although the Ethernet adapter was detected and configured correctly, Mozilla couldn't connect to the Internet. The version here is pre-release, but other distributions did a better job of setting up.

their place for those trying out Linux and for specialist applications. This group test looks at several of the currently available live distributions, comparing features, performance and convenience.

### Your favourite distro on CD

Most of the products reviewed here haven't been developed from the ground up.

Typically, live editions are based on an existing distribution tweaked to run from CD.

Mandrake Move is, unsurprisingly, based on Mandrake and Suse Live on Suse. Several others, including Knoppix, Gnoppix and Morphix, are based on Debian. In fact, a hard disk install of any of the Debian-based live implementations can be the quickest way of getting Debian on your system without wrestling with the native installer.

If you have an affinity for a particular distribution, you'll find the environment of the associated live distribution most familiar, but the beauty of a CD-based OS is that it's easy to try different options, and it's worth looking at several products. Some of the editions are geared heavily towards the try-before-you-buy audience, so don't offer a full spread of applications. The thoroughbred live distributions, however, offer a complete Linux environment with little functional compromise.

### Keeping it mainstream

Linux hardware detection has been driven in part by the growth of live distributions. Once a luxury for hard-disk Linux installers, proper automatic configuration of hardware is essential for a useful live distribution.

In general the products reviewed here did an impressive job of figuring out our test systems well



Gnome is the desktop environment in Gnoppix, but the overall package lacks polish

enough to launch X-Windows and configure networking. But as with everything Linux, working with newer or esoteric hardware wasn't always so easy.

We gave up testing on a laptop with only an external Firewire CD drive, because none of the live distributions we tried could boot up all the way; on an older motherboard with an Nvidia Nforce chipset, results were variable, with some environments working perfectly and others failing to boot properly; and none of the distributions could automatically configure the 3Com Gigabit Ethernet interface on an Asus A7V600 motherboard.

Most of these kinks can be worked out and new images built of any of the customisable live distributions, but if your hardware is very new or you know it to be poorly supported in current Linux distributions, you may struggle with live setups. However, if you have a mainstream system, you'll probably have no trouble.

### Performance

Live distributions aren't the best choice for limited hardware. CPU speed isn't paramount, but you need a reasonable amount of Ram and a fast CD-Rom drive. The most modest machine we



More of a work in progress, Morphix will appeal to Linux enthusiasts rather than novices

The Gnoppix desktop environment is Gnome 2.4. Open Office is the only office suite provided, with Evolution 1.4 as the default mail client and Mozilla as the web browser. Utilities are provided for setting up a persistent home directory and, besides the staple items, there's a wide range of utility software from the Debian archives.

Gnoppix is a mixed bag. The features and included software are good, but the packaging is rough around the edges. Other live distributions are cleaner and provide more options for desktop environments, browsers and office suites. But if you're a big fan of Gnome and aren't dependent on totally automatic configuration, Gnoppix may be for you.

### Morphix 0.4.1

A Knoppix descendant, Morphix offers a smaller download and a modular selection of applications. Variants are offered featuring Gnome, KDE or a Light option. The big selling point of Morphix is the ease with which you can roll your own setup. The user community is active and, in addition to documentation on how to customise your setup, the Morphix site has links to many different specialist builds.

The Light GUI variant boots quickest, although its startup is still slow compared to a stripped-down hard disk installation. The interface is a clean desktop with a launcher bar across the bottom of the screen.

Morphix KDE ships KDE 3.1 as its desktop environment and the KOffice suite. Morphix Gnome, on the other hand, goes for Gnome and Open Office. Otherwise the setup on each is similar, although the desktops themselves are distinct.

For gamers the Morphix Gamer setup offers a neat out-of-the-box solution, with the lightweight IceWM desktop handling

X-Windows duty, and a slew of games installed in only a couple of clicks.

The documentation for Morphix makes it clear that the whole project is a work in progress and shouldn't be considered a finished product. It is, though, under active development and we found it was well enough advanced for the enthusiast crowd, and nearly ready for prime time.

### Mandrake Move

Originally the Mandrake distribution was Red Hat Linux compiled with optimisations for newer processors. It's since grown into a separate product and is now much more than just a souped-up clone of Red Hat, with Mandrake Move as the live variant.

Mandrake Move is available directly from Mandrakesoft. While it can be downloaded for free, users are asked to join the Mandrake Club or to go on to purchase a boxed copy. The boxed edition of Move is bundled at different price points with USB keys of varying sizes.

Mandrake Move boots directly into KDE 3.1. On our test systems the display



Mandrake Move is a quality distribution with a slick desktop environment

### Linux Live reloaded

A stock live distribution may well contain everything you need. With different options for office applications, gaming and desktop environments, the products featured in this article do an excellent job of covering the common bases.

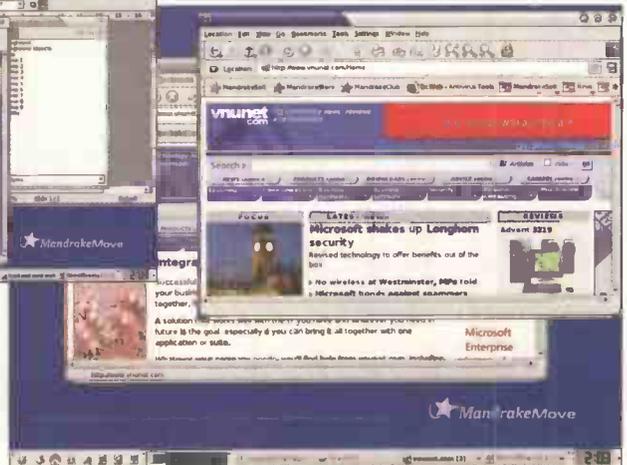
But requirements differ and if you need a package that isn't provided in the off-the-shelf live distributions, or a completely customised environment, you'll need to dig a little deeper. The good news is that the project teams for live distributions typically expect you to want to customise the product beyond just holding a persistent home directory on removable media (see 'Home on the USB key' box).

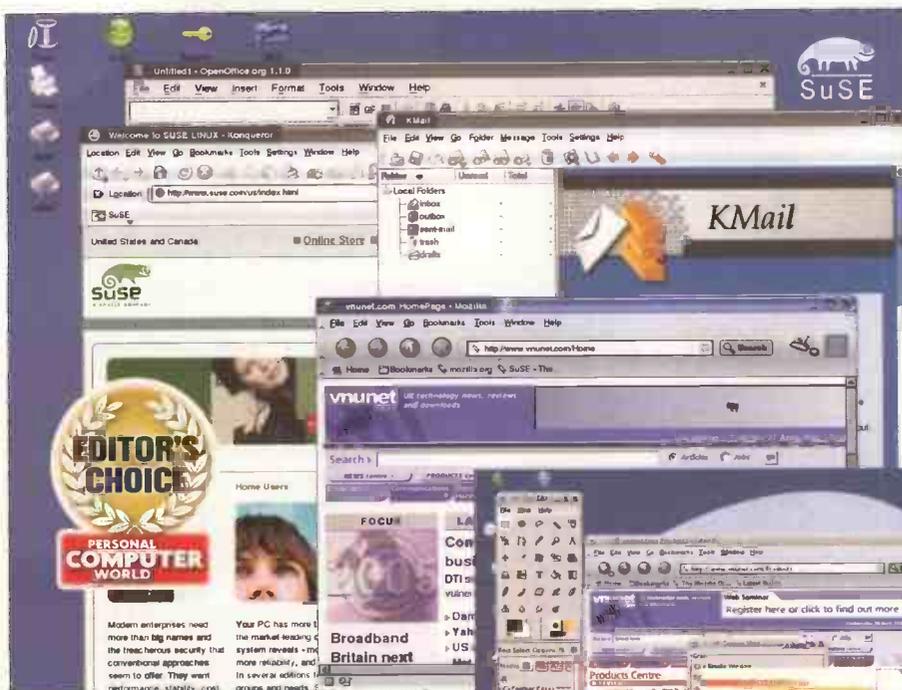
Rolling your own version of a live distribution is easiest with a host Linux machine with enough space to house the guts of the distribution, the prepared ISO image for burning to CD and, of course, a CD recorder. In practice that means almost any recent machine will do for hardware.

Of course if trying a live distribution is your way of dipping your toe in the Linux waters, you probably don't have a Linux machine already handy. If you do, though, it's not too tricky to lash together your own custom distribution based on one of the products here. Morphix in particular provides good outline documentation describing how the system is constructed and suggesting simple places to add your own modules.

auto-configuration left us with a disappointingly low refresh rate. In a fashion similar to Linspire Live the Mandrake Move desktop and menus are organised neatly along functional lines, rather than as a jumble of programs familiar only to experienced users. The office functions sit on top of Open Office 1.1, and the browser of choice is Konquerer.

System configuration is based around Mandrake's Drak tool, which has a clunky interface in places but isn't unfriendly.





Suse Live is a demo version of Suse, so no customisation is possible and it takes ages to boot up, but it's worth the wait

Right: Mepis Linux is a good choice for power users, but the interface and packaging have some way to go for mainstream users



Overall Mandrake Move is a quality distribution. While the hardware configuration could be stronger, the desktop environment is slick and compares well with Linspire Live.

## Suse Live

The live version of Suse is intended as a demonstration version of its regular counterpart. Accordingly, you can't do any customisation, and there are other ups and downs to this approach for the casual user.

First, Suse Live takes a long time to boot. On boot the standard Suse installer – Yast

(Yet another setup tool) – kicks off to detect and configure hardware. While Yast does a superb job of setting up hardware, it takes a long time to do it. Only when Yast has completed does the system proper boot up. In the boot process itself steps such as generating an SSH host key set would normally be one-time operations for a hard disk install, but with a read-only system they are every-time operations.

Once the system has booted, though, things take a turn for the better. A clean and well-presented KDE 3.1 desktop has icons on

the desktop for KDE's Konquerer browser and the Open Office suite. A well-laid-out menu and quick-launch buttons in the KDE taskbar round up the polished feel. The time taken waiting for Yast to complete is worth it; on our test system the resolution had automatically been set to a usable 1,280 x 1,024 with a refresh rate of 100Hz, and the network interface was properly determined and configured with DHCP. Mozilla is installed as well as Konquerer for those who prefer a different web browser.

Suse Live hits its target market very well. It's not for the tweeker, and it takes a long time to boot. But it is polished, does a great job of detecting hardware and bundles a sensible suite of applications.

## Mepis Linux beta 2

Until now Mepis has been a relatively unknown brand in the Linux world. As with many other distributions the standard offering is for a hard-disk-based install, and the live version is a sideline. As sidelines go, though, this one has some interesting features.

On bootup Mepis offers a Grub-based (Grand Unified Bootloader) menu of choices. Power users will appreciate the choices on offer, with different screen resolutions and kernel versions. Once you choose an

option the system starts up almost like a normal Linux box. There's no pretty logo screen with progress bar; instead you can see the auto-detection routines doing their thing and subsystems initialising. This isn't as clean as some competitors, such as Knoppix (and its derivatives) or Suse, but it works and is fine given its beta status.

On our testbed Mepis had no trouble booting into a 1,280 x 1,024 KDE 3.1 desktop running on top of a 2.6.4 kernel. Both KOffice and Open Office are installed, as are Konquerer and Mozilla for web browsing. Several Mepis custom utilities are provided for system management, including a hard disk installer that proved to be quick and flawless, installing a multiple kernel setup in just a few minutes.

The boot messages, look of the interface and overall packaging of Mepis aren't (yet) on a par with the better-established or bigger name live distributions. But the feature set is good, and the distribution is up to date. For power users Mepis is already a good place to start, and it's getting better quickly.

## Linspire Live

Formerly known as Lindows – the name was recently changed to avoid trademark issues – Linspire is targeted at the novice Linux user: Its live version is marketed mostly as a demonstration edition, but contains most of the functionality of the regular Linspire. Getting Linspire direct from the manufacturer costs \$30 (£17), but it can be

## Home on the USB key

For many applications, a writable home directory takes a live Linux distribution from oddity to seriously useful. And the most convenient format for carrying around data is on USB memory key, offering a good combination of size, performance and durability.

Over the past few years keyring-sized USB keys of reasonable capacity have become cheap, with 256MB keys available for around £50.

Several of the distributions featured here include simple mechanisms for setting up a home directory on a USB key, and instructions for using that directory when booting the OS. Since the distribution itself is inherently read-only, that involves manually appending an option at boot time, but that's a small price to pay for the added convenience.

You don't need to devote your key to act solely as a Linux home directory – you can create an image file which, like a mini ISO image, contains your home directory and all the files in it. Then all you need is a generic copy of your chosen live distribution to boot into your preferred environment.

If your system supports booting from USB you can go one step further and install the whole operating system on a USB key. Of course that takes a lot more space, and does mean using your key just as a bootable Linux device. But if you have a 512MB or 1GB key it's possible to cram in a full-size distribution with a full suite of office applications. Try that with Windows.



The Windows-inspired look and feel of Linspire won't scare off new users

downloaded from P2P services such as Kazaa and BitTorrent for free. This is permitted by Linspire because it saves the company the cost of supporting arbitrary numbers of huge ISO image downloads to end users.

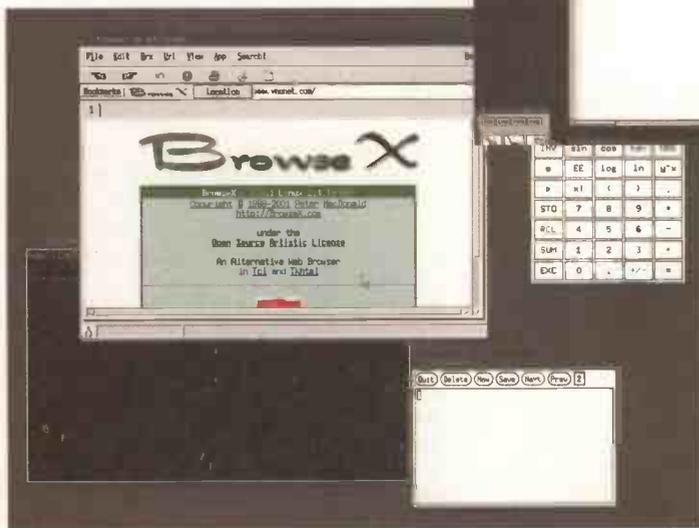
Right from bootup Linspire (still branded 'Lindows') presents a clean interface that won't scare a novice user, with in-depth descriptions of the boot sequence. Boot time is reasonable and, once complete, the user is dumped into a KDE-based desktop.

Unlike most other distributions the underpinnings aren't displayed up front. From the desktop itself through to the menus and the Internet Suite, everything is neatly branded as Lindows, which gives the environment a coherent feel. The browser and mail client are both from Mozilla, and the (not rebranded) office suite is Open Office. Additional software is sparse but reasonable, and adequate for an office desktop.

Linspire Live is a cleanly presented distribution that shouldn't scare users new to Linux. It's not the most flexible or the most comprehensive option, but it's simple to use and covers the basics well.

### LNX-BBC 2.1

LNX-BBC is a svelte distribution, at 50MB for the ISO image. The idea is that it will fit on a business-card sized CD-R so it can be conveniently carried around in a wallet. It's a similar idea to the Sysadmin Survival CD



Above: You can run Feather Linux from a USB key, but its functionality is rather limited

Left: A svelte distribution that will fit on an 8cm CD, LNX-BBC could be useful for troubleshooters

## How to work with ISO images

All the distributions here (and on this month's cover DVD) are supplied as .iso images, large files containing the data to burn to CD, laid out in the proper file system. Whichever OS you use to burn an image to CD, the data is all preprepared inside the .iso file.

Once you've downloaded a CD image you should verify it before burning to CD. Download or project sites typically display MD5 checksums of each file posted. The MD5 sums a hash of the contents of a file. If the contents change, the checksum will change. So you checksum the downloaded file and compare the two checksums. If they match you're good to go, otherwise there's a problem with your CD image.

On Linux you'll typically find the program 'md5sum' already installed. For other OSs, search for 'md5 checksum' on your preferred download site.

If you're using Windows or Mac your CD software will have an option to 'Burn ISO image' or something similar. You then just point it to the downloaded .iso file and tell it to record. If everything's successful you should end up with a working, bootable CD.

Be sure to look for the specific ISO burning mode, rather than just copying the .iso file to a CD. If you don't choose the correct mode you'll just end up with a CD that has a single directory containing the .iso file, which isn't what you want. Telling your CD software you want to burn from an ISO image tells it to look inside the file and lay out the burned CD accordingly, rather than just copying across the .iso file itself.

that Red Hat used to provide as part of its boxed Linux product. And, in a novel twist, if you join the Free Software Foundation your membership card will be a bootable CD containing LNX-BBC.

The space constraint of a 50MB image means that LNX-BBC has fewer features than the larger distributions. It's not intended as a drop-in replacement for a regular desktop Linux install but as a rescue CD for booting and inspecting systems. Even here, though, LNX-BBC is conservative; the hard drives will be mounted read-only and you have to mount them manually to read/write to perform modifications. It's possible to roll your own variant of LNX-BBC using the GAR packaging system.

The current version of LNX-BBC is a little behind the curve, having been released in May 2003. That's not to say this isn't a useful distribution, though. Plenty of tools are included for inspection and recovery of misbehaving systems, and the network facilities include SSH and BitTorrent clients.

LNX-BBC doesn't compete with the heavyweight distributions, but nor is it intended to. As a system recovery CD that fits in your wallet it can be forgotten about until you need it, and then it'll be a blessing.

### Feather Linux 0.4.0

Continuing the 'small is beautiful' theme, Feather Linux demands just under 64MB of disk space. While it can be run from a CD,

Feather is intended to run directly from a USB key drive and, unlike its big brother, Knoppix, you can run Feather from a USB key that doesn't cost almost as much as your PC.

Two variants are available: the standard Feather Linux and the Feather Linux Console Edition. The standard Feather aims to provide a small but usable desktop environment, including a surprisingly elegant and full-featured window manager. Space constraints mean that no office suite is included, but Feather does include music playback, administrative and network tools as part of the distribution, and

tools to download additional software on a per-session basis.

The Console Edition is targeted at system administrators and is smaller still, requiring almost exactly 50MB of disk space. Very much along the same lines as LNX-BBC, the toolset is shaped towards diagnosing and repairing faulty Linux systems.

For most users Feather will be a compromise too far in terms of functionality. But for on-the-run system administrators Feather offers a neat, compact graphical environment with a useful amount of power.

## Table of features

	FEATHER LINUX	GNOPPIX	KNOPPIX	LINSPIRE LIVE	LNX-BBC	MANDRAKE MOVE	MEPIS LINUX	MORPHIX	SUSE LIVE
URL	<a href="http://featherlinux.bertios.de">featherlinux.bertios.de</a>	<a href="http://www.gnoppix.org">www.gnoppix.org</a>	<a href="http://www.knoppix.net">www.knoppix.net</a>	<a href="http://www.linspire.com/lindowscd_info.php">www.linspire.com/lindowscd_info.php</a>	<a href="http://www.lnx-bbc.org">www.lnx-bbc.org</a>	<a href="http://www.mandrakestore.com">www.mandrakestore.com</a>	<a href="http://www.mepis.org">www.mepis.org</a>	<a href="http://www.morphix.org">www.morphix.org</a>	<a href="http://www.suse.co.uk/private/download/suse_linux/">www.suse.co.uk/private/download/suse_linux/</a>
Price	Free	Free	Free	\$30 by mail, free on P2P services	Free	Free to try, various options to buy	\$9.95 (£5.50) to download	Free	Free
Version tested	0.4.0	0.6.0-rc2	3.3	N/A	2.1	N/A	Beta 2	0.4.1	N/A
Size	48-64MB	700MB	700MB	500MB	50MB	645MB	700MB	210-680MB	680MB
Audience	Enthusiast	Enthusiast	Enthusiast	New user	Enthusiast	New user	Enthusiast/new user	Enthusiast	New user
Office environment	N/A	Open Office	KOffice/Open Office	Open Office	N/A	Open Office	KOffice/Open Office	Various	Open Office
Window manager (alternative)	N/A	Gnome 2.4	KDE 3.1 (various)	KDE	N/A	KDE 3.1	KDE 3.1	Various	KDE 3.1
Graphical browser	N/A	Mozilla	Konqueror/Mozilla	Mozilla	N/A	Konqueror	Konqueror/Mozilla	Various	Konqueror

# Editor's Choice

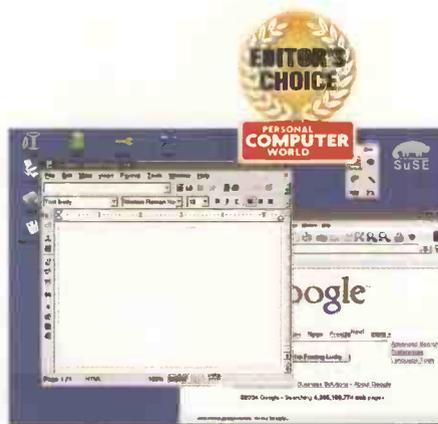
If you're new to Linux and considering a live distribution as an introduction without commitment, a handful of options stand out. Unsurprisingly it's the bigger distributions that offer the fewest surprises: Suse Live, Mandrake Move and Linspire Live offer the friendliest interfaces and a good mix of tools.

**Suse Live** is the most impressive introduction, with only its slow boot time counting against it. It has excellent hardware detection and configuration, and a good desktop. Hence we've given this our **Editor's Choice** as we think it's the best all-rounder for Linux newbies.

**Linspire Live** goes far enough in branding that, in keeping with its Lindows heritage, it almost doesn't seem like Linux, which is why we've given it a well-deserved **Highly Commended** award.

**Knoppix** shows its form as the longest-standing live distribution with wide-ranging documentation together with a comprehensive set of packages, all squeezed into the 700MB of an 80-minute CD-R. Having pioneered the genre, it has built on its strengths in successive versions, and we think it deserves our second **Highly Commended** award.

While congratulating the winners in this group test, it's worth a final few comments on the other distributions we tested, as they're quite an assorted bunch aimed at different types of user.



## 'Suse Live has excellent hardware detection and configuration'

- Mepis is a promising distribution that doesn't quite yet match the established players for polish, but is advanced with its 2.6 kernel option.
- Mandrake doesn't match the Suse hardware detection, but does have a polished desktop and bundle of applications, as well as the option of a persistent home directory.

For Linux enthusiasts experimenting with live distributions the choice is a bit different.

- The polish of Suse Live unfortunately won't compensate for its demonstration-focus and slow load time.
- The cosseted environment of Linspire Live isn't always comfortable for the long-time Linux user.
- Mandrake Move is the only big-name distribution that matches the polish of a solid desktop environment and application mix with the convenience of persistent home directory.

But for all the tinkerers around, there's a lot more fun to be had with some of the custom distributions.

- Gnoppix isn't quite as comprehensive as Knoppix, but is the just the thing for big fans of Gnome (KDE is the prevalent default environment across live distributions).
- And, perhaps most interesting of all is Morphix, with its modular system for building customised distributions including only what you need, all on top of a customised Knoppix.



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VP201b PCIV  
August 2004 Issue

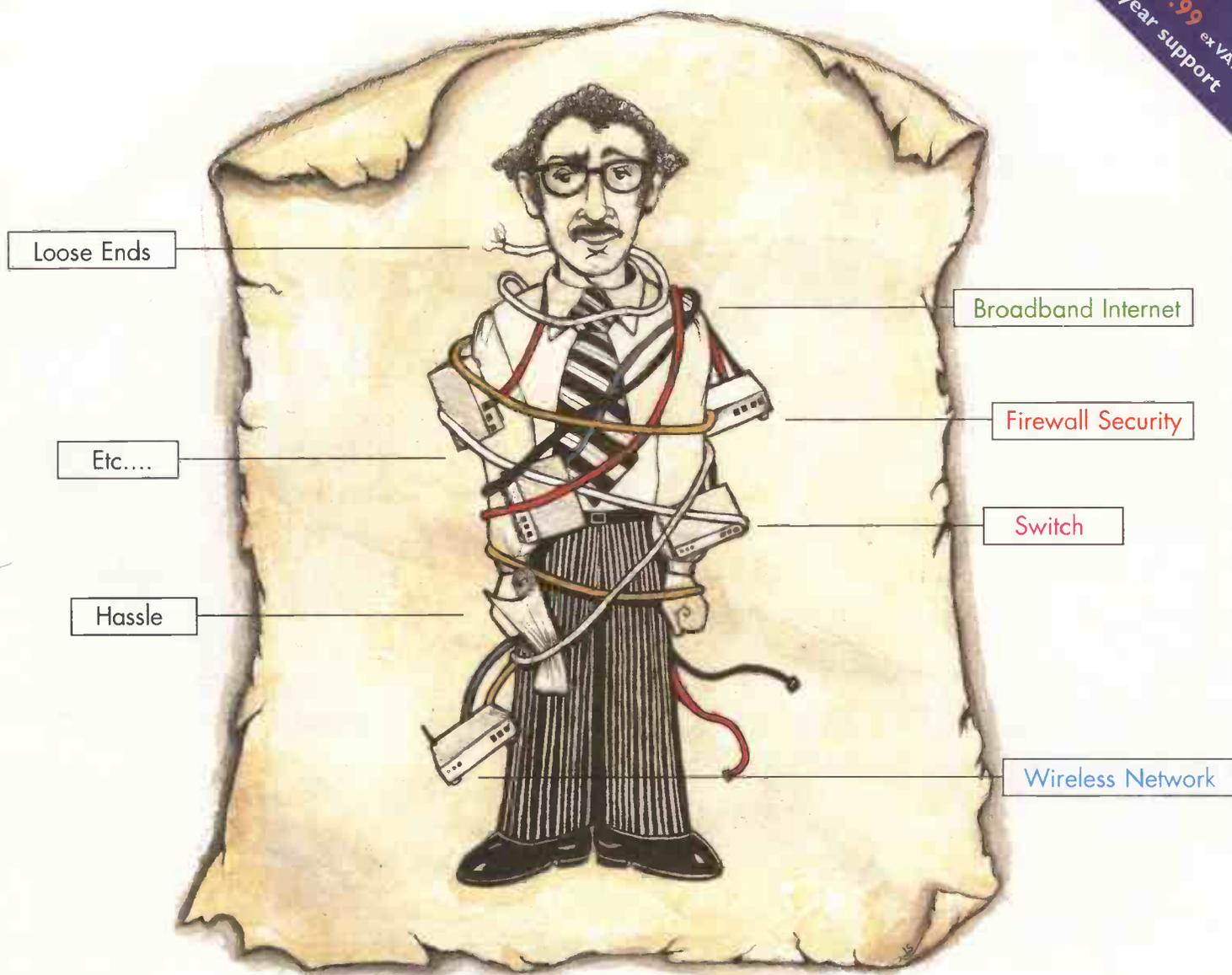


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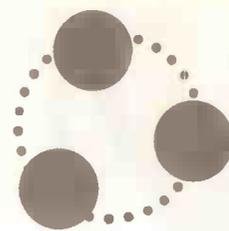
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WRITTEN BY ALAN STEVENS

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Sans are not for SMEs  
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## SSL gains popularity

While IPsec remains the dominant technology used to implement Virtual Private Networks (VPNs), Secure Sockets Layer (SSL) is gaining mainstream acceptance, with its use nearly doubling in the US between 2004 and 2006. According to Infonetics Research, adoption in the US will rocket, with companies attracted by the ease of use, lack of client software and the fact that workers regularly connect via public broadband connections.

## 10Gbits over copper

Krone has launched unshielded copper cable capable of carrying 10Gbits/sec Ethernet over a distance of 100m. Coppertent Unshielded Twisted Pair (UTP) complies with Category 6 standards but is elliptical rather than circular and is designed to ensure the unshielded cables avoid crosstalk.

## VOIP hitch for SMEs

Small to medium businesses are not installing Internet telephony due to the lack of products offered by ISPs. Seventy per cent of tier-two or 'niche' ISPs have no plans to offer Voice over IP products, preventing businesses from making cost savings by running voice calls over data networks, claims research from Cimol Technology. Tim Brooks, technical director at Cimol, said: 'SMEs are making a swing from dial-up to broadband but are still tied into fixed line services and PBXs when it comes to telephony.'

This month we review a selection of servers, and put all-in-one security devices to the test

## IBM to attack server market

IBM is stepping up its challenge to Sun Microsystems and HP in the Unix server market by launching P5 servers based on its Power5 processor.

The P5 will introduce a new version of IBM's AIX operating system, AIX 5L 5.3, and will use the company's Virtualisation Engine software for partitioning workloads and running multiple operating systems.

The servers will be binary compatible with AIX 5L 5.2 applications and will be able to simultaneously support 5.2 and 5.3 in partitions on a single system, as well as Red Hat or Suse Linux workloads.

IBM's virtualisation can quickly adjust the allocation of memory, I/O and processor resources, allowing rapid changes to cope with peaks and troughs in demand.

Adalio Sanchez, P-Series general manager at IBM, said:

'We have taken the operating flexibility of the system up a notch to address the on-demand [capabilities] customers [want]. Seventy to 80 per cent of Unix servers are under-utilised.'

The P5 520, 550 and 570 models offer from two to 16 dual-core Power5 processors. IBM took the lead in dual-core processors, which effectively offer the power of two processors in one package, with the Power4, introduced in 2001.

Rivals Intel, Sun and AMD are all developing dual-core designs.

The P5 520 is a two-way, entry-level, desk-side or rack-mounted server. It has a 1.65GHz Power5 processor and up to 32GB of Ram, running either AIX 5L or Linux. Prices start at \$12,920 (approx £6,972).

The P5 550 scales up to four-way, comes with 64GB of Ram, and has a starting price of \$22,100 (approx £11,926).



IBM's P5 servers are based on its Power5 processors

The P5 570 will scale up to 16-way and features a 1.9GHz Power5 processor, and can also run the OS/400 successor, i5/OS, in addition to AIX and Linux. It has a starting price of \$28,659.

IBM is also set to expand the scalability of its recently launched Eserver i5 line of servers. The Eserver i5 570 is to be extended to a 16-way server.

All models will be available from 31 August.

Miya Knights

## Call costs cut for large companies

Large organisations can cut their phone bills by 15 per cent at no capital cost by using a new gateway service, the developers claim.

Call costs for many companies have risen dramatically over the past few years because so many are now made to mobile phones.



Carriers such as BT charge operators an average 12p per minute for routing calls from the fixed network, pushing the user charge to between 13p and 18p, said Paul Liesching sales director of Essex-based Cellclear.

Cellclear installs a gateway containing Sim cards of all UK mobile operators, allowing it to bypass the fixed network by calling them on their own networks. A bonus is that volume discounts can be obtained on calls from each card.

This enables Cellclear to charge between 4.9p and 6.4p per minute plus its own cut of between 1.5p to 3p per minute depending on volume.

Enterprises can install a similar gateway themselves, but Liesching said they would then need the expertise to set up and maintain it.

The system is proving particularly popular in cash-starved public sector organisations such as hospitals and universities, because they can cut costs at a stroke without the need to apply for funding.

Cellclear originally simply resold mobile airtime to operators but had to change its business model after court challenges by operators, Liesching said.

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

Clive Akass

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# Do research – don't take the easy option

A lower price and limited functionality doesn't make corporate products suitable for small businesses, says Alan Stevens

**'Many smaller businesses are likely to gain little, if anything, from an iSCSI San'**

It is common practice for IT vendors to repackage products originally intended for large corporates, and sell them at reduced prices to small and medium-sized enterprises (SMEs). However, dropping the price doesn't necessarily turn a big corporate system into a package suitable for SMEs. This is something that vendors of iSCSI storage area network (San) products seem to have forgotten.

Enthusiasm for iSCSI is understandable. The iSCSI protocol lets block-level data move over high-speed TCP/IP networks from storage to servers throughout corporate networks, enabling companies to build a San more easily and cheaply than they could with traditional Fibre Channel technology. Indeed, it enables a San to be created using ordinary Ethernet networking components, selling at commodity prices. And vendors such as Datacore, Falconstor and others have developed software to turn ordinary Windows servers into iSCSI storage hosts, putting San technology further within the grasp of SMEs.

For larger firms, there may be many benefits, including greater flexibility for storage provisioning and the ability to bring new capacity online quickly. Performance, security and network storage may all be improved. However, many smaller businesses are likely to gain little, if anything, from an iSCSI San.

It's relative, of course, and the term SME covers everything from a one-man band to organisations with hundreds of networked users. And, at the high end, iSCSI San technology is worth considering. Lower down the scale, however, a San of any kind is likely to be counterproductive, being both more expensive and complicated than network-attached storage (Nas) or ordinary server shares.

Unfortunately vendors don't seem to realise this. Datacore, for example, has just released a 'Lite' version of its Sanmelody software selling at £110. Clearly aimed at small firms, this full implementation of its iSCSI and Fibre Channel server software is limited only by capacity.

It's cheap, but who needs it? Certainly not firms with just a single server. In the rush to commoditise the product, no concessions have been made to reduce complexity. Sure, the full Sanmelody package is easy to install and manage if you're in IT support in a large organisation, but if you're the IT manager at a smaller firm, the Lite version will be hard going.

Vendors shouldn't let their enthusiasm for new technology run away with them. They need to research benefits carefully and make sure they are of value for smaller firms. They also need to do more than drop the price and limit functionality.

SMEs have needs that are distinct from those of the largest corporates and they deserve systems designed to reflect this.

## Storagetek targets ILM arena

Storagetek has launched a mid-range, rack-mounted system aimed at information lifecycle management (ILM) applications. The Streamline SL500 (pictured) uses similar technology to the company's recently launched, high-end SL8500, but fits into standard cabinet racks.

One cabinet accommodates a base unit, which carries the robotic head, and up to four expansion units. The base units can accommodate up to 50 slots and the expansion units up to 130. This allows up to 500 slots in one full-length

cabinet, with a capacity of about 100TB.

According to Jeff Hodgins, Storagetek's vice-president for global business development, the market opportunity is in the tens of thousands. He said 62,000 high-capacity, tape library units shipped last year.

Hodgins added that the initial market for the SL500 will be in upgrades and replacement, but he said growth will come through ILM where Storagetek could have the edge over EMC.

'ILM is important and it is a question of whether the customer wants open ILM or closed ILM. We are far more

heterogeneous than EMC,' Hodgins claimed.

Sun and Storagetek also announced that they are extending their relationship to include the SL8500, which Sun will sell as part of its Storedge product line. The launch came as the company warned that the market remained tougher than expected.

Chief executive Patrick Martin said: 'Similar to others in the industry, we found this to be a challenging period.'

Colin Barker

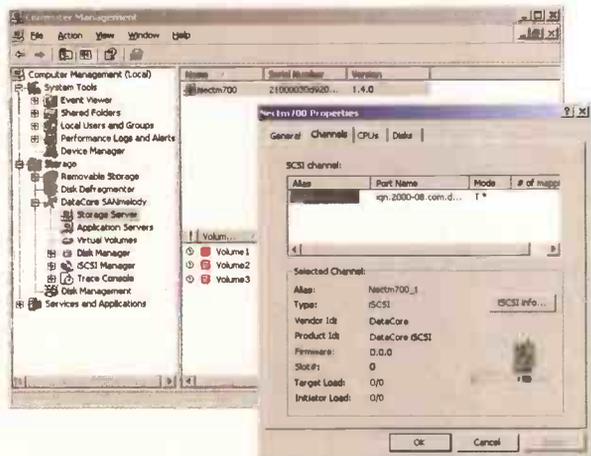
The SL500 uses similar technology to the high-end SL8500 products



## STORAGE SERVER

### Datacore Sanmelody Lite

Entry-level San software for SMEs



A cheap way of building an iSCSI San, Sanmelody Lite could be a step too far for many small businesses

**A**imed at very small businesses Sanmelody Lite is a full implementation of Datacore's Sanmelody program, normally priced at over £1,000. It can be used to turn an ordinary Windows PC or server into an iSCSI San (storage area network) host, with storage on that system accessed and used by others on the network as though it were installed locally.

Nothing is disabled, although you are limited to just one host processor, four disks and a 128MB cache. Although the low price tag makes it seem a good buy, that's not necessarily the case for the smaller business.

To start with it's fairly difficult to deploy. The software installs easily enough and is simple to manage through an extension to the standard Computer Management snap-in for the MMC (Microsoft Management Console). However, that management can get complex.

Any disk normally accessible to Windows can be used by Sanmelody, but not the boot disk, and the drives to be used have to be partitioned then allocated to virtual volumes. Then you download and install an iSCSI initiator onto each client-server and map virtual volumes to those systems.

On the plus side you end up with an iSCSI storage host, able to serve up dedicated storage to clients in a very efficient and robust manner. New volumes and extra capacity can be brought online quickly and you can add extra fault tolerance by upgrading to the full Sanmelody package. However, on a small Lan, ordinary Windows shares or Nas (Network Attached Storage) are easier, and it's hard to see value in the extra complication of Sanmelody Lite unless you've several servers and lots of users.

#### DETAILS

**PRICE** £146.88 (£125 ex VAT)  
**CONTACT** Datacore 0118 949 7024  
[www.datacore.co.uk](http://www.datacore.co.uk)

**SYSTEM REQUIREMENTS**  
 300MHz processor or above • 512MB of Ram • Windows XP, 2000 or Server 2003

**PROS** Cheap; no special San hardware required; same functionality as the full Sanmelody product

**CONS** Complex configuration

#### VERDICT

**Makes an iSCSI San an affordable option, but unlikely to be of interest to really small businesses**

**FEATURES** ★★★★★  
**ENTERPRISE VALUE** ★★★★★  
**EASE OF USE** ★★★★★  
**OVERALL** ★★★★★

## WIRELESS PRINT SERVER

### Troy Pocketpro USB

A cable-free way to print your documents



Troy's tiny Pocketpro USB print server can be used to share a USB printer on a wireless network

**T**he Pocketpro USB stands out from other network print servers for two reasons. First, it will work with most USB-equipped printers and, second, it can connect to the network wirelessly. Despite being pocket sized, it can be used to share a printer on mixed Windows, Unix/Linux and Novell networks and is compatible with a wide range of industry-standard Lan management tools.

The software needed to install and configure the Pocketpro USB comes on CD-Rom with a thick manual to help with the process. This is relatively straightforward, although we did have a few problems when entering Wep encryption keys via the custom setup utility. These were fixed using the alternative web-based interface, which we used to configure the Pocketpro USB to attach first to an 802.11b access point then a single wireless notebook in peer-to-peer (ad-hoc) mode.

Both setups worked well and we were also able to print wirelessly to a number of different printers. No changes are required on the Pocketpro to do this, but you have to use the correct client driver. The printer needs to support either PCL or Postscript emulation, ruling out some of the cheaper inkjets.

If you attach a multifunction device, you won't be able to use the scanner/fax facilities. A fixed 10/100 Ethernet port is also built into the device so you can use the Pocketpro on conventional wired networks. However, the fixed and wireless interfaces can't be used together.

The 802.11b wireless interface is relatively slow (11Mbps/sec), which could be a concern when printing large or complex documents, but in our tests with 'typical' office documents the Pocketpro USB performed well.

#### DETAILS

**PRICE** £197.40 (£168 ex VAT)  
**CONTACT** Troy 01427 753 653  
[www.troygroup.com](http://www.troygroup.com)

**SPECIFICATIONS**  
 Multiprotocol print server • USB 1.1 interface for printer attachment • 10/100 Ethernet port & 802.11b wireless Ethernet interface • 64/128bit Wep encryption • 802.1x authentication support

**PROS** Multiprotocol; wireless and fixed Ethernet interfaces

**CONS** 802.11b only; one USB 1.1 port

#### VERDICT

**A neat way of adding a USB printer to the Lan without the need for wires**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**ENTERPRISE VALUE** ★★★★★  
**OVERALL** ★★★★★

## FILE SERVER

## HP Proliant DL145

64bit Opteron power that beats Intel-based alternatives hands down



**T**he Proliant DL145 is the first HP server to feature AMD Opteron chips and is designed for use in high-performance computing environments. It can house up to two Opteron processors which, as well as ordinary 32bit x86 applications, can support 64bit programs when loaded with the appropriate software.

Although only 1U high, the DL145 is a large, solid device and not really made for in-situ maintenance. Nor does it feature much redundancy. There's only one power supply and, although well equipped in terms of cooling, none of the fans or hard disks can be hot swapped. On the plus side you get ECC (Error Checking and Correcting) memory and remote management facilities, however the DL145 isn't a good choice for small companies looking for

a single-server installation. It's designed for rack-dense server farms and clustered deployment where individual servers are more easily swapped out and fixed when things go wrong

Inside the case the layout is extremely neat and tidy, which is a good thing when it comes to maintenance. We were impressed with the fixed data bus, which eliminates the need for bulky cables. Apart from a few neatly bound power leads, there are very few wires inside.

The main motherboard has an AMD 8000 series chipset that is surprisingly compact. The Opteron chips fit into sockets on this board with ducting to draw heat away to five cooling fans. You can choose three processor configurations, all of which have 1MB of onboard cache with clock speeds of 1.6, 1.8 and 2.2GHz available. Opteron clock speeds

aren't directly comparable with those of Intel's Xeon, due to the different architectures.

Memory is configured in two banks of Dimm slots which can take up to 16GB, although you'd be hard pushed to find an application capable of using all that. PC2700 DDR SD-Ram is used, starting with 1GB or, as on the review server 2GB, fitted as standard, depending on the model. An ATI Rage controller looks after the video interface and, as well as the usual keyboard/mouse ports, there are USB connectors front and rear.

Connectivity is handled by an onboard Broadcom controller which equips the server with two Gigabit Ethernet ports. A separate 10/100 Ethernet interface enables you to connect an independent management network with a separate management processor to provide a remote console and command-line interface even before an OS is installed. The Proliant 100-series management processor is compliant with v1.5 of the Intelligent Platform Management Interface to support a range of industry-standard management tools.

At first, the DL145 doesn't appear that well equipped. There's room for two ATA 100 drives with a modest 7,200rpm spin speed. A 40GB disk comes as standard, but up to 320GB can be specified on a pair of 160GB drives. These can be mirrored for extra redundancy and a SCSI model is planned. However, the internal storage is primarily for the OS while data

resides on a storage area network. A 64bit, 133MHz, PCI-X slot enables a suitable San host adapter to be fitted.

The DL145 can be configured with either Windows or Linux, although 64bit support isn't yet available on the former. The server provides a very capable platform, faster and more scalable than Xeon-based equivalents, such as the Proliant DL140 we reviewed in May (see graph), and yet more affordable. For the compute-intensive high-performance and scientific market it's a winner.

## DETAILS

**PRICE** £2,256 (£1,920 ex VAT)

**CONTACT** HP 0845 270 4222

**www.hp.co.uk**

## SPECIFICATIONS

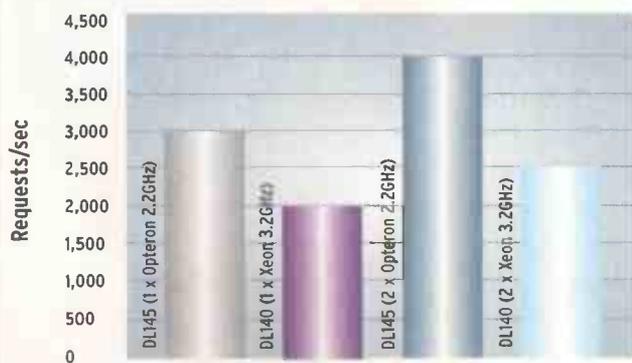
1U rackmount chassis • AMD Opteron (2.2GHz, 1MB cache) • AMD 8000 chipset • 2GB PC2700 DDR SD-Ram memory • Integrated dual-channel Ultra160 SCSI controller • 3 hot-swap 1in hard disk bays • 40GB Seagate ATA 100, 7,200rpm drive • Dual Gigabit Ethernet interfaces • 164bit/133MHz PCI-X expansion slot • System management processor and interface

## VERDICT

**Knocks the spots off Intel-based alternatives both in terms of power and price**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**ENTERPRISE VALUE** ★★★★★  
**OVERALL** ★★★★★

Proliant DL server test results (Opteron vs Xeon processors)



When running Windows Server 2003 and tested using the Web Bench benchmark the Opteron-powered Proliant DL145 was significantly faster than the Xeon-based DL140 reviewed in May. It also scaled better when a second processor was added. (Graph shows peak throughput with 28 clients)

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# All for one, one for all

WORDS: ALAN STEVENS

Rather than buying a bevy of security products to tackle the variety of threats to your network, you could try an all-in-one solution. We reviewed six devices to see what they're capable of

**N**etwork security is the number one issue for most companies, with an ever-increasing number of threats to contend with from viruses to spyware and, of course, spam. To gain full protection, each requires its own specialist tools, which means either taking a chance and only dealing with what you see as the major threats, or spending large amounts of time and money covering all the angles.

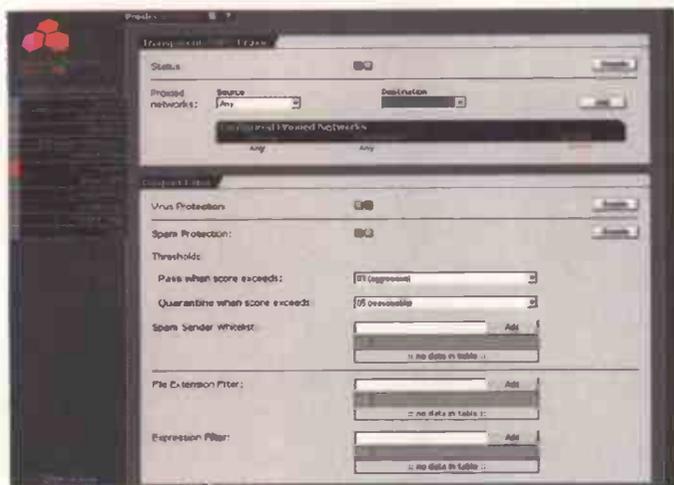
Fortunately there is a third way, an all-in-one security appliance designed to tackle a wide range of problems in one fell swoop.

There are lots of devices to choose from, all providing a mix of tools in a format designed to simply plug into the Lan and start working. Management is, typically, via

a remote browser, vendors providing what they think are the most important security applications to do the job.

We've looked at six devices, all aimed at small to medium-sized businesses, concentrating on ease of management. These vary in size and complexity, but each can be used on networks for just a handful of users to those with several hundred. Five are 'turnkey' solutions made up of hardware and software. The sixth can be bought this way or, as we tested it, used to turn an ordinary PC into a custom security appliance.

In addition to one-off capital costs, you need to budget for further updates and support. The prices quoted here include updates for the first year only, and may not cover all options, so check with the vendors. >



Astaro Security Linux is managed remotely via a web interface and can be installed on basic x86 PC hardware or preinstalled on a custom appliance

## Astaro Security Linux 5.0

**A**staro Security Linux differs from the other products in this group test in that it's just software. However, we've included it here as it's deployed as an appliance using either your own PC hardware, or preinstalled on a custom device from Astaro partner Aegis Defence ([www.aegisdefence.com](http://www.aegisdefence.com)).

A Pentium II or better is recommended, with 256MB of memory and 8GB of disk space. At least two network interfaces are required (up to 20 can be supported) with the software normally configured as an Internet gateway. Installation from CD-Rom is based on a disk-imaging process which, on the Pentium III PC used for testing, took around 10 minutes.

Detailed configuration is done via a remote browser, using a tool called Webadmin. We found this easy enough to use, but there are no setup wizards to help and some experience of Linux is required. We also found the menus less than intuitive, for example we had to navigate the various proxies to find the anti-virus and content-filtering options and refer continuously to the manual to get the software to work as we wanted. Additional licences are required for several of the options, including the anti-virus and content filtering.

Six key applications can be configured, starting with an ICSA-certified stateful inspection firewall which also provides application proxies. A VPN (virtual private network) gateway now supports L2TP over IPSec for use with Windows clients and the ability to automatically generate VPN clients for easier deployment. Next come home-grown anti-virus and anti-spam options with, in the latest v5.0 release, virus protection for the web with facilities to scan HTTP and FTP traffic as well as SMTP/Pop3 emails.

Content filtering via URL list is the fifth option with intrusion protection and detection, plus comprehensive logging and reporting facilities bringing up the rear.

### DETAILS

**PRICE** From £274.95 (£234 ex VAT) for 10 users - without hardware  
**CONTACT** Astaro 0118 903 6050  
**www.astaro.com**  
**PROS** Can be installed on basic PC hardware; low cost; automatic generation of VPN clients  
**CONS** Linux expertise required  
**VERDICT**  
**A low-cost approach to security, but requires specific expertise**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**ENTERPRISE VALUE** ★★★★★  
**OVERALL** ★★★★★



The Crossbeam C10 provides a secure high-performance platform for a number of top-name network security tools

## Crossbeam C10

**T**he C10 from Crossbeam is a combination network switch and rackmountable Pentium server with 512MB of memory and a 40GB hard disk. A set of six Gigabit Ethernet UTP ports provide the necessary Lan/Wan connectivity (fibre interfaces are available as an option) and, running security-hardened Linux, the C10 provides a secure high-performance platform for a number of big-name security tools.

The applications are all full implementations, preinstalled onto the internal hard disk. However, what you end up with depends very much on the applications you decide to license on the C10, with some seven to choose from in total. These start with Check Point's Firewall-1 which provides a core stateful inspection firewall together with VPN-1, also from Check Point, which adds IPSec-based secure remote access. Aladdin Esafe can also be licensed to, among other things, block viruses and spam, with Interscan Viruswall from Trend Micro another of the available applications.

In terms of content filtering, you can then deploy Websense software or Secure Computing Smartfilter and, last, there's Network Sensor from ISS, to add

extra intrusion detection and prevention (IDPS) facilities. Crossbeam recommends that no more than three applications be activated in total, with a number of recommended combinations to choose from.

A local console and CLI is used for initial deployment, with a dedicated management port and browser interface for more detailed configuration. However, each application is then managed independently, some via a browser, others using custom interfaces and software depending on the product involved. It's worth noting that application licences have to be purchased as if you're buying them separately and aren't included in the price quoted.

### DETAILS

**PRICE** £6,909 (£5,880 ex VAT) excluding optional applications  
**CONTACT** Unipalm 01638 569 600  
**www.unipalm.com**  
**PROS** Gigabit throughput; security applications; apps preinstalled  
**CONS** Expensive compared to alternatives; each app needs to be managed independently  
**VERDICT**  
**Good functionality but it's dear**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**ENTERPRISE VALUE** ★★★★★  
**OVERALL** ★★★★★



You don't get a firewall or VPN server with the SentryPilot, but you do get solid anti-virus, anti-spam and content-filtering tools

## Equinet SentryPilot

**T**he Linux-based SentryPilot from Equinet comes in two formats. The base model we looked at, aimed at firms with up to 100 users, and SentryPilot Enterprise for up to 250.

Both products run the same disk-based software on what is effectively a small PC with, in the SME version, a Celeron processor, 1GB of memory and an 80GB hard disk (two disks are fitted in the enterprise model). Dual 10/100 Ethernet interfaces connect the appliance to the local network and the Internet with the option of using SentryPilot as a gateway, although most users will attach it to the Lan using a single port to monitor traffic transparently.

As befits an appliance there's no screen or keyboard with setup and management of the SentryPilot all done via a browser. A wizard guides you through the initial setup with straightforward menu-based tools for more detailed management. There's no firewall as on some of the other products we looked at, or a VPN server. However, you do get the respected Sophos anti-virus software which can both trap viruses downloaded by users browsing the web and scan incoming email traffic. The usual facilities to quarantine and/or delete suspect files are

all provided with automatic updates direct from Sophos servers every hour.

SentryPilot can be used with any local or web-hosted SMTP mail server, including Exchange and, alongside the anti-virus protection, provides two spam-filtering tools. Spamcop, is used to trap messages from known spammers, and Spam Assessment ranks remaining messages against a set of known spam characteristics. Those with a high score can then be deleted at the server or marked as spam for later removal by users.

Content filtering is done using N2H2 and updates for all the utilities are included in the price for a year, after which they are available by subscription.

### DETAILS

**PRICE** £3,519.13 (£2,995 ex VAT)  
**CONTACT** Equinet 01793 603 700  
[www.equinet.com](http://www.equinet.com)

**PROS** Simple setup and management; good mix of anti-virus and content-filtering tools  
**CONS** No firewall, VPN server or intrusion detection

**VERDICT**  
**Not a complete solution but impressive and easy to deploy**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**ENTERPRISE VALUE** ★★★★★  
**OVERALL** ★★★★★



Small but well specified, the Fortigate-60 is easy to deploy and provides just about everything needed to protect a small-business network

## Fortinet Fortigate-60

**P**hysically the smallest of the devices we tested, the Fortigate-60 is well specified with a four-port 10/100Mbps/sec Lan switch and three Wan ports, also rated at 10/100Mbps/sec. One of the Wan ports can be used to configure a DMZ (demilitarised zone), the other two adding redundancy to the Internet link. The Fortigate-60 can be installed as either an Internet gateway, with optional Network Address Translation (Nat), or configured to plug into the Lan to monitor traffic in transparent mode.

The appliance is Asic-based (Application-Specific Integrated Circuit), running custom FortiOS software. Setup and management are via a browser with an optional command-line interface (CLI). A setup wizard makes deployment easy, but no other wizards are provided to help with more detailed setup. The menu-based browser interface is easy to follow, reasonably intuitive and designed to prevent conflict and other common mistakes.

An ICSA-certified stateful inspection firewall is rules-driven and has bandwidth management facilities. Next is a VPN server (only available when the Fortigate-60 is configured as a gateway) which supports PPTP, L2TP and IPsec tunnelling.

The anti-virus scanner is maintained by Fortinet, with

regular updates pushed out to the appliance automatically and this can scan HTTP, FTP and all email traffic. There's anti-spam support as part of the extensive content-filtering options for both web and email users. URL and keyword driven, these can take a while to configure, but a content-filtering service from Cerberian can help automate this ([www.cerberian.com](http://www.cerberian.com)).

An intrusion-detection option scans for common signatures and, with the firewall, can prevent a range of common Denial of Service (DoS) and other attacks. Useful logging and alerting facilities are built in and an optional management tool (Fortimanager) can centrally administer this and other Fortinet appliances.

### DETAILS

**PRICE** £728.50 (£620 ex VAT)  
**CONTACT** Fortinet 01483 549 061  
[www.fortinet.com](http://www.fortinet.com)

**PROS** Well-specified Asic-driven hardware; good range of security options; easy to deploy  
**CONS** No specific anti-spam tools

**VERDICT**  
**A lot of good functionality at a very affordable price – excellent value for the smaller business**

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**ENTERPRISE VALUE** ★★★★★  
**OVERALL** ★★★★★



Effectively a small PC, the Inty Exoserver XL provides small-business users with shared networking and Internet access plus a range of security services

## Inty Exoserver XL

**M**ore than just a security appliance, Inty's Exoserver is designed to provide shared Internet access together with file and print sharing and a local email server. It also comes with a built-in firewall and VPN gateway to which can be added other optional security services.

The hardware is effectively a small PC with a 2.4GHz Celeron processor, 500MB of memory and 120GB hard disk. Three 10/100 Ethernet ports are provided for Lan/Wan use with, on the review system, an internal ADSL modem for broadband connectivity. The operating system is FreeBSD, on top of which the Inty software is configured and managed via a remote browser interface.

This interface is easy to use with clear menus supported by good online help and documentation. The firewall is preconfigured for maximum security, but adding and customising rules to handle exceptions is straightforward. Similarly, we had no problems configuring the VPN gateway which supports both PPTP and IPSec tunnelling.

Three add-on applications are available: Maildefender Anti-virus scans all types of network traffic for known viruses using Sophos scanning technology. A Maildefender anti-spam module

blocks spam both by checking against a blacklist of known senders and by looking for specific spam characteristics. The usual facilities to either block or quarantine problem messages are also provided.

When it comes to content filtering the core software provides URL access controls and you can obtain updated lists of pornographic sites at no extra charge. You can also add the Advanced Web Content Filtering which uses N2H2 technology to block access based on website categories.

The cost of the add-on depends on the number of users. You can have the Exoserver as a fully managed service for a monthly fee, also depending on user numbers.

### DETAILS

**PRICE** £2,931.63 (£2,495 ex VAT)  
**CONTACT** Inty 0870 900 4689  
[www.inty.com](http://www.inty.com)

**PROS** Shared Internet access; Sophos anti-virus technology; simple management GUI

**CONS** Add-ons bump up price

**VERDICT**  
A lot more than just security and a good choice for companies with limited time or expertise

<b>PERFORMANCE</b>	★★★★★
<b>FEATURES</b>	★★★★★
<b>ENTERPRISE VALUE</b>	★★★★★
<b>OVERALL</b>	★★★★★



In addition to its purple case, the Edgeforce Plus stands out by virtue of McAfee anti-virus and anti-spam scanners plus Surfcontrol content filtering

## Servgate Edgeforce Plus

**T**he distinctive purple Edgeforce Plus is a rackmountable appliance equipped with two 10/100 Ethernet ports for Lan and Internet connectivity plus an optional DMZ port. It can be configured as an Internet gateway or set up to monitor network traffic transparently and extended with optional hardware and software modules.

The core, Linux-based, software offers a rules-driven stateful inspection firewall preconfigured to resist common DoS and other attacks. A PPTP/IPSec VPN server is also included with both firewall and VPN gateway developed and maintained by Servgate itself.

To go with these base tools it's then possible to add McAfee anti-virus and Spamassassin scanners. The anti-virus module can scan FTP, Pop3 and SMTP traffic and either drop infected files or quarantine them using the hard disk contained in the Professional Module, required for the McAfee software to be deployed. Spamassassin also requires this module and works by rating messages using Bayesian rules, again either quarantining suspect mail or marking it as spam for later action by email clients.

The Professional Module also provides local web caching and logging plus web content

filtering. Originally based on Websense, this has recently been updated to use Surfcontrol URL filtering software. The test unit had the optional performance module fitted, too, increasing the number of concurrent sessions supported by the firewall and doubling VPN throughput.

Setup and management can be performed via the usual browser-based GUI. This lacks the wizards provided by some vendors but with its policy-driven approach is nonetheless intuitive. The latest version includes a 'dashboard' to monitor activity and a CLI is also provided together with SNMP support for use with the Servgate Global Manager and other, third-party, management tools.

### DETAILS

**PRICE** £4,271.13 (£3,635 ex VAT) fully configured

**CONTACT** Servgate Technologies 01625 252 500 [www.servgate.com](http://www.servgate.com)

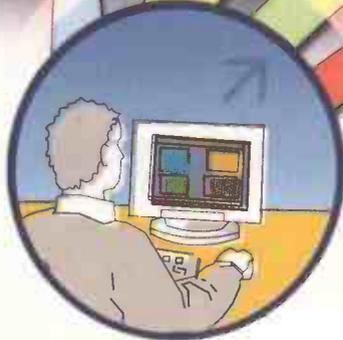
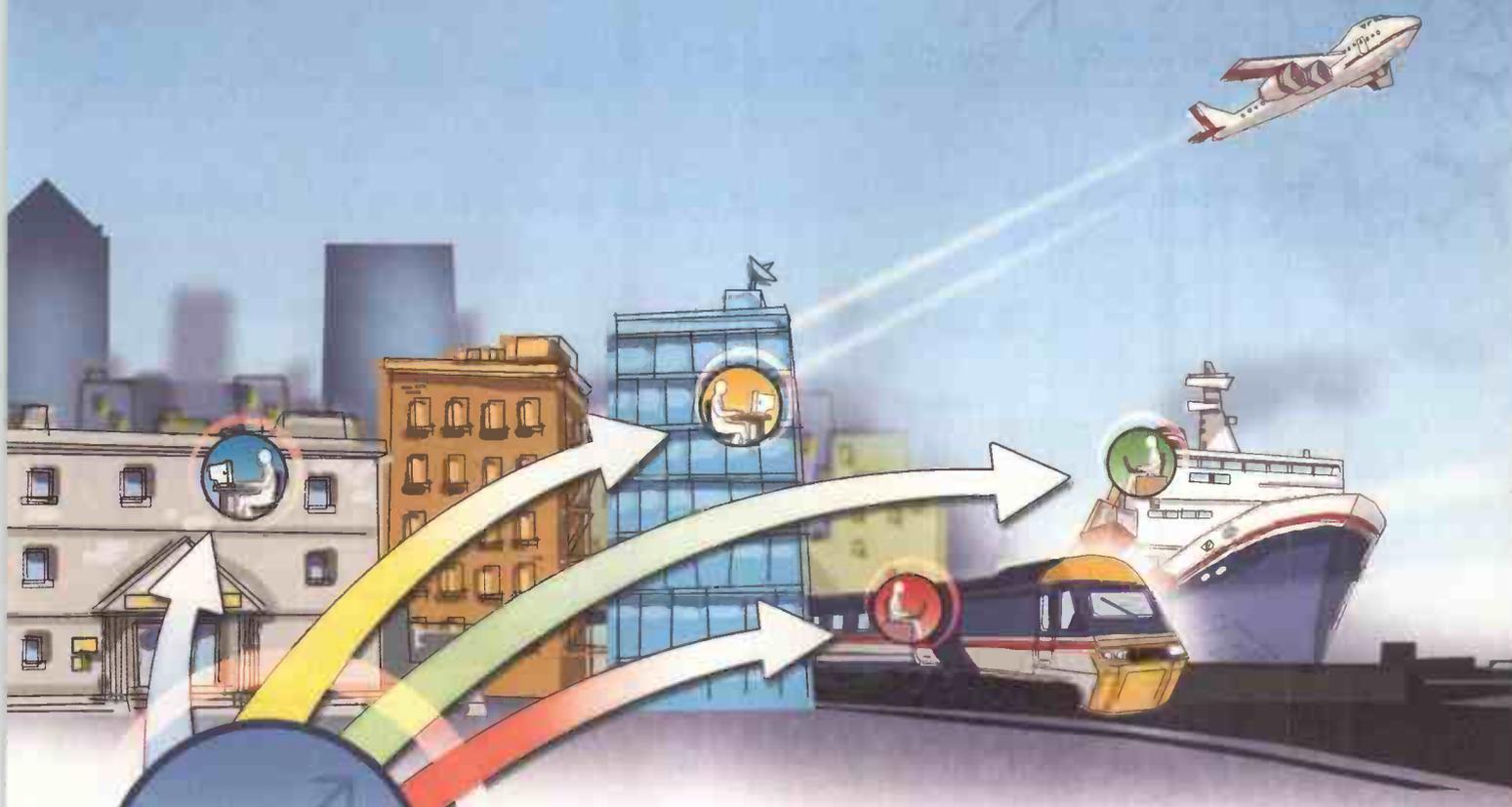
**PROS** Modular format; McAfee tools; Surfcontrol content filtering

**CONS** No link redundancy; expensive with optional modules

**VERDICT**  
Modular format makes this a good choice for a growing firm

<b>PERFORMANCE</b>	★★★★★
<b>FEATURES</b>	★★★★★
<b>ENTERPRISE VALUE</b>	★★★★★
<b>OVERALL</b>	★★★★★





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## Table of features

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VENDOR	ASTARO	CROSSBEAM	EQUINET	FORTINET	INTY	SERVGATE
PRODUCT NAME	SECURITY LINUX 5.0	CIO	SENTRYPILOT	FORTIGATE-60	EXOSERVER XL	EDGEFORCE PLUS
Price inc VAT (ex VAT)	From £274.95 (£234) for 10 users *	£6,909 (£5,880) **	£3,519.13 (£2,995)	£910.63 (£775)	£2,931.63 (£2,495)	£2,043.33 (£1,739)
Sales telephone	0118 903 6050	01638 569 600	01793 603 700	01483 450 890	0870 900 4689	01625 252 500
URL	<a href="http://www.astaro.com">www.astaro.com</a>	<a href="http://www.unipalm.com">www.unipalm.com</a>	<a href="http://www.equinet.com">www.equinet.com</a>	<a href="http://www.fortinet.com">www.fortinet.com</a>	<a href="http://www.inty.com">www.inty.com</a>	<a href="http://www.servgate.com">www.servgate.com</a>
PHYSICAL FEATURES						
Lan ports	2-200	6	1	6	2	2
Wan ports	Platform dependent	Config dependent	1	2	2	1
Wan port redundancy	Optional	✓	✗	✓	✗	✗
DMZ	✓	✓	✗	✓	✗	✓
Local hard disk	Required	✓	✓	✗	✓	✓
SECURITY FEATURES						
Firewall	✓	✓	✗	✓	✓	✓
Firewall vendor	Open source	Check Point	N/A	Fortinet	Inty	Servgate
ICSA certification	✓	✓	N/A	✓	✗	✓
VPN gateway	✓	✓	✗	✓	✓	✓
Anti-virus	✓	✓	✓	✓	✓	✓
Anti-virus vendor	Open source	Aladdin, Trend Micro	Sophos	Fortinet	Maildefender (Sophos)	McAfee
Anti-spam	✓		✓	✓	✓	✓
Anti-spam vendor	Open source	Aladdin	Spamcop & Spam Assessment	Fortinet	Maildefender	McAfee
Web content filtering	✓	✓	✓	✓	✓	✓
Content-filtering vendor	Open source	Aladdin, Websense, Secure Computing	N2H2	Fortinet	N2H2	Websense & Surfcontrol
URL filtering	✓	✓	✓	✓	✓	✓
Keyword filtering	✗	✓	✓	✓	✓	✓
RBL support	✓	✓	✓	✓	✓	✓
Intrusion detection/prevention	✓	✓	✗	✓	✗	✗
IDPS vendor	Open source	ISS	N/A	Fortinet	N/A	N/A
MANAGEMENT FEATURES						
Web interface	✓	✓	✓	✓	✓	✓
CLI	✓	✓	✓	✓	✓	✓
SNMP	✗	✓	✗	✓	✗	✓
Logging	✓	✓	✓	✓	✓	✓
Alerting	✓	✓	✓	✓	✓	✓
SCORES						
Performance	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Features	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Enterprise value	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

\* Price for software only \*\* Application licences extra

# Editor's Choice

**A**lthough they varied widely in functionality and price, we were impressed by all six appliances. That doesn't mean we would recommend them all, at least not to the same market and, as might be expected, there are good reasons for preferring some over others.

## At the extremes

At the high end, the Crossbeam C10 impressed us as it is the only product in the test to feature Gigabit Ethernet ports – six in all. The switch technology on which it's based enables data flows to be processed at very high speed so the firewall, for example, can handle up to 2Gbits of data per second. You also get a choice of market-leading security applications from Check Point, Aladdin, Trend Micro and others, all proven to give good results.

The C10 can be expensive, however, and you have to manage each application individually, as though they're installed on their own separate servers. So although a good choice for larger companies already using such products, the C10 isn't recommended for smaller organisations dabbling their toes in the security pool.

At the other end of the scale Arastro Security Linux is a very low-cost solution, especially if you provide the hardware yourself in the form of an old PC. Installation is easy, but it was the hardest of the six products to configure, calling for a level of expertise that may be lacking in the smaller organisation. The Arastro product is worth looking at if you're on a tight budget, but otherwise is best left to open-source enthusiasts.

## The winners

Between these extremes two of the remaining four products stood out, the first of which was the Servgate appliance. The modular Edgeforce Plus is well engineered and easily upgraded to enhance performance and extend the security features. It's a good solution for the growing business needing to start small but ramp up security defences as servers, applications and users are added to the network.

All the key tools are available on the Edgeforce Plus including popular McAfee anti-virus and anti-spam utilities. The VPN

implementation is impressive too and, in the latest release of the security-hardened Servgate OS, Surfcontrol content filtering has been added. Throughput doesn't quite match the C10, but the firewall can process up to 200Mbits/sec, and there's policy-driven management too. We've given the **Servgate Edgeforce Plus a Highly Commended** award and

recommend it to larger or growing small businesses.

The real hit of the group was the Fortigate-60. There's no hard disk and it's Asic-driven,

which enables it to be a lot smaller than the others. In theory, the Asic approach makes the unit more robust and secure. Despite the small size and relatively low price (it's the cheapest hardware appliance here) you get a lot for your money.

There's a built-in four-port switch for Lan connectivity, dual Wan ports for redundancy and load balancing and a hardwired DMZ connector. USB ports are also provided for future support of broadband modems and the end result is a range of configuration options normally associated with hardware costing a lot more.

Although not made up of branded products, the software is pretty good. As well as an ICSA-certified firewall there's intrusion detection and a built-in VPN server able to handle site-to-site and direct client tunnels using all the leading protocols and encryption technologies. We liked the fact that the anti-virus engine can scan web as well as email traffic and you get anti-spam and content-filtering abilities too. On top of this, Fortinet pushes updates to its device when new threats

are discovered, rather than having them pulled down by the appliance according to a pre-set schedule.

The browser-based interface made the Fortigate-60 easy to configure, plus you get logging and email reporting facilities. With a firewall throughput of around

70Mbits/sec it's not the fastest on the planet, but for a small business or branch office looking to protect a broadband-connected network it's more than adequate and a hard combination to beat. As a result, **Fortinet's Fortigate-60** is our **Editor's Choice** small business all-in-one security appliance. ■



**Fortinet Fortigate-60**

**'The Fortigate-60 isn't the fastest on the planet, but it's hard to beat'**



**Servgate Edgeforce Plus**

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<p><b>AMD ATHLON 64 3400+</b> AMD Athlon 64 3400+ processor with HyperTransport technology. True 64-bit processor ready for future 64-bit applications. The fastest!</p>				
<p><b>Micron 1024MB DDR RAM</b> Massive 1 Gigabyte of high speed DDR RAM increases performance and allows multiple applications to run at the same time.</p>				
<p><b>Serial ATA 200GB HARD DISK</b> 200GB hard disk storage with fast 7200rpm speed and ultra fast Serial ATA interface. Massive capacity storing large amounts of photos, videos and other files - Future proof.</p>				
<p><b>ATI 256MB ATI 9800</b> ATI Radeon 9800 256MB Graphics Card with TV-out and DVI. The ATI 9800 is one of the fastest graphics card ranges available and this product comes with a massive 256MB of dedicated DDR video RAM. Includes twin screen support. Play the latest 3D games in style!</p>				
<p><b>NEC DVD-RW DUAL LAYER</b> Latest Dual-Layer 8 speed multiformat DVD-Rw drive; 8.5GB instead of 4.7GB; Record 4 hours of DVD-quality or 16 hours VHS quality. Also reads and writes single layer discs - The Best!</p>				
<p><b>DVD x16 DRIVE</b> Additional DVD-ROM drive to run DVD movies and make one step DVD to DVD copying easy.</p>				
<p><b>WI-FI WIRELESS</b> 802.11g 54Meg Wi-Fi Wireless system and software. Set your PC as a virtual router to enable other Wi-Fi PCs and Notebooks in the house to share your Broadband Internet and provide wireless home networking.</p>				
<p><b>WIRELESS KEYBOARD AND MOUSE</b> Wireless multimedia keyboard and wireless optical mouse.</p>				
<p><b>DIGITAL PC-TV WITH REMOTE</b> Full-feature DIGITAL PC-TV system with Media software. Watch all your favourite programs (Free to air Digital Terrestrial) in full screen or windows, capture, edit and record and burn onto DVD! Infrared remote control makes whole process simple. Use your PC as a Video Recorder and Media Centre!</p>				
<p><b>DIGITAL RADIO</b> Listen to digital music and record onto your PC with ease.</p>				
<p><b>10-IN-1 CARD READER</b> Multiformat reader and writer panel allows you to use virtually any memory/flash card. Also includes front audio, microphone, Firewire and USB 2.0 connectors.</p>				
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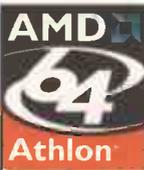
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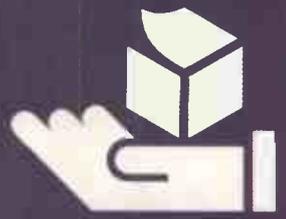
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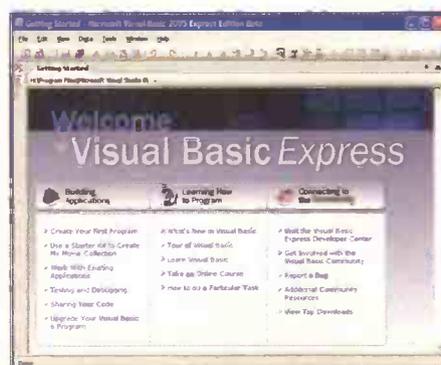
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Creating a stylish system doesn't have to cost a fortune. Find out how in Hardware



PAGE 194

We investigate online streaming music services in the Sound column



PAGE 202

We take a look at Microsoft's new Express series of Visual Basic programs

Whatever you do on your computer,

there are probably traces left behind, and log files feature in two of this month's Hands on columns.

In Databases you can find out how they help you recover from a server failure, while in Web development we've looked at the sort of information they can teach you about your website, along with some more reasons for getting to know your server.

Diagnostics crop up too in the Windows section, where Tim Nott looks at how you can give your hard drive a health check and waxes nostalgic about the days of Xtree. We've plenty for users of other Windows systems too, with securing a new system on the agenda for Terence Green in Windows 2000 and tips for delving behind the error messages in Windows XP, along with how to edit your Registry safely using scripts.

Gordon Laing has been investigating Overclocking once more, finding out the importance of high-speed memory for the best performance and stability, while over in Hardware he explains how you can turn a standard system into something that will grace the most stylish of living rooms, without spending a fortune.

The security conscious should check out the Networks column for Alan Stevens' advice on setting up Wep and other wireless security tricks, while the mobile user will find tips on the essentials for the road warrior from Guy Kewney.

Barry Shilliday concludes his look at digital cameras under Linux and explains how you can use USB removable storage devices with the operating system. Whether you're a Linux or a Windows programmer, you'll find tips on Mono – an open-source alternative to Microsoft's .Net – in Tim Anderson's Visual programming column.

Office users will find tips on creating their own complex formulas in Spreadsheets, while over in Word processing there's more on easy-reading fonts and tips for navigating around large documents. On the musical side, Niall Magennis looks at streaming music services, while in Digital imaging Ken McMahon explains how mixing sound carefully can make all the difference to your video editing.

Finally, we kick off, as usual, with four pages of Question time, covering the solutions to all your problems. If you're having difficulty troubleshooting your PC, fire off an email to Hands on. We're here to help.



Nigel Whitfield



# Advice from our experts

Our Hands on experts answer your questions and solve your problems

## Databases

**Q** From an Access database of about 150,000 records, I can filter the records I want, which total about 2,000 records. However, there seems to be no straightforward way to extract these and make them into an independent database to give them to another person. I've been shown a very laborious way, but there must be some simple procedure to do this.

**Pádraig McCarthy**

**A** What you need to use is a Make Table query. This is simply a query which, as the name suggests, will write the answer table to disk.

Create a new query, set up the filtering condition, pop down the Query menu and select Make Table. A dialogue box will open which asks for the name of the table you wish to create (see screenshot 1). Finally, press the Run button (the one with the exclamation mark) and the query should run and deposit the required rows into the new table.

Once the table is in one database, it is relatively easy to move it to another Access database.

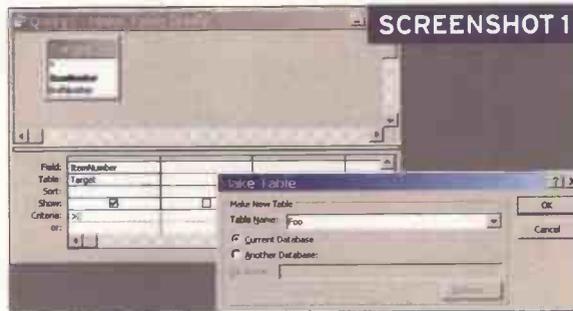
## Hardware

**Q** I'm a subscriber to Sky and would like to buy a PVR. The obvious choice would be Sky+ but after the recent upgrade articles in Hands on Hardware, I wondered if a Tivo would be a better bet? Will it work with my set-top box?

**Gerald Ottey**

**A** Yes, a Tivo will work with any set-top box and uses a stick-on infra-red dongle to change the channels as required; some Pace boxes will need an IR-to-Irda adapter though. As for Tivo versus Sky+, the former has many more upgrading and hacking options if this is what you're into. For example, while both boxes can have their disk capacities upgraded, only the Tivo will support options such as network connectivity and digital video extraction straight to your PC. UK Tivos have however been discontinued, so you'll need to buy one from a specialist supplier such as [www.tivoland.com](http://www.tivoland.com).

Additionally, Sky+ as standard can record two channels at once and stores the digital bitstream, which means its recordings are identical to



Creating a Make Table query

the original broadcast. The choice is yours, but for more information on upgrades to both units, check out the forums at [www.avforums.com](http://www.avforums.com). We covered Tivo upgrades in July's issue and will look at Sky+ disk upgrades in the future.

**Q** I've read with interest PCW's recent articles on upgrading and modifying a Tivo PVR. Is it possible to fit a bigger hard disk without resorting to any hacks or software modifications?

**David Crofts**

**A** A handful of specialist suppliers sell hard disks which have been preconfigured with the Tivo operating system and software. It's then just a simple process of opening your box and swapping the old disk or disks for the new one; you will need a Torx 10 screwdriver to get inside though. As for the preconfigured disks, they unsurprisingly cost slightly more than buying your own and installing the software yourself, but it's an easy option for those who want a quick upgrade. Tivoland and Pacelink are two of the biggest suppliers of preconfigured Tivo disks in the UK and sell a variety of drive capacities – a 120GB disk costs around £99 inc VAT and will triple the typical capacity of a standard 40GB Tivo. Since any existing recordings and preferences are stored on your original disk though, you'll lose them in a swap. If you're keen to preserve your recordings, send your unit to Tivoland and have the company transfer the data onto the new disk at an additional cost.

**Q** I have a Chaintech Zenith 9CJS motherboard and a Maxtor Serial ATA (Sata) hard disk. The Bios offers several operating modes for Sata – which should I use?

**Robert Finlayson**

**A** Under the Integrated Peripherals section of your Bios, choose On-chip IDE Device then select On-chip Serial ATA from the list. If you're running Windows XP, the best mode to choose is Enhanced, which will support two Sata drives, along with up to four more on the older Parallel ATA connectors. If you're running an OS older than Windows XP, you may need to select Combined Mode or Sata only. Sata drives need different data and power cables to older Parallel ATA drives; adapters for older power supplies are available.

**Q** In August's Hardware column, a compact Windows 98 installation was run from a Compact Flash (CF) card. I understood that CF cards have a write-limit and as such the Windows swap file shouldn't be on the card itself. Can it be run directly out of Ram?

**Pete Gurney**

**A** Compact Flash, along with other Flash memory formats, supports a limited number of writes which, while sufficient for years of use in digital cameras and mp3 players, would last considerably less time if hosting a Windows swap file. One solution, as you suggest, is to relocate the swap file to run out of standard Ram. This can be achieved using a software utility to create a Ram disk partition, but as explained in August's column, this is a little like robbing Peter to pay Paul. Rather than, say, devoting half the system Ram to house the swap file, we disabled virtual memory and allowed Windows 98 to run entirely out of available Ram. How well this works depends on your application, but we found 256MB of Ram was more than sufficient for playing numerous videos and music files in Media Player 9 under Windows 98.

We plan to do more tests on this for future columns, but in the meantime, concerned CF booters may also wish to disable Tune-up Wizard and Task Scheduler to prevent Windows from automatically starting up Scandisk or Defrag, which could again put the card under strain.

## Spreadsheets

**Q** For regular charity donations under Gift Aid I want to use an Excel table with monthly dates in column A and the donations in



columns B, C, D and so on. When I make a claim to the tax office I need to give the date of each donor's last gift; the amount of that gift and the sum of all the amounts given by each donor. There are blank cells in the table because each donor doesn't give every month.

**Jim Druett**

**A** Here's an example you can adapt. On a worksheet named Gifts, enter 1/4/04 in cell A2. Right-click A2, drag down the column and choose Fill Months. Enter the donations in columns B to G. Name the next worksheet, Analysis. In cell B3 enter:

```
=INDEX(Gifts!$A:$A,MATCH(9.99E+307,Gifts!B:B))
```

(Key: ✓ code string continues)

and drag this across to cell G2. Custom format these cells mmm. This will display the month of each donor's last gift. In cell B4 enter:

```
=VLOOKUP(B3,Gifts!$A$2:✓$G$6,2)
```

Use the same formula for each cell to the right but adding one to the last digit, so cell G4 will have:

```
=VLOOKUP(G3,Gifts!$A$2:✓$G$6,7)
```

This row shows the amount of the last donation. In cell B5 enter:

```
=SUM(Gifts!B2:B6)
```

and drag to G5 to display the total given by each donor (see screenshot 2).

**Q** With Lotus 1-2-3 I used to type in \- (reverse slash and minus sign) to fill a cell with a line. Later, if the cell width was changed, the cell was still full of minus signs. How do you do this in Excel?

**Richard Haynes**

**A** On the Format menu, choose Cells, Custom and in the Type box enter ;;;\*- (three semi-colons, an asterisk, and a minus sign). Enter one minus sign in the cell, press Enter. The dashes will fill the cell. You can change the column to any width and the dash lines will adjust (see screenshot 3).

**Q** I have two columns of swimming race times in the format mm:ss.00 and wish to subtract the time in one column from one in the other column on the same row. How do you do this in Excel? All I get in the answer column is #VALUE.

**Bob Hornby**

**A** I think what you are asking is how to find the difference between two times which are entered in seconds and hundredths of a second. Give the range A5:C5 your stated Custom format. In cell A5

enter 1:20.05. In B5 enter 1:20.12. In C5 enter:

```
=B5-A5
```

and see the answer 00:00.07. If you wish to enter the race times in seconds enter 0:80.05 and 0:80.12 for the same answer. If you suspect an answer may be negative use:

```
=ABS(B5-A5)
```

in cell C5. You can always use Conditional Formatting to display the answer in red if the answer is negative. Select Formula Is in the Conditional Formatting dialogue box and enter:

```
=IF(A5>B5,1,0)
```

as the formula.

**Q** In Excel 2002 what's the quickest way of dividing a list of first and surnames that are in column A to put the first names in column B and the surnames in column C?

**Tricia Wilson**

**A** Highlight the names. Select Text to Columns on the Data menu. On Step 1 click Next. On Step 2 choose Space as the Delimiter and None as the Text Qualifier. In Step 3 enter B1 as the Destination and then click Finish (see screenshot 4).

**Q** Can you format the same cell on several worksheets in Excel?

**Sam Schwind**

**A** Yes. First create a Style that covers the font, point size, font colour and background colour you want. Then Group the worksheets which apply by holding down Ctrl and clicking on the appropriate worksheet tabs. Highlight the selected cell or range. Select the new Style in the box to the left of the Font name box on the Formatting toolbar. To Ungroup the sheets, right-click any tab and select Ungroup Sheets. You can also hold down Ctrl, click on any cells throughout the workbook, then select the new Style in the box and it will be applied to those cells.

### Windows 2000

**Q** I had two copies of Windows 2000 installed, one on the C drive and another on the D drive. I deleted the files on the D drive associated with Windows but when I boot up the computer it still gives me the option to choose either installation, obviously failing to boot up if I choose the D drive version. Can you help? I only want one Windows 2000 installation.

**Jamie Seeley**

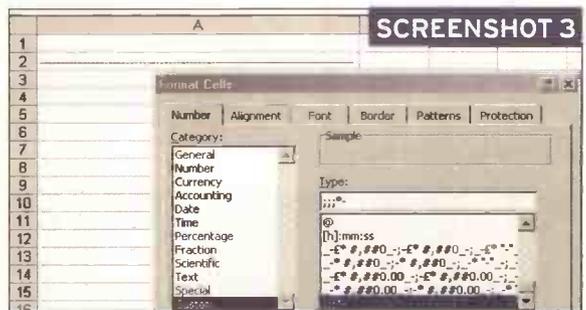
**A** The menu which displays the choice of operating system is stored in a file called boot.ini in the

donors.xls:2							
A	B	C	D	E	SCREENSHOT 2		
1	Date	Donor 1	Donor 2	Donor 3	Donor 4	Donor 5	Donor 6
2	Apr	£ 17.00	£ 25.00	£ 40.00		£ 13.00	£ 10.00
3	May			£ 45.00	£ 30.00		
4	Jun	£ 32.00				£ 26.00	
5	Jul				£ 35.00		
6	Aug						£ 15.00
7							
8							
9							

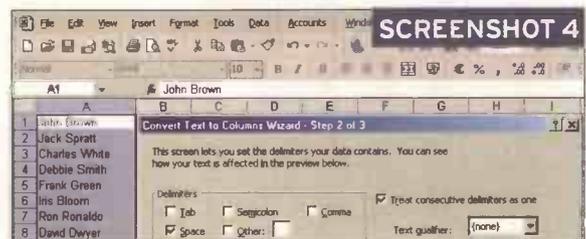
  

donors.xls:1							
A	B	C	D	E	F	G	
1	Summary	Donor 1	Donor 2	Donor 3	Donor 4	Donor 5	Donor 6
2	Last gave in	Jun	Apr	May	Jul	Jun	Aug
3	Gave in that month	£ 32.00	£ 25.00	£ 45.00	£ 35.00	£ 26.00	£ 15.00
4	Gave altogether	£ 49.00	£ 25.00	£ 85.00	£ 65.00	£ 39.00	£ 25.00
5							
6							

Creating a report of Gift Aid donations



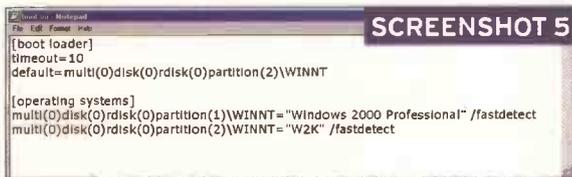
A self-adjusting line of dashes in Excel



Dividing names between columns



root of the C drive. This file normally has its System, Hidden and Read-only attributes set, so it isn't displayed in Windows Explorer and it cannot be edited. To make it visible, in Windows Explorer, select Windows Explorer/Tools/Folder Options/View and click on Advanced Settings. Scroll down the tree and deselect 'Hide Protected OS files'. Also change the setting of 'Hidden files' to 'Show Hidden files'. Now that it is visible, right-click on boot.ini, select Properties and deselect the Read-only attribute in order to edit the file. Save a copy of boot.ini as boot.bak and then double-click on boot.ini to open it in Notepad. It will look similar to this:



SCREENSHOT 5

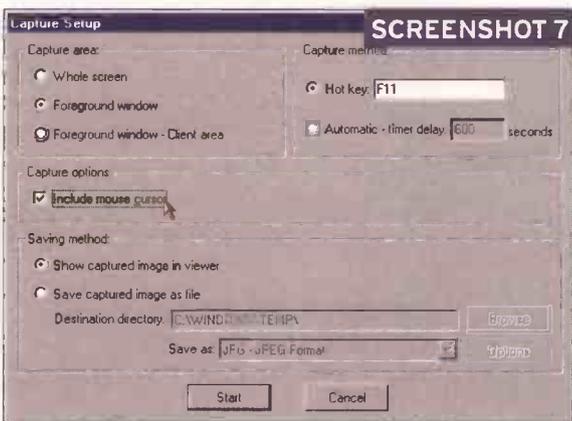
Editing boot.ini in Notepad

```
[boot loader]
timeout=10
default=multi(0)disk(0)rdisk(0)partition(2)\WINNT
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINNT="Windows 2000 Professional" /fastdetect
multi(0)disk(0)rdisk(0)partition(2)\WINNT="Windows 2000 Professional" /fastdetect
```



SCREENSHOT 6

Checking for spaces between sentences



SCREENSHOT 7

Grab the cursor in screenshots with Irfanview

**A** If you go to Styles & Formatting, right-click on a style and choose 'Modify', you'll find that the Modify Style dialogue contains a checkbox to 'Automatically Update'. If you deselect that option, the problem should go away.

**Q** When typing in Word I have always used one space after a full stop. I am now told by a tutor at a word processing course that there should be two spaces. Indeed, when I type something at the course centre with only one space after a full stop and then do a spelling/grammar check their system flags an error. If I repeat the exercise on my home PC I can type one, two or even three spaces after a full stop to start a new sentence and the spell checker does not flag an error. There must be a switch somewhere that alerts the spell/grammar checker to look for two spaces. Where is it and what do you consider to be the correct number of spaces?

Alex Wood

**A** Your tutor is wrong. This is a legacy from typewriter training with fixed-width fonts. It's not considered good practice in WP or DTP to use spaces for formatting in general, and double spaces after a full stop are a capital offence (pun intended) at PCW. However, if your tutor won't take our word for it there is a setting in Word under Tools, Options, Spelling & Grammar - Grammar Settings. You can check for one space, two spaces or not check at all (see screenshot 6).

**Q** I work on long documents and often need to cut and paste paragraphs within them. When I need to block a section of text in a Word 2000 document I place the cursor at the start of the block and try to tease the mouse to the end of the section I wish to block. However, the program scrolls down incredibly fast to the end of the document and it is impossible to block a lengthy paragraph with the mouse. The only way to do so is with F8 and the scroll arrows. How can I get it to slow down?

Ken Townley

The two lines under 'operating systems' are menu items indicating the partition number of each Windows installation. Deleting the line referencing the D drive will stop it appearing. As this leaves only one menu item the menu won't display at startup either. If there's any doubt as to which line to delete, edit the text between quotes of one of the menu lines, changing "Windows 2000 Professional" to "W2K" for example. Now when the computer is started the choices on the menu will be Windows 2000 Professional and W2K, allowing for positive identification (see screenshot 5).

## Word processing

**Q** Since installing Word 2003 I have encountered a maddening formatting problem. If I highlight a heading and reformat it the formatting is applied to the whole document rather than just the highlighted text.

If I undo the action, the formatting is retained on the selected text but the rest of the document reverts to its original format.

This happens with bold, italic and centre to name a few, using either keyboard shortcuts or menus and I can't find anything in Options to turn off. Do you know what might be causing the problem?

Paul Haddlesey

**A** This is a well-known bug in Word and Microsoft only got round to fixing it in Office XP. Another solution is to leave the insertion point at the start of the block to be selected, then use the scroll bar to bring the end of the block into view. Shift & click will then select the block. Alternatively you can use Shift with the arrow and



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- Additional DVD-ROM drive to run DVD movies and make one step DVD to DVD copying easy.
- 802.11g 54Meg Wi-Fi Wireless system and software. Set your PC as a virtual router to enable other Wi-Fi PCs and Notebooks in the house to share your Broadband Internet and provide wireless home networking.
- Wireless multimedia keyboard and wireless optical mouse.
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Page Up/Down keys. See this month's Hands on Word processing for some other selection tips.

## Windows

Is it possible to alter the delay between changes in the XP Picture and Fax viewer slideshow? I like to use this to view my digital photos, but it doesn't give me much time between changes.

Jerry Price

The easiest way is to download the XP version of TweakUI from [www.microsoft.com/windowsxp/downloads/powertoys/xppowertoys.msp](http://www.microsoft.com/windowsxp/downloads/powertoys/xppowertoys.msp). You will find that the option appears under the Explorer branch. Note that this is only available in the latest version (2.10.0.0) of TweakUI, file date 25/06/03. The previous version (2.00.1.0) dated 19/03/02 doesn't include the option – if you have this version then you must remove it from Control Panel, Add/Remove programs, before trying to install the new version. See also this month's Hands on Windows XP for another possible problem and another method of changing the delay.

When you press the 'Print Screen' button to take a screenshot in Windows and paste it into an image-editing application, the cursor does not appear anywhere. Is it possible to take screenshots which include the cursor?

Joel Kitching

Not unaided, but there are plenty of third-party applications that can help. Snagit can do this – as well as many other tricks such as capturing all the text in a window, such as a list of files in a folder. You can get a trial version from [www.techsmith.com](http://www.techsmith.com). Irfanview – the free image viewing and editing application – can also do this (see screenshot 7).

I am presently using XP Professional and have recently installed it following an upgrade. My problem, although simple, is frustrating in that the machine refuses to shut down from the command buttons. The shut down button simply restarts the machine as does the restart button.

Peter South

The good news is that you can probably stop the restart by going to Control Panel, System Properties, Advanced. Click on the Startup and Recovery Settings

button, then in the System failure section, untick the 'Automatically restart' option (see screenshot 8). OK back out of all dialogues, shut down the computer and brace yourself for the bad news – you will probably see a system failure screen, known to fans as the Blue Screen of Death. This may give you a clue as to what the underlying problem is: CD-R packet-writing software is a frequent suspect.

When you install an ISP's software, most of them add a search bar or a links pane at the bottom of the Outlook Express window. Is there a way of getting rid of this bar to return OE to its 'out of the box' format?

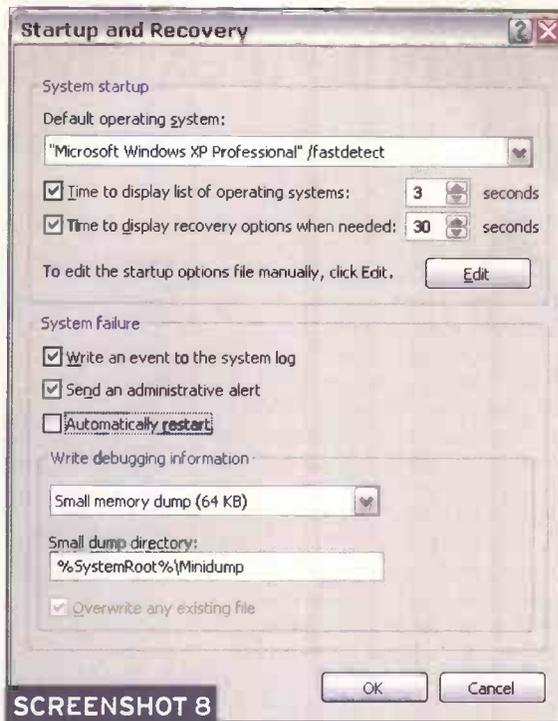
Chris Byner

Having taken the usual restore point or Registry backup precautions, run REGEDIT and then go to HKEY\_CURRENT\_USER\Identities\{long hexadecimal number}\Software\Microsoft\Outlook Express\ 5.0. In the right-hand pane you will see an entry titled ShowBodyBar – change its value from 1 to 0. For a more thorough job find the string value BodyBarPath and delete it. You can also edit the WindowTitle entry to get rid of the 'provided by Whoever' in the title bar.

I have a system dual-booting Windows 98SE and Windows XP. I have DVD-Rom and DVD writer drives. These are set as I want them in Windows 98, but XP shows them reversed. Windows 98 has a Settings tab in the drive properties in the Device Manager, which lets you assign different letters, but XP doesn't seem to offer this. Is it possible to change the XP letter allocation by a different method?

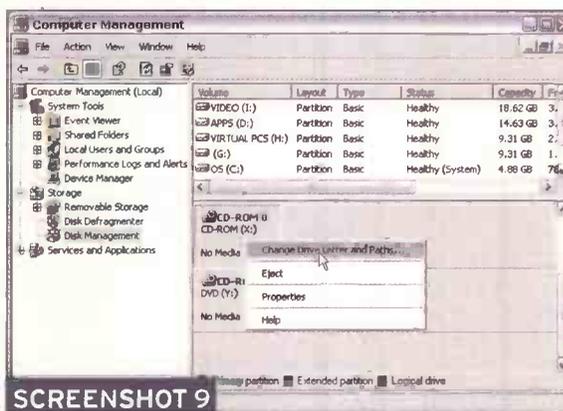
Frank Carmody

Yes, it's possible, but just cunningly hidden. Go to Computer Management – a quick way is right-click on 'My Computer' and choose Manage from the context menu. In the left-hand pane go down the tree through Computer Management (Local), Storage, Disk Management. The right-hand pane will split into two – scroll down the lower pane and you'll see your DVD drives. If you don't see them go to View, Bottom and select 'Graphical View' or 'Disk List'. If you right-click on a drive you'll see an option to 'Change Drive Letters and Paths' (see screenshot 9).



SCREENSHOT 8

Turn off restart on failure in XP



SCREENSHOT 9

The instruction to change a CD or DVD drive letter in Windows XP has moved

## CONTACTS

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**Gordon Laing**

has been a hardware enthusiast ever 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

# Machine makeovers

## How to transform a standard system into a sleek and stylish looking feature

**A**fter years of churning out faceless beige boxes, the PC industry's finally getting round to the idea that computers can look quite attractive. While this has undoubtedly been driven by the surge of media PCs designed for use in our living rooms, there's no reason a machine in the back room or office shouldn't also look good. Thankfully there's now an increasing range of smart-looking cases which don't need to be hidden under a desk.

Sadly the best intentions of case designers can be ruined when it comes to assembling a system. The biggest problem is front-facing drives, which rarely, if ever, match the rest of the case. Once you've popped out those matching drive-bay covers and replaced them with an optical drive and perhaps a floppy disk or card reader, the overall look is inevitably less slick.

Many drive manufacturers have cottoned onto this and offer models with black or silver bezels to better match coloured cases, but it's still not anywhere near the appearance of consumer electronics devices, where various trays and slots blend in with the entire front panel. Take a look at any CD or DVD player and you'll see its tray is the only part of the optical drive that's visible from the front.

In contrast, every PC has the entire height and width of its optical drive visible, with an outline around its edge as if to further highlight the fact that it's always been a separate component slotted in at a later date. If only there were some way for optical and other drives to blend in a little better and look as if they were always part of the case.

### Blending in

The only way a drive can truly blend in is to design the case around a specific model. Manufacturers that go down this route can either inform the buyer which drive they need, or supply it with the case. Apple does this by having a case designed around specific components then selling them as a complete package – hence the neat, integrated-looking optical drive trays of its G towers and Imacs.

Sadly, most PC case builders are unaware of the drives that will be fitted, so they simply leave gaps for standard bays, or at best fit a flap to



**Most barebones units look best when you first unpack them from the box. The big problem is finding drives that match the front panel – sadly the white fascia of this slot-loading DVD drive detracts from the original design of a Shuttle SB51G**

hide whatever's behind. One of the few exceptions is Hoojum, whose Cubit and forthcoming Nanode cases are specifically designed for slot-loading optical drives (see [www.hoojum.com](http://www.hoojum.com)). Rather than cut the usual hole to slide in an entire drive from the front, though, Hoojum's faceplate features a thin slot for inserting discs, with the actual drive mounted from behind; the front panel effectively replaces the existing plastic bezel on the drive.

Tastes vary, but I reckon Hoojum's design has it absolutely right. I've always been fond of slot-loading drives, and I wanted a PC case with nothing more than a slot on the front for inserting discs. A problem with Hoojum's design is that it demands slimline notebook-style optical drives, whereas I wanted to accommodate a full-size 5.25in drive. I also wanted to discretely accommodate an LCD or Vacuum Fluorescent Display (VFD) for showing media information.

There's only one manufacturer I know that offers such a case, and they're custom-built in California. A-Tech Fabrication's aluminium HTPC case is one of the best thought-out solutions for anyone building a dedicated media PC. There are options to accommodate slot or tray-loading drives, various displays, IR sensors, front-mounted ports, and even a USB-driven rotary dial. Each case is built to order so you'll have to wait several weeks and pay between £200 and £300 plus shipping, but the result is worth it. See [www.atechfabrication.com](http://www.atechfabrication.com) for more information.

Of course, this being Hands on Hardware, I wasn't just going to order a complete case and be done with it. Instead I decided to create a custom faceplate for a Shuttle SB51G XPC which was already being used as a media system. Shuttle sells optional faceplates for several of its XPC designs, but these all have the same cutouts for the 5.25in and 3.5in drive bays. I wanted a thin disc slot for the optical drive and a mounting for an LCD.

Before launching into this project, I should mention an alternative. If your case came with good-looking drive bay covers, there's no reason you can't recycle them with your optical drive. Many enthusiasts glue the case's drive bay cover onto the tray of their optical drive and mount the unit about 5mm further back in the case until it's flush.

Of course, unless you're handy with tools, you'll lose any ports or controls on the front of the drive. While most could probably live without the headphone jack and volume dial, the disc eject button is a greater concern. Some modders get



**This case from A-Tech Fabrication solves the problem of non-matching drives by hiding them behind a custom faceplate, which can also house displays and controls – perfect for a media system**

round this by wiring a new button or fitting a short mechanical lever to push the required part; if you're lucky, you may find pressing the corner of the glued-on drive bay cover pushes the eject button for you.

The process of hiding a drive behind an existing bay cover is known as 'stealthing', and is regularly discussed on many web forums. Doing a search on 'stealthing optical drive' should return many interesting projects.

### Custom faceplate

The custom faceplate for my Shuttle XPC would feature the same holes for the front-mounted ports, power and reset buttons, but replace the existing large gap for the 5.25in and 3.5in drives with a single disc slot and a window to view an LCD. I intended to use the existing Shuttle faceplate and my optical drive's bezel as templates to work out where the various holes and disc slot would go, then position the display window wherever the display itself could be mounted in the case.

The first step was to remove the standard Shuttle faceplate, which on the SB51G consisted of three separate layers held in place by four Allen-keyed screws. Behind the transparent 5mm front panel lies a coated paper-like sheet; both sit in a 10mm deep plastic surround and provide guide slots and holes for the various ports, plugs and drive bays, along with delivering the distinctive look to this model. Once all three layers have been removed, the internal aluminium chassis is revealed.

My plan was to dispense with the front-most transparent layer along with the paper sheet and replace them with a single custom faceplate that would sit in the standard plastic surround. I reckoned the surround's 10mm thickness could accommodate an LCD mounted directly on the surface of the aluminium chassis below, but I'd still need to make some physical modifications.

Most LCDs and VFDs are wider and thicker than you'd imagine. The display itself normally measures up to 10mm thick and is mounted on a circuit board which is generally wider and taller still. This board may also have several plugs or components that protrude from the rear. So while the faceplate may only require a simple window cutout to reveal the display, you'll need to accommodate the circuit board and its larger physical requirements behind.

In July 2003's column, I tested a 20 x 4-character LCD from US-based Crystalfontz ([www.crystalfontz.com](http://www.crystalfontz.com)), that used a single USB interface for



data and power; this model 634 cost around £80 with shipping and Customs duty. It's quite a large display, but the circuit board appeared to fit almost perfectly in the gap between the bottom of the optical drive and the top of the power button circuitry.

Shuttle had mounted the small circuit board for the power and reset buttons directly onto the aluminium chassis and I saw no reason not to do the same, albeit atop thin washers for electrical isolation. Annoyingly, several components poking out of the rear of the display circuit board prevented it from sitting flush on the aluminium chassis, but a few minutes with a hacksaw solved that problem.

With the chassis suitably sawed, appropriate holes drilled and a short strip from the 3.5in drive cradle sliced off, the display could be screwed into place. The plastic surround then needed the gap for a 3.5in drive widening to allow the display to fit through – again, a hacksaw did the trick. While the resulting saw-cuts weren't the smoothest or straightest around, they'd all be hidden behind my shiny new custom faceplate.

With no tools (or skill) to produce the faceplate myself, I once again

**A Shuttle SB51G with its standard faceplate removed. A slot-loading optical drive is fitted, but its own fascia removed. The aluminium chassis has been cut to accommodate the depth of an LCD module**

**The Shuttle SB51G with a custom faceplate made of black Perspex. A discrete slot was cut for loading optical discs and a window cut to view the LCD**

turned to Hamar Acrylics who cut and drilled the Perspex sheet used in May's arcade console project. This time I opted for 5mm thick black Perspex to hide my handiwork. As described earlier, my design used the existing Shuttle faceplate as a template for the ports, buttons, screw-holes and outer shape.

I marked the disc slot's position using the plastic bezel from my optical drive and carefully measured the size and position of the display window. Hamar charged £20 for the work, and can be found at 238-240 Bethnal Green Road, London; the company doesn't have a website but can be called on 020 7739 2907.

### Parting thoughts

With the case reassembled, its appearance was improved, although the black Perspex did attract some dust. For my next attempt I'd also consider fitting some kind of protective transparent sheet for the display and finding some way to accommodate an internal IR receiver.

If you want a professional-looking custom faceplate and don't have any facilities nearby, consider using Schaeffer AG's cunning online service. Its free downloadable front-panel designer software uses CAD tools to put together a plan for a custom faceplate, which can then automatically be emailed to the company's computer-controlled milling machine in Berlin. Prices vary depending on size, weight and quantity, but you're looking at about £30 for a beautifully machined aluminium custom faceplate to your exact specifications. I hope to try this service for a future project; see [www.schaeffer-apparatebau.de](http://www.schaeffer-apparatebau.de).

In the meantime, if you're looking for inspiration for custom faceplates, try searching the Small Form Factor forums at [www.sudhlan.com](http://www.sudhlan.com). There you'll find plenty of ideas, including several from those who've used Schaeffer's service. Probably the most impressive project remains one originally posted over two years ago: Mark J Foster's amazing Shuttle XPC mod which accommodated a 7in widescreen 800 x 480pixel colour TFT monitor in its front panel. Details of Mark's project and how he achieved it can be found at [www.tallx.com](http://www.tallx.com). And I thought it was a challenge to get my 115 x 50mm LCD in there...

### CONTACTS

Gordon Laing welcomes your comments on the Hardware column. Email him at: [hardware@pcw.co.uk](mailto:hardware@pcw.co.uk). Please do not send unsolicited file attachments.





**Gordon Laing** has been a hardware enthusiast ever 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

## Pushed to the limit

### We find out how far you can overclock an Intel Pentium 4 2.4C processor

In this month's Overclocking column we're looking at how far we can push an Intel Pentium 4 2.4C processor.

This 2.4GHz chip has a Northwood core and was manufactured using a 0.13micron process. Since the 0.13micron process has seen the Northwood core officially clocked beyond 3GHz, there should be plenty of ceiling for overclocking one rated at just 2.4GHz. For a full explanation, see last month's Overclocking column.

The C suffix for this chip refers to its external bus speed of 800MHz. As with other Pentium 4 processors, this speed is achieved by applying quadruple data rate technology to the motherboard clock, which in this case is 200MHz. If the memory is driven at the same speed for the best performance (known as synchronous operation) then it too will need to be rated at 200MHz externally. Since standard memory for this platform employs double data-rate technology, this means the P4C will need memory rated at 400MHz, also known as DDR/PC 3200.

As explained in this column two months ago, the most common way to overclock a processor is to increase its bus speed. The 2.4C processor employs a fixed 12-times clock multiplier and a standard bus speed of 200MHz – so 12 x 200 gives you the 2.4GHz speed. Increasing the bus speed to, say, 210MHz, would therefore drive the chip at 12 times 210, or 2.52GHz.

As with all overclocking projects though, you have to keep an eye on any components potentially affected by an increase of the bus. Fortunately the Bios on modern motherboards allow you to fix the speeds of the PCI and AGP buses so they remain unaffected. If the memory's being driven synchronously though, it will be affected by a faster bus speed.

Since the P4C processors require DDR 400/PC 3200 memory for standard operation, you'll need faster-rated memory to support overclocking with synchronous settings. Fortunately the big memory manufacturers produce specialist modules for this very purpose and probably the most useful is DDR 500/PC 4000 – this can run externally up to 250MHz, allowing



**Ultra high-speed memory is essential when overclocking the Pentium 4C processor. Kingston's Hyper-X PC4000 memory is rated at 500MHz, allowing the bus of a P4C chip to be potentially increased by 25 per cent**

the processor bus to be increased by an extra 50MHz. While there are no guarantees with overclocking, a bus speed of 250MHz would drive our 2.4GHz Pentium 4 at 12 x 250 or 3GHz.

To put this theory to the test we built a system using a Shuttle SB75G2, 2.4C processor, 80GB Seagate disk and an all-important matched pair of 512MB Kingston Hyper-X PC 4000 DDR memory modules. For comparison with earlier overclocking results in the Hardware column, we tested the system using Sysmark version 2002 on Windows XP Pro SP1.

Running at its default speed of 2.4GHz on a 200MHz bus, the system scored 269. We then entered the Shuttle's Bios and increased the

Kingston's specifications rated the modules as 3/8/4/4. We manually entered these settings and tried the 220MHz bus speed again.

Success – the system booted at 2.65GHz and scored 291. Feeling confident we increased the bus to 230MHz, then 240MHz, driving the chip at 2.77 and 2.89GHz respectively without a problem. We then went for broke with a 250MHz bus which clocked the chip at 3GHz, but the system became unstable even after a boost in core voltage. Dropping back to 245MHz though it ran perfectly happily, even with the standard 1.5v.

While we didn't quite get the memory clocked to its 500MHz maximum, it certainly did the business at 490MHz, allowing the P4C to be overclocked to a considerable 2.94GHz, scoring 315. Clearly the earlier 2.52GHz ceiling had been due to over-aggressive memory timings. Out of curiosity we re-ran the tests at 2.4 and 2.52GHz with the slower memory timings and scored 260 and 270 respectively – understandably slower than the same frequencies using aggressive memory timings.

If you're experiencing overclocking lock-ups despite being certain your components are nowhere near their frequency limits, then it's well worth checking the memory timings. I'd always trusted SPD Auto settings to get it right, but in this case they were a little over-ambitious. While enhancing performance at modest overlocks, they'd prevented us attaining the ultimate frequencies. We'll study the effects of memory timings in greater detail next month.

## 'You have to keep an eye on any components potentially affected by an increase of the bus'

bus speed under the frequency/voltage section to 210MHz, thereby driving the system at 2.52GHz. It started up and ran the tests fine, scoring 279.

When we went for anything higher though, the system locked up, even with higher core voltages. This came as a bit of a surprise considering we'd heard of 2.4Cs being overclocked beyond 3GHz with relative ease. While we may have just been landed with an unco-operative chip we decided to look again at the Bios settings.

Under the Advanced Chipset section we'd blindly left the memory timings on Auto, believing the module's 500MHz rating would provide plenty of headroom for our tests. Interestingly, though, the Auto settings using SPD were driving it with timings of 3/8/3/3, whereas

### CONTACTS

Gordon Laing welcomes your comments on the Overclocking column. Email him at: [overclock@pcw.co.uk](mailto:overclock@pcw.co.uk). Please do not send unsolicited file attachments.

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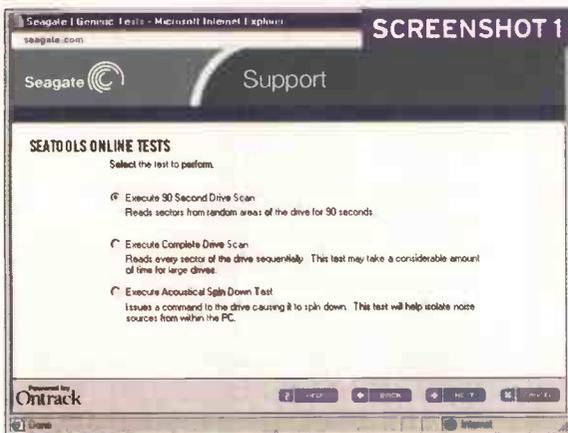




**Tim Nott**  
is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family

## Dangerous driving

Tools for testing your hard drive, viewing graphics files and confusion over bytes and bits



**Test your hard drive online or offline**

**H**ave you ever had a dodgy hard drive? The hard disk on my first PC – all 65MB of it – packed up just inside the guarantee period. Since then I've upgraded PCs and disks on an irregular basis and never had a problem. Many users aren't so lucky. So, in general, are hard disks reliable? Are they more or less reliable than they used to be? And are certain brands more reliable than others? The problem with trying to answer questions such as these is that the supporting evidence is either anecdotal or theoretical.

You'll get advocates in Internet newsgroups saying that 'We always buy Storefuttocks – never had a dud' which will immediately elicit the reply 'Just had three fail – never buying Storefuttocks again – we'll stick with Datagrommet'. Obviously – and for what should be equally obvious reasons – I am making these names up, but although there might be evidence of bad batches of disks, there is much advocacy and little fact. The manufacturers themselves, as one might expect, are somewhat more objective and scientific. For example – and to quote a real manufacturer – the Seagate Savvio disk drive has an 'impressive reliability specification of 1.4 million hours MTBF'. And that last bit stands for 'mean time between failure'. So, with average luck, your new disk will spin happily for around 160 years, which doesn't really offer much reassurance. For a start, this figure is obviously not based on empirical observation, unless the Savvio has been under wraps since Queen Victoria's coronation in 1838. It's a theoretical figure – which may have

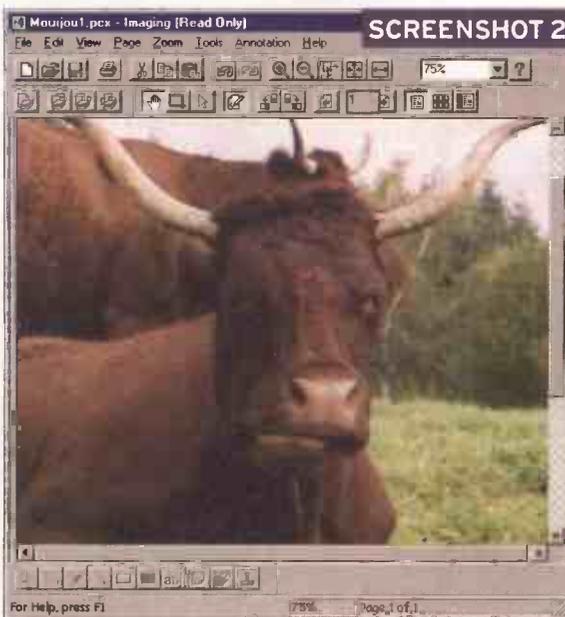
to be adjusted when the drive has been on the market for a time and the manufacturers have statistics of returned units to take into consideration. You'd be far better off comparing warranty periods rather than MTBF. And, irrespective of guarantee, you still need to back up your data.

A further complication is that not all drives returned as faulty are, in fact, faulty. Seagate (again) reckons that one in three returned drives are in perfect working order, and the problem that prompted the return 'may have been caused by a virus, a loose connector, a simple power spike or some other problem not related to the hard drive'. This wastes everybody's time and, if a drive is replaced, the data on the old drive is lost. So, Seagate has made some diagnostic tools available, which were on our cover DVD last month. Alternatively, there's an online version which works via a browser plug-in, and a standalone version that will run from a floppy disk or a bootable CD-Rom. You'll find these at [www.seatools.info](http://www.seatools.info), and they work on all ATA, Sata and SCSI hard disks – not just Seagate's own products (see screenshot 1).

### Thumbs up

One thing that has steadily improved over the years is the facility for viewing graphic files in Windows.

**The Kodak image viewing and annotation tools**



Going back to the prehistory of Windows 3.x, it was non-existent, and if you didn't want to wait an age while some expensive image-processing software loaded to view a tif then you'd need a third-party viewer. One such was Canyon Software's Drag and View, which worked as a File Manager add-on. Surprisingly enough, it's still going strong, with a version for Windows 95-XP and handling file types as diverse as Autocad and avis. Windows 95 came with a Quick View utility, but this was limited in the file types supported. Although the beta version had gif and jpeg support, this never made it through to the end product.

Windows 98 did somewhat better. Although Quick View was still hanging around, it could still only manage bmp and rle file formats. To the best of my knowledge, the only use for the latter was in changing the startup screen in Windows 3.x. What was better was the arrival of the Kodak Imaging program and thumbnail view. Kodak Imaging is, in fact, two programs. There's a viewer (Kodakprv.exe) which lets you view, zoom, rotate and print images. It also has a button to open the image in the full-strength Kodak Imaging, which has facilities for annotation, though little in the way of image processing. Despite being able to view a good range of image formats including tif, jpeg, gif, bmp, dib and pcx, most of these will appear as read-only as it can only save to bmp, tif or awd (fax) format (see screenshot 2).

Incidentally, there's a rather cute trick you can do in Windows 95 and 98, involving not so much thumbnails as little-fingernails. Run Regedit and go to HKEY\_CLASSES\_ROOT \Paint.Picture \DefaultIcon. Change the value from C:\Progra~1\Access~1\MSPAINT.EXE,1 to just %1. Restart Windows, and you'll notice that the large and small icons for bmp files are displayed as miniatures of the images themselves (see screenshot 3).

The thumbnail viewer in Windows 98 is built into Explorer and there is a lot that can go wrong with it. First you must have the IE4 (or later) enhancements turned on. They can be turned off in Tweak UI, and if 'Toolbars' is greyed out on the Taskbar context menu this is a sign

that they have been. In older versions of Tweak UI, go to the IE4 tab (even if you are running a later version of IE) and make sure that the IE4 check box is ticked. Newer versions have an IE tab and you should make sure Shell Enhancements is ticked. Next you must have thumbnail view enabled for each folder you want to show thumbnails in: go to the parent folder, right-click the target folder, choose Properties, and tick the 'Enable thumbnail view' check box. This will create a desktop.ini file in the target folders giving it the necessary magical properties, and you should find that 'Thumbnails' is now an option in the View menu. Note that 'View as web page' also uses thumbnails to preview a selected file in the left section of the folder. This again requires the IE enhancements to be turned on, but is otherwise independent of the thumbnail view: you can preview a file this way when in details or icon view.

Another way in which thumbnails can get damaged is if another application interferes with the file extension properties. This typically manifests itself when some, but not all, thumbnails fail to appear. Often you will see, say, bmps as regular thumbnails, while jggs display a generic icon. This can be cured with some careful Registry editing. According to Microsoft, this can happen when Internet Explorer is upgraded to version 5.5, and it has been known to happen with third-party applications. Also according to Microsoft, the following file types can be affected - .art, .bmp, .dib, .gif, .jfif, .jpe, .jpeg, .jpg, .png and .wmf (see screenshot 4). Some of these, such as .art, you will probably not encounter.

To repair these you need to run Regedit (having first backed up the Registry), and go in turn to each of the extensions listed - including the leading full stop - under HKEY\_CLASSES\_ROOT. Each extension key should have a subkey named Shellex - if it doesn't, create one. And each Shellex subkey should itself have a subkey named {BB2E617C-0920-11d1-9A0B-00C04FC2D6C1} - again, if it doesn't, then create it. Regedit will automatically create a value in the right pane, under the last subkey, named 'default'. Double-click on this, and give it a value of {7376D660-C583-11d0-A3A5-00C04FD706EC}. If you want to do this the easy way, you can copy and paste those numbers from MSKB article 192573.

Going back to the Kodak Image Viewer, you'll note that although it is



Above: Making icons out of bmp files

capable of viewing a range of file types, it is only associated by default with tif, pcx and various fax formats. Which is probably why many people are unaware of its existence. If you double-click on a gif or jpg, it will open in Internet Explorer, and if you open a bmp you'll find yourself in Windows Paint - assuming no third-party application has nabbed the association.

If you'd like to open those file types in the Imaging Preview and enjoy the benefits of a zoom control and being able to view portrait format images without lying down, there are two ways of doing this. If you hold down Shift and right-click on, for example, a jpg, you will get an 'Open with' command. This leads to a dialogue where you can choose a program, and an 'Always use this program...' checkbox, so you only have to do this once. This will modify the relevant Registry settings. If you are reluctant to upset the apple cart in this way, then add a shortcut to C:\Windows\Kodakprv.exe in the SendTo folder, which will let you throw any file at Image Preview.

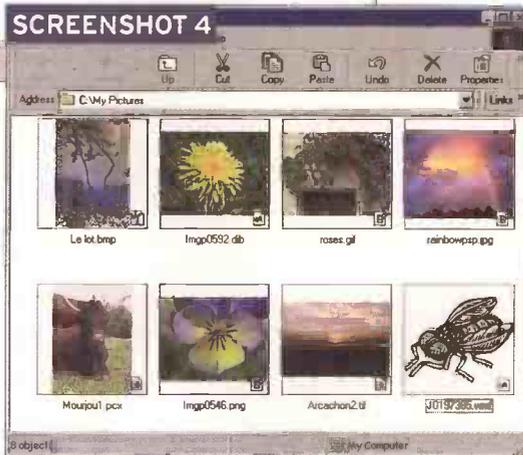
Moving on to ME, things improve further. The Kodak Imaging is still there - in both the preview and annotation versions, but is even more discreet - unless you run it from the Start menu, you'll only see it if you open a pcx or fax file. Everything

else opens in a separate Image Preview. This - which is located at C:\WINDOWS\SYSTEM\SHIMGVW.DLL - handles viewing in both the web page preview area in folders and as a standalone window (see screenshots 5 & 6). Both have zoom and rotation controls, both can print, but that's it - there are no editing facilities, nor any controls to send the file elsewhere for editing - if you want to do that you need to go back to the file in its folder and right-click. Two more irritations have vanished - you don't have to hold down the Shift key to get 'Open with' on the right-click menu, and you don't have to go through the business of enabling thumbnail view in a folder's

properties - it should always be available from the folder View menu or toolbar. For some reason - probably tradition - bmp files still open in Windows Paint, but the 'Open with' and 'Send to' methods outlined above also work in ME. Incidentally, although the ME Shellex entries in the Registry seem more robust than their 98 counterparts, be warned that they can

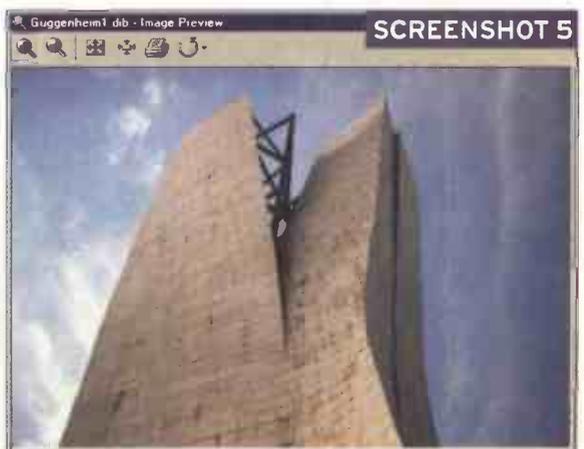
go adrift. If you want to use the method given above to fix them, although the name of the last subkey is the same, its value should be {3F30C968-480A-4C6C-862D-EFC0897BB84B}.

There are a couple more gotchas in Windows ME. First, you need to have web content in folders enabled to get the preview pane - note that Folder Options has migrated in ME from Explorer's View menu to the Tools menu. Unless you are in the My Pictures folder, or a subfolder thereof, you'll



Some of the file types you can see as thumbnails in 98

The ME viewer in standalone mode





The ME viewer plugged into a folder

also notice that the preview pane is a 'lite' version – you don't get the zoom and rotate controls. To enable these you have to use the 'Customize This Folder Wizard'. Find this on the folder's View menu then follow the prompts to 'Choose or edit an HTML template...', then choose 'Image Preview'. This will also give you a slideshow option. The slideshow takes over the entire screen, but if you move the mouse, you'll see a toolbar appear with controls to start, pause, jump forward or back and close the slideshow. And if you want to change the time each picture stays on the screen, then take a look at this month's Hands on Windows XP – the Registry edit and script are the same, though you can't get there from TweakUI.

## The byter bit

Some aspects of computing seem deliberately designed to confuse. You would think an industry predicated on the strict logic of programming would have its units fairly well sorted out. Not a bit of it. Measure that '19in' CRT display. Bet you it's nearer 18in as, unlike LCDs, the industry tradition is to quote the measurement to the corners of the glass tube, not the picture size. And as we saw in last month's Question time, the size of a megabyte or a gigabyte depends on whether you are buying or selling. Modem and download speeds are another source of confusion, as one anonymous reader found. His brand-new AOL broadband service jumped him up from '56kbps' to '512kbps'. But when he downloaded a 700MB file, it took several hours, and reported a download speed of between '55 and 65kbps'. A friend of his claimed she had downloaded the same file in 90 minutes, so was

his own connection correctly configured? The key here is the difference between bits and bytes. They both begin with b, but there are eight bits in a byte. The PCW house style is to write Kbits/sec or Kbytes/sec, which is fairly easy to distinguish. You may see elsewhere Kb/s and KB/s, Kbps and other variants. Generally, an uppercase B denotes byte, and a lowercase b denotes bit. So it's extremely easy to get it wrong.

The next layer of confusion is that ISPs and modem makers talk in bits per second. Software – such as the download progress dialogue in browsers – talks in bytes per second. So, that 700MB file contains 5,600Mbits, or 5,600 x 1,024Kbits. Divide this by 512Kbits and you get the number of seconds the download should take. Which I, kindly assisted by the Windows Calculator, make 11,200 seconds, or roughly three hours and seven minutes. That, of course, is ideal – heavy traffic on the download site, ISP problems and other considerations could make this longer. So the reader's 'several hours' isn't too disappointing.

## 'The key is the difference between bits and bytes. They both begin with b, but there are eight bits in a byte'

And as for his friend – well, you can get 1,024Kbits/sec broadband, and at a price you can even go up to 8Mbits/sec. But maybe she was just having him on.

## prn – more joys

July's piece on the joys of prn elicited some helpful feedback. Dr Guy Teeth, who I suspect is hiding under a pseudonym, suggested enclosing the %1 in the batch file in double-quotes, in order to cope with long file names. Having tried this, it doesn't appear to be necessary – at least in Windows 98SE – as the

batch file parses the short version of the filename, for example, MYPRIN~1.PRN instead of My Print File.PRN. Tony Russell came up with several suggestions. Instead of creating a file association for prn files, you could put the batch file – or a shortcut to it – in the Send To folder. Tony also got round the USB problem in a rather neat way. If the printer is shared on a network, then you don't need to worry about ports. Amend the batch file to read:

```
copy %1 \\computername\
printername /b
exit
```

(Key: ✓ code string continues)

with suitable substitutions for the computer and printer names, and Windows will find the printer on the same, or a different PC.

Thanks also to Jim Wilkinson, also referring to July's column, who points out that the latest version (7.5) of the Opera browser has built-in RSS capabilities, so you don't need a separate reader or a plug-in and can read feeds alongside mail and regular web pages. Find out more at [www.opera.com/products/user/m2/rss](http://www.opera.com/products/user/m2/rss).

July's request for help in preserving the creation dates of folders and subfolders when copying continues to bear fruit. Ron Hughes suggested the Files & Settings Transfer Wizard, but that needs Windows XP. Ben Kent had two suggestions. His first, ZTreeWin, is a 'tribute application'. Not many PC utilities have a fan club, but one that does is XTree. This legendary file manager saw the light of day in 1985, and later spawned a Windows version before getting the chop as a result of a corporate takeover. It is, however, fondly remembered by its fans at [www.xtreefanpage.org](http://www.xtreefanpage.org), by its author at [www.jeffreyjohnson.com](http://www.jeffreyjohnson.com) and by Kim Henkel, the author of ZTreeWin. You'll find the latter at [www.ztree.com](http://www.ztree.com), and you can try before you buy (see screenshot 7).

Although ZTree inhabits a command prompt window, it does have a character-based graphic interface, you can use the mouse, and there are loads of keyboard shortcuts. For those who prefer the rigours of the command line, XXCOPY will do the job, as one of its 160 switches preserves the attributes of the copied folders. What's more, it is freeware – you'll find it at [www.xxcopy.com](http://www.xxcopy.com).

ZTree – a tribute to XTree



## CONTACTS

Tim Nott welcomes your comments on the Windows column. Email him at: [win@pcw.co.uk](mailto:win@pcw.co.uk). Please do not send unsolicited file attachments.

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**Tim Nott**  
is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family

## Obscure errors and safe scripts

Some useful advice on error messages, and tips on editing the Registry using scripts

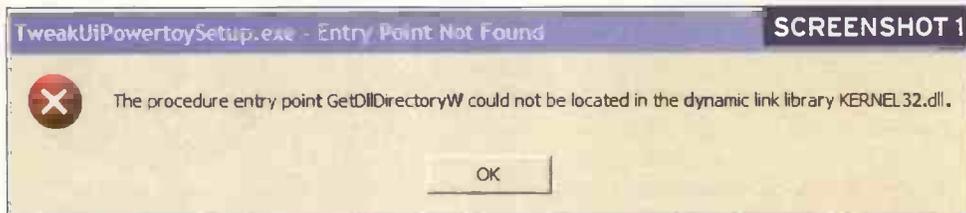
**W**e try to be thorough in these pages and, while researching the answer to Jerry Price's slideshow question in this month's Question time, I checked it out under both XP Pro and XP Home. Rather than have a roomful of PCs to cover various versions of Windows, or an insanely elaborate multi-booting setup, I have XP Pro installed as the operating system with various other versions of Windows installed as 'Virtual PCs' which run in windows under the XP Pro host. This has several advantages. First, speed, as you can save the state of a Virtual PC so that it loads in seconds, and switch between Virtual PCs and the host OS instantly. Second, safety – if one of the Virtual PCs goes belly up, you can wipe it and reinstall while getting on with other work.

Although I am diligent about keeping the host PC up to date, I'm a bit lax about the other systems: this is how I discovered that the earlier version of XP TweakUI, installed on the XP Home Virtual PC, didn't have the slideshow timer option. So I removed that version from Control Panel, Add/Remove, as the Microsoft Download site states, downloaded the new version, and double-clicked on it. This resulted in the following error message: 'The procedure entry point GetDllDirectoryW could not be located in the dynamic link library KERNEL32.dll' (see screenshot 1).

The smart thing to do in these cases is paste a keyword or two from the error message into the Microsoft Knowledgebase search engine. No luck there. Google, however, revealed pages of hits, and it turns out that this is what happens if you try and install the newer version and don't have XP Service Pack 1 or XP Server 2003. Suitably chastened, I downloaded and installed SP1 on the XP Home Virtual PC, and all was well.

The download page does state that one of those operating systems is required, but it's easy to miss. What's hard to understand is why Microsoft couldn't have furnished us with a more comprehensible error message. I hate to be picky, but something along the lines of 'You must have SP1 or Server 2003' might be more useful.

Before we leave the subject of error messages, here's a very useful tip passed to me by Jon Atkins. If you get



A fine piece of obfuscation

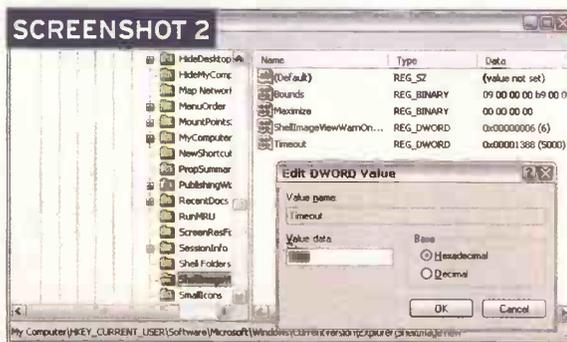
an error message, or other system message in XP, then pressing Control & C copies the text of the message to the clipboard. So, you can, for example, paste it straight into a search engine – or an email to the Hands on team – without having to try to spell 'GetDllDirectoryW' correctly. I wish I'd known that two paragraphs ago.

### VB slideshow

It has been a while since we got our anoraks muddy with some VB scripting, so let's look at Registry editing with scripts. There are several good reasons for using a script to change Registry settings. First, it's more convenient than loading Regedit and drilling down to the requisite key. Second, it's safer – you don't risk making accidental changes to the Registry as you're just confining yourself to the relevant keys and values. Third, you have the glow of achievement shared by all DIYers. Since we have a ready-made example, let's stick with the slideshow delay. Before you run the script you need – just once – to create the relevant Registry entry. Run Regedit.exe and go to HKCU \Software \Microsoft \Windows \CurrentVersion \Explorer \ShellImage\ShellImage\ShellImageView. Create a new DWORD value, give it the name Timeout and a decimal value of 7,000. This sets the slideshow delay in milliseconds, just as TweakUI does (see screenshot 2).

The code in figure 1 was typed into Notepad and saved as Slideshow.vbs –

Doing it the hard way – just once



so what does it do? The first line declares the variables we are going to use. This is considered good form – rather like listing the members of a football team before the match starts. Remember the convention we use in these pages – the red 'code string continues' arrow means that you keep typing on the same line until you come to a line end without an arrow: only then do you press Enter. So when I refer to a line, I mean a logical program line rather than a printed line of text.

The next line sets our first variable to an 'object', in script-speak. The Wscript.Shell object is the Swiss army knife of scripting – it can be used to read system information, manage shortcuts, run programs and work with the Registry. The line after that assigns a string of text to our next variable, myVal, and that text is the Registry path to the value we want. Having established that, we can send our Shell object off to read the corresponding value and store that in our third variable, msoldDelay, which is the current value of the Timeout key in milliseconds. Having converted that to user-friendly seconds, we need input from the user. Again this is assigned to a variable, newDelay.

Looking at the items in brackets after InputBox, the text up to the first comma is the prompt that appears in the box. After the comma is the quoted box title, and after the second comma the current delay is set as the default contents of the box (see screenshot 3).

The next line is unashamedly bodging. If the user cancels rather than OKs the input box, the value of newDelay will be zero, and the slideshow isn't going to like this. In this event, or if the user types in zero, newDelay is set back to the default value of five seconds. After that, the script converts back to Registry-friendly milliseconds, and we use our last variable to hold a Registry value type – in this case a DWORD value.

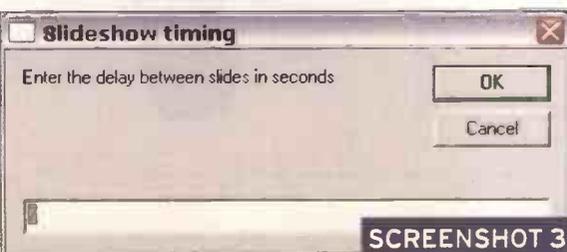


With everything in place, we call on our Shell object again. This time we want it to write a value to the Registry, so we use the Regwrite method, which takes three arguments. The first is the name and location of the entry to be written – we've already got that stored as myVal. The second argument is the value we want to assign to it – stored in msnewDelay. The third argument is the value type – in this case it's a DWORD so we use the value already assigned to the myType variable. Finally, the script pops up a message box confirming what has been done.

Note that, as usual, this is very basic Visual Basic. We don't have the space to wrap it all up with bells, whistles and error-handling routines. This is why you need to create the Timeout value using Regedit before you run the script for the first time, or you'll get an error when the script attempts to read a non-existent value. Nor does the script check that you've entered a numeric value in the box – type in letters and it will grind to a halt with a 'runtime error'. Both these limitations could be overcome with more code. A third, easily curable drawback the script shares with TweakUI is that it doesn't check for implausible values for the delay. Depending on your computing power and image sizes, you'll find a delay of less than one second or so produces unpredictable results. On the other hand, it involves fewer clicks than the TweakUI method, and lets you input the delay in seconds, rather than milliseconds: the TweakUI spin box makes this a tedious business.

## More Pagefile

Reader Alex Nichol took me to task over my comments on the optimum size of the XP pagefile; in particular, the 'conventional wisdom' of suggesting that the pagefile be a multiple of Ram size. The conventional wisdom is to be found in XP Help – search for 'pagefile', then look in the results under 'Managing your computer's performance'. According to Alex, it's not that simple. First, it's the sum of physical Ram and pagefile that counts, and second it's also affected by Fast User Switching. We don't have room to go into the details here, but



SCREENSHOT 3

FIG 1

## VB code for the slideshow delay

```
Dim WSHShell, myVal, msoldDelay, oldDelay, newDelay, msnewDelay, myType
Set WSHShell = WScript.CreateObject("WScript.Shell")
myVal = "HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\ShellImageview\Timeout"
msoldDelay = WSHShell.RegRead (myVal)
oldDelay = msoldDelay/1000
newDelay = InputBox("Enter the delay between slides in seconds", "Slideshow timing", oldDelay)
if newDelay = 0 then newDelay = 5
msnewDelay = 1000*newDelay
myType = "REG_DWORD"
WSHShell.RegWrite myVal, msnewDelay, myType
MsgBox("Delay set to " & newDelay & " seconds")
```

(Key: ✓ code string continues)

Alex has an excellent article at [www.aumha.org/win5/a/xpvm.htm](http://www.aumha.org/win5/a/xpvm.htm). The article also mentions another Ram FAQ – 'where has all my free memory gone?' This one has been hitting Hands on regularly for many years, and the short answer is that Windows is using it because it's there. Which doesn't mean to say it is unavailable – if an application requests memory, Windows will cough it up.

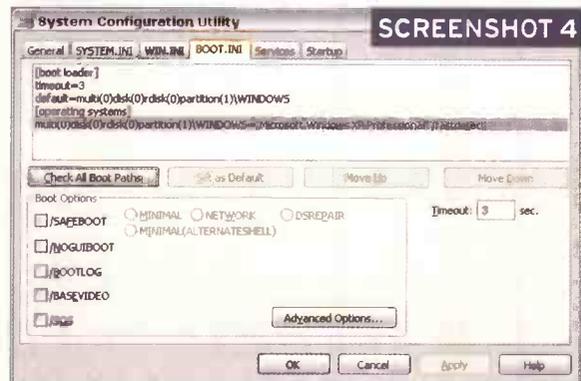
Alex had another comment to make on August's tip for editing the boot.ini file to remove vestiges of old dual-boot installations. If you run the System Configuration Utility (Start, Run, Msconfig.exe) and turn to the BOOT.INI tab, you'll see a button to 'Check all boot paths'. This will do what it says, and offer to remove any redundant entries. You'll also find an option, on the same tab, to reboot in Safe Mode (the /safeboot checkbox), should you need to do this and can't hit the 'sweet spot' with F8 during the boot sequence (see screenshot 4).

Another point arising from August's column concerns using the Group Policy Editor to clear the pagefile at shutdown. You can only do this in XP Pro, as I should have made clear. XP Home users will have to edit the Registry manually. The value is at HKLM \SYSTEM \CurrentControlSet \Control \Session Manager \Memory Management \ClearPageFileAtShutdown. A value of 1 clears the pagefile, 0 leaves it alone.

## Author! Author!

Last December, we looked at the XP Indexing service and using the Ciadv.msc Management Console to search the index. I wrote: 'It doesn't appear

Roll your own slideshow timer



MSConfig – the easy way to check boot settings

to be possible to save the settings of this window, so you'll need to click on the Show Console Tree button to get a two-paneled view. I've since discovered that it is possible to save the settings to a Console. First, you need to open it in 'Author' mode by using the /a switch. For example, if you are using the Start, Run, box you'd type:

```
%systemroot%\system32\ciadv.msc /a
```

(Key: ✓ code string continues)

Having done this, you'll find that the File menu, which normally contains only Options and Exit, now has New, Save, Save As, Open and a history. You'll find that if you make changes to the console – such as switching to two-paneled view – you can save them. We'd recommend leaving the original ciadv.msc as it is and Saving As a new name. You'd then need to modify any shortcuts you use to start the Indexing Console. Note that you can also get into Author mode by right-clicking on a .msc file and choosing Author from the context menu.

## CONTACTS

Tim Nott welcomes your comments on the Windows XP column. Email him at: [xp@pcw.co.uk](mailto:xp@pcw.co.uk). Please do not send unsolicited file attachments.

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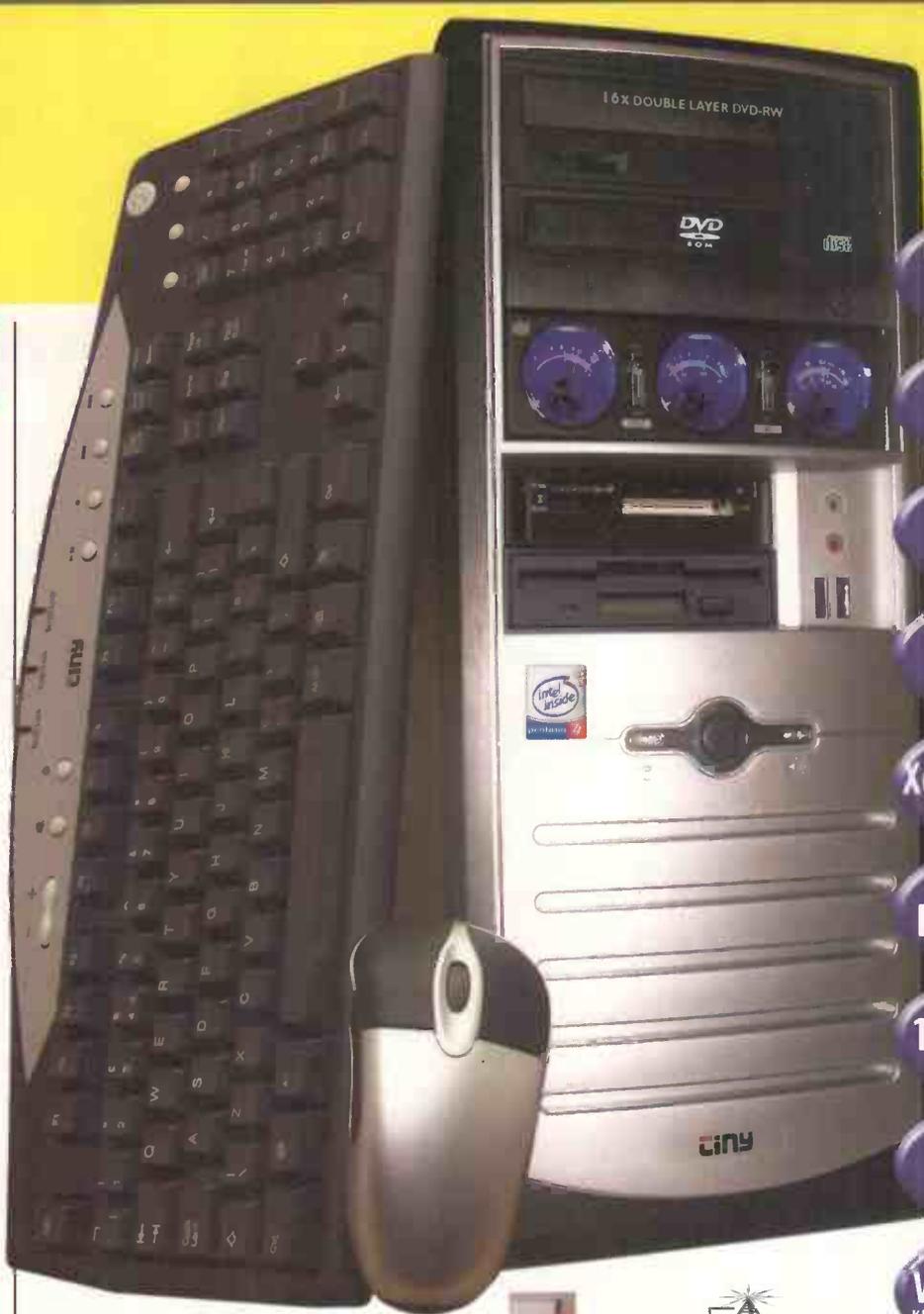
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**Terence Green**  
has tussled with computers ever since starting as an IBM mainframe operator in 1979. Since 1981 he has documented the gap between what PCs claim to do and reality

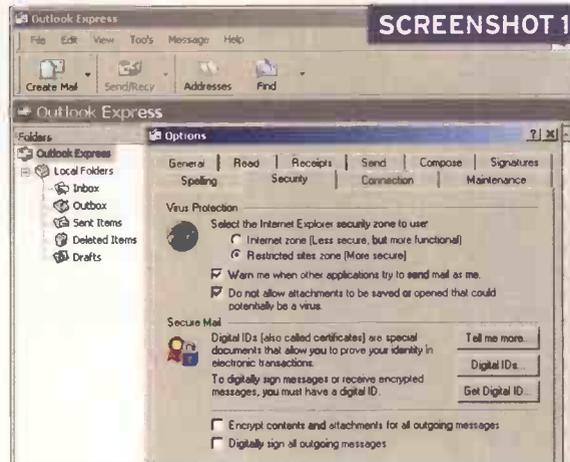
## Security block

### How to disable access to file attachments, and transfer Address Books in Windows

In June we mentioned some new security options in the Outlook Express side of the Internet Explorer 6 Service Pack 1 upgrade. These options are intended to make Outlook Express 6 SP1 less insecure than earlier versions. At the time, we failed to mention one particular new setting in Outlook Express 6 that removes access to email attachments based on the file extension of the attachment. This option, set by default in Outlook Express 6 when the Internet Explorer 6 Service Pack 1 upgrade is applied, causes Outlook Express to hide email attachments based on the file extension of the attachment. Thanks are due to John Weston for reminding us about this 'gotcha'. It is disconcerting to be told that access to 'an unsafe attachment has been removed' but access is only blocked. The attachment remains intact though inaccessible. The block can be disabled using the information in the Knowledgebase article at <http://support.microsoft.com/?id=329570> (see screenshot 1).

The list of blocked file extensions is maintained by Internet Explorer in an Unsafe File List hard-coded in a file called shdocvw.dll. More information can be found at <http://support.microsoft.com/?id=291369>. Curiously, the Dutch language version of KB291369 <http://support.microsoft.com/?id=kb;nl;291369> describes a method for creating Include and Exclude lists which is not mentioned in the English language article. It also appears to say that this method doesn't override the list in shdocvw.dll, which rather limits its potential. English translations of the instructions can be found by Googling with the keyword 'Unsafe-File-List' (omit the quotes), or you can cut and paste the Dutch into the Babel Fish translator at <http://world.altavista.com>.

Another workaround, described in <http://support.microsoft.com/?id=291387>, may be of use in enabling legitimate incoming attachments of a particular type. Finally, as a quick workaround for the occasional legitimate attachment, highlight the message with the hidden attachment and click on the 'Forward' button. The attachment can now be accessed and saved. Close the Forward window



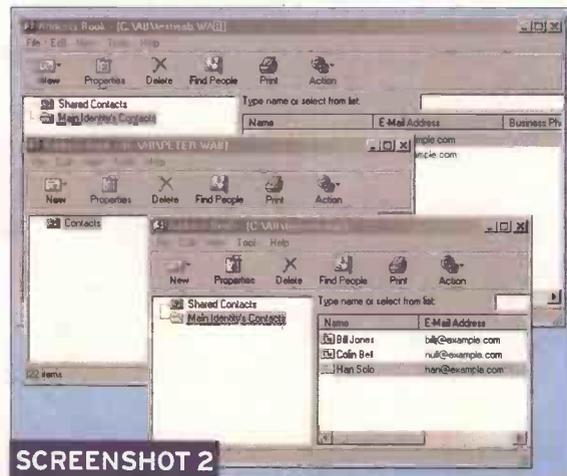
**Regaining access to attachments in Outlook Express 6**

once you've saved the file; there's no need to forward the message. Microsoft calls this blocking feature a 'virus protection' measure, but it's largely cosmetic. People who need to access legitimate attachments now have the choice between disabling protection entirely or trying to unblock specific file extensions with the help of inadequate and poorly documented customisation methods. It's a measure that won't educate people who open attachments unthinkingly to take more care, but may motivate them to find out how to disable blocking.

### Express address

Peter Benda ran into another problem that has its roots in a cumulative security update for Outlook Express but with a twist. Peter transfers data including an Outlook Express Address Book – a wab file – between a desktop and a laptop computer. The user accounts on the two computers have

**Opening multiple Address Books in Windows**



**SCREENSHOT 2**

different names which Peter works around by renaming the copied file. But whenever any address in the laptop wab is changed, an icon with a single tilde, '~', as a filename appears on the Desktop.

There are two problems here. The tilde appears on the Desktop due to a flaw in a recent Internet Explorer cumulative security update – see <http://support.microsoft.com/?id=830921>. The file on the desktop is in fact a misplaced backup of the Address Book wab and is best not deleted. Moving it to another location or setting its Hidden file attribute are possible workarounds. A fix is promised in the next Internet Explorer cumulative update. A hotfix is available for those who can't wait, but only by contacting the Microsoft UK Support Centre. This costs from £29 ex VAT, but hotfixes are free, provided you don't broaden the call by raising other support queries. If you request the hotfix, mentioning the problem named in the KB article as the reason, you'll be told how to access it.

The other part of the problem, having to rename the Address Book wab file before the laptop Outlook Express can see it, is unrelated to the tilde issue. The renaming issue arises because the complete path and filename of the default Address Book, the wab file that Outlook Express opens when it starts, is specified in an entry in the Windows Registry in the key, HKEY\_CURRENT\_USER\Software\Microsoft\WAB\WAB4. The file named here is the one Outlook Express loads at startup and displays in the Contacts pane by default. The wab filename is usually formed from the current user account name. If the user account which Peter uses on the laptop is LAPTOP, the default Address Book will normally be named laptop.wab and stored in the user profile for the LAPTOP account, which will be Documents and Settings\LAPTOP/etcetera.

Because the filename is explicitly defined in the Registry, and because Peter is copying a wab from an account with a different user name, say DESKTOP, into the user account LAPTOP, he has needed to rename the copy wab each time. Editing the Registry entry (see above) on the laptop to reflect the name of the wab being copied over from the desktop

computer, for example desktop.wab instead of laptop.wab, is a one-time operation to save renaming the file each time.

The ease with which this default wab file can be renamed opens up other possibilities on standalone and workgroup computers where the main user is also the administrator. For example, moving the default wab to a more accessible folder with a shorter name would simplify the copy operation, and could also make backing up easier. The default wab normally resides deep within a cosmopolitan mix of data, system, customisation, and temporary file folders gathered under Documents and Settings. This arrangement is designed to support centralised management of Windows 2000 clients in a managed Windows network; on a standalone workstation the complex mix of personal, system, and redundant data adds an unnecessary layer of complexity to backups.

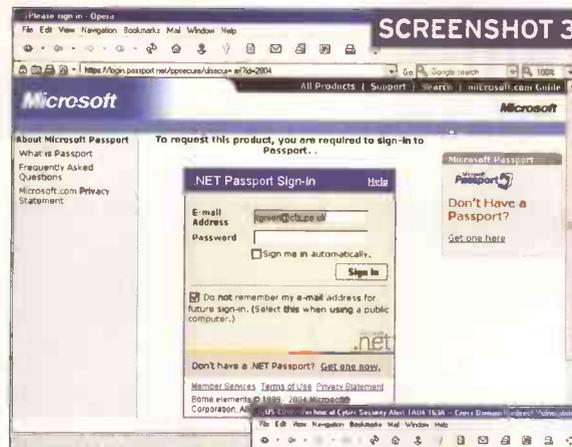
It's easy to determine the location and filename of the default wab for a user account. Start 'WAB' (omit quotes) from Start/Run. wab.exe is the Address Book application. It can run independently of Outlook Express. When the Address Book application is started in this way it opens the default wab, and the path and filename can be displayed with the Help/About menu of the Address Book application (see screenshot 2).

## Harry Caine

There have been several responses to the cautionary tale of Harry Caine reported in the August column. Mike Coe interrupted his backup routine long enough to dash off a note saying, 'The one thing we all want to know, which you didn't tell us, is what happened to Harry's computer in the end!' Harry ran an in-place upgrade which restored proper operation and retained his data and personal settings, but then he connected to the Internet without the benefit of any firewall protection and quite quickly found his computer once again infected by Blaster.

This is an all too common pitfall, regularly reported by readers. A recent email neatly described the symptoms of Blaster and went on to explain how the reader had 'reinstalled Windows 2000 several times in an attempt to eradicate this problem, including installing on a brand new hard drive, but the problem persists'.

This problem arises because a freshly upgraded Windows computer is a completely unpatched Windows computer. Any Windows upgrade,



from any version to any version, restores Windows to the default shipping state with no security updates or service packs applied. It requires an array of patches, often amounting to scores of megabytes before it can be considered fit to be

connected to the Internet. Until then, the newly upgraded computer is very vulnerable, not least to each exploit that has been identified and patched in the past. This alone is a considerable problem, as many exploits persist in the wild long after their initial exposure. The Microsoft Blaster worm was headline news last summer but continues to multiply, though less rapidly than at its peak, and several even older exploits continue to spread.

A firewall, including a personal software firewall, if installed prior to connecting to the Internet for the first time, is a must-have defence, but there are other steps also worth taking. In particular, go to the Microsoft UK Security home page at [www.microsoft.com/uk/security/protect/alert.msp](http://www.microsoft.com/uk/security/protect/alert.msp) or the main Microsoft security site at [www.microsoft.com/security/protect/cd/order.asp](http://www.microsoft.com/security/protect/cd/order.asp) for readers outside the UK, and order the Windows Security Update CD. This free CD contains critical updates for Windows 2000, XP, ME and 98. Production schedules being what they are, the Security CD, although released in February 2004, only contains updates released up to October 2003. Even so, applying the updates from this CD should make a dent in the amount that still needs to be downloaded from Windows Update. The only fly in the ointment is that those ordering the Security CD in the UK are required to register for a .Net Passport before being allowed to place the order (see screenshot 3).



Top: Microsoft Passport to Security

Bottom: Cert alert for Internet Explorer

While on the subject of firewalls, it's important to remember that a firewall is no magic bullet. There are a number of attacks, either hosted on malicious websites or arriving in HTML email, which bypass standard firewall setups by the rather simple expedient of using approved routes such as Internet Explorer and Outlook Express. You wouldn't expect a firewall to prevent you from browsing a website with Internet Explorer, or viewing HTML mail in Outlook Express, but this is how

some attacks occur.

They take advantage of Internet Explorer's unpatched vulnerabilities and ActiveX scripting to do their dirty work. One example, current in June 2004, can be found on the US Government's National Cyber Alert System on the Cert website at [www.us-cert.gov/cas/techalerts/TA04-163A.html](http://www.us-cert.gov/cas/techalerts/TA04-163A.html). The flavour

of the problem facing Internet Explorer users is succinctly described in layman's terms under the heading, 'II. Impact' in this document: 'By convincing a victim to view an HTML document (web page, HTML email), an attacker could execute script in a different security domain than the one containing the attacker's document. By causing script to be run in the Local Machine Zone, the attacker could execute arbitrary code with the privileges of the user running IE', (see screenshot 4).

A few mitigation methods are given under the heading 'III. Solutions'. Essentially it recommends disabling ActiveX in Internet Explorer and being very careful, while noting that 'this behaviour will not prevent exploitation of this vulnerability in all cases'. Not only that, but disabling ActiveX will prevent some websites, Windows Update for example, from being displayed in Internet Explorer. With this in mind, the safer course may be to switch to a more modern browser such as Opera, Mozilla, or Firefox for general browsing, while employing the ageing Internet Explorer only for access to Windows Update.

## CONTACTS

Terence Green welcomes your comments on the Windows 2000 column. Email him at: [win2000@pcw.co.uk](mailto:win2000@pcw.co.uk). Please do not send unsolicited file attachments.



**Barry Shilliday**  
has worked with computers for almost two decades. By day, he is a Linux and Unix consultant, but in his free time prefers to travel the world – and snap it with his camera

## Digital direction

We conclude our series on digital cameras by looking at manipulation and management

Over the past couple of months we've seen how to get digital cameras working under Linux. In the August issue we looked at libgphoto2, the back-end library that provides all the underlying hardware support for digital cameras, together with its command-line front end, gphoto2. In September's issue we saw how to use KDE's native support for retrieving images from a camera and deleting them through Konqueror. This month we'll end the series by having a look at Digikam, an application specifically designed for digital cameras and the manipulation and management of images.

Digikam, like KDE's native support, works on top of the libgphoto2 library, and relies upon this for hardware support. You'll therefore need a working version of the library before you can do anything with Digikam. Have a look at August's Hands on for details, or head over to the project's home page at [www.gphoto.org](http://www.gphoto.org). As we've seen previously, a quick and easy way to see if your camera is supported is to run the command `gphoto2 --list-files` after plugging in the camera; if you see a list of the images stored on the camera, everything will be fine.

Digikam offers more than simple image retrieval. It comes with a sophisticated album system for managing your photos. You can sort and edit the photos, add comments, and much more. Also, as a well-integrated KDE application, you can drag and drop images between different KDE programs. Finally, Digikam supports plug-ins, providing extra features such as mpeg encoding, setting an image to the backdrop, creating an HTML album, emailing images (and automatically resizing them), and multiple batch image-processing options.

Now we know how wonderful the application is, let's look at getting it installed. Currently Digikam (<http://digikam.sf.net>) is an independent, add-on package for KDE version 3.2. It's likely to be included in the next version of KDE (3.3), but in the meantime you need to download and install it for yourself. If you compile it from the source code, you will need the normal system development tools, as well as KDE development libraries. I always



Above: A window pops up in Digikam to confirm the added camera has been found

Right: Selecting your camera from the list will provide thumbnail previews of all photos on the camera



Right-clicking on a photo lets you perform common tasks such as deleting



SCREENSHOT 3

Installing from source is done in the familiar, standard way. Extract the source, run the configure program, and build and install the code:

```
# tar xfvj digikam-0.6.2.tar.bz2
# cd digikam
# ./configure
# make
# make install
```

(Key: ✓ code string continues)

The configure program takes an option '--prefix' where you can tell it where to install the binaries.

By default this is /usr/local, which is adequate for most people. You can specify another directory if you want to keep the application separate from the rest of the system, but be warned that this might require some extra configuration for KDE to find the new software. Note that Digikam will not compile under KDE 3.1 or older versions. If you're keen to use Digikam, now

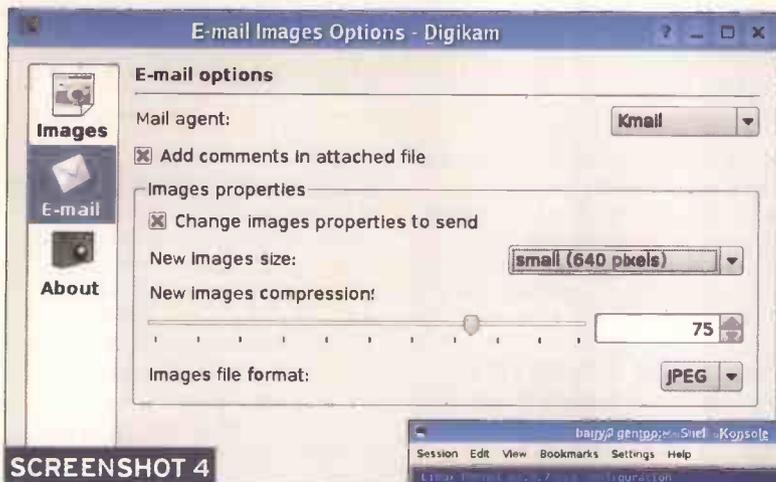
might be the time to upgrade to a newer distribution.

Once the compile process is complete (it may take a while), you can optionally install the plug-in package. This is also available on the project's home page, as well as this month's cover disc. Use the same numbered version for the plug-in package as the core application, digikamplugins-0.6.2.tar.bz2 in this case. Extract and build the code in exactly the same way as before.

### Setting up Digikam

Run Digikam from the KDE Graphics menu, or by running 'digikam' from a shell. The first time it's launched, it asks for a directory for the album. Unfortunately, it doesn't give you the option to create a new directory! The suggestion is 'Pictures' in your home directory – so open a Konqueror window to create this directory, or just run `mkdir ~/Pictures` from a shell. Now press the 'Select' button and find the new directory.

The main Digikam window now opens. The first thing to do is to add the digital camera. Select 'Settings -> Configure Digikam' from the menu



SCREENSHOT 4

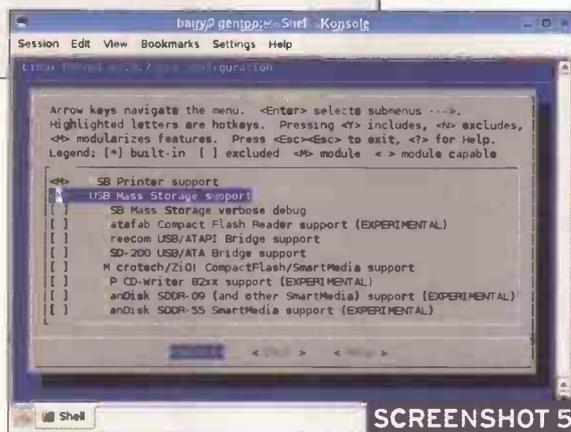
to get the appropriate screen. Click on the Cameras tab, and hit the 'Auto-detect' button. A window pops up to tell you the camera's found (see screenshot 1). Click the OK button to return to the main window. If you now click the camera icon on the toolbar, you should see your camera listed. Select it from the list to get a thumbnail preview of all the photos on the camera (see screenshot 2).

Right-click on any image to open the full-size image, download or delete it from the camera, or to retrieve Exif information. You can also download and delete multiple images by selecting the ones required – do this in the usual way by pressing the Ctrl key and selecting each image or dragging the mouse to select them.

## Albums

In the camera window you can create an album to manage the photos more easily. This is where Digikam's flexibility really lies. Click the 'New Album' button and enter a suitable name. Now downloaded images are placed into the album instead of the Pictures directory. You can download all files from the camera via the 'Camera -> Download' menu. Back on the main screen, right-click on the new album name to place it into a collection. Several pre-existing ones are available, such as Friends and Miscellaneous; you can add as many as you like. On the disk, each album is treated as a regular directory, and images are placed into these directories. An XML file maintains information about the photos, such as the collection, date modified and any comments added to the pictures.

From the album list you can do all sorts of impressive things, even more so if you've installed the plug-in package. You can drag images to other KDE applications or to other albums and double-click to view them. Right-clicking on a photo lets



SCREENSHOT 5

you perform common tasks (see screenshot 3) such as deleting, adding comments and so on, and the Tools menu gives access to some more exotic plug-in features, such as creating a calendar. As an example, select a couple of photos and run the 'Email Images' menu option (see screenshot 4). The plug-in works with several email applications, including Kmail, Mozilla and Evolution. You can have the plug-in automatically resize the image to a few preset sizes (nobody likes to receive 3,072 x 2,048-sized pictures). Once you hit OK, your email program is launched with the images attached and ready.

Digikam contains many more features, and newer versions will continue to build on these. The best way to learn its capabilities is to play around with it.

## USB storage

Those USB pens come in handy. For about £25 you can pick one up online that stores 128MB of data – far more useful than a floppy. Some PCs have a Bios that will even allow booting from them. What's more, you can use them to store and retrieve files on any PC or Mac (so long as it has USB ports, of course). This includes Linux systems, and there's not usually much you have to do to get them working.

The kernel uses its standard USB drivers to communicate with the pen,

Left: The Email Images option works with a variety of email applications

Below: The 2.6 kernel's configuration screen for adding the right driver

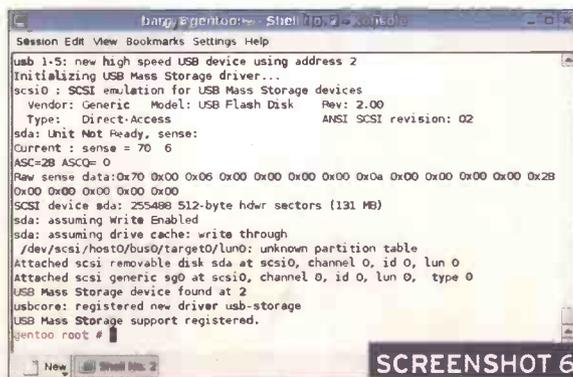
and these drivers are included in any recent Linux distribution. In addition, the kernel needs the 'USB Mass Storage' driver to let you access the pen's data. Again, for most recent distributions you won't have to do anything. If you use your own custom kernel, make sure the necessary drivers are installed. Screenshot 5 shows the 2.6 kernel's configuration screen for adding the right driver.

Now to get the pen working. First of all, plug it in and see if the kernel has found anything. If you run the 'dmesg' command, you'll see the various kernel messages since bootup. This information shows any hardware detected, including hot-pluggable USB devices.

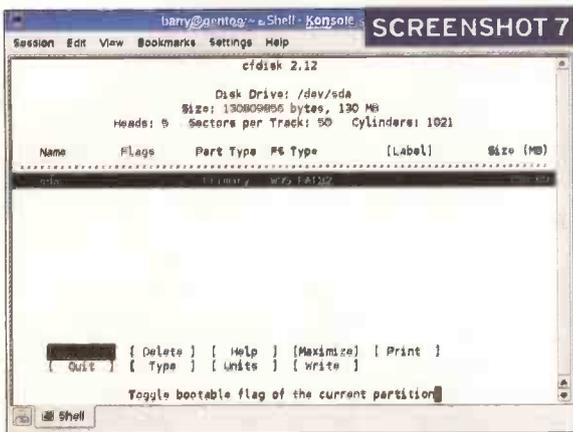
Look at screenshot 6. Here you can see the kernel has first initialised the USB storage driver, which has in turn detected the USB pen. The kernel treats it as a SCSI device – don't worry about this, it doesn't affect how the device works in any way. After this, the device is given a name and its size is detected (131MB). The device name is sda. You're probably familiar with hda, hdb, and so forth. These are the names the kernel uses for each IDE device. For SCSI disks, even emulated ones like this, an sd prefix (for SCSI Disk) is used instead of hd. If there is a real SCSI disk on the system, the pen will most likely receive the name sdb.

In this example, something unpleasant appears in the dmesg output: 'unknown partition table'. It's unlikely to be anything to worry about. Linux can treat USB pens in two ways: as a whole disk, just like a floppy disk, where the filesystem is laid over the entire device; or as a regular hard drive, which has partitions, even if it's one large partition that uses the whole drive. The kernel always tries to read a partition table on the device. If a filesystem is laid directly onto the whole device, as in this example, the kernel gets confused and reads a non-existent (hence corrupt)

The kernel has initialised the USB storage driver, which has detected the USB pen



SCREENSHOT 6



partition table, or complains that it can't read one.

You can simply use the pen as a whole disk, but there are a couple of reasons not to. One is that the kernel expects a table. More importantly, some distributions try to detect and configure USB pens automatically. If there is no partition table this will fail, either by making the pen inaccessible, or worse, creating false devices based on a non-existent but misread partition table. To get around this is simple enough – just create one large partition on the pen that covers the entire disk. You only lose about 1KB of space for the table and boot sector. If, however, you don't want to change the pen's layout, just skip to the next section.

Partitioning the pen is easy. Run `fdisk` or `cdisk` as you would with a normal hard disk:

```
# cfdisk /dev/sda
```

See screenshot 7 for an example.

The first time you run `cdisk` on the device, it will warn you that the partition table doesn't exist or is unknown. Accept its offer to create one. Be warned that this will destroy any data currently on the pen drive, so make sure you've transferred any files first. You can see how to do this later. Within `cdisk`, select 'New' to create a new partition, and then 'Primary' for the partition type. If you want to use the whole disk, just accept the suggested size. As with hard drives, you can create four primary partitions, including an extended one for logical partitions. Since the size is rather limited, it's usually only necessary to create one full-sized primary partition. Also note that Windows cannot manipulate partition tables on USB pens, and will only recognise the first primary partition.

Next, for Windows and Mac compatibility, change the filesystem type to Fat32 (type 0B, this is listed on the screen for changing types). For small-capacity pens, you might want

### Partitioning the pen is easy

FIG 1

```
/dev/sda1 /mnt/flash vfat noauto,user 0,0
```

to use Fat16 instead. Finally, write the table and quit `cdisk`. Rerun 'dmesg' and check the kernel has re-read the partition information. The kernel should no longer complain about an unknown partition table, and list 'p1' as a recognised partition.

### Mounting the device

The naming convention for partition devices is identical to IDE hard drives. As above, `sda` refers to the entire disk, while `sda1` refers to the first primary partition, `sda4` the last (since the maximum is four), and `sda5` and above to any logical partitions that exist. If you've created a new partition table, you will need to create a new filesystem (format in Windows parlance) before you can use it. Do this either in Windows or using the Dos tools for Linux:

```
# mkdosfs -F32 /dev/sda1
```

The -F option instructs the command to use Fat32, since it defaults to the old Fat16 format. Use the -n option to create a volume label – the default is no label. There are more options to `mkdosfs`, though you're unlikely to need any of them; see the man page for details.

The pen is now ready for use in Linux as well as Windows. Access the pen by mounting it in the normal way. For example, create a new directory `/mnt/flash` and mount the pen there:

```
# mkdir /mnt/flash
# mount /dev/sda1 /mnt/flash
```

If the whole device is used without a partition table, mount using the disk name (`sda`) instead of the partition name (`sda1`). Once you've finished with the pen, it's absolutely essential to unmount it before

removing it from the PC:

```
# umount /mnt/flash
```

Only root can mount and unmount devices in this way, which isn't particularly convenient for normal day-to-day use. It's simpler to set up a new entry in the file system table in the `/etc/fstab` file. Be careful editing this file; messing it up can make the system unbootable, since it contains all the disk devices to mount at startup. Add to the end of the file an entry such as the one in figure 1.

The table is in a standard format. The device name comes first, followed by the mount point (`/mnt/flash`) and the filesystem type (`vfat` for Fat32). After this, two special options are used: `noauto` and `user`. The `noauto` option tells the system not to mount the device automatically at startup; this is probably necessary for all removable devices. The `user` option allows any user to mount the device, although it restricts unmounting permission to only the user who mounted the device. With this entry in place, the mount command is simpler, too; the device name isn't necessary as the system picks it up from the `fstab` file:

```
$ mount /mnt/flash
```

The Knoppix CD-based distribution ([www.knoppix.com](http://www.knoppix.com)) automatically scans for USB pens on startup, and creates the appropriate icons on the desktop. If you insert the pen after booting, you need to do the manual process above to access the data. For normal disk-based distributions, the `fstab` line is enough to make the pen available for use at any time. You can create a desktop icon in KDE by right-clicking on the desktop and selecting 'Create new hard disk device'. In the window that follows, enter a name (such as USB Pen) and, under the 'Device' tab, select the correct entry from the `/etc/fstab` file (see screenshot 8). You can then use the pen in KDE by clicking on its icon – it is automatically mounted if required. As usual, be sure to unmount the pen before removing it – there's an unmount option on the menu if you right-click on the pen's icon.

Under the 'Device' tab, select the correct entry from the `/etc/fstab` file



### CONTACTS

Barry Shilliday welcomes your comments on the Linux/Unix column. Email him at: [linux@pcw.co.uk](mailto:linux@pcw.co.uk). Please do not send unsolicited file attachments.

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**Tim Nott**  
is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family

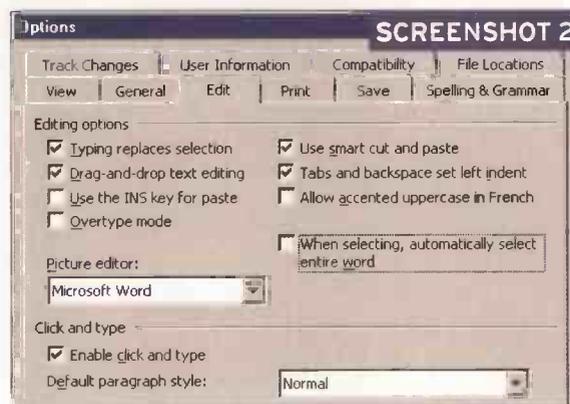
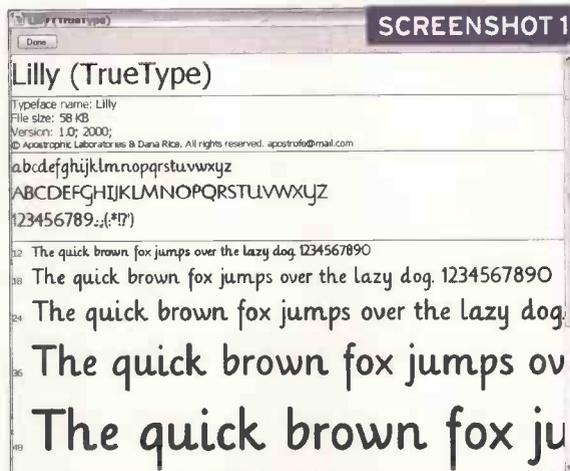
## Back to school

### Some handwriting font links and a few tips on selecting text in Word

**A**ugust's request for fonts for teaching handwriting brought forth a terrific response. The overwhelming majority suggested typefaces from the British designer and handwriting guru Rosemary Sassoon, particularly Sassoon Infant and Sassoon Primary. You will find Dr Sassoon's fonts at [www.clubtype.co.uk/sassoon.html](http://www.clubtype.co.uk/sassoon.html).

These fonts are not free, but there are reduced prices for schools. Malcolm Gordon kindly brought Kath Balcombe's Handwriting for Windows to my attention – this is a combination of handwriting software and a cursive font. Kath has been teaching dyslexic pupils for 17 years – you can find out more at [www.users.globalnet.co.uk/~babc](http://www.users.globalnet.co.uk/~babc). If you're looking for a free font, then primary school teacher Tony Hunter suggests a visit to [www.underfives.co.uk/download.html](http://www.underfives.co.uk/download.html), which has a number of shareware and freeware fonts. The Young Reader font is shareware – you can try it for free but if you want to keep it you'll have to pay its designer, Mrs Gail Petersen of Reno, Nevada approx \$5. The other fonts – National First and National Primary – are freeware, and designed by Roger White, who works at a UK school for autistic children. There's a dotted version of National First, which teachers might find useful.

Mike Moore suggested Lilly, designed by Fredrick Nader of Apostrophic Lab and Dana Rice (see screenshot 1). Sadly the website, [www.apostrophiclab.com](http://www.apostrophiclab.com), has been 'under construction' since last December, but we did find a selection of the Lab's fonts at [www.pedroreina.net](http://www.pedroreina.net). You may be able to find other sources with a web search, but take note there is another typeface named 'Need a Lilly', which is a font composed of needle-and-thread characters. Although the licensing information in the Lilly (and other Apostrophic typefaces) is unclear, an article on that site quotes Nader as saying: 'The question I am most frequently asked is this: "Why do you give your fonts away for nothing?" This is an honest and complicated question. My answer is this: "This is the alphabet. Nobody owns the alphabet."' And, no I don't know why the Lab names typefaces after medications.



**Top: The Lilly TrueType font**

**Bottom: Word's select and paste options**

### Selection box

In this month's Question time, we promised Ken Townley some more tips on selecting text in Word, so here they are. If you move the cursor into the left margin of the document in Normal or Page Layout view, you'll see it turn into an arrow similar to the Windows standard pointer, except that it points to one o'clock rather than 11. From here, a single click will select the nearest line. Note that if you have 'Wrap to window' turned on in Tools, Option, View, then the contents of that line may not be the same – you'll see the difference if you swap views. A second click selects the entire paragraph, irrespective of view and a third click selects the entire document. However, if you hold down the mouse button after the second click, and drag up or down, you'll find whole paragraphs will be added to the selection.

Inside a paragraph, a single click repositions the insertion point, a double click selects the nearest word, and a triple click the paragraph. If

you want to select an entire sentence, then hold down the Control key and click anywhere within the sentence. If you prefer the keyboard to the mouse, then there is a wealth of possibilities. In general, the Shift key extends the selection to wherever you go with another key, so Shift & right arrow will select the next letter, Shift & End will select to the end of the line and Control & Shift and Home will select the entire document up to the insertion point. The F8 key will put you in 'extend' mode – it is equivalent to holding down the Shift key, and you can cancel it with the Esc key. However, if you keep pressing the F8 key on its own you'll select a word, then a sentence, then a paragraph and then the whole document.

There are a couple of items you should look at in Tools, Options, Edit. First, drag and drop editing is on by default, but it isn't compulsory: if you'd rather use the keyboard or menus to cut, copy and paste, you can disable drag and drop (see screenshot 2). The option to 'automatically select entire word' is one of those things you'll either love or hate. I am of the latter persuasion, as I often find my typing skills mean I have to get into the middle of a word. However I do consider 'Smart cut and paste' essential. This makes sure you don't inadvertently add extra spaces or remove spaces between words when pasting or drag-dropping, and also removes superfluous spaces when you delete text. Although it's not totally foolproof it does save time, and if you've got Word XP or 2003, you'll find a Settings button to fine-tune the options.

Finally, if you hold down the Alt key and drag with the mouse, you can select a rectangle of text. This can be useful in selecting columns of text separated by tabs and can also produce 'cut-up' poetry in the style of William Burroughs. Finally, if you have Word XP or later, holding down the Control key lets you create non-contiguous multiple selections.

### CONTACTS

Tim Nott welcomes your comments on the Word processing column. Email him at: [wp@pcw.co.uk](mailto:wp@pcw.co.uk). Please do not send unsolicited file attachments.



# Predict your monthly payments

Create a formula for working out bills and find the last cell of a column

	A	B	C	D	E	F	G	H	I	J	K
1	182	0.113	0.0715								
2											
3	191	£21.21		9	182	£ 20.57	£ 0.64	£ 21.21			
4	180	20.34		0	180	20.34	-	20.34			
5	182	20.57		0	182	20.57	-	20.57			
6	175	19.78		0	175	19.78	-	19.78			
7	182	20.57		0	182	20.57	-	20.57			
8	184	20.71		2	182	20.57	0.14	20.71			
9	190	21.14		8	182	20.57	0.57	21.14			
10	179	20.23		0	179	20.23	-	20.23			
11	210	22.57		28	182	20.57					
12	182	20.57		0	182	20.57					

How to build up a formula bit by bit

arrive at the formula shown at the start of this column (see screenshot 1) and you can remove all the intermediate steps.

## Finding the last cell

Bruce Finlaison asks if there is an Excel function to reference an entry in the last cell of another column. There isn't but it's easy to create one. Press Alt & F11. On the Insert menu, choose Module. Type in the following code originally volunteered by reader Chris Fox (see screenshot 2).

```
Public Function LastCell(rngCells As Range)
    Dim i As Variant
    For Each i In rngCells
        If Not IsEmpty(i.Value) Then
            LastCell = i.Value
        End If
    Next
End Function
```

Close the VBA window. Save the file and now your new function will be available. If the column concerned is F then in a cell in another column type:

```
=LastCell(F:F)
or
=INDEX(F:F,COUNTA(F:F))
```

It works if there are no blank cells in the column above the last occupied cell. In blank cells you could enter a zero and on the Tools menu choose Options, View and uncheck the Zero values box.

If you want to find the bottom of column F, and there are no intermittent blank cells, click on cell F1 and press End and then Down arrow. If there are blank cells in the column click on the column heading F. Then press Shift & Enter. Then press Ctrl & Up Arrow.

## CONTACTS

Stephen Wells welcomes your comments on the Spreadsheets column. Email him at: [spreadsheets@pcw.co.uk](mailto:spreadsheets@pcw.co.uk). Please do not send unsolicited file attachments.

Reader Roger Kimber uses a spreadsheet to predict his gas and electricity bills. The first 182 units of each weekly total used are charged at 11.30p, and any above this are charged at 7.15p. He wanted a formula to work out each week's usage charge.

There are many ways of calculating this. Here is one way and it works with any spreadsheet which offers an IF() function such as Excel, Lotus 1-2-3, Quattro Pro and Works.

My suggestion to him was to list his weekly totals down column B starting in cell B3. In cell A1 enter 182. In B1 enter 0.113. In C1 enter 0.0715. Then in C3 he could enter this formula and drag it down the column:

```
=(B3-IF(B3>$A$1,B3-$A$1,0))*$B$1+IF(B3>$A$1,B3-$A$1,0)*$C$1
```

(Key: ✓ code string continues)

But the purpose here is not to provide a ready-made formula but to suggest how to create your own.

If you can give an example of the answers you are looking for you have undoubtedly worked it out by taking logical steps. To distil that into a spreadsheet formula, first record the steps you took on a spare worksheet. Let's do that with Roger's example.

Make the entries for A1, B1 and C1 as described above. In B3 make a sample entry of 191 units. The first thing to calculate is, if the entry is more than 182, how many more units is it? In cell E3 enter the formula:

```
=IF(B3>A1,B3-A1,0)
```

However, as you are going to drag this down the column later, and you don't want A1 to change, click on each A1 in the Formula Bar and press the F4 function key. So now this bit of the formula reads:

```
=IF(B3>$A$1,B3-$A$1,0)
```

That gives us the number of units which will be charged at 7.15p.

Now you need to find the number of units to be charged at 11.30p so in cell F3 enter, =B3-E3. If the entry in B3 is 182 or higher then F3 will display 182. If it's lower, then F3 will repeat the entry in B3.

Skip column G to give some breathing space and in column H calculate the total charged at the higher rate. So in cell H3 enter:

```
=F3*$B$1
```

With this example the answer should be £20.57 as it represents 182 units x 0.113. Column I will hold the cost of units charged at the lower rate. So the formula in cell I3 will be:

```
=E3*$C$1
```

and the answer with this example will be £0.64.

Now all you have to do is add together the cost of the units charged at the higher rate with the cost of those at the lower rate so in cell J3 enter:

```
=H3+I3
```

giving a total of £21.21 for 191 units. You can drag these formulas in columns C through H down to cover the entries in column B.

Now to the fun part. In cell C3, transfer all this into one formula. Instead of H3+I3 as in J3, enter the contents of H3 and I3 so you get:

```
=(F3*$B$1)+(E3*$C$1)
```

Replace the F3 with the contents of cell F3 and you get:

```
=(B3-E3)*$B$1+(E3*$C$1)
```

Finally replace the mentions of E3 with the contents of cell E3 and you

Creating a function to find the last cell in a column

```
Public Function LastCell(rngCells As Range)
    Dim i As Variant
    For Each i In rngCells
        If Not IsEmpty(i.Value) Then
            LastCell = i.Value
        End If
    Next
End Function
```

SCREENSHOT 2

**IS YOUR  
ANTI-VIRUS  
UP TO  
SPEED?**

## **FASTER RESPONSE TO NEW VIRUSES**

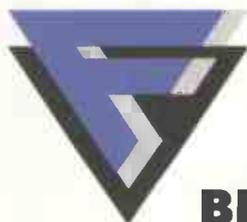
New forms of worms and viruses appear frequently and spread with astonishing speed. Protecting against known viruses is easy – responding to fast, new threats is where you'll see the difference.

At F-Secure® we monitor the networks around the clock and statistics\* show our research lab consistently responds with updated protection much faster than our major competitors. Our unique service enables us to deliver up-to-the-minute protection to workstations, servers and gateways, multiple times a day. In addition, F-Secure's user-friendly interface makes it easy to install and maintain the highest level of protection.

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\*c't magazine and AV-Test.org, April 2004

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**Ken McMahon** is a freelance journalist and graphic designer. His involvement with digital graphics began with a Commodore 64. He graduated to Macs and now works mostly with PCs. Draw your own conclusions

# Mixing it up

## How to mix audio for Dolby Digital 5.1 output and tackle surround sound



Left: Adjusting the master volume level in Premiere Pro's Audio Mixer



Below: Panning a mono sound effect from left to right using Latch automation

**A**udio is often the last thing people think about when they are editing a video but, like titling, it's often the thing that makes the biggest difference and turns an average production into something exceptional. The audio tools available in video-editing applications, from professional kit such as Premiere Pro all the way down to the likes of Windows Movie Maker 2, Pinnacle Studio 9 and Ulead Videostudio 8, contain everything you need to provide your audience with a professional audio experience.

At it's most basic, audio editing involves adjusting levels to ensure consistency throughout and between clips, introducing crossfades at video cuts and an attempt to remove, or at least minimise, noise.

Variations in levels might arise simply as a result of using a camcorder's built-in mic to record an interview including close-up and medium-range shots; as the subject gets closer to the camera, their voice gets louder. Noise is any audio that you don't want, from the buzzing of the camcorder tape transport motor to low-flying aircraft.

While there are steps you can take, and tools that will help you improve the quality of poor audio, you can save yourself a lot of effort by taking a few basic steps that will help you obtain the best quality audio in the first place. Using a good quality external stereo mic, with a wind shield rather than the one mounted on the camcorder, and monitoring the sound with headphones will help avoid some of the worst problems.

Aside from normalising sound levels and cleaning up audio, there's also huge scope for improving sound quality by intelligent fading, correctly balancing the levels of multiple audio tracks and modifying the waveform properties to create or enhance audio atmosphere.

### In the mix

Consider a sequence which includes the following audio components: the 'natural' stereo audio soundtrack recorded with the video at the time of shooting, let's say a busy street scene with traffic noise; a voiceover narration recorded subsequently and a music backing track. The overall volume levels of each of these audio components will need to be carefully balanced to ensure each element gets the right emphasis at the right time. The motorcycle that passes by just as the narration reaches a crucial point will need to be faded back and the climax of the music will need to be ramped up just as the narration reaches the end. It's increasingly the case that editing applications will allow you to carry out this task in real time during video playback, producing keyframed adjustments in the audio track.

In addition to all of these considerations, DVD video provides Dolby Digital 5.1 surround sound, and a number of video-editing applications provide tools for balancing sound channels across the six speakers of a 5.1 speaker setup.

Until quite recently, 5.1 encoding was the preserve of expensive professional editing programs, or required plug-ins, but lately has begun to appear further down the video-editing food chain in applications like Pinnacle Studio 9, which we'll look at later, and Ulead's DVD Movie Factory 3 Disc Creator.

I don't intend to go into detailed explanation of how 5.1 encoding works here, so if you're a bit sketchy have look at Niall Magennis' very readable explanation in December 2003's Sound column (available for 99p on the PCW website. Go to [www.pcw.co.uk/PCW/HandsOn](http://www.pcw.co.uk/PCW/HandsOn), click on Sound in the left-hand page and go to the bottom of page six). What I will show you is how to balance and encode audio for multichannel output on DVD in both Adobe Premiere Pro and Pinnacle Studio 9.

But first, I want to run through some of the basics of sound editing in Premiere Pro. You'll find similar audio tools in other professional editing applications such as Ulead Media Studio, Vegas 5 and Final Cut Pro and Express on the Mac.

When you place a DV clip into the Video1 track on Premiere's timeline its stereo audio track is placed into the Audio1 track. Drag the zoom slider in the timeline window to the maximum zoom value and, if necessary, adjust the height of the Audio1 track so you can see the waveform.

The height, or amplitude, of the waveform represents the volume of the sound and the frequency represents the pitch. Delete the unused audio tracks by right-clicking on Audio2 and selecting 'delete tracks' and 'delete audio tracks/all empty tracks' in the dialogue box, and select workspace/audio from the window menu to display the audio mixer.

Below the Audio1 track you'll see the master track for the sequence. Click the triangle to expand the track and, if you can't see the yellow volume line running along the middle, click the Show keyframes button and select Show track volume from the contextual menu.



In the Audio mixer drag down the master volume slider and you'll see the master track volume line move lower down. All of the audio tracks in this sequence are mixed through the master track, so you're controlling the overall volume level for the sequence (see screenshot 1).

Display the track volume for Audio1 and drag the volume fader for the Audio1 track in the audio mixer, and you'll see the volume levels change in the same way. Press the space bar to play the sequence and adjust the audio levels during playback. Click the loop button at the bottom of the audio mixer to continuously loop playback while making adjustments.

Beneath the track indicator in the audio mixer you'll see a pulldown menu with five options – off, read, latch, touch and write. These are automation modes for applying keyframed changes to an audio track during playback.

Using our earlier example, you could play back your street scene and, at the point where the motorcycle buzzes into audio range, slide down the volume faders until it's barely audible or at least doesn't interfere with the narration track.

The various modes work as follows:

- **Off:** Ignores any previously keyframed changes during playback.
- **Read:** Reads the automated settings and applies them during playback.
- **Write:** Writes changes to the audio track during playback. Keyframes are written from when playback starts, whether you make changes or not.
- **Latch:** Latch is like write, but no keyframes are written until you make a change and the new value remains until you change it again. For example if you reduce the track volume fader to -∞ it stays there until you move it back up again.
- **Touch:** This is like latch, except that altered values aren't 'latched'. They don't stay where they are when you stop adjusting, but return to their original setting at a rate determined by the Automatch time audio preference in the audio preferences. The default value is one second. In touch mode you would drag the volume fader downwards as the motorcyclist approached, hold it as he passed by, then let go so it would return to its original position.

Clearly, there's scope for disaster here – if you hit the playback button with the wrong automation mode selected you could, in a few seconds or worse minutes, accidentally overwrite a lot of carefully edited audio. To prevent this from happening you can right-click the relevant property and engage Safe During Write mode.

## Left, right

Before we get onto mixing audio for AC3 5.1 encoding, let's first take a look at a related process called panning. Panning positions a mono audio track within a multichannel (in this case stereo) track. Typically, panning is used to locate positional sounds in the right place. Using our motorcyclist example, let's assume we want to enhance the engine noise, rather than eliminate it – if our motorcyclist was driving towards and past us on the left side of the screen we'd want the sound to come from the left speaker.

Here, we'll use a mono effects wav file for the motorcycle sound called bike.wav. With the timeline window active select Sequence/Add tracks and add a mono audio track called motorcycle. Place the bike.wav clip at the beginning of the track, press Home to return the playhead to the beginning of the sequence and then press the spacebar to begin playback. What you'll hear is the video's stereo soundtrack in the Audio1 track, overlaid with the bike.wav clip in the motorcycle track. The mono audio is equally split between the sequence's left and right master stereo channels. You'll be able to hear this clearly if you mute the other audio tracks by pressing the solo track button for motorcycle in the Audio Mixer.

Press Home to return the playhead to the timeline start and in the Audio Mixer drag the pan control for the motorcycle track all the way to the left until it reads -100. Now play back the sequence and you'll hear the sound effect coming from the left speaker only. The default automation mode for the new channel is Read, so no keyframes have been created yet and the pan adjustment affects the entire track.

Return the playhead to the timeline start once again and change the automation mode for the motorcycle track to latch. This time, after a couple of seconds, drag the pan control all the way to the right until it reads 100. It's easier to do this smoothly by scrubbing the numeric input below the pan knob; hold down the Shift key to increase the rate of change. Aim to complete the pan in one to two seconds.

Expand the motorcycle track, click the Show keyframes button and select Show track keyframes from the contextual menu. Click the track effect properties and select panner/pan and you'll see the automatically created keyframes that move the mono sound from the left to the right channel. Return the playhead to the start of the sequence

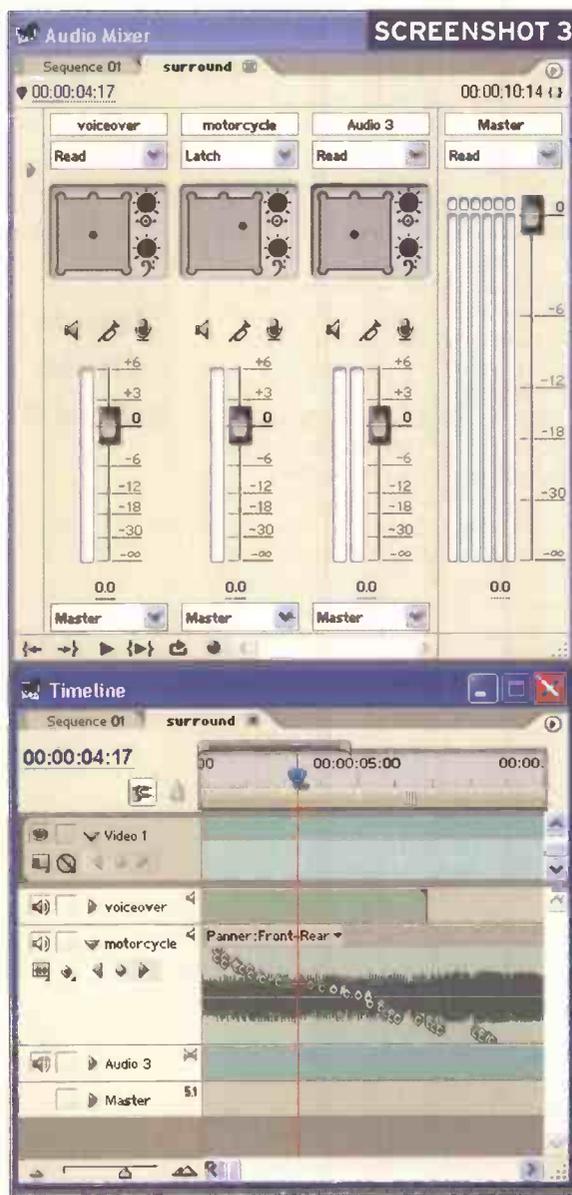
and play back to confirm that the sound travels smoothly from the left to the right speaker (see screenshot 2).

When you do the same thing with a stereo audio track it's called balancing, rather than panning – hover over the pan/balance knob and the tip box will call it a pan control on mono tracks and a balance control on stereo ones.

## Surround sound

Balancing audio tracks for a 5.1 surround system works in much the same way, except that there are six outputs to choose from rather than two. The only condition for panning or balancing is that there must be more channels in the output track than there are in the input track. Consequently you can pan a mono track or balance a stereo track to a 5.1 track. If you import an existing 5.1 audio track the input channels are

**Balancing a mono effect to a 5.1 surround mix. During playback the puck moves from top right to bottom left. The front/rear keyframes are displayed in the timeline view**





just passed straight through to the output channels.

Create a new sequence (File/New/Sequence) called surround, with one video track. In the audio pane of the New Sequence dialogue box select 5.1 from the master track pulldown, select two mono and one stereo tracks and leave the others on zero.

Drag the video clip to the Video1 track; its associated stereo audio track will be placed in Audio3. The bike.wav effect we used before goes into Audio2, renamed motorcycle, and we've captured a voiceover narration to the Audio1 track which has been renamed voiceover.

If necessary, resize the Audio Mixer so that you can see all three audio tracks and the 5.1 master track. Notice that the pan and balance controls have been replaced by a 5.1 surround tray.

The surround tray looks a bit like a bizarre billiard table with pockets at all four corners and one in the middle of the top edge. As you might have guessed, the pockets represent the channels, or speaker positions in a 5.1 system – left, right, centre, left surround and right surround. Additionally, there are two knobs to the right of the surround tray. The top one controls the centre channel percentage and the bottom one the strength of the low frequency effects (LFE) channel, which is directed to the subwoofer unit.

As before, you can position and move the sound in individual mono and stereo audio tracks within the 5.1 surround field during playback using one of the available automation modes. This time the motorcycle is going to approach from the front right and exit via the rear left speaker.

First drag the puck from the motorcycle track surround tray into the top right pocket and select Latch mode from the track automation pulldown. Begin playback of the sequence and at the appropriate

**Pinnacle Studio 9's Volume and balance tool depicts all three of its audio tracks in the same surround pan using different icons**

moment drag the puck from the top right pocket into the rear left one.

To check the keyframes have recorded select Show track keyframes in the timeline window and click the track effect properties. The panner properties now has four display options; left-right, front-rear, centre and LFE. Select left-right to see the keyframes move the track audio laterally across the 5.1 space and front-rear to see its progression in that axis (see screenshot 3).

If you want to hear the effect you'll need a soundcard capable of 5.1 output hooked up to a suitable speaker system. Alternatively you could burn a

## 'You don't need expensive editing software to make use of surround sound'

recordable DVD to check the mix on a home theatre system.

Depending on the nature of the track, you might want to similarly adjust the centre and LFE strength. For vehicles, explosions and the like ramping up the LFE can make a big difference to the impact.

The centre speaker is usually used to enhance dialogue, and so for your voiceover narration track you should leave the puck in its default central location, but increase the centre percentage to 100.

You don't need expensive editing software to make use of surround sound. Pinnacle Studio 9 can encode audio tracks in Dolby Pro Logic format, an analogue forerunner of Dolby Digital which decodes the audio signal to provide spatial information to a four-channel system – left, right, centre and a rear surround channel.

You manipulate surround audio in Studio 9 using the Volume and balance tool. Studio's audio tools are much less sophisticated than

Premiere Pro's, but they're also a good deal simpler to use.

For one thing you're limited to three sound tracks – the original audio associated with the video clip, sound effects/voiceovers and music. These are displayed left to right in the Volume and balance tool, each with a master volume control and level fader.

In stereo mode the sound can be balanced from left to right by dragging a speaker icon between a pair of main speakers. In surround mode you can position each track in the same fashion from left to right and from front to back, although with Pro Logic you don't have the option of differentiating between left and right at the back (see screenshot 4).

As with Premiere Pro, you can balance surround audio during playback of the timeline and Studio automatically adds keyframes. The timeline can display either volume, balance (left/right) or fade (front/back) keyframes, which are selected from the clip's contextual menu.

Once you've balanced the audio, the speaker icons in the surround tray are animated during timeline playback, so you can see where the sound is going. Further changes using this visual interface overwrite existing keyframes, so any fine tuning is best carried out by manipulating keyframes in the timeline itself.

## Slide scanners update

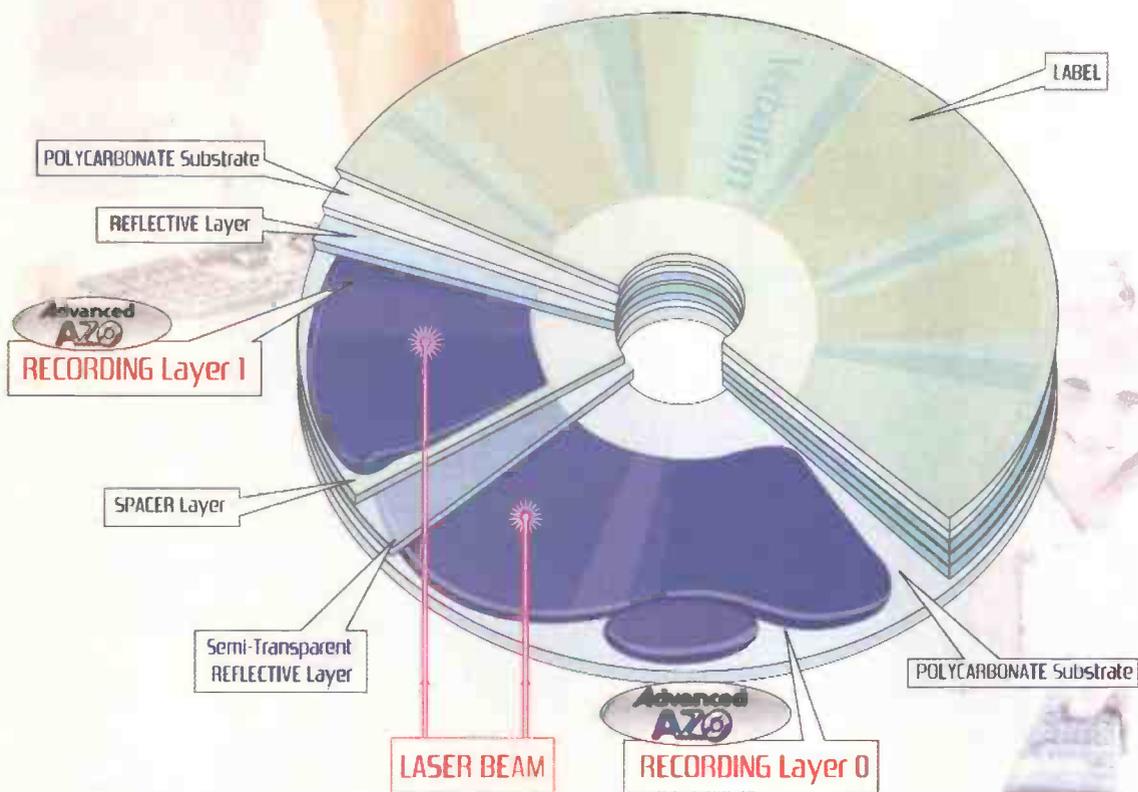
In the last issue, I compared transparency scanners from Minolta and Nikon. Just after we went to press, Tony Moon emailed to ask about options for scanning transparencies. Tony mentioned that he was considering buying an ES-E28 slide copy adapter for his Coolpix 4300. I have to admit that this contraption, which attaches to the lens of the camera via an adapter, is a new one on me, but it looks interesting and appears to be good value at around £70 including the adapter. I'll be trying to get my hands on one to see how the quality measures up to a 'proper' slide scanner. In the meantime, if anyone else has used one, or something similar, both myself and Tony would be interested to hear from you.

## CONTACTS

Ken McMahon welcomes your comments on the Digital imaging & video column. Email him at: [digitalimaging@pcw.co.uk](mailto:digitalimaging@pcw.co.uk). Please do not send unsolicited file attachments.

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**Guy Kewney** has been reporting on all aspects of IT since long before the first personal computers arrived on the scene. He now believes the wireless revolution will change the world



# Travelling companions

We help you choose a few essential items for your travels, and check out Spybot

**T**his month, a look inside my travel bag after a salutary lesson about high-charge wireless. The high charge comes about from using GPRS roaming. I've ranted about this and warned readers to ensure they do deals before travelling; roaming costs can be astronomical. My highest so far was a session in Spain, where Telefonica managed to charge me €34 per megabyte, when I was under the impression I was paying a tenth of that (and grumbling about how high the charge was, as well).

What I didn't realise at the time was how much of that traffic wasn't mine. It was spyware.

Spyware normally comes under the heading of 'something I'm going to fix one day'. I don't like it, but it's not a problem – at least when you're sitting at home using broadband. However, if you get enough spyware cluttering up the PC, then the machine slows down. And, more significantly for the mobile user, that traffic starts to get pretty expensive when you have to pay by the megabyte, as is the case with GPRS.

It was after a grumble from my accountant that I looked into an unexpectedly high roaming data charge, and discovered that I'd been using a connection far more than my memory could justify. In the end, I concluded that unauthorised traffic was the problem, so I've now made it a habit to install Spybot.

I've tried several spyware trappers, and this is the one I use. Most of the others have serious defects of usability, and all of them cost more than Spybot.

Given that Spybot is now a must when I'm travelling, the question arises: what else would you regard as essential gear for the wireless nomad? So this month's column, in the hope that my example may be helpful, offers a look into my travelbags and quickly describes how to install Spybot.

## What's in your wallet?

Don't laugh. It's a tangle of cables. Bit by bit, I'm trying to replace the cables with wireless devices. But, wired or wireless, this is a collection of things I'd say you have to have with you when you travel. Some of



You have to look in the bottom right corner of the screen, for the blue B for Bluetooth icon (circled), to use the device

these things are not ideal, but just happen to be what I bought when I needed to get up and running.

## The computer

I have an IBM Thinkpad X31. There's a simple reason: it's small and light, but has a high-res screen and a battery that lasts for a full day.

When I got it, its Centrino wireless chipset was a big plus: it meant that I could go anywhere there was a Wifi wireless network, get onto the Internet and still have the card slot free for other things. These days, I

## 'If you get enough spyware cluttering up the PC, then the machine slows down'

have to plug rather too many other things in and it's about due for upgrade, not least to support 802.11a and g; the old Centrino chips only support 802.11b. It also has no Bluetooth, no SD (Secure Digital) slot and only two USB sockets, both of which are USB1.

It does have two slots: one standard PC Card, one Compact Flash (CF). That was essential when I got the PC, because I had a digital camera with CF storage. Now, I have a new 5megapixel HP 945; unfortunately,

Right-click on the Bluetooth icon, select Quick Connect, then Headset

it uses SD storage. So my favourite add-ons are the mini USB hub, and the mini-Bluetooth dongle.

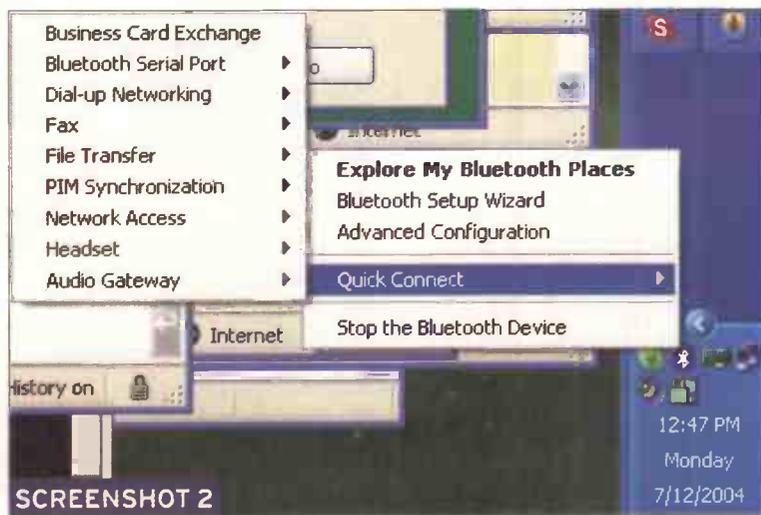
The Bluetooth dongle is the new Linksys USB part and the first one I've plugged into my PCs which worked without having to muck about updating drivers or using third-party software. Other people speak highly of the TDK Bluetooth device, but recommend third-party drivers, for example.

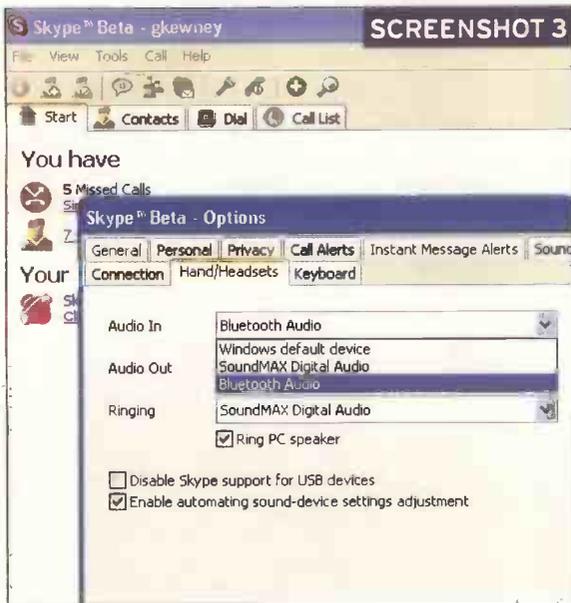
Installing it is almost too simple to describe – with two caveats. The first is that you install the software before plugging in the device. Under Windows XP, it really didn't seem to matter that much: I tried it both ways on two separate machines, and it sorted out the drivers without problems. Other versions of Windows are pickier.

The second caveat is that when you've installed it, nothing appears to happen. You have to look for the new icon in your systray (see screenshot 1).

Click on that, and the obvious thing to do is to search for a headset. You're going to be using Voice-Over-Net while you're travelling, so open Quick Connect (see screenshot 2) then select Headset from the pop-up menu. Follow the instructions on the screen to connect to your Bluetooth headset, and you now have a wireless headset for your PC. I use the Plantronics Bluetooth headset.

Why this one? Not because of its excellent performance in a breeze – which appears to be true of all of them. As soon as any wind blows, people say: 'Sorry, can't hear you...' it





beats me why they can't think of a way to solve this problem.

But it is still better than a wired hands-free kit. The wire gets caught around the handbrake, the car door handle, indicator stick, gear stick and even in the door. If you hide it in your pocket, it tangles up and when you need it, it's a five-minute game to untangle it.

There's another big advantage to using a Bluetooth headset with your PC: it allows the phone to ring. Normally, Voice Over Net means that the phone rings in the soundcard. If you have a headset on, you can hear it just fine, sometimes too loudly, but if you are away from your machine it's inaudible.

With the Bluetooth headset, you can get the phone ring to go through the PC speaker (using Skype as the example, see screenshot 3) or through the 'default audio' or the headset. So the phone can ring in your study as loudly as you set the volume control on the speaker; but the voice comes through the headset as privately as you like.

If you imagine this means fewer wires, you're wrong: you now have to carry your Bluetooth headset charger with you as well.

The next item to take is a multipurpose Flash card reader. They're amazingly cheap, they plug into the USB socket and you stick your camera memory chip into a socket. The memory card appears in Explorer as a disk drive and you copy the files across. The one I have isn't ideal, but it works.

## The mouse

The Thinkpad has a little red trackpoint. But there are times when only a real mouse will do, and so I

With net phone calls, you can make the ring go through the speakers but have private chats through the headset

tried a wireless mouse. It used Bluetooth and it took me about six goes to give up on making it work. I couldn't, so I gave it to a friend, and bought a very cheap Powersync portable mouse in Taiwan last time I was there. It has wires, and plugs into the USB port. But that leaves me with a problem, because I also plug my SPV smartphone into the USB port; and now I've got two ports and three devices.

## The smartphone

The phone I presently use for making calls is the Orange SPV E200 (by the time you read this, I have a suspicion it will be the Orange E500, but that's a guess after seeing a prototype). But what makes me use the SPV?

Certainly not the battery life – it needs charging every night, or the design; it's a lump. The answer is simple: Pocket Outlook.

On a PC, Outlook is one of the software products I tolerate. I suspect

## 'With a Bluetooth headset the phone ring will go through the PC speaker'

I'll never love it. I could rant for several pages about the things I dislike about it, but suffice to say if I'm looking for your name or phone number, I'll reach for the SPV, because it is so easy and quick at finding them in a hurry. It also shows me my appointments, without having to pull the PC out of my briefcase and switch it on.

But that doesn't solve the problem of the batteries. I have to recharge it, and because it comes

with a dual-purpose recharge and sync cable, this isn't an issue. As long as it is plugged into the USB port, it will exchange new data with the PC and charge its battery. But this is my third USB connection.

Yes, I have too many devices. Mouse, phone, card reader and that's before adding any other device – say, a portable CD or DVD drive. I solved this by getting the 'world's smallest USB hub' which is a self-powered device that's small enough to fit into a Type 2 PC Card slot if you have one. It's incredibly cheap in some parts of the world, and I got mine for €10 – but I've seen it for four times that price, so shop around.

It will also take a headset, if you don't have a Bluetooth one.

Other essentials? There are a few. I travel with a four-socket UK power extension cable. It means I only need buy one foreign adapter for whatever country I visit. Also, it means that I get priority in a crowded seminar room, because three other people from the UK can share my socket.

Bizarrely, I also have my own wireless access point. It allows me to have wireless Internet in hotel rooms where they have only provided wired Ethernet, and has security enabled, so that guests in neighbouring rooms can't access the net via the connection I'm paying for.

I have a wonderful little retractable headset too, which folds up small enough to fit into a shirt pocket, and if you haven't got a Bluetooth one (or the Bluetooth battery is flat) I recommend using something like this for phoning home.

And finally, I do travel with a portable USB DVD player/CD-R.

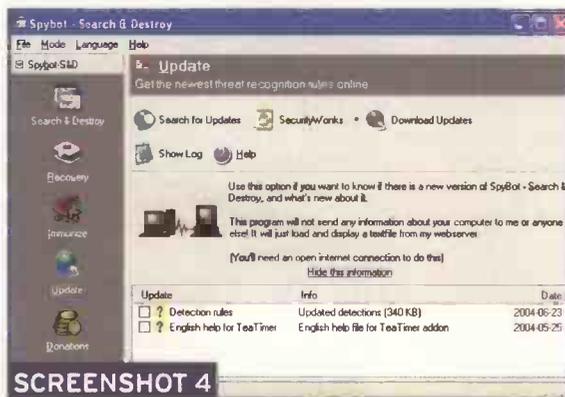
## Spybot

Back to Spybot. I downloaded this from [www.spychecker.com/program/spybot.html](http://www.spychecker.com/program/spybot.html) and it's free, with the option of donating money. It's almost too simple to describe: it's as near foolproof as I've met in software, and it walks you through an initial tutorial wizard to set up. Then you press the 'search and destroy' button, it finds any spyware on your PC and stops it from working (see screenshot 4).

You may not need all my other essentials, but if you're using GPRS abroad, this is one thing you shouldn't leave home without.

## CONTACTS

Guy Kewney welcomes your comments on the Mobile computing column. Email him at: [mobilecomputing@pcw.co.uk](mailto:mobilecomputing@pcw.co.uk). Please do not send unsolicited file attachments.



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HP Laserjet 5L/6L/3100/3150 (C3906A)	£28
HP Laserjet 5P/5MP/6P/6MP (C3903A)	£32
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HP Deskjet 930/950/970/1220/G55/85/95	(45A/78D)	£34
HP Deskjet 920/940/V40/V45/PSC750/950	(15D/78D)	£34
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50	£43	£45
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**Canon Inkjet Cartridges**

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BJC210/240/250	(BC02/BC05)	£14
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BJ30/BJC50/70/80/85/Tanks 3's	(BC11E)	£12
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BJC50/70/80/85	Tanks 3's (BC11)	£10
S200/S300	(BC124BK/BC124)	£6
S200/S300 TWIN Pk (BC124BK/BC124)		£11
BJC2000/4000/5000Series (BC20E/21E)		£21
BJC2000/4000/5000Series/Tanks (BC12)		£5
BJC3000/S4000	(BC33)	£38
BJC3/6000/S4000/Tanks (BC138/3C/3M/3Y)		£7
BJC6000/6100/6200/6500	(BC30/31)	£26
BJC7000/7100	(BC60/61)	£26
BJC7000/7100 Colour Ink Tank (BC16)		£18
BJC7000/7100	Photo Ink Tank (BC62)	£39
BJC7000/7100	Photo Ink Tank (BC62)	£24
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High Resolution	(800/200) (HR101)	£22	£6
Glossy Paper	(200) (GP301)	£5	£15
Photo Paper Pro	(800/200) (P101)	£11	
Photo Paper Pro 4"x6"	(20) (PC101)	£10	
Glossy Photo Card 4"x6"	(20) (FM101)	£5	

**Compatible Cartridges**

**Compatible Inkjet Cartridges**

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Epson 800/1520	(JT108/JT089)	£5	£8
Epson 440/640	(JT187/JT191)	£5	£8
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Epson 480/580/C20/C40	(JT013/JT014)	£5	£8
Epson 680	(JT017/JT018)	£9	£12
Epson 880	(JT019/JT020)	£5	£9
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Epson P 810/830/925	(JT026/JT027)	£5	£11
Epson C42	(JT036/JT037)	£5	£8
Epson C60/C61	(JT028/JT029)	£9	£11
Epson C62/CX3200	(JT040/JT041)	£9	£11
Epson C64	(431/442/443/444)	£14	£7
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Epson C84	(441/442/443/444)	£14	£7
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Stylus 440/460/640/660/670	(187/191)	£15
Stylus 740/760/860/1160	(189/191)	£16
Stylus 480/580/C20/C40	(T018/T014)	£11
Stylus 680/680T	(T017/T018)	£20
Stylus 880	(T019/T020)	£20
Stylus 900/980	(T003/T005)	£20
Stylus P 790/870/890/915	(T007/T008)	£15
Stylus Photo 1270/1290	(T007/T009)	£15
Stylus Photo 810/830/925	(T026/T027)	£19
Stylus Photo 950	(T331/2/3/4/5/6)	£10cm
Stylus Photo 2100	(T341/3/4/5/6/7/8)	£11cm
Stylus Photo 2000P	(T015/T016)	£22
Stylus Photo R200/300	(T481/2/3/4/5/6)	£9cm
Stylus Photo R800	(T57? ALL 8 COLS)	£10cm
Stylus Photo RX500/700	(T481/2/3/4/5/6)	£9cm

**HP Inkjet Cartridges**

Deskjet 500 Series	(51626A/25A)	£17	£19
Deskjet 600/660/670/690/695/29/49A		£17	£19
Deskjet 610/612/640	(6614D/49A)	£17	£19
Deskjet 810/PSC500	(6615D/23D)	£17	£19
Deskjet 816/825/840/845	(6615D/25A)	£17	£19
Deskjet 920/940/V40/V45	(15D/6578D)	£17	£19
Deskjet PSC750/PSC950	(15D/6578D)	£17	£19
Deskjet 820/50/70/1100	(45A/41A)	£17	£20
Deskjet 720/815/890/1120	(45A/23D)	£17	£19
Officejet T45/T65/R45/R65	(45A/23D)	£17	£19
Deskjet 930/950/970/1220	(45A/78D)	£17	£19
Deskjet G55/85/95/K60/80	(45A/78D)	£17	£19
PhotoSmart P1000/P1100	(45A/78D)	£17	£19
Deskjet 2000/2500	(44A/41C/42Y/43M)	£22	£23
Deskjet 2200/2250	(44A/36C/37M/38Y)	£22	£23
Deskjet CP1700	(44A/36C/37M/38Y)	£22	£23
Deskjet 3320/3420	(8727A/28A)	£12	£14
Deskjet 5550/PS7000 Series	(56A/57A)	£12	£18
Deskjet 5550/PS7000	Photo (6658A)	£18	
CP1160/OJ 7110/D Series	(5011D/10D)	£14	£18
CP1160/OJ 7110/D	(PrintHead No.14)	£28	£28
Designjet 10/20/50PS	(36C/37M No.11)	£22	£23
Designjet 10/20/50PS	(B4K/C/M/82Y)	£29	£29

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Premium+ Glossy Photo	(C7040A)	£50	£19
Premium+ Photo Glossy	(C6832A)	£20	£13
Premium+ Photo Matte	(C6951A)	£20	£14
Premium Glossy Photo	(O1992A)	£10	£7
Premium Glossy Paper	(C3831A)	£10	£9
Premium HeavyWeight 2-Side	(C1853A)	100	£12
Photo Quality Inkjet Paper	(C6984A)	£20	£6
Premium Transparency	(C3832A)	£20	£14
Iron-On T-Shirt Media	(C6050A)	£10	£13

**HP 10x15cm Paper Media**

Glossy Photo 10x15cm	(C7894A)	£60	£10
Glossy Photo 10x15cm	(C7891A)	£20	£4
Premium+ 10x15cm Photo	(O1991A)	£20	£7
HP A3/A4 Paper Media	A4	£3	£4
Professional Brochure/Flyer	(C0818/21A)	£9	£18
Premium Inkjet	(A4-150/AS-100/153/185/5A)	£14	£22
Premium Photo	(A4-150/AS-200/153/185/5A)	£7	£29
Bright White	(A4-500/AS-200/153/185/5A)	£7	£10

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Proofing Gloss & Proofing Matte			POA

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Apple S/Writer 1500	(8041/4609)	£16
Apple S/Writer 2200 & 2400/2500	AS CANON	£20
Lexmark 3501/5000/2000	(1400/13619)	£20
Lexmark 3201/5000/2111	(A1970/1980)	£19
Lexmark 242/43/251/52	(A1970/M0120)	£19
Lexmark X73/X83/X85	(A1970/M0120)	£19
Lexmark Z12/Z22/Z32	(17G0050/60)	£20
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**Niall Magennis** has been dabbling in Midi and digital audio since the days of the Atari ST. He writes on a freelance basis for a number of music magazines and lives in London in a flat overrun with music equipment

# Music on demand

How to stream the music you want, when you want it, with some help from the Internet



SCREENSHOT 1

**T**he major record companies have, until recently, treated the net as some kind of plague. It's not too difficult to understand why they saw it as such a threat. After all, they spent many years building a dominant position in the industry, only for something like Napster to come along and start hacking away at the foundations their corporations were built on. The irony, of course, was that practically anyone could see that the net represented the future of music distribution once someone worked out how to charge for downloads. And the double irony was that Napster was working hard on turning itself into a legitimate service in the months before it was closed down because it saw going legit as its only hope of survival.

In the intervening years – it's now around two years since Napster finally caved in – the majors poured money into services such as Pressplay only to later flog them on. In fact Roxio bought both Pressplay, and the Napster brand and then relaunched Pressplay as the new Napster.

Thankfully there's a plethora of online music services available in the UK including Itunes, the new Napster and Wippit, as well as various services that are built on OD2 technology (now owned by Loudeye) such as HMV, Virgin and

Mycokemusic.com (see screenshot 1). Everyone knows that these services offer legitimate downloads of music on a track by track basis or via a subscription model, but less well known is that many of them also offer music on demand radio stations. For example, with Napster you can make a giant playlist of tracks, dump them into your Napster playlist window and have the software stream the tracks one after another (see screenshot 2).

Years ago we were promised video on demand, especially on cable networks, but except for the Homechoice service that operates in parts of London it hasn't really materialised. However, audio obviously takes up a lot less bandwidth than video so it is easier to stream. After all, many amateurs run net radio stations that broadcast using the streaming mp3 format. So why has it taken so long for music on demand services to appear?

The answer probably has something to do with the paranoia that record companies suffer from any time the Internet is mentioned. However, there have been music on demand services before from the likes of Imageradio.com and RadioMOI.com. The latter offered 160,000 songs in mp3 and asf streaming formats. It used to be available as a free service, but later in its life it started charging and, at the moment, doesn't seem to be accepting new subscriptions.

## Supply and demand

Despite these early pioneers suffering problems, audio on demand is now starting to take off. As more people get kitted out with broadband it means that the listening experience is improving. No longer do people have

to put up with puny 28.8K streams that offered woeful sound quality. A typical mp3 is encoded at 128Kbits/sec and, as most broadband connections offer around 500Kbits/sec of bandwidth, it's easy to see that a broadband connection can support near-CD-quality streaming audio. In fact newer, more efficient compression schemes such as Windows Media Audio and Real Audio can provide near CD-quality playback at lower bit rates.

One of the leading lights for audio on demand is, believe it or not, the BBC. The corporation started its audio on demand service back in June 2002, but it only offered a limited range of programming. Over the past few months, however, the variety of the content on offer has vastly improved. There are still issues with copyright that mean some shows will never be available as part of the on-demand service and that others have quirky restrictions placed upon them. You can't rewind shows with music, for example, due to copyright restrictions, while Premiership matches and Formula One commentary are not available online because the BBC doesn't hold worldwide rights. Copyright restrictions have also meant that the BBC can only hold the shows on the site for a week (see screenshot 3). That's enough time to grab programs you've missed but we'd love to see the corporation offer a larger archive so you could dip in and out of it at different times.

A good example of what we'd like to see is [www.freshlymixed.com](http://www.freshlymixed.com). This website has built up a catalogue of past dance mixes from top name DJs that were broadcast on Radio 1 and Kiss FM (see screenshot 4). The archive is now huge, with over 1,000 mixes from big names. Unfortunately, only the latest mixes are available for free download using Bit Torrent ([www.bitconjurer.org/BitTorrent](http://www.bitconjurer.org/BitTorrent)). You now have to pay to access the vast majority of the archived content. Nevertheless, the site does show that there is a demand for this kind of service.

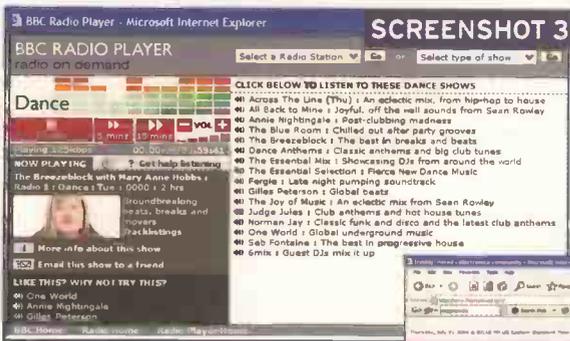
Despite the fact that the BBC shows are only held for a week, there's still a wealth of material on offer, thanks to the range of radio stations. All the major national stations are covered – including those that are only transmitted on digital

Sites such as Virgin's, based on OD2 technology, allow you to stream tracks for a price

The Napster service can stream music to your PC in real time

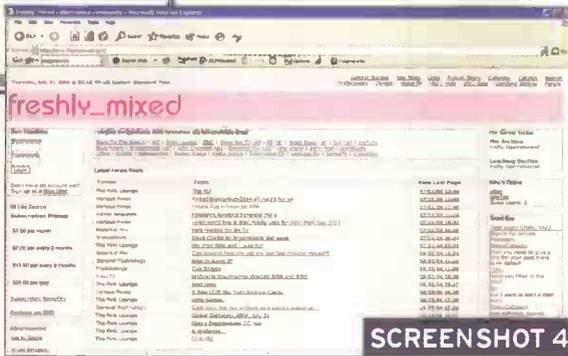


SCREENSHOT 2



The BBC radio on demand archive holds around seven days worth of radio programming

Freshly Mixed offers an archive of DJ mixes pulled from stations such as Radio 1



services such as DAB radio and Freeview – but you can also access programs from regional stations. You can even listen to various different charts online that are pulled from shows on Radio 1, 1Xtra and the other stations.

To access the majority of the shows you'll need to have Realplayer installed. You can grab this from [www.real.com/products/player/bbc.html](http://www.real.com/products/player/bbc.html). It's best to get it from this location, as it seems to be a special version of the player without the annoying Adware that afflicts the other downloadable versions.

Alternatively, if you want to avoid using Real's player altogether you can download the Real Alternative codec from [www.k-litecodecpack.com](http://www.k-litecodecpack.com), which contains the necessary codec to allow you to play back Real Audio files in other players. It's a 5.5MB download so it shouldn't take too long to grab from the web. There's also a plug-in that allows you to use Winamp to play back Real Audio files. You can get the 70KB file from <http://winamp.com/plugins/details.php?id=22143>. However, for this plug-in to work you'll need to already have Real Audio installed on your system.

Once you've got the player installed on your PC head to the on-demand radio site at [www.bbc.co.uk/radio/aod](http://www.bbc.co.uk/radio/aod). Here you can choose shows either by radio station or by genre. Once you make your choice the BBC radio tuner will load in a new window and list the shows available within your chosen category. The radio tuner is easy to use and there are even links provided to other similar shows that you might want to check out. Alternatively if you're a Radio 4 fan and want to find a show you've missed, try the listen again page at [www.bbc.co.uk/radio4/progs/listenagain.shtml](http://www.bbc.co.uk/radio4/progs/listenagain.shtml). The other stations also have similar pages where you can jump to the latest episodes of shows that you've missed.

### Alternatives to Auntie

The BBC site isn't the only one experimenting with music on

demand services. Yahoo has gradually been building a reputation for its Launch service. The service originally started as a sort of promotional tool for record companies to promote new songs and videos from big name artists. It then developed into a more general video on demand service for music videos. Yahoo later offered streaming radio stations and the company has now developed this further by offering users the ability to create a personalised music station.

When you sign up to Yahoo Launchcast you are given a YahooID (if you're already a Yahoo user you can just sign in using your existing ID). Once you've picked an ID you're then taken to a page where you can select the genres of music you want played on your station. As you pick a category it expands to show a list of well-known artists. The list is short, but it only serves as a fine-tuning tool for the site to work out the type of music you like. Once you've ticked the boxes for the artists you want to hear you can then click on the Create

You can rate tracks on Launchcast to gradually train the service to play the type of music that you like



My Station link. This takes you to a page where you can choose to launch the player and tune to your station.

The clever thing about Launchcast radio is that it's interactive – you can rate the tracks that it plays to teach it the type of music that you like. So if it plays a Radiohead track you really love, you can give it a four star rating and if it plays a John Lee Hooker track you're not keen on you can give it a low rating. When you first start listening to your radio station it may play a lot of duff tracks, but if you keep giving ratings it will gradually start to play more and more songs to match your taste (see screenshot 5). The other important aspect is that Yahoo has included a skip button so if a song you don't like is played you can quickly give it a low rating and then press the skip button to move on to the next track in the stream.

On the free Launchcast service you can stream tracks in low and medium quality. There is a high quality setting but you have to pay for it and it's not available to UK users at present. There are some other limitations. You can currently only listen to 800 songs per month, including songs you choose to skip, before restrictions are imposed. Once you go past this limit you won't be allowed to skip songs and playback will be in mono only. However, the restrictions seem pretty fair as 800 songs is quite a lot per month, provided you don't make heavy use of the skip button.

Yahoo is expanding the service to link it in more tightly with its other offerings so you can now access the Launchcast service from the Yahoo browser toolbar if you use it, or from Yahoo's instant messaging software.

However problems with copyright are affecting Launchcast just as they are the BBC. The service used to offer around 225,000 songs for personalised stations, but because of a dispute with record companies that number has been cut to 150,000.

Let's hope that music on demand doesn't stop with the BBC and Yahoo. We were promised that the net and broadband would offer us more choice and control over what we watch and listen to. It would be a shame if the shortsightedness of record companies ended up holding back legitimate music on demand services in the same way it held back the development of legal music download offerings.

### CONTACTS

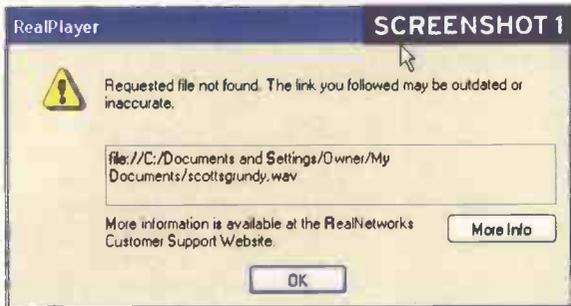
Niall Magennis welcomes your comments on the Sound column. Email him at: [sound@pcw.co.uk](mailto:sound@pcw.co.uk). Please do not send unsolicited file attachments.



**Nigel Whitfield**  
edited computer magazines before going freelance in 1995. A specialist in Internet and consumer issues, he has a degree in Computing Science from Imperial College

## Get to know your server

Creating your site is just the start – a good webmaster needs to deal with glitches too



A few months back, I looked at how you can create presentations for the web using SMIL, which allows you to schedule and synchronise playback of pictures, audio and other multimedia elements. The basics are pretty simple to grasp but, as with many things on the web, sometimes unexpected glitches crop up.

In the case of one reader, Robert Brook, accessing the file on the web server resulted in a listing of the SMIL XML code in his web browser. The observant may recall that this is similar to an issue I touched on last month, looking at using the Opera browser to open RSS feeds on your website.

The most likely problem when you see the code appearing in your browser is that something is amiss with the Mime information. In Robert's case, the SMIL file opened fine from the desktop, which suggests that Windows has the file associations sorted, so it's the server side that needs to be set up. We briefly mentioned adding a Mime type for our RSS feed last month and if you want a quick fix, refer back to that and ensure your server is set up to supply the type application/smil for files with the extension .smil.

As an aside, if your media player downloads files to the hard drive before playing them, you'll need to include full URLs for the component parts of your presentation – Real Player, for instance, saved the .smil file to the hard drive, played it from there and consequently couldn't find the files referred to, since they weren't on the local drive too (see screenshot 1).

But it prompts me to explain in a little more detail how all the various parts of the web development process work together to provide a site that

Without full URL paths in the SMIL file, Real Player was unable to play back the presentation – it thought the components would be on the local hard drive

If you manage your server using a web interface like this, remember it may overwrite any manual configuration changes you make

does what you expect, and in how to keep it doing that in future.

File extensions are, you might think, the way in which your computer decides what program to use to open a particular type of data. And you'd be right – when you're dealing with files on the desktop, that's exactly what's happening. When you download from the web, however, the file associations that are most important are not the ones on your computer, but the ones on the server, which are determined by the mime.types file. We've talked about that in terms of the Apache web server, but you'll also find it on many others on the Linux/Unix platform, which is still the most popular way of hosting websites.

The file contains a list of Mime types, one per line, followed by white space and then the extensions that files of that type will have on the server, without their leading full stops. Hence lines like:

```
application/smil ✓
smi smil
```

(Key: ✓ code string continues)

If you're not sure what the correct type is, a Google search can often help; search for 'smil mime type' and it's easy to come up with the right answer.

You'll notice, however, if you look at the file that not everything is in there. For example, there's no entry for PHP. Instead that's typically included in httpd.conf – the main configuration file for the server – with an AddType directive, which is just a way of adding to the mime.types information; since the

PHP module often has to be loaded in the server configuration file too, it makes sense to keep both lines in the same place.

However, there's a caveat here – if you're using servers like a Cobalt RaQ, or other systems with a web-based management interface which hides the configuration files from you, you may have difficulties making changes. That's because on some of these systems, the various configuration files are rebuilt from a database when you do make settings changes via the web. As a result, manual changes you make can be easily lost (see screenshot 2). You need to check if there's a basic template file you can edit, rather than the live version. And if you're on a shared server, you can probably forget making these sort of changes without help from someone with overall admin privileges. If the Mime information you need isn't already configured on the server, you may be out of luck.

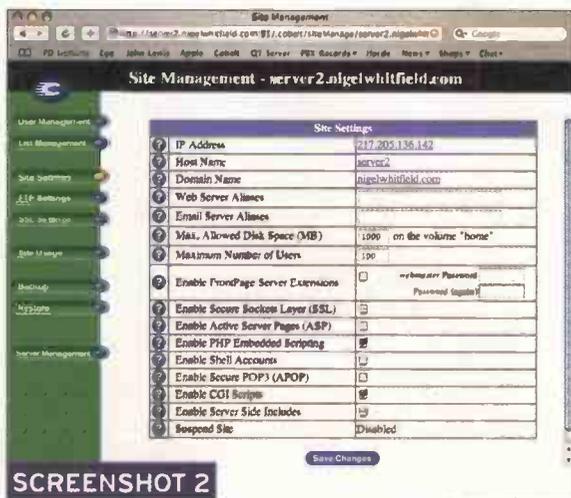
When it comes to server configuration files, there's obviously a lot more than setting up scripts and mime types; we've seen in the past how you can use .htaccess files and access directives to put passwords on folders, for example. You can also rewrite URLs, which is often helpful when you do a major redesign of your site, and a topic for another column.

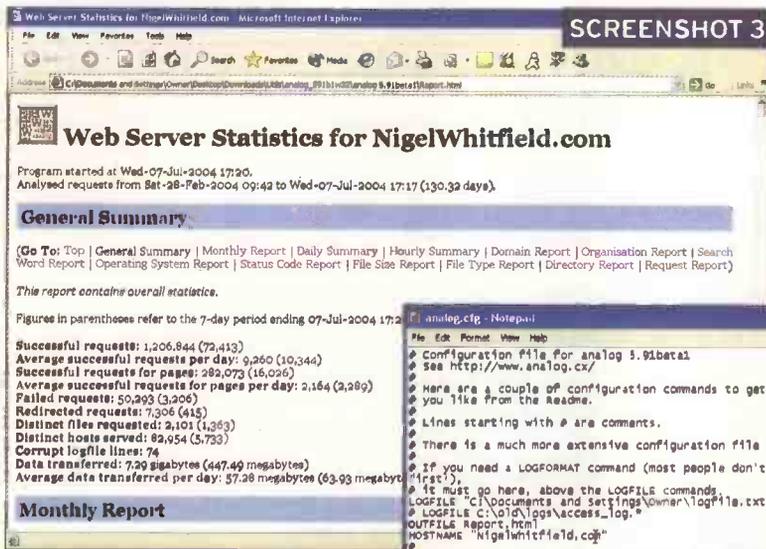
But for many people, of course, with ISP-provided web hosting accounts, or free space elsewhere, discussions of server configuration are something of a moot point; you take what you're given and that's it.

### Chopping logs

One thing that most people do have, however, is log files. All but the simplest of web hosting deals should provide you with access to some form of log file, which can be vital in finding out information about how your site is used and where visitors are coming from.

Some servers will manage the log files for you, presenting statistics via a web interface, but on others you'll simply see a logfile that you can download. And it's important that you do from time to time. A common source of problems updating your website, with files not appearing to update properly, is that the log file has grown to such a size that your





Log analysis can tell you useful things, including identifying if certain files represent a large proportion of all the data downloaded from your server

choose which elements are included in each report, the order they appear in and are sorted in, and add headings, date ranges and other information. In short, you're going to need to edit it to produce exactly the information you want – though there are some examples included in the distribution.

If you want to do that yourself, you can open the file in a text editor, and refer to the HTML documentation that accompanies Analog. The most important thing that you'll need to do is edit the LOGFILE line in analog.cfg, so that it looks something like this:

```
LOGFILE C:\Mydata\webserver.log
```

(see screenshot 4). Then, on Windows, it's a simple matter of running Analog and double-clicking on Report.html (the default output file name) when it's finished. That's pretty soon if you're not looking up IP addresses, but be prepared for a long wait if you are.

Mac OSX users will find an additional program in the download, called Analog Helper X. That provides a graphical interface that you can use to select some of the options for reporting – though unless you register it, you can't turn on all the reports. When you've made your choices, it writes a new analog.cfg file for you and optionally starts the analysis (see screenshot 5).

Turning on the DNS lookups creates a cache file, which is well worth keeping; it can end up quite large, but if you don't use it, then processing of logs is slowed down tremendously. On our test Windows system, analysing a 250MB log file, representing 130 days, took less than a minute with no DNS lookups enabled. That's for over 1.25 million log entries. Adding DNS lookups slows that considerably, with OSX taking around five minutes for every 10,000 log lines; Windows will perform similarly, since the limiting factor is the DNS timeouts, rather than anything else.

So, forget the DNS – Analog is still useful; the default settings will even show you what search terms people used to reach your site, which is well worth knowing before you decide whether or not to pay for keywords on search engines.

**CONTACTS**

Nigel Whitfield welcomes your comments on the Web development column. Email him at: [webdev@pcw.co.uk](mailto:webdev@pcw.co.uk). Please do not send unsolicited file attachments.

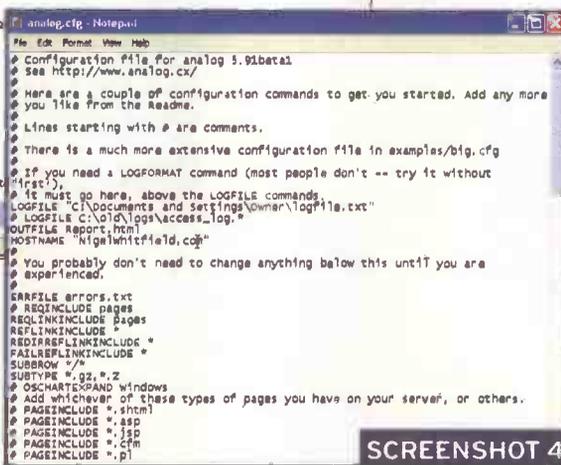
disk quota has been filled up, preventing any more uploads, and perhaps preventing orders from being added to a database, or customer enquiries being recorded, depending how the site is set up. So even if you don't intend to do anything other than delete it without opening it, your server log file is not something you should ignore.

FTP the log file from your server to your own computer, however, and a quick look at it is likely to make you shudder – thousands of lines of text, with path names, IP numbers, dates and times. So, what useful information can you glean from it?

To an extent, that depends on how the log file is configured – another of the many things you can change in the server configuration files. But most people will have files in a common log format, which includes the IP address of the system requesting a file, the file requested, the date and time and the referer. That last, for those who are new to these things, is the address of the page that resulted in the request for a particular item. So, for your home page it might indicate who's linking to you, and for one of your pictures, it will show the name of the HTML file that references the picture. There's also the browser name.

All this information can tell you many things. If you have banner ads, the referer can help you work out how effective they are; you can see which other sites are sending most clicks to you, or which browser is the most popular and – if you're happy with the time it takes – from which networks or ISPs most requests to your site are coming.

That last can take a long time; most web servers store only the IP address for a request because the overhead of looking up names can



SCREENSHOT 4

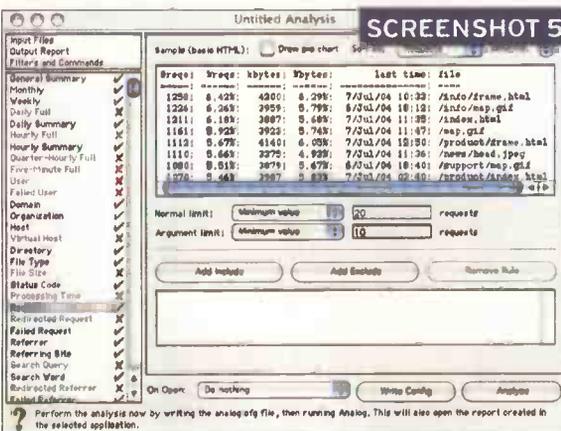
slow things down, especially if there is no valid name for an incoming connection. So if you want that information you need to look it up when you analyse the log, which means plenty of waits for timeouts, and staying online while it all happens.

And what do you use to do this? One of the most popular is Analog ([www.analog.cx](http://www.analog.cx)) (see screenshot 3), which is available for a wide range of platforms. If you're looking for something with drag and drop simplicity, however, it may well not be for you. That's because it's essentially a command-line tool, and the results you receive depend on the contents of a configuration file, analog.cfg.

The configuration file is where you customise which reports are generated – hourly, daily, weekly, monthly and so forth. You can

You can get started with Analog simply by editing the config file to point to your downloaded server log

OSX users can make some configuration changes using Analog Helper X, which is included as part of the Analog download



SCREENSHOT 5



**Alan Stevens**  
has been implementing and supporting networks for over 25 years, working for IT vendors, systems integrators and customers. He now mostly researches and writes about networking matters

## Protect your wireless Lan

### How to keep wireless intruders at bay by following these simple precautions

**A**longside its numerous advantages, wireless networking suffers from a number of drawbacks, particularly when it comes to security. That's compounded by the scant attention paid to this issue by many home and small-business users. Indeed the majority of such users tend to view the technologies involved as either too complicated to bother with or only of importance on large corporate networks.

Neither of these assumptions is true. Sure, wireless security can involve a lot of complex technology, but that doesn't necessarily make it difficult to apply. And security really does need to be addressed by everyone, from the largest of companies down to the home user. Aside from setup time, it needn't cost anything – as I'll demonstrate in this month's column, with a walkthrough of a couple of simple precautions that anyone can take to keep wireless intruders at bay.

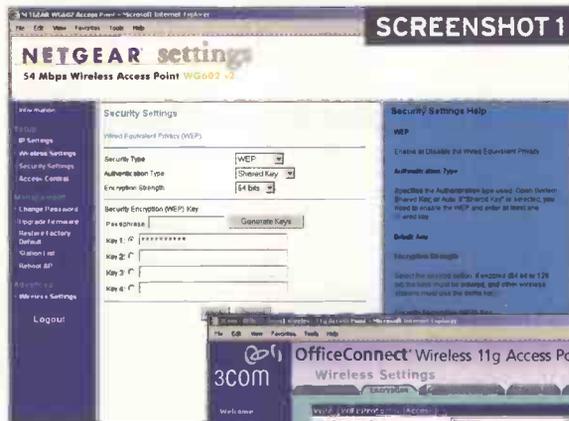
### Who's on your Lan?

Wireless security is mainly concerned with just one thing – stopping unauthorised users from connecting to your network to, for example, browse the Internet for free or mess around with your files. There are several ways of preventing this, but the one that gets talked about the most is encryption, where the wireless information is scrambled to protect it. This not only stops data being intercepted by sniffer programs but also stops users without the correct encryption keys connecting to the network.

When it comes to wireless networking the most popular encryption technology is known as Wep (Wired Equivalent Privacy) which was included as part of the original 802.11 wireless standard introduced in 1999.

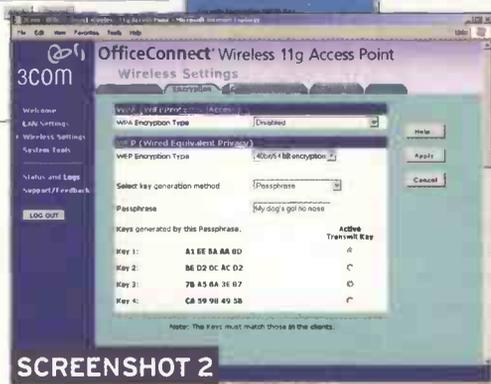
Unfortunately Wep has come in for a lot of criticism because it's not that secure, since it relies on fixed keys to scramble and unscramble data. However, it is universally supported and is better than no encryption at all and it doesn't cost anything to use.

Unless you're very unlucky, you'll find Wep encryption available on all your wireless hardware, no matter what the device or who the



**Above: Enabling Wep encryption is usually just a matter of ticking the appropriate box on the access point or wireless router to which clients will connect**

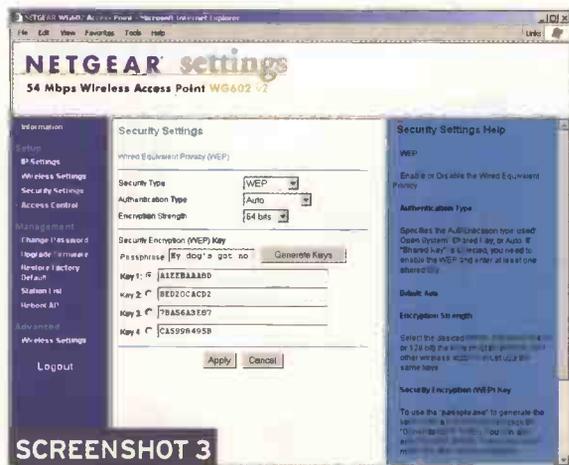
**Right: Rather than manually entering keys, some wireless devices offer to generate keys for you based on a pass phrase you supply**



**SCREENSHOT 2**

vendor. It won't be activated by default, but turning it on is usually just a matter of ticking a box and specifying the shared secret (key) to be used to encrypt/decrypt the data. Of course the same keys will need to be specified at the client end and on the wireless access point or router you're connecting to (or another client in peer-to-peer or ad-hoc, networking), and how you go about this will depend on the hardware involved.

However, the approach is the same regardless of manufacturer, the following example illustrating what's required when configuring a typical 802.11g access point (WG602) from Netgear.



**SCREENSHOT 3**

### Wep to go

As with most network devices, Netgear's WG602 is managed using a browser, with a separate menu to handle the security settings, including encryption options. From this you simply select Wep as the security type together with 'shared key' as the authentication method – as shown in screenshot 1.

You can then choose either 64bit or 128bit encryption, with the latter clearly harder to crack and, therefore, more secure. However, the shared keys are over twice as long and the processing overheads greater, which could affect throughput. Plus, on a home or small-business network basic 64bit encryption will do the job. After all, you're mainly trying to discourage the opportunistic browser

who, once they find Wep encryption enabled, will normally give up and look elsewhere, no matter what level has been applied.

Next you have to tell the wireless access point what keys to use when scrambling and unscrambling data. As on most wireless devices this can be done in two ways, one of which is to simply type in the keys yourself. On the WG602 you need to use hexadecimal format when entering the keys manually, using the numbers 0-9 and letters A-F. Some vendors let you choose between hexadecimal and ordinary Ascii characters, making keys easier to remember, but on this device Netgear doesn't. You also need to enter 10 hexadecimal digits for 64bit keys and whopping 26 for 128bit encryption.

As you can see from screenshot 1, up to four different keys can be specified on the Netgear access point. However, on a small network you're unlikely to use more than one, so there's no point bothering with the others. The keys are labelled from 1 to 4, whereas devices from other vendors may start at zero. This makes no difference and if you're using just one key use the first entry, no matter what number it's given.

**Although not covered by the Wep standard, the same pass phrase can often be used regardless of vendor**



## Pass, phrase

If hexadecimal notation gives you a headache, you can sometimes get the wireless device to generate the keys for you, based on a pass phrase. This saves having to type the keys yourself, added to which the pass phrase can be any set of ordinary Ascii numbers and letters, making it a lot more meaningful, without the keys generated becoming any easier to guess. For example, you could specify a company name or the name of your dog, from which the software will generate a pseudo-random set of keys.

Not all vendors give you this option and it's not included in the Wep standard, but where they do, they tend to use the same technology so the same pass phrase can often be used both at the client end and on different access points and routers, as shown in screenshots 2 and 3, where the same pass phrase is used to generate the same keys on the Netgear WG602 and a 3Com wireless access point.

You will, though, need to make a note of the keys produced, as these may have to be entered manually as part of the client setup, especially if you're using the built-in Windows XP client. Some wireless clients can generate keys from a pass phrase, but the built-in XP software can't.

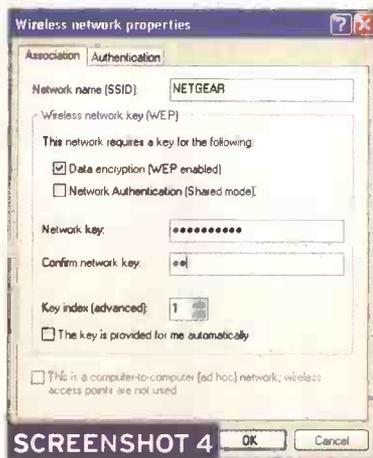
## Client-side Wep

It's the turn of the clients next, all of which have to be configured to use Wep in order to connect to the network. Again, the details here can vary depending on the hardware and vendor involved, but it's much the same process especially when using the wireless client included as part of Windows XP, as in screenshot 4.

When a Windows XP client detects a wireless network it will typically work out whether Wep encryption is turned on automatically or not. If it is, you'll be prompted for a key to use, which needs to be typed in using hexadecimal notation. You have to type it twice as, for security, you won't be able to review the characters as they're entered and need to make sure there aren't any typos.

You'll also find the box marked 'The key is provided for me automatically' selected by default and, in most cases will have to untick this to enter the keys yourself. It's also possible to match any of the four keys that might be configured on the target device using the Key Index setting.

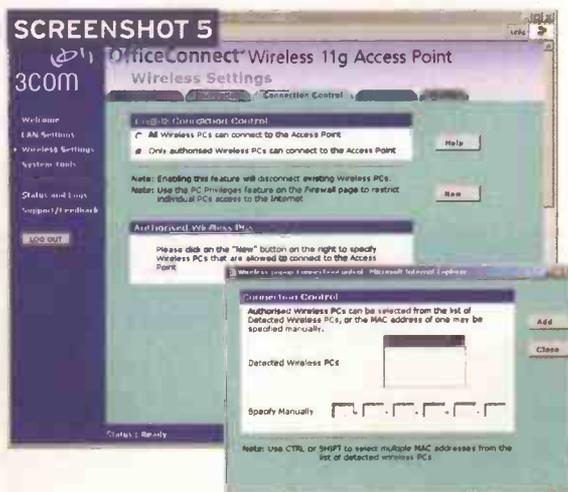
Assuming the key supplied matches that of the wireless access point, router or other wireless client you want to connect to, the connection will be made as normal. After that, anything you can do with



an unencrypted link will be possible and, if you've chosen 64bit keys, you're unlikely to see any impact on performance. The keys you provide will also be stored on the client PC, so the next time you connect there's no need to enter them again.

If the key doesn't match, the connection will fail and XP will restart the process, looking for available networks to connect to. Chances are you've simply mistyped the key or written it down incorrectly, and merely need to try again. You can do this as many times as you want, as there's no limit to the number of retries allowed. However, if you can't connect after two or three goes you really ought to go back to the access point or router and check the settings again.

For the most part Wep should just work, but it's not 100 per cent foolproof, especially when it comes to hardware from different vendors. Indeed the most commonly reported problem is being unable to connect to an access point from one vendor using a wireless adapter from another when Wep is enabled. Unfortunately if nothing else appears to be at fault then there's little you can do.



Wep keys need to be entered on every client PC that wants to connect to the wireless Lan. This screenshot shows the built-in Windows XP client

Mac addresses can be entered manually, but most access points and routers let you point to connected clients and add their addresses automatically

## Mac filters

If you are having problems with Wep there's another easy way to stop unauthorised access to your wireless Lan. And that's by using the unique Mac (Media Access Control) address, programmed into the silicon of every Ethernet device, to limit access.

All wired network devices have a Mac address and so do all wireless adapters, routers, access points and so on. This takes the form of a 48bit number usually represented using six pairs (tuples) of hexadecimal digits, such as 00:09:5B:98:73:46. Admittedly Mac addresses can also be programmed into software and can be forged, but it's not easy and anyway a hacker would need to know the exact addresses you've allowed onto your network to gain access, making Mac address filtering a very secure solution. You wouldn't want to use it on a large Lan with hundreds of possible client addresses, but where just a handful of users are involved, Mac address filtering can be very effective indeed.

## What's my address?

You'll need to know what Mac addresses to allow or exclude, but that's easier than you might expect. In Windows, for example, you can simply open a command window and type ipconfig /all to show both TCP/IP and physical (Mac) address settings.

Armed with this information you can then configure your wireless access point or router to bar access from any other address. Easier still, in most cases you don't even need to work out the address in advance, as most access points and routers are able to list the Mac addresses of attached stations and all you have to do is point to the ones you want to allow, as shown in screenshot 5.

The 3Com Officeconnect access point has identified an active wireless client and its Mac address. This can be added to the list of clients allowed to access the Lan and any others barred from using the network at all.

The beauty of Mac address filtering is its simplicity, and it can be used by itself or with Wep encryption if you want to add another layer of protection. Together they provide good basic security to which other tools can be added, such as extensions to the Wep technology which make it harder to crack. I'll discuss both in next month's Hands on.

## CONTACTS

Alan Stevens welcomes your comments on the Networks column. Email him at: [networks@pcw.co.uk](mailto:networks@pcw.co.uk). Please do not send unsolicited file attachments.



**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

## No smoking servers

### Why update queries are useful and how a log can help in a smoky environment

In the May issue I answered a question from Sarah Richardson about compacting databases. Sanjay Mehta emailed to say that this can be done automatically on closing the database.

Open the database, then choose Tools, Options, and then click the General Tab and tick the box Compact on Close. Very neat.

### Updating data

Chris Lee has a table in Access with a number of fields, of which two are ItemNumber and RefNumber.

#### Target

ItemNumber	RefNumber
1	1
2	5
3	2
4	2
5	56

He needs to import information (from an Excel document) which has some of the same values for ItemNumber, but a different set of values for RefNumber.

ItemNumber	RefNumber
1	34
2	35
5	23

He then needs to be able to substitute these values for RefNumber into his Access table, based on the corresponding ItemNumber value. In other words, after the substitution, he wants his table in Access to look like this:

#### Target

ItemNumber	RefNumber
1	34
2	35
3	2
4	2
5	23

In the sample database on this month's cover disc (dbcoct04.mdb), there is a table called Target; as the name suggests, this is the table in which the substitution will take place.

The first step is to create a new table in the Access database that will act as a temporary store for the imported data. This table only needs two fields. Although not mandatory, it is easier if they have the same names as the fields in the target table. What is vital is that they are of the same data type as the target fields; in this case Long Integer. So the temporary store table I have created is called Source and has two fields – ItemNumber and RefNumber.

Moving data from Excel to Access is relatively painless – you can even use good old cut and paste. The Source table already contains some data, but you can cut and paste some data into it from a worksheet of your own devising if you want to see the entire process working from scratch.

So, we now have two tables, Source and Target. What we need is a device to update the appropriate rows in the target, using data from the source. However, we only want to update those rows where we have a matching value in the ItemNumber fields. Happily, there is a type of query called an Update query.

The general syntax for this type of query is:

```
UPDATE <target table name>
INNER JOIN <Source table name>
ON <two fields that contain the numbers that should be matched>
SET <two fields that contain the numbers that should be substituted>;
```

(Key: ✓ code string continues)

So, in our case, that reads as:

```
UPDATE Target
INNER JOIN Source
ON Target.ItemNumber = Source.ItemNumber
SET Target.RefNumber = Source.RefNumber;
```

This says, in effect, wherever the ItemNumbers are identical, replace the value for RefNumber in Target with the value in RefNumber in Source.

When you run the query the data will be updated, but warnings will appear (see screenshots 1 & 2).

This SQL appears in the sample database as a query called ReplaceTheNumbers. You can also build this query in Access using the GUI. Select the two tables, pop down the Query menu and select 'Update Query', drag and drop a link between the fields as shown in screenshot 3 and select the field options as shown.

Update queries are amazingly powerful and are well worth getting to know. The general solution shown here can be adapted to work in a variety of situations, but DO work only with a copy of your data until you are happy that the query is doing what you want.

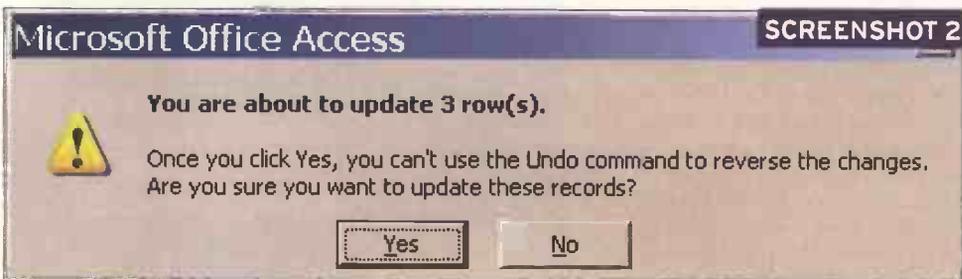
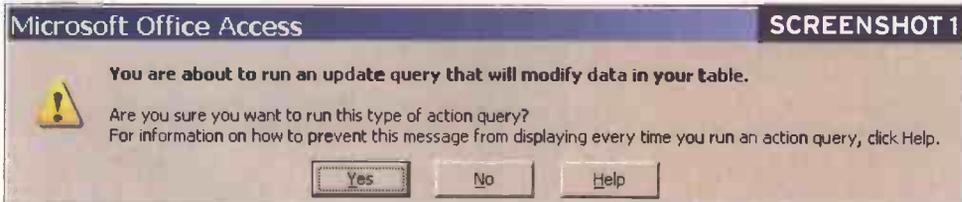
### Recovering databases

Recently I was doing some work with Gordon Associates ([www.gordonassociates.co.uk](http://www.gordonassociates.co.uk)). The company is well known for running the Access User Group in the UK; possibly less well (but deserving to be better) known for its excellent database and Internet development work.

While I was there a call came in from someone who had been running an SQL Server database. Then something unfortunate happened. I'm not a hardware expert, but I do know that electrical components function because they contain compressed smoke. If it ever leaks out, then the components stop working. Unfortunately a smoke-escape event occurred with the database server.

On attempting a disk recovery, they managed to recover the SQL Server database files (.mdf) but not the transaction log files (.ldf). This is a problem, because SQL Server is

An update query will check with you that you really do want to update the existing data





unwilling to open a database if it can't find the log files. Error messages appear, and SQL Server refuses to continue. At this point the people involved can become rather tense.

You are now thinking 'No problem, use the backup,' which is an excellent thought; the most recent one turned out to be six months old. This type of discovery has a tendency to increase, rather than decrease, the tension; so the company rang for help.

Experience suggests this is not the optimal time to tell the person concerned that they should have backed up more frequently. In almost every case they have already worked this out for themselves in the interval between the smoke and the phone call. What they are seeking is a solution rather than a pious lecture.

By pooling our resources, we came up with a couple of solutions. However, before we go over them, please note that both these solutions involve non-standard use of SQL Server and one of them uses an undocumented feature. There is a very good reason certain features remain undocumented. It is because they bite. So please don't experiment with these solutions for fun on a production server. Only ever try this on a test server using copies of the data.

The first step is (on a test server) to create a new database with the same name as the original. This will create a set of mdf and ldf files.

Next, stop SQL Server and delete the ldf and mdf files that have just been created. Then copy the recovered mdf file to the location of the one you have just deleted.

Restart SQL Server. You will find, of course, that SQL Server notices the database has no ldf file and is unhappy.

With SQL Server running, update the sysdatabases to Emergency mode. You can achieve this using the command:

```
update sysdatabases set
status=status | -32768
where name = 'YourDatabase'
```

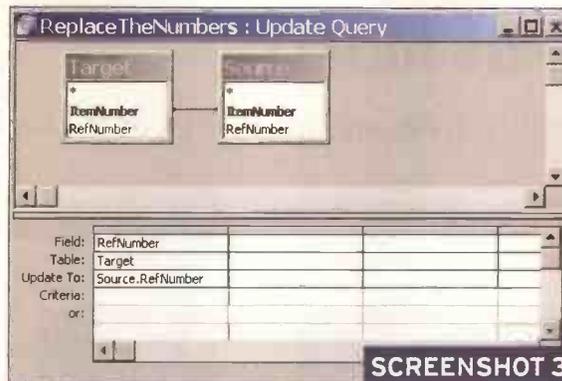
| is the pipe symbol.

Obviously, when you do this, you should replace YourDatabase with the name of your database.

You should now be able to see the tables/stored procedures in SQL Server.

Create a new empty database called YourDatabase\_Recovered and use Export to copy objects from the broken database to the newly created one.

Delete the original database and recreate a new empty one with the same name. This will remove the Emergency mode setting on the database. Then using Export, copy the objects from the recovered



An update query being built using the GUI in Access

database to the new empty one. Hopefully, all should now be well.

As an alternative to the deletion and recreation of the db, you can use the undocumented command:

```
DBCC REBUILD_LOG
(YourDatabase, 'c:\
YourDatabase.ldf')
```

to rebuild the log file.

Then Execute the command:

```
sp_resetstatus
YourDatabase
```

to set the status of the db 'back to normal'.

## Log files

Whether or not you use SQL Server, you may need to know about log files in databases. In the example above, SQL Server was refusing to open a database when it couldn't find the log files. Why? What are log files, why are they so important and why doesn't Access have any?

Log files exist to record what is happening, moment by moment, to the database. They contain details of every transaction that is run against the database. Not only is the information about each transaction recorded, but there is also enough detail stored in the log file to allow all the transactions to be reproduced if necessary. This is a very powerful feature. Imagine that you back up a database at midnight. The database then runs until 3pm when, without warning, the server becomes toast. You restore the backup (to a new server) and then play back the log files. This action will move the database from the state it was in at midnight forward, until the state it was in just before the crash.

This does, of course, assume that you keep a copy of the log files. For this reason, they are often exported at regular intervals, off the server, so that in the event of a catastrophic failure, the logs survive and can be played back.

However, log files have another function, which is all to do with data integrity. Suppose that I run a transaction against the database that

moves £200 between our accounts. For the sake of argument, let's assume that the money moves out of your account and into mine. This transaction is one logical unit (it is simply a transfer of funds), but the database will carry out two separate operations. First, it removes £200 from your account, and then it puts £200 into mine. What happens if the server goes up in smoke just after the first operation has completed and just before the second one starts? If there is no log file, the £200 has gone up in smoke too! However, if there is a log file, it will have been told that the two operations were to be treated as one logical operation and that the operation must either be carried out completely or not at all.

When the database is restored and the log files are played back, the database engine will notice that a transaction started, some money was moved, but it will also find that there is no record of the transaction completing. In which case, it will assume that the transaction is incomplete and it will not carry out any part of the transaction. In other words, the £200 won't be in my account (which is a shame) but, more importantly, it hasn't disappeared from your account into the ether.

Which brings us to why SQL Server is so unhappy about letting you use a database when it can't find the log files on startup. Under these conditions, SQL Server cannot be sure that the database is in a consistent state. Indeed, in the case listed above, where the log files were lost as a result of a server crash, this is a perfectly valid concern. It is quite possible that one or several transactions were incomplete at the moment of crashing and the database may well be logically inconsistent.

Of course, there are times when a database, even in an inconsistent state, is much better than no database at all – particularly when no database equates to no job. However, when you recover a database in the way described above, it is highly advisable to check the database for consistency. (I am, of course, aware that this is very easy advice to give and that the actual checking can be monstrously difficult to do in practice, but that doesn't stop the advice being correct.)

Finally, why doesn't Access have log files? We'll look at this next month.

## CONTACTS

Mark Whitehorn welcomes your comments on the Databases column. Email him at: [database@pcw.co.uk](mailto:database@pcw.co.uk). Please do not send unsolicited file attachments.



**Tim Anderson** is both 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

## Making sense of Mono

### How a cross-platform .Net could help, and we check out Microsoft's new Express series

**V**isual Basic for Linux and Mac is here. So is C# and ASP.Net, Microsoft's technology for dynamic, data-driven web applications. This isn't a remarkable change of heart from Microsoft – it is, in fact, the Mono project, which produced its first non-beta release at the end of June.

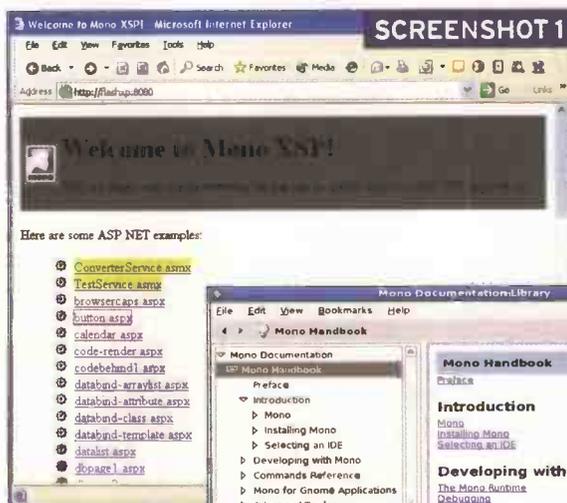
Mono is an open-source initiative from Ximian, the organisation which has its origins in the Gnome project. Gnome provides a GUI framework and desktop for Linux and other platforms. Ximian is now part of Novell, although exactly what part Mono plays in Novell's platform strategy is not clear.

However, there are several reasons Mono may be important. First, it is a new cross-platform development option alongside Java or C/C++. Although Mono is a tiny contender, it has advantages. It gives you a choice of languages, and Visual Basic is easier than Java or C# for novice programmers because it is not case-sensitive. The .Net platform is highly productive and some developers prefer it to Java. On the web side, ASP.Net is an excellent framework.

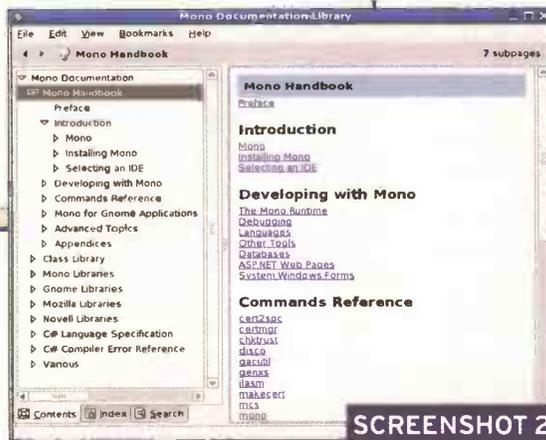
Another factor is that the .Net platform has Platform Invoke, which makes it easy to call out to native code libraries. Java's equivalent is JNI, which works well but requires an intermediate non-Java wrapper library. Most interesting is the possibility of migrating Windows applications to other platforms. The idea is that you write your application in Visual Basic or C# and then use Mono to run it on Linux or Mac.

So much for the theory: how about the reality? Mono 1.0 is both hugely impressive and rather a mess. In some areas it exceeds expectations, but parts are unfinished and, like many open-source projects, not well-presented, especially for those coming to Mono for the first time or with a Windows rather than Unix background.

We installed it on Windows and Linux (Suse 9.0) shortly after release. On Windows we downloaded and ran the Mono setup, but what you get is barebones: the mono compiler, runtime and essential libraries. There is no documentation and no clue as to what to do next, except to start trawling through the Mono website and discussion lists. Much of what makes Mono useful is missing in



**Top: Here's the Mono implementation of ASP.Net accessed from Windows**



**SCREENSHOT 2**

**Right: Monodoc is a great way to browse the Mono documentation. You can also view the content from within Monodevelop**

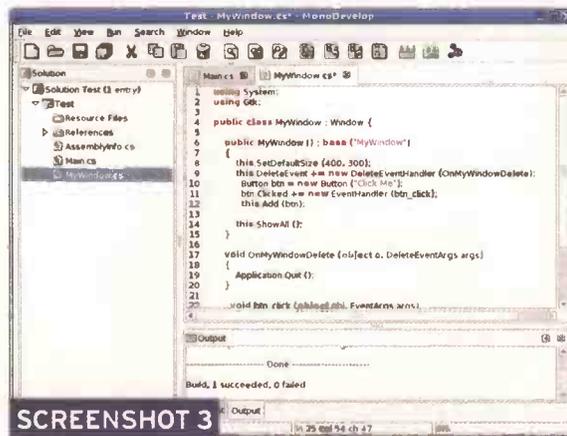
this official Windows install, including ASP.Net support (see screenshot 1). The GUI libraries called System.Windows.Forms are not there either, since they are not supported in Mono, so out of the box it will only do console applications or library components. You can imagine people interested in Mono trying this and being disappointed, but many of these gaps can be filled with a bit of effort.

But why would you want to run Mono on Windows when you already have the real .Net? The answer is that it lets you, in effect, develop Linux applications on Windows. Mono also has some useful libraries which are not part of Microsoft .Net.

a complete alternative GUI framework for .Net, which is easy to use and performs well. The combination of Mono, Gtk#, and Sqlite or MySQL for the database, makes Mono a comprehensive tool for the desktop, while together with ASP.Net it gives you an excellent platform for web applications.

Anyone doubting the potential of Mono should look at Monodevelop (see screenshot 3). This open-source IDE is ported from Sharpdevelop, a Windows IDE built with C# and Microsoft .Net. Monodevelop uses Mono and Gtk#. It looks great already, with echoes of Visual Studio .Net in its design and handy features such as code completion and integrated documentation. Unfortunately, it is at version 0.5 and not yet stable. When it has progressed, it will be the tool of choice for Mono developers. In the meantime, use the editor of your choice. We used the free JEdit, a Java editor which works well with C#. There's also an Eclipse C# plug-in.

Using Mono, we quickly created a simple Gtk# application. It is a completely different framework from



**SCREENSHOT 3**

**The Monodevelop IDE for C#, running on Linux, is a great example of an advanced GUI application in Mono as well as a good IDE. Unfortunately it's still in early beta**

System.Windows.Forms, the Microsoft GUI framework, but well-designed and with some strong features of its own. One of these is integration with Glade, which lets you define a GUI layout as XML and load it dynamically at runtime. There are visual designers for Glade, which is important since Monodevelop currently lacks any form-building tools. Another key piece is Gecko, the embedded web browser based on Mozilla. This is a strong cross-platform alternative to embedded Internet Explorer. An interesting side-effect of Mono is that more open-source libraries like this may become useful on Microsoft .Net as well. It is C# code, so should run fine provided the underlying native code libraries are present.

### Getting started

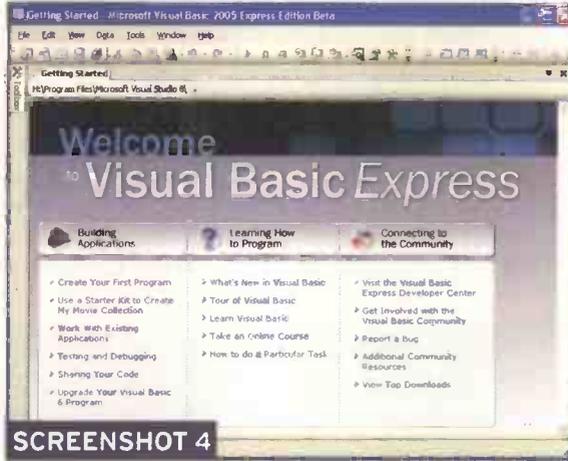
Getting started with Mono's ASP.Net is straightforward. You can start an ASP.Net web server by running xsp.exe, which is itself a Mono application. To try it out, we switched to Mono's test directory and ran:

```
mono xsp.exe
```

This runs XSP on port 8080. We could then access this server from anywhere on the network. For serving a public website, there is an Apache module called mod\_mono. It will be interesting to see if many ISPs offering shared hosting will provide Mono's ASP.Net as an option alongside PHP. A possible issue is that like server-side Java, Mono may be more demanding on server resources than PHP scripting. Novell also has a tricky marketing challenge. The open-source community is suspicious of Mono because it implements a Microsoft technology, while Microsoft worries that Mono may foster Linux adoption.

Mono is a lot of fun to play with and all the downloads are free, so it is well worth a look. Given the scope of the project, it works remarkably well and it's a huge achievement for the Mono team. However, it is not well-documented and badly needs tutorials and a more complete and detailed reference. It will also be more attractive when Monodevelop has matured a little.

Finally, let me be clear about what Mono can and cannot do. If you take a .Net executable, compiled with Visual Studio .Net, or if you try to compile existing C# or VB.Net code, it might work on Mono but more than likely it will not. In particular, forms applications will not work since they need System.Windows.Forms, which is not implemented. The reason is that these classes wrap the Windows API, and the Windows API is not available on Linux or the Mac. Non-



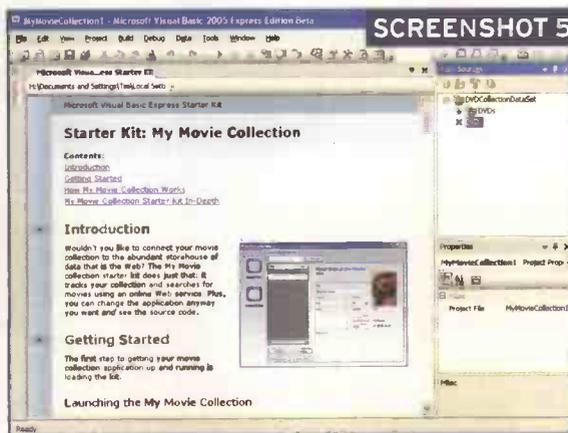
visual code may work, including ASP.Net applications, but if it does COM interop, or calls the Windows API, or uses a class or method or third-party component that is not yet available on Mono, it will fail. You will most likely need to slightly adapt the non-visual code to work on Mono and, in the case of Forms applications, either port to Gtk# or else have two separate GUI parts, one for Windows and one for Mono, sharing common non-visual code.

**Microsoft's new Express series, now in beta, is aimed at non-professionals**

### Visual Studio Express

If Mono represents the bleeding edge of .Net development, Microsoft's newly announced Express range is the opposite. Even in beta it is slick and polished, and will be laden with documentation and tutorials when fully released next year (see screenshot 4). Aimed squarely at novices and non-professional programmers, the Express series includes Visual Basic, Visual C#, Visual C++, Visual J#, SQL Server and Web Developer. Although the branding is new, you can see these packages as upgrades of older products such as Visual Basic Standard Edition, MSDE – the free desktop version of SQL Server – and Web Matrix, the free development tool for ASP.Net. Pricing is not

**This example movie collection application accesses the Amazon web service to look up details of your DVDs**



yet announced, but Microsoft is indicating that at least SQL Server Express will be free.

There seem to be several strands in the Express product concept. One is that they should be genuinely easy to use, restoring some of the drag-and-drop simplicity that was in early versions of Visual Basic and which got a bit lost in the transition to grown-up object orientation, disconnected data model, and other .Net features. Another idea is to promote both Windows and ASP.Net, offering low-cost or free development tools to keep users loyal. Third, Microsoft is putting great effort into wooing die-hard Visual Basic 6.0 developers who have not yet gone to .Net.

The Express series is based on version 2.0 of the .Net Framework, and exploits new features of the .Net class library. For example, Visual Basic has a collection of classes in a namespace called 'My', simplifying tasks like file handling, printing, network access and multimedia.

Imagine you want to download a file programmatically. This is a considerable task in .Net 1.1, especially if you do the right thing and download on a separate thread. In Visual Basic 2005 most of the work is done in one line:

```
My.Computer.Network.  
DownloadFile(  
"http://yoursite/  
yourfile",  
My.Computer.FileSystem.  
SpecialFolders.My  
Documents,  
ShowProgress:=True)
```

(Key: ✓ code string continues)

Similar ease of use applies to other tasks, such as printing or playing an audio file. A lot of work has also gone into data access, with a richer datagrid and a quick route to read-write database applications. On ASP.Net, user management and login is now built in, so it becomes almost trivial to set up a website with user registration. These features may not be exciting from a technical point of view, but for users who want to get the job done well and quickly they are great.

Mono is at [www.mono-project.com](http://www.mono-project.com). JEdit is at [www.jedit.org](http://www.jedit.org). Visual Studio Express is at <http://lab.msdn.microsoft.com/express>.

Examples from this column are at [www.itwriting.com/pcw](http://www.itwriting.com/pcw).

### CONTACTS

Tim Anderson welcomes your comments on the Visual programming column. Email him at: [visual@pcw.co.uk](mailto:visual@pcw.co.uk). Please do not send unsolicited file attachments.

# Leisure

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## LOADING



## Doom and no gloom

By the time you read this, the highly anticipated Doom III will have arrived. The game is the third in the series of popular shoot-'em-ups, the first of which appeared in 1993.

In the latest outing, players step into the shoes of a marine sent as part of a security detachment to the Union Aerospace Corporation's research facility on Mars.

Your job takes a turn for the worse when top-secret teleportation experiments go awry and all hell breaks loose. Literally.

Players return from a routine mission to find their fellow marines have been brutally slaughtered or, in many cases, turned into zombies. Your main objective then becomes survival and finding a way to stop the demons from reaching Earth.

The game is a modern spin on a tried and tested formula, but recent technological advances make this an exciting prospect. See [www.pcw.co.uk/Products/Software/1156896](http://www.pcw.co.uk/Products/Software/1156896) for a preview and we'll have a full review in the next issue. [www.doom3.com](http://www.doom3.com)

## Soldiers: Heroes of World War II

Yet another World War II outing, but what's new?



It seems that barely a month passes without the release of a new World War II game.

Soldiers is the latest addition to this saturated category, and at first glance it seems to do little to distinguish itself. The game plays like a cross between Command and Conquer and Commandos, so the basic control scheme involves selecting troops and clicking where you want them to go to.

Soldiers goes a few welcome steps further though, allowing you to manually control each individual. This function becomes an essential part of combat and adds an element of action not normally found in realtime strategy games.

As well as the threat of being shot, troops will come up against environmental hazards which add variety. You'll have to climb walls and take control of vehicles to complete your missions.

Manually controlling vehicles is one of the most satisfying aspects of the game. Not least because the direct control system suits their style of movement far better than the eight-way run scheme used by infantry. Tanks are a particularly welcome addition, as they allow

you to plough your way through almost any obstacle.

The quantity and variety of missions is impressive. There are 30 in total, spread out across four campaigns; it's just unfortunate the game is so difficult.

Every new scenario seemed almost impossible at first. You'll regularly find yourself outnumbered 10 to one, with an under-equipped strike force. You can view the entire battlefield and plan your strategy, but trial and error, as well as use of the quick-save function are necessary if you are to progress.

Managing assets over a large map adds to the difficulty, but you'll also have to put a lot of thought into decisions made in

confined areas. Vehicles can be controlled by a single soldier, but they are most effective when manned by more than one. Tanks, for example, work best when using a commander, driver, gunner and reloader so you can perform tasks simultaneously.

For all its strong points, Soldiers is not without its faults. The game camera is prone to wandering off to new areas to draw your attention to something, but won't return you to your original location. This problem is exacerbated by off-screen troops who are quite happy to be wiped out by the enemy without calling for help.

Despite these minor gripes, Soldiers is an enjoyable action-strategy title that adds new elements to a saturated genre.

Rory Reid

## DETAILS

**PRICE** £34.99 inc VAT

**CONTACT** Codemasters

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

### SYSTEM REQUIREMENTS

Windows 98SE/ME/2000/XP • Pentium III 1GHz • 256MB of Ram • 2GB hard disk space • DirectX 9 compatible soundcard • 8x CD-Rom drive • 32MB graphics card

### VERDICT

Soldiers is an enjoyable WWII romp that brings new additions to an established formula

**OVERALL**

★★★★★



View the battlefield to plan your strategy and keep your troops alive



## Competitions

### Win a Viewsonic monitor or a copy of the graphic illustration package Xara X1

Turn to page 208 for a chance to win one of two Viewsonic monitors or one of 10 copies of Xara X1



## Transport Giant

Run things your way with your own empire



If you've ever thought you could do a better job of managing our transport network than its current handlers, Jowood's Transport Giant could be the simulation for you. In this game you play the role of a resourceful entrepreneur bent on building a successful empire.

Initially, players must decide which year they want to start in. You can choose from a variety of periods, including the early 19th century or bang up to date in the year 2000.

Your ultimate goal is to make a fortune, but if you are unsure at first there is a practice mode called the Sandbox, which allows free play. You won't receive a final rating here, but there are no financial worries since all vehicles and equipment are free.

Next you will need to decide where you want to begin building your transport company. The game gives you a choice of either Europe or the US and provides the primary transport requirements for your chosen region. Things such as food and coal will have to be shipped, but you'll also have to ferry passengers, transport mail and remove rubbish to satisfy your town's needs.

In total, there are 130 vehicles, 60 different products and industries and over 500 unique buildings. You can choose to play over 7,150 years in the endless game mode or go for a quick session in one of 14 special missions.

The in-game date changes continuously and you're constantly kept on your toes with developments. Weather conditions change and new seasons bring new challenges to contend with. More significantly, an evolving economic situation means you're regularly put under pressure to keep your profits stable.

Transport Giant is a challenging game that should hold your interest, particularly if you are a fan of simulations.

Sameena Shami

### DETAILS

**PRICE** £29.99 inc VAT

**CONTACT** Jowood  
[www.jowood.com](http://www.jowood.com)

### SYSTEM REQUIREMENTS

Windows 95/98/ME/2000/XP • 64MB of Ram • Intel Pentium III • 3D Direct X 8.x compatible • 4x CD-Rom Direct X 8 compatible • Soundcard

### VERDICT

Tedious for those who want instant gratification, but ideal for the patient strategist

**OVERALL** ★★★★★

## Championship Snooker 04

Chalk your cue, the Crucible is waiting



Snooker is not the most exciting spectator sport, and playing it in real life without the necessary skills can lead to humiliation. World Championship Snooker 2004 from Codemasters is the latest snooker simulation that lets you practise your shots from the safety of your PC.

There's not much you can do to jazz up the actual game of snooker, so Codemasters has included plenty of animated sequences and created lifelike models of all the famous players.

The gameplay is stunningly realistic. Balls bounce off cushions perfectly and you can apply all manner of spins to your shots. Playing against the likes of Ronnie O'Sullivan and Steve Davis adds to the realism and each player has his own strengths and weaknesses.

There are various game types on offer. You can play in a friendly match or try to become number one by challenging all 128 players in the LG Tour.

As with most slow-paced sports simulations, the gameplay is spiced up by the ability to win money. You can then take your hard-earned cash to the players' lounge and fritter it away on a variety of

equipment, including shirts, bow ties and cues.

If you find snooker a bit tricky, you'll be pleased to hear that eight-ball and nine-ball pool options are available.

You can also try out some trick shots and play a selection of bonus games such as Time Bandits, where you only have a couple of seconds to play each shot.

World Championship Snooker 2004 is unquestionably one of the best snooker simulators currently available. If you've got no interest in the sport though, there is little likelihood you'll enjoy it. Also, owners of the previous editions of the game will find it difficult to justify purchasing this latest outing.

Will Stapley

### DETAILS

**PRICE** £29.99 inc VAT

**CONTACT** Codemasters  
[www.codemasters.co.uk](http://www.codemasters.co.uk)

### SYSTEM REQUIREMENTS

800MHz Pentium III or equivalent • 128MB of Ram • 1.4GB of hard disk space

### VERDICT

If you're snooker loopy, World Championship Snooker 2004 should keep you happy for a long time

**OVERALL** ★★★★★



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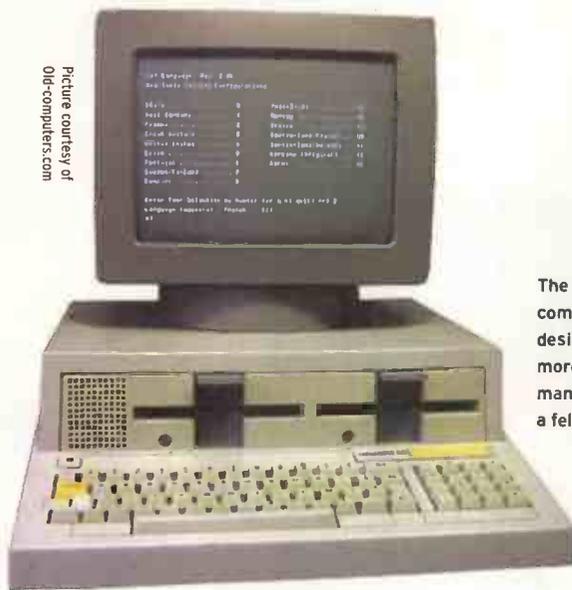
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Picture courtesy of  
Old-computers.com

The Olivetti M20 reflected the company's beliefs, as it was designed in-house and rejected more obvious processor manufacturers in favour of a fellow Italian company

# Olivetti M20

How a one-time giant of the typewriter industry turned its talents to the world of PCs

**A**s the 1970s drew to a close, Olivetti understood it needed to enter the personal computer market, and fast. The company may have enjoyed success with its ET 101 electronic typewriter launched in 1978, but it was clear that PCs would soon make many of its core products redundant. Seeing the threat as an opportunity, senior management set its research and development teams to work.

Olivetti was founded as the first Italian typewriter factory in 1908 by Camillo Olivetti in Ivrea, near Turin. It employed 20 people on a 500m<sup>2</sup> production floor which later turned out around 20 typewriters per week; the company's first product was the M1 typewriter.

Olivetti grew, launching the M20 typewriter in 1920 and producing 13,000 machines a year by the end of that decade. The first portable typewriter, the MP1, was launched in 1932 and, during this and the following decade, the company moved into other products.

During the 1950s, Olivetti adopted electronics alongside its traditional mechanical expertise, producing Italy's first mainframe computer, the Elea 9003 in 1959.

Six years later it presented the Programma 101, a desktop computer which could be programmed by magnetic cards.

It sold several thousand units worldwide, but the P101 was later considered way ahead of its time and a missed opportunity for the Italian industry. The death of Adriano Olivetti (then chairman), followed by costly acquisitions and investments led Olivetti into financial difficulties. By the mid-1970s, it was deeply in debt.

The man who turned Olivetti's fortunes and took it into PCs was Carlo De Benedetti who, in 1978, bought a stake in Olivetti and took over its management. In a speech in 1996, Benedetti said he was originally brought in as an entrepreneur to revive Olivetti's fortunes. He reorganised it with product development, focusing on word processing and information technology.

Two such products included the departmental M30 and M40 computers under joint development at Olivetti's Italian HQ and its Advanced Technology Center (ATC) in Cupertino, US. Olivetti wanted a smaller computer to complete this line.

Olivetti's Systems and Strategy boss, Elserino Piol, considered buying in a machine from a third party, but Enzo Toressi, head of

ATC, proposed they design it in-house. He convinced Olivetti management to have it developed at ATC and work began in early 1981; Dave Helms managed the project and John Golini was brought in as chief architect.

As Olivetti's personal computer preceded IBM's PC, there was no concept of producing a compatible system. Instead Olivetti developed an architecture based on its own beliefs and existing relationships.

This was illustrated by the company's choice of micro-processor. Rejecting Intel's 8086 and Motorola's 68000, it opted for the Z8001 from fellow Italians, Zilog. The 16bit Z8000 series was launched by Zilog in 1979 and consisted of two models: the Z8002, which could only address 64KB of memory, and the Z8001, which could address 8MB. The Z8001 had neat features, but powered just a handful of designs.

Olivetti coupled the Z8001 with 128KB of Ram, upgradeable to 512KB, 12KB of Rom and graphics capabilities of 512 x 256 pixels in up to four colours. For an operating system, in mid-1981 Toressi approached Bill Gates, who produced a modified version of Dos and the Basic programming language for the Z8001, called PCOS. Gates also

influenced the name of the system, after it was suggested the M16 badge could be negatively associated with the standard US Army assault rifle. Olivetti chose M20, after its second typewriter.

The M20 software and hardware were designed and prototyped in Cupertino, while its mechanics, enclosure and production took place back in Italy. It was formally announced in April 1982 and cost from \$3,000 when released later that year. The M20 was a well-specified system for the price, but in August the previous year IBM had launched its Personal Computer using Intel's 8088 processor. Even by 1982 the writing was on the wall for proprietary systems.

IBM's influence was felt throughout the industry, including Olivetti, whose 1984 follow-up, the M24, dumped proprietary architecture in favour of full PC-compatibility – it became one of the company's most successful products.

As for recent years, Olivetti sold its personal computer division in 1997 and became involved in a series of telecoms alliances. In August 2003, Olivetti merged with Telecom Italia, adopting the purpose and name of this company.

Gordon Lain

## Win a Viewsonic monitor

**T**his month we're giving two readers the chance to walk away with an excellent Viewsonic monitor. One winner will receive the fantastic 20in VP201, as reviewed in our August issue. This scored five out of five in our review and was given our coveted Recommended award.

The VP201 has a 176° ultra-wide viewing angle, UXGA 1.92megapixel resolution, ClearMotiv broadcast-quality video technology and native HDTV high-scan 720p compatibility. It sounds complicated, but all this advanced technology means your movies and images will look fantastic.

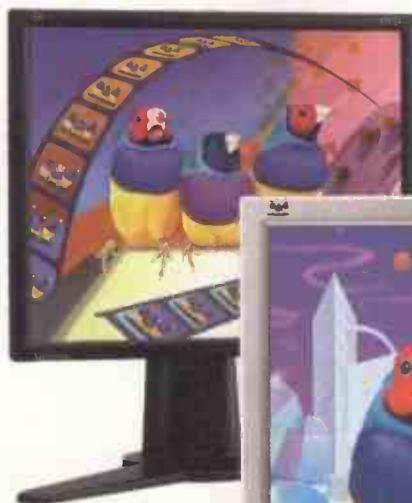
Monitor stands are an often overlooked area, but the VP201 has one of the best around. It has tilt and height adjustment, as well as a swivel feature, which is perfect for anyone who spends a lot of time working with office documents. It is available in black or black and silver, so it's sure to look great next to any PC.

The second winner will receive the 17in VP171 monitor. This is a smaller alternative to the VP201, but it offers excellent image quality through digital or analogue connectors.

For your chance to win either of these, simply answer the question below and follow the instructions on how to enter.

**In which issue was the Viewsonic VP201 reviewed?**

- a) June 2004
- b) July 2004
- c) August 2004



### PCW OCTOBER 2004 VIEWSONIC COMPETITION ENTRY FORM

**In which issue was the Viewsonic VP201 reviewed?**

.....

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### Rules of entry

This competition is open to readers of PCW, except for employees (and their families) of VNU Business Publications, Viewsonic and Xara. PCW is the sole judge of the competition and the Editor's choice is final. 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. Prizes will be dispatched direct 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.

### August winners

The winner of the Microland Athlon 64 PC is Peter Simpson from Tyne and Wear, and Marian Oxley from Brighton wins the Evesham PC.

## 10 copies of Xara X<sup>1</sup> up for grabs

# Xara X<sup>1</sup>

**W**e've teamed up with Xara to give away 10 copies of its latest graphic illustration package, Xara X<sup>1</sup>. The software has an easy-to-use interface that lets you achieve professional results even if you can't draw very well.

Producing vector illustrations, bitmap editing, and photo composition is quick and easy using the comprehensive toolset, plus it provides a professional-level graphics tool that can be used by people with little experience.

As well as all the drawing tools you would expect, Xara X<sup>1</sup> offers options such as automated shadows, bevels and contours, pressure-sensitive brush stroking, multi-stage graduated fills and feathering.

Xara X<sup>1</sup>'s photo and bitmap handling is fast and powerful. As a result you'll be able to use the package as your primary, general-purpose image-composition tool. It can produce compact, highly optimised graphics and can be integrated with Macromedia Dreamweaver for website creation. Xara X<sup>1</sup> supports a broad range of printing systems from domestic inkjets through to professional colour separation systems, so it can cope no matter what your level of expertise.

For your chance to win a copy, answer the question below and follow the instructions on how to enter.

**WIN!**



**With which product is Xara X<sup>1</sup> compatible?**

- a) Macromedia Dreamweaver
- b) Microsoft Money
- c) McAfee Virusscan

## How to enter

Fill in the coupon and send to the following address by 23 September 2004:

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.....

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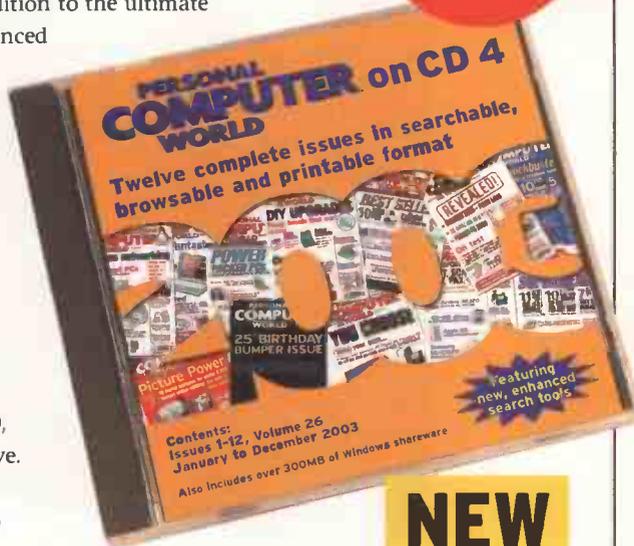
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### System requirements:

PC: Windows 98, ME, NT, 2000, XP, 64MB of Ram, CD-Rom drive.  
Mac: Powermac or compatible, Mac OS9.1 or higher and 64MB of Ram.

You will also need Acrobat or Acrobat Reader 5 installed.



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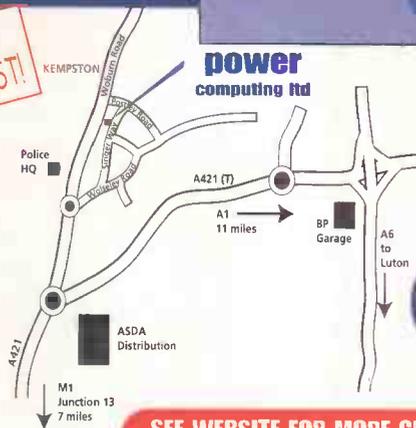
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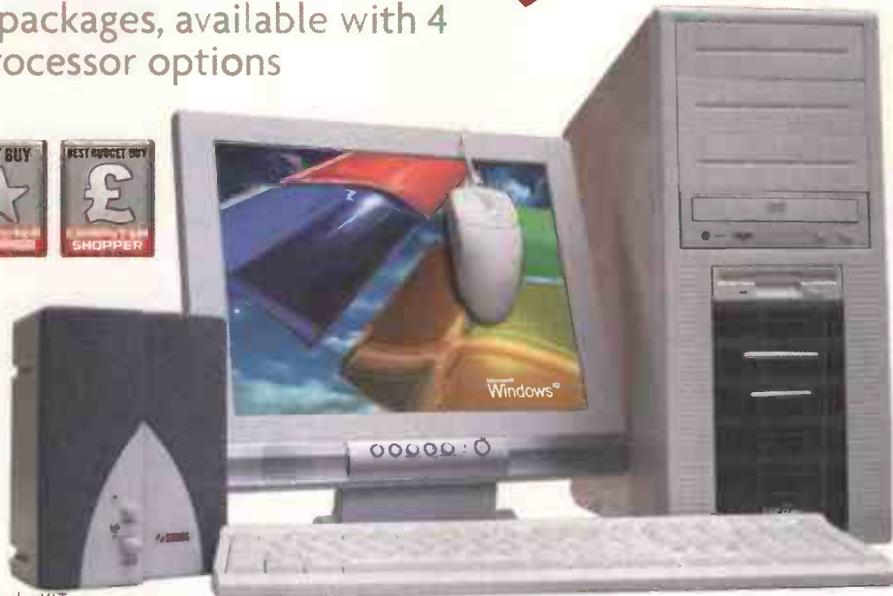


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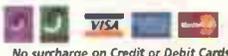
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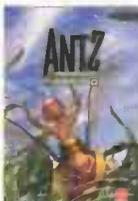
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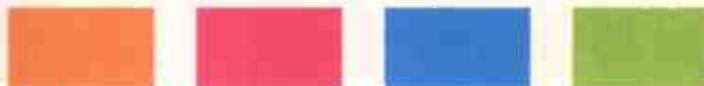
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<b>M</b>	512MB Seiko 512MB USB 2.0 Pen Drive	Laptop Drives for IBM/Compaq/Toshiba/DELL	PowerLite DVD-107 DVD w/ R/W/8 speed 20x CD/DA
<b>M</b>	512MB COMPACT FLASH Memory		EXTERNAL LGCR DUAL LAYER DVD/RW w/ w/ USB 2.0
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Coated Matt	140 gsm	100 sheets	£ 7.29	
Coated Matt	160 gsm	100 sheets	£ 8.50	
Coated Matt	210 gsm	100 sheets	£ 9.99	

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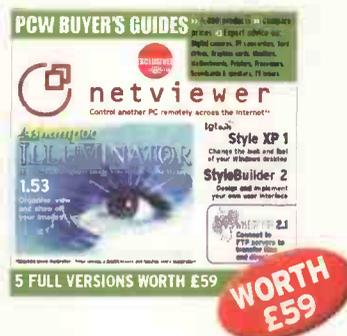
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# October Cover Disc

Five pages of workshops, special offers and more >>

## On the CD

- Netviewer
- Style XP 1.01
- Stylebuilder 2.03
- Wise-FTP 2.1
- Ashampoo Photo Illuminator 1.53
- Buyer's guide ebook



## 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 that 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 October 2004 cover disc  
 ABT, 306 St Mary's Lane  
 Upminster, Essex RM14 3HL  
 quoting reference 'PCW Vol 27 No 10'.  
**PROBLEMS INSTALLING/RUNNING THE SOFTWARE** > Check the support page on the disc, or check the manufacturer's site.  
**GENERAL DIFFICULTIES** > 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](http://www.vnusupport.co.uk).  
 Or email us at [pcw@vnusupport.co.uk](mailto:pcw@vnusupport.co.uk).

## On the DVD

- Ashampoo Uninstaller 2002/2003
- Linux Live
- Netviewer
- Style XP 1.01
- Stylebuilder 2.03
- Wise-FTP 2.1
- Ashampoo Photo Illuminator 1.53
- Buyer's guide ebook



## FULL SOFTWARE LISTING

### CD

#### Full versions

- Netviewer
- Style XP 1.01
- Stylebuilder 2.03
- Wise-FTP 2.1
- Ashampoo Photo Illuminator 1.53

#### Buyer's guide ebook

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- Monitor
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#### Trial versions

- Ashampoo Uninstaller Suite Plus
- Contribute 3
- Showshifter 3
- StyleXP 2.11
- Wise FTP 3.02
- Xara X

#### From the magazine

- Bittorrent 3.4.2
- JEdit 4.1
- Mono
- Spybot Search and Destroy 1.3

- XXCopy 2.85.5
- Ztreewin 1.49.2

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- and resources, including:
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- Harddisk Search and Stats 2.0
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- Open Office 1.12
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- Process Explorer 8.41
- Adobe Acrobat Reader 6.01
- Aladdin Spamcatcher 3.05
- Bit Defender 7 Free Edition
- Mozilla 1.7.1
- Mozilla Firefox 0.9.2

### DVD

#### Everything on the CD PLUS...

- Full versions
- Ashampoo Uninstaller 2002/2003

#### Linux Live group test

- LNx-BBC 2.1
- Feather Linux 0.4.0
- Gnoppix 0.6.0-rc2
- Knoppix 3.3
- Linspire Live
- Mandrake Move
- Morphix 0.4.1
- Suse Live





## Need to know

### System requirements

Windows 95 or later, 1MB disk space, Internet

### Information

[www.netviewer.info/pcworld](http://www.netviewer.info/pcworld)

### Installation instructions

Run NetviewerConsultant\_EN.exe and click 'Request license key'

### Limitations

\*Two-month licence only

# Netviewer

Show your PC screen live over the Internet with this tool

**W**ith email, instant messaging applications, video chats and more, we've never had so many ways to communicate with friends and colleagues. So why is technical support such a hard slog, all 'What do you see on the screen?' and 'Where are you now?' And why is collaborating with others still so much easier when you're in the same room?

The simple answer is that you can't see what's on their screen. Unless, that is, you're using a desktop-sharing tool such as Netviewer. This ingenious tool lets you connect to another person's PC and view exactly what's on their desktop. They could run through a presentation or show you some work in progress while you take a closer look.

If you want to get more involved, Netviewer also supports remote control.

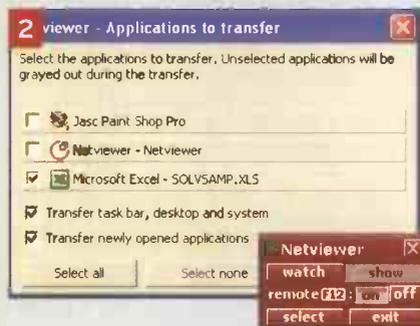
If the user of the remote PC isn't sure how to do something in Access, say, then they can let you take control of the application. It's running on another system, but you'll be able to operate the program as though you were there, using your mouse and keyboard. If you need to share information, you can drag and drop files between the two PCs.

All this functionality comes with the minimum of effort. There's no installation involved; just unpack some files into the folder of your choice. It runs on any version of Windows, from 95 onwards. And HTTP tunnelling via port 80 means Netviewer won't clash with your firewall. This simplicity pays off quickly, ensuring hassle-free connection to just about any PC, with no technical expertise required.

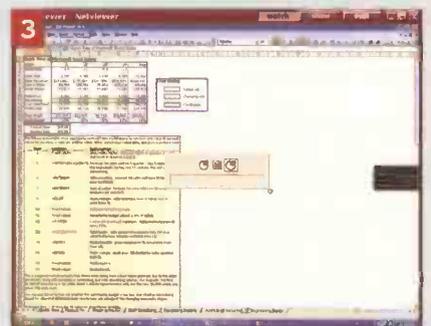
## Take remote control of another PC



**1** Email the Netviewer client program to your session partner (or they can download it from [www.netviewer.info/pcworld](http://www.netviewer.info/pcworld)). Run the consultant program and give them the consultant code by phone; enter code into the client. They can see the consultant's screen ('Show mode').



**2** You want to see what's on the client, so click 'Watch' on the Netviewer panel. The client will be asked if they want to transfer their screen content, and should click 'Yes'. Now the client must click Remote, then Select, and choose the applications they'd like to let you control.



**3** Once you've been given control, you can operate the remote PC using your mouse or keyboard. Show your partner a program feature or diagnose a spreadsheet problem, for example. Press [F12] and they can revoke your remote control rights. See the Netviewer pdf file for more.

## Upgrade >> Netviewer range

### New features

- >> Supports remote control
- >> Drag and drop files between PCs
- >> One2many version

To use Netviewer past the two-month limit of this version, you need to upgrade. Prices start at £1,790 for one workstation licence, with discounts if you buy more.

It is also available in a One2many version, where multiple clients can connect to you for a web conference. Prices begin at £3,600 for 10 participants in a virtual conference room. Visit [www.netviewer.info](http://www.netviewer.info) for more information.



**FULL  
VERSION**

**tgtsoft**

**Need to know**

**System requirements**

Windows XP, 5MB disk space

**Information**

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

**Installation instructions**

Registration not required

**Limitations**

None

# Style XP 1.01

Change and customise your old Windows XP interface

**W**hen you buy a new PC you'll probably spend time tweaking default Control Panel, Explorer and Internet Explorer settings to suit your needs. So why leave the XP interface untouched? It can be customised in a number of ways, personalising your system and giving Windows a completely new look and feel.

Style XP can help achieve this by applying Windows Themes, co-ordinated collections of backgrounds, cursors, icons, sounds and screensavers. Add visual styles and defining elements, such as colour schemes and fonts, and you can change the appearance of Windows. It's even possible to change the logon screen you see when Windows boots (as long as you don't log into a domain server).

Install the program and it will ask if you want to apply its Coughdrop theme. Click

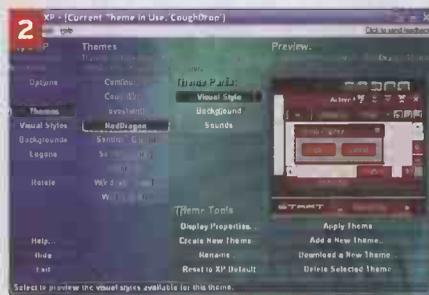
Yes to confirm everything's working correctly, and admire your PC's stylish new look. If you're not happy with that look, or would like to explore, choose the Themes, Visual Styles, Backgrounds and Logons sections, and check out the customisation possibilities on offer. If you're easily bored, try clicking on Rotate, and let Style XP change your theme when you log on, every day or once a week.

Once you've exhausted the themes, styles and backgrounds provided with XP, it's time to download some more from an online library such as ThemeXP ([www.themexp.org](http://www.themexp.org)). Click the 'Add a new...' Style XP button, choose the background, visual style or logon screen you've downloaded, and it'll be imported and ready for action.

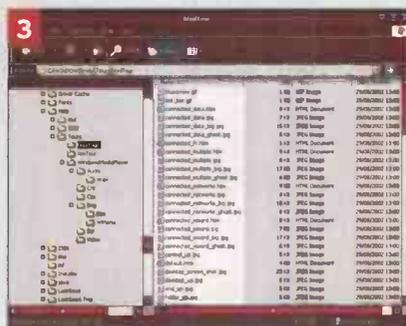
## Give Windows a complete makeover in five minutes



**1** Style XP is great at manipulating and applying Windows themes, but can't create any (you can with Stylebuilder, also on this month's disc). The web is full of sites giving away themes, so browse the Visual Styles section of ThemeXP ([www.themexp.org](http://www.themexp.org)) and see what appeals.



**2** You'll download zip files, but Style XP knows how to handle them. Click Themes > Add a New Theme, then point Windows at one of the files you've grabbed. A thumbnail will appear in the Preview window to confirm you've selected the right file.



**3** Click Apply Theme and wait while Windows loads the new theme files then updates your desktop and running applications. Now try running a few Windows applications to see how they look with the new visual style. Customise background, colour and so on until happy.

## Upgrade offer >> Style XP 2

**New features**

- >> Customise icons
- >> Personalise your boot screen and transparency
- >> Improved performance
- >> Support for the XP SP2 beta

Style XP 2 lets you customise icons, your boot screen and transparency, as well as changing Explorer's (and Internet Explorer's) standard buttons. Performance has been improved, there's support for the XP SP2 beta, and you can read about the changes at [www.tgtsoft.com/download\\_sxp\\_changelog.php](http://www.tgtsoft.com/download_sxp_changelog.php). Go to [www.tgtsoft.com](http://www.tgtsoft.com) where the new version can be yours for \$19.95 (about £11).

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£11**



**FULL  
VERSION**

**tgtsoft**

### Need to know

#### System requirements

Windows XP, 21MB disk space

#### Information

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

#### Installation instructions

Registration not required

#### Limitations

None

# Stylebuilder 2.03

Get creative and design your very own Windows Theme

**P**lay around with Stylebuilder companion program Style XP (also on this month's disc) and you'll have access to thousands of ready-built Windows XP themes, freely available in online libraries such as ThemeXP ([www.themexp.org](http://www.themexp.org)). But if you still can't find the exact look you want, use Stylebuilder to customise your Windows interface.

Once Style XP is installed and running, launch Stylebuilder and choose 'Blue' from the left-hand shortcut bar. You'll see icons showing the different parts of Windows you can customise, from colours and fonts, to buttons, the Explorer and Task Bars.

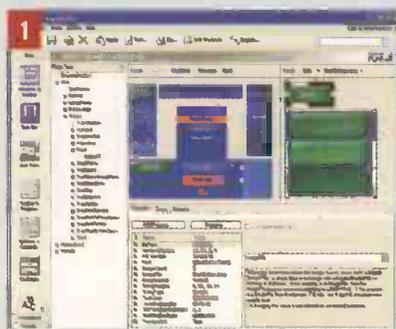
Click 'Windows & Toolbar' as an example, and you'll see a sample window displayed using the current style. Click an element of this, perhaps the caption bar, and

Stylebuilder will display all the different areas that can be tweaked. You might change the bar's shape or colour, have the caption displayed in a different place, or play around with a host of other values.

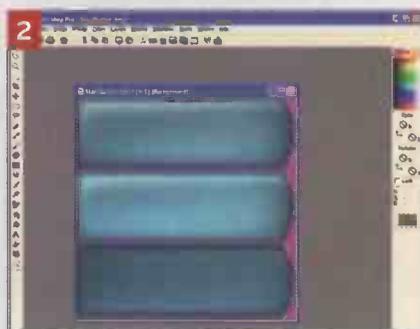
Unless you're skilled in the dark arts of Windows graphics, many of these interface properties won't mean very much. However, if you want to find out what Fillcolorhint does, for instance, the Properties window displays helpful hints on exactly how it can be tweaked.

You'll still make mistakes, but a convenient Test option makes it easy to try out your changes. If something doesn't work, just go back, play around and try it again. When you've finished Style XP will install the theme on your PC, and you can even compile it to share the style with others.

## Customise the Windows XP Start button



**1** Ensure Style XP is running, then launch Stylebuilder, click Tools > Options > New, and point it at your best image editor (Paint Shop Pro is fine). Click Blue in the left-hand toolbar, select 'Task Bar'. Right-click the Start button in the centre preview window, and select 'Edit In...' (your editor).



**2** In Paint Shop Pro, you'd now select the Magic Wand tool, hold down Shift, then left-click in the four purple areas so they're selected. Click Selections > Invert to choose the buttons instead; use a Colors menu option to replace the green colour. (These principles apply to other editors).



**3** Close your editor, saving the changes you've made, and they'll be reflected in the preview window. To see what they look like, click Apply, give the style a name and select OK. Stylebuilder will compile your changes, then update Windows to use the new colours. If you don't like it, try again.

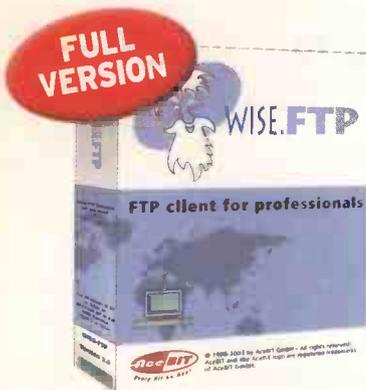
## Upgrade offer >> Style XP 2

### New features

- >> Customise icons
- >> Personalise your boot screen and transparency
- >> Improved performance
- >> Support for the XP SP2 beta

To complement Stylebuilder, Style XP 2 lets you customise icons, your boot screen and transparency, and change Explorer's (and Internet Explorer's) standard buttons. Performance is improved, and there's support for the XP SP2 beta. Read about the changes at [www.tgtsoft.com/download\\_sxp\\_changelog.php](http://www.tgtsoft.com/download_sxp_changelog.php). Go to [www.tgtsoft.com](http://www.tgtsoft.com) where the new version can be yours for \$19.95 (about £11).

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# Wise-FTP 2.1

Scheduling, Explorer integration and file transfer tricks

**Need to know**

**System requirements**

Windows 98 or later, 3MB disk space, Internet connection

**Information**

[www.wise-ftp.com](http://www.wise-ftp.com)

**Installation instructions**

Launch program; complete Activation Wizard

**Limitations**

None

**F**irst defined in 1973, FTP is the oldest form of Internet file transfer around. There's nothing old-fashioned about Wise-FTP 2.1, though. It adds a host of new features aimed at simplifying and speeding up all your FTP transfers.

As with previous versions, you start by using the Site Manager to create profiles for your favourite FTP sites. Enter a site and host name, user ID and password if required, then store the details for re-use later.

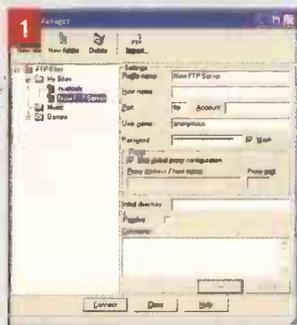
Now you can connect from the Site Manager with one mouse-click, or (in future) just pick a site name from the File > Quick Connection list. After a short pause, Wise-FTP displays views of your local and remote systems, and transferring files is as simple as a drag-and-drop.

Select a remote folder, then a local folder containing the files you'd like to upload. Click Tools > Synchronize Folders, and Wise-FTP will upload only the files that have changed recently.

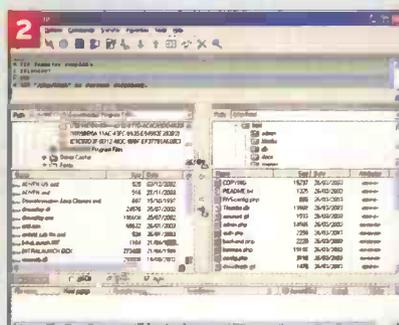
If you'd rather, you can also work from within Explorer. Expand My Network Places and you'll find Wise-FTP Network Places with entries for every site profile you've created. Here you can access your FTP server, and upload or download files and folders without ever seeing the main Wise-FTP interface.

Perhaps the simplest way to handle FTP transfers is by scheduling them, so they'll run even when you're not around. Click Acebit > Wise-FTP > Task-Planner on the Start menu to launch the new scheduler, then right-click on its system tray icon to explore the options on offer.

## Three steps to faster FTP file transfers



**1** You don't need to remember long user names and passwords or find your site details in a list. Click Tools > Site Manager, then select New Site to add your host and user name, account or password. Click New Folder to create groups for related sites, and drag and drop sites to rearrange them.



**2** Click File > Quick Connection and choose which FTP site to access. If you'll be browsing the remote server, click Tools > Read all folders to download its folder and file structure all in one go. To upload, pick a remote folder, then drag and drop any local files you'd like to transfer.



**3** If the same FTP transfers are made regularly (or they involve large files and take ages), schedule them to happen automatically. Launch the Task Planner, right-click on its system tray icon, select Wise-FTP Schedule. Click Task > New Task and tell the wizard which files to transfer.

## Upgrade offer >> Wise-FTP 3

**New features**

- >> New user interface
- >> Clipboard monitoring for FTP URLs
- >> Assignable shortcut keys
- >> Support for secure authentication and file transfer (SFTP)
- >> HTML editor

Acebit's latest update offers a new user interface, clipboard monitoring for FTP URLs, shortcut keys. There's support for secure authentication and file transfer (SFTP) and an HTML editor for editing web pages directly on a remote FTP server. The program costs \$49 (around £26.50), but an upgrade from version 2 costs you only \$9.95 (about £5.40). Go to [www.wise-ftp.com/order.htm](http://www.wise-ftp.com/order.htm) to upgrade.



**FULL  
VERSION**

## Ashampoo Photo Illuminator 1.53

### Need to know

#### System requirements

Windows 98 or later, 20MB disk space

### Information

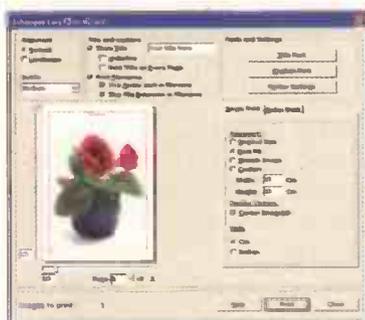
[www.ashampoo.com](http://www.ashampoo.com)

### Installation instructions

Click Internet > Enter Reg/Trial Key > Get Free Key

### Limitations

None



Forget image-printing hassles, the Photo Illuminator Easy Print Wizard provides every setting you need in one dialogue box

### Take image management to a new level

The world is full of graphics organisers and, at first glance, Photo Illuminator looks much like all the others, with an Explorer-like interface, thumbnail previews and basic editing functions, such as resize, rotate and resample.

But look a little further and it begins to stand out. Most organisers let you create slideshows, for instance, but this is the only one we've seen that can create copies of your images, all resampled to the same size. It can also compress the pictures and a spoken soundtrack into an exe file, which you can then share with others.

There's more attention to detail elsewhere. It's no surprise that the File Conversion Wizard helps in converting file types, for instance, but here it can also resize, rotate and rename images in the same operation. You also get a Snapya screenshot wizard, with a variety of selection options, crop shapes, fade and cursor effects, and more.

If you want to share your images, look no further than the Burnit wizard. This will burn your selection of images onto a CD, without requiring any other mastering software. It also adds thumbnails and a slideshow program, so it's as easy to view the pictures as it was for you to create them.

### Upgrade offer

#### >> Ashampoo Photo Illuminator 2

If you like version 1.53 of Photo Illuminator, take a look at version 2. It comes with goodies such as a fast file search wizard, a Pack 'n' Go Wizard to compress and send images by email, a skinnable interface and plenty more.

Buying the program would normally cost £21 but, as a registered user of Photo Illuminator, you'll pay only £14.99. Visit the Ashampoo shop to place your order ([www.ashampoo.com/shop/0218/upgrade](http://www.ashampoo.com/shop/0218/upgrade)).

## Ashampoo Uninstaller 2002-2003

**FULL  
VERSION**

### Need to know

#### System requirements

Windows 98 or later, 10MB disk space

### Information

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

### Installation instructions

Launch the program, click OK (Test shareware) > Internet > Get free full version

### Limitations

None



Install and uninstall programs through Uninstaller 2002-2003 to avoid leaving junk files behind

### Just the tool to remove junk files cluttering a hard drive

Do you remember when your current PC arrived? Setting it up, being amazed at the speed boost, wondering how you'd fill the spacious hard drive? You needn't have worried, of course, because somehow drives can fill up all by themselves. Install programs leave 'temporary' files behind, uninstall options don't work properly and, in no time at all, your disk is cluttered with junk.

Ashampoo Uninstaller 2002-2003 has weapons to help bring rogue files under control. Its UIWatcher lives in your system tray and pops up whenever it spots you running a setup program. It takes a snapshot

of your system before and after installation, recording all the changes in a log file.

To remove the program, use Uninstaller 2002-2003 instead of the application's own uninstall routine. It'll use the log file to remove the program, deleting its files and folders, even restoring any changed Registry settings to their values before installation.

Unwanted applications are only part of the problem, though, so Uninstaller 2002-2003 also includes tools to find and delete temporary files, clear your Internet tracks, manage fonts, locate duplicate files and more. If there's any wasted space on your hard drive, this is the program to find it.

### Upgrade offer

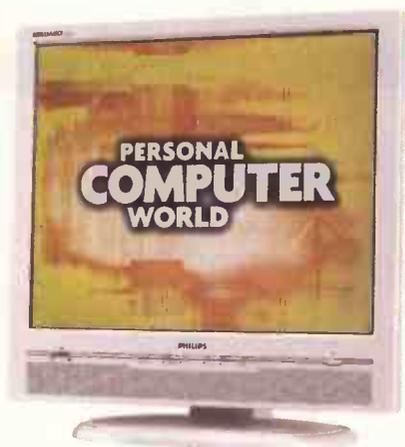
#### >> Ashampoo Uninstaller Suite Plus

Ashampoo Uninstaller no longer exists, but the good news is that it's been reinvented as Ashampoo Uninstaller Suite Plus, which includes new features such as an email attachment monitor to detect viruses, an IP spam blocker, a tool to

manage your Startup programs, a redesigned interface, and lots more. As a registered user of Uninstaller 2002-2003 you can upgrade at a only £7.99 (normal price £21). Visit [www.ashampoo.com/shop/0303/upgrade](http://www.ashampoo.com/shop/0303/upgrade) to purchase.

# Next Month

on sale 23 September 2004



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If you're on the move, a lightweight notebook is essential. We road test seven ultraportables



Seven dual-layer DVD drives put through their paces



Unleash the performance of your peripherals with a firmware upgrade

## Don't miss November's PCW

### Free performance upgrades

Have you ever considered upgrading the firmware on your digital camera, printer or graphics card? You might be surprised to know how much performance and functionality you can unleash for free. Our guide will show how to upgrade a range of hardware components.

### 17in TFT monitors

We've taken 10 of the latest 17in models and put them head to head to find out just what you get for your money.

### Ultraportable notebooks

If your notebook rarely leaves your desk, you probably don't really care how much it weighs. But if you're on the move, a lightweight model can make all the difference. In our group test you'll find seven sub-2kg notebooks that will lighten your load.

### Dual-layer DVD burners

The latest DVD burning technology lets you record up to 8.5GB of data on a single disc, and prices of these drives are already dropping. See how they perform in our round-up of seven DVD+R9 drives.

For regular updates of what's in November's issue, go to [www.pcw.co.uk/PCW/next.jsp](http://www.pcw.co.uk/PCW/next.jsp)

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PERSONAL  
**COMPUTER**  
WORLD



## OCTOBER 1984

The cover of our October 1984 issue showed an American footballer holding a Commodore Plus/4, with the words 'Field goal or fumble?' making a tenuous link to a review on page 120. The machine had its strong points, but also had several foibles such as a joystick and cassette interface that weren't compatible with previous Commodores.

We looked at the Apricot F1 too, a compact and inexpensive system pitched at the £1,000 business machine market. According to Peter Bright's review, the F1 wasn't designed for powerful, general-purpose micro computing, but was for people who needed a good-value



micro to perform one or two business tasks to a high standard.

Michael Stevens also revealed some remarkable similarities between innovations in computer technology and the way in which the brain works.

On a lighter note, we turn to our gaming section. D-Day and Battlecars were the first titles from Games Workshop, the company that originally brought Dungeons and Dragons into the UK. Both titles were very good, but Daley Thompson's Decathlon for the Commodore 64 stole the show.

## OCTOBER 1989

Guy Swarbrick welcomed the first Apple Mac portable, though in fairness to the English language he pointed out that at 6.8kg and measuring 387 x 387 x 102mm it was better described as a luggable. He loved the 640 x 480 mono screen which had 'excellent contrast, can be viewed from any angle and is pin sharp'. But he baulked at the £4,500 price tag.

Also reviewed in that issue was a Comcen Compact 386. It weighed 9.9kg and was described as a 'transportable', perhaps because you needed a transporter to carry it around. Options for the Comcen included a luxurious 512MB hard disk and a CD drive.

Reviewer Simon Jones felt the need to explain the many advantages

**The Apricot F1: it wasn't particularly powerful but was still a snip at £1,000 back in 1984**

of the CD, which he said could hold up to 550MB, and even more with compression. He wrote: 'If you want your own data on CD-Rom then an order of 1,000 units would work out at £5 a disc.'

Manek Dubash had an eat-your-words moment at the start of his review of hDC Windows Manager, one of a number of utilities aimed at overcoming the limitations of Windows 2.0. Microsoft, he wrote, had for years been trying to convince us that 'what we really want is fancy graphics to help us drive our computers. We've remained unconvinced'.

## OCTOBER 1994

In October 1994, columnist Simon Rockman took it upon himself to predict the imminent demise of the Internet. Stating that it was only of real use to the likes of journalists, he believed that, in time, people would find the Internet as interesting as the telephone and that no-one would spend hours using it. Not, perhaps, the most accurate of predictions ever to be found within the pages of *PCW*.

What was slightly more accurate was our vision of digital TV and radio becoming commonplace in the UK. If you've ever tried DAB radio, our promise back then that it would banish interference forever might seem like wishful thinking, but no-one can deny the improvements that digital TV has brought.

Meanwhile, the increasingly popular CD-Rom drive had reached the dizzy heights of quad-speed. Costing around £500 each these drives certainly weren't cheap, but in terms of performance they set new standards.

Our news pages also featured a story about the falling prices of CD writers or, as they were known back then, CD-Rom recorders. Two companies had just launched a CD writer below the £2,000 mark and further drops were predicted.

Sony, however, was sure that its new rewriteable MD-Data drive (aka the Minidisc) would soon be the recordable media of choice and see off the floppy disk for good. Who would have thought that 10 years on, the 3.5in floppy drive would still come as standard on a brand new PC?

## OCTOBER 1999

Chip wars are intricately tied to the rise of computing, and five years ago, the battle between AMD and Intel intensified as Athlon-based PCs began to ship.

Dubbed the 'Pentium Killer' on our cover, we looked at five PCs, costing up to £2,350, that were running 600MHz Athlons, and found them all to be good performers. After a chequered history with its processors, we felt AMD had produced a chip that would challenge Intel's dominance, and that has proved to be exactly the case.

Another area of fast-paced movement was the rise of the megapixel for digital cameras. We reported on a speech given by Nancy Carr, Nikon's consumer group general manager, a few months previously, predicting that consumer cameras would remain below 2megapixels, because otherwise they would require too much memory and power.

That had been busted by October and consumers continued to have an insatiable appetite for high-resolution digital cameras. With 4 and 5megapixels now the norm, we haven't stopped yet.

ADSL was vexing one of our columnists, who had found that, despite living in London, his postcode was not covered in BT's broadband trials. Add to this that quoted prices of £30 per month had turned out to be inaccurate (up to the tune of £110) and he was not happy.

So he took the only course of action open to a reasonable man: convince his wife they should move to a house just round the corner, which, coincidentally, could get broadband.

**The PCW team**

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