

# REVIEWS

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**Nik Rawlinson**  
DEPUTY EDITOR

# We must keep lifeline open

**I**t's the beginning of June as I write this and the trial of David Copeland, the man accused of planting three bombs in Brixton, Brick Lane and Soho, has just begun. By the time this column appears in print the trial is expected to be over and the outcome will be known. In the meantime, the London papers are, perhaps not surprisingly, devoting considerable acreage to the case and to reporting that the accused allegedly downloaded two books from the Internet: *The Terrorist's Handbook* and *How to Make Bombs Book 2*, before planting bombs in areas frequented by minority ethnic groups and gay drinkers.

It is perhaps this fact that for many is

justifiably taught the value of the family unit while those around you, who know no better, assume that you are something you are not. More often than not, those who find themselves in this position feel a need to conform to society's expectations and hide their true self behind a façade of heterosexuality, ending up feeling lonely and worrying what will happen when the truth must finally come out.

For many, therefore, the Internet provides their first contact with other gay people and helps them to realise that they are one of countless millions around the world. Newsgroups, websites and even dedicated keyword areas in some of the content-driven online services, such

## It is this fact that is the most shocking – as though a trusted third party has turned traitor

the most shocking – it is as though a trusted third party has turned traitor. The Internet is a means of support for many in minority groups and it is precisely those groups that were targeted using information gathered from that same resource.

During the six years I have been online, I have seen plenty of changes. What was once a largely text-based medium has fully embraced photography and multimedia. Modem speeds have increased four-fold and we have come to accept the abolition of account membership fees and free access for all. It is perhaps this last change that has been the most important, lowering the barriers to entry so it is no longer merely a network of the privileged few or those in further education.

But one thing that has remained constant throughout that time is the sense of belonging that it fosters, drawing individual users into multinational communities defined by interest, ability or personality. Growing up gay is not an easy thing to do – throughout your education you are

as AOL's Utopia, allow them to talk about their feelings and concerns anonymously and safely before having to admit to either themselves or the world that they are gay.

Ethnic communities also use the Internet to great effect. Many members have relatives overseas and for them the Internet is an effective means of keeping in touch with loved ones without the cost of long-distance phone calls, allowing them to send photos of events that could not be attended in person. It is also a cheap way of organising activities and publishing community news and noticeboards.

For minority groups everywhere the Internet has become so much more than a way of researching your hobby, checking train times or booking tickets for the cinema. It is a lifeline to a life they have left behind or, in some cases, they have not yet found and as such it is a trusted mentor, a dependable messenger and a faithful friend. It seems a cruel twist of fate, then, that those who were the targets of bombs are also likely to be those who would argue the loudest for the freedom of the Internet.

	<p><b>VNU European Labs</b></p>
<p>VNU Labs tests all kinds of hardware and software, from PCs and modems to databases. All our tests simulate real-world use and for the most part are based on industry-standard applications such as Word, Excel, PageMaker and Paradox. Our current PC tests for Windows 98, NT and 2000 are the SYSmark tests from BAPCo. In all our performance graphs, larger bars mean better scores.</p>	

<p>ratings</p>	
<p>★★★★★ ★★★★★ ★★★★ ★★★ ★</p>	<p><b>EXCELLENT</b> <b>VERY GOOD</b> <b>AVERAGE</b> <b>BELOW AVERAGE</b> <b>POOR</b></p>

# Mesh Matrix 850T

The new-improved Athlon with on-die cache is **the jewel in the crown** of this high-end system.

**A**MD's Athlon is an impressive processor, but recently it has been hampered by a speed bottleneck. The 512KB of off-die cache meant that it frequently lost out to Intel in our performance tests. The latest revision of the Athlon, codenamed Thunderbird, should remove this bottleneck due to its 256KB of on-die, full-speed cache. Mesh is the first PC manufacturer to submit a machine built around the cartridge-based version of this new processor and it has put together an excellent package that shows off the technology while keeping an eye on value for money.

The processor is clocked at 850MHz, which helps the PC achieve a respectable SYSmark score of 164. This is quite an improvement – the last 850MHz Athlon with off-die cache that we reviewed achieved 152 in the same test. The processor itself looks no different to existing Athlons, and AMD isn't going to make a big song and dance about this new chip, as there will be a mix of on and off-die cache processors floating around the channel for some time.

Taking a closer look at the sides of the processor cartridge, however, revealed that the cache chips seen on the previous generation of Athlon processors were missing, as they should be.

This machine isn't just about the latest processor, though. The components Mesh has put inside make this a well-rounded system. The choice of graphics card is the excellent new Hercules 3D Prophet II (see review p114), which uses nVidia's latest chip, the GeForce 2. Hercules has placed large heatsinks on the 32MB of DDR memory, which we reckon will leave more scope for overclocking. It also comes with both S-Video and DVI connectors, ensuring that you'll be able to connect it to all of today's latest multimedia devices.

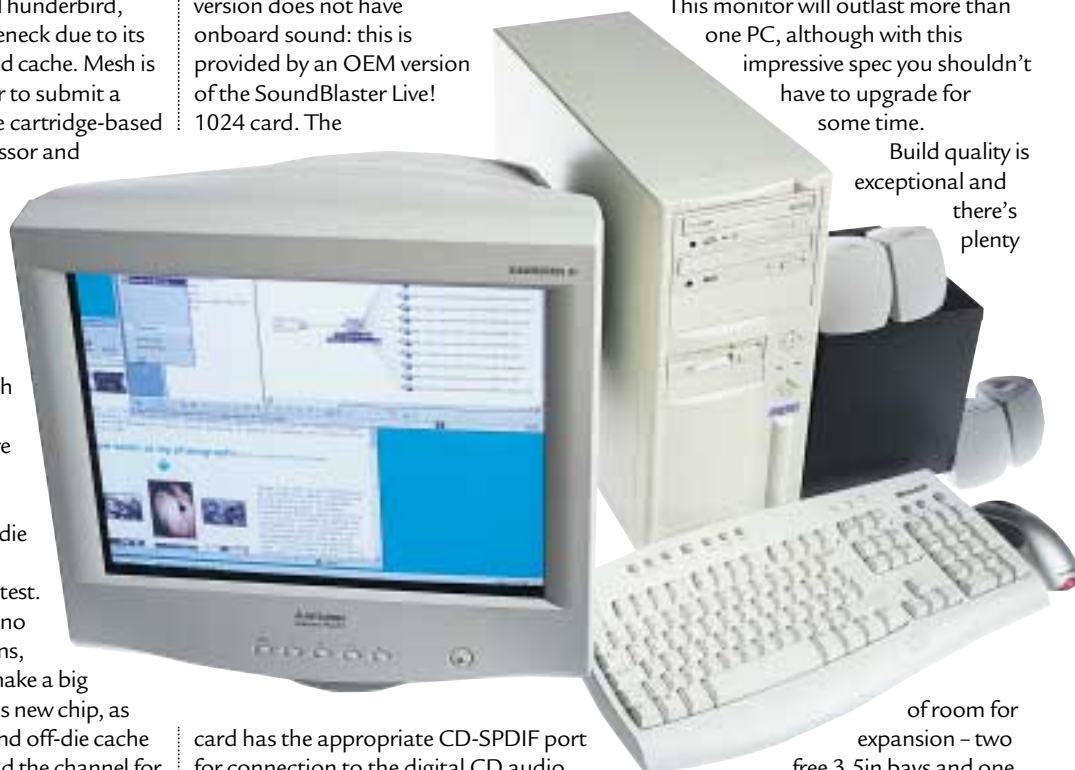
The processor has been mounted on MSI's K7 Pro motherboard, which uses AMD's 750 chipset. After everything is taken into account, three PCI slots and one shared slot remain free for future expansion. AMD's chipset doesn't support PC133 memory or AGP 4x, but

motherboards based on VIA solutions, such as the Atlas Meridian A750T reviewed on page 78, should result in a marginal performance increase. Memory consists of 128MB of PC100 sitting in a single memory slot, with two free. Mesh's version does not have onboard sound: this is provided by an OEM version of the SoundBlaster Live! 1024 card. The

The monitor is first class. The Mitsubishi Diamond Plus 91 is a good example of a 19in aperture-grille model. The Naturally Flat Diamondtron tube can comfortably run at higher resolutions and be looked at for long periods of time.

This monitor will outlast more than one PC, although with this impressive spec you shouldn't have to upgrade for some time.

Build quality is exceptional and there's plenty



card has the appropriate CD-SPDIF port for connection to the digital CD audio port, although no cable is supplied.

A large 30.7GB Maxtor DiamondMax Plus 40 hard drive sits in a 3.5in bay, leaving two free. This is more than enough for all but the most data-hungry users. For backup, Mesh has gone down the CD-RW route, with Panasonic's CW 7585. This writes at eight-speed and rewrites at four-speed. There's an extra drive inside for on-the-fly copying – Pioneer's DVD-115 is present in the second 5.25in bay. Cyberlink's Power DVD is supplied to let you watch DVDs with no dropped frames. Mesh has opted for Adaptec Easy CD Creator 4 to operate the backup device and this works efficiently under the chosen operating system, Windows 98.

The rest of the software is first rate considering the machine's price and specification. Microsoft's Works Suite 2000 is not as fully featured as Office 2000, but it is a complete office suite and comes with Word as a separate application. There's also a copy of Ringcentral to help you send faxes through the supplied Diamond Supraexpress 56i Pro modem.

of room for expansion – two free 3.5in bays and one 5.25in bay. Combine all this with the five-piece Labtec LCS 2514 speakers and you've got an attractive package with the latest technology at a bargain price.

JASON JENKINS

## DETAILS

★★★★★



**PRICE** £1,761.33 (£1,499 ex VAT)

**CONTACT** Mesh 020 8208 4706

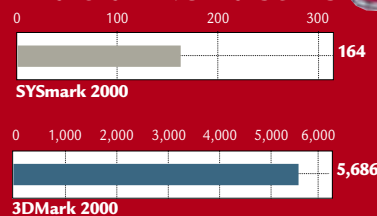
**www.meshplc.co.uk**

**PROS** Fast; great choice of components

**CONS** Some may still hanker after Microsoft Office 2000

**OVERALL** A fantastic machine that shows off AMD's new processor beautifully

## PERFORMANCE RESULTS





# Systemax D650 RV Pro

AMD's Duron processor poses a challenge to Intel's Celeron on both price and performance.

**B**efore the launch of the Athlon last year, AMD made its name producing value-oriented processors in the shape of the K6-2 and K6-III. In the past year, it has managed to shake off this image fairly successfully, positioning the Athlon as a direct rival to Intel's Pentium III.

Now, however, it has decided to complement its range of processors with a Celeron rival, the Duron. This Socket A processor is based on the same core as the standard Athlon and sports 128KB of on-die cache. AMD has promised to compete aggressively with Intel on price and, judging from the system Simply has put together for us, the Duron looks to be a formidable rival.

The Duron at the centre of this system is clocked at 650MHz and, in common with Intel's Celeron, has 128KB of on-die cache. This is half that of the new on-die cache Athlons (codenamed Thunderbird) and helps AMD save on production costs while still offering a speedy processor.

At the time of writing, the choice of motherboards was thin on the ground, as with any new processor launch. The one chosen for this system is Gigabyte's new GA-7ZM. Unfortunately, this is of the microATX variety – normally the fact that this is present in a full size ATX case would get us worked up, but given the dearth of boards, we'll let Simply off this time.

The GA-7ZM uses VIA's new KT133 chipset, which has a couple of important advantages over AMD's 750. First, it supports PC133 SDRAM for an extra performance boost. Second, the single AGP slot is AGP 4x compatible.

The motherboard itself has three memory slots, one of which is occupied by 128MB of PC133 SDRAM. There are two PCI slots available and a third one that is taken up by a generic winmodem. At the base of the board is an Audio Modem Riser (AMR) slot, which Simply

has chosen to leave vacant.

Build quality is very impressive. Simply has positioned an enormous heatsink on the Duron and this, combined with its fan, should help ensure that you won't experience any overheating problems. In addition to this, all the free bays, ports

excellent example of a 17in aperture-grille model. It uses an FD Trinitron tube to display a picture that even first-time users will appreciate.

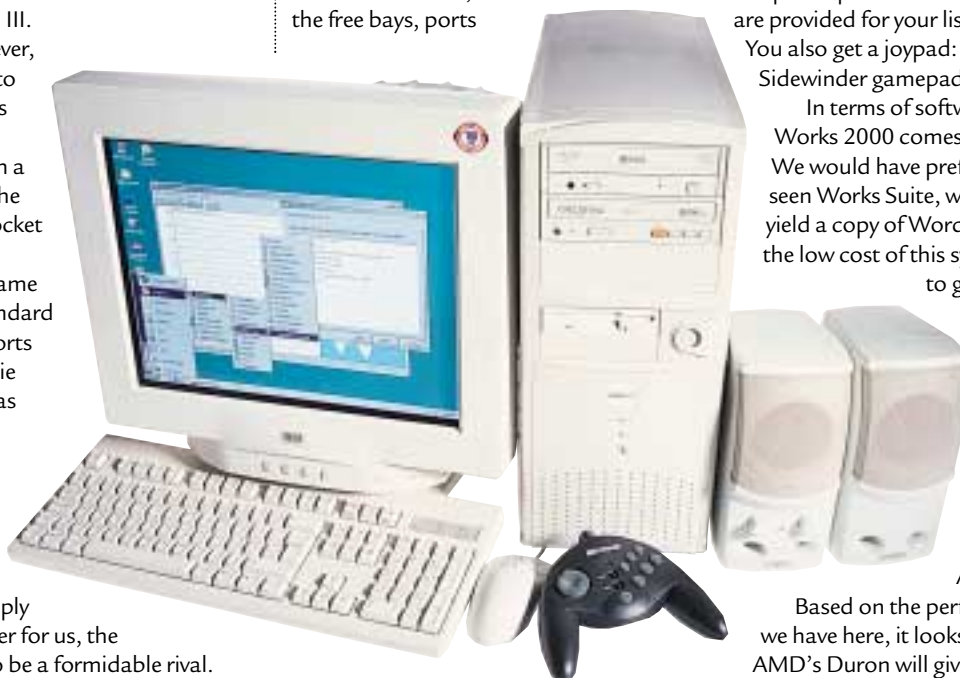
Sound is onboard, courtesy of VIA's KT133 chipset, and a pair of half-decent two-piece speakers – Creative's SBS52 – are provided for your listening pleasure. You also get a joypad: Microsoft's Sidewinder gamepad.

In terms of software, Microsoft's Works 2000 comes pre-installed. We would have preferred to have seen Works Suite, which would also yield a copy of Word 2000, but for the low cost of this system it's nothing to get excited about.

The company is also offering a limited software bundle containing WordPerfect 8, McAfee VirusScan and Acid Music.

Based on the performance results we have here, it looks as though AMD's Duron will give Intel's Celeron a run for its money. If the Systemax D650 RV Pro is any indication of the standard of the systems to be based on the Duron, then we've got a lot to look forward to. All in all, an excellent buy.

JASON JENKINS



and components are easily accessible.

In the AGP slot is a Creative Annihilator Pro. This uses the original GeForce chip, together with 32MB of DDR memory, to produce some pretty impressive 3D scores. The PC raced along in our Quake III timed demo, managing an impressive 71.6fps. 3DMark 2000 was also a good performer, managing to rack up 4,555. Considering the stated clock speed of the processor and the price of the system, these are a great set of results – you'll be able to use this PC for games as well as less demanding applications.

Simply's trademark makes a reappearance in this PC – the company has included both a Ricoh DVD/CD-RW combo drive and a Creative 52x CD-ROM. This means that you'll be able to play the latest DVDs, load DVD software and still copy discs on the fly. This would be good in any system, but it represents tremendous value in one costing only £899 ex VAT. A generous 30.7GB Maxtor hard drive is provided, which we would expect most people to have a difficult time filling.

There's been no compromise with the monitor, either. The CTX PR705F is an

## DETAILS

★★★★★

**PRICE** £1,056.33 (£899 ex VAT)

**CONTACT** Simply 0870 729 7366

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

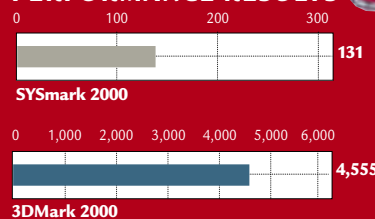
**PROS** Speedy performer for the price; good monitor and graphics card

**CONS** MicroATX motherboard limits expansion potential

**OVERALL** A system that shows off the latest technology, but manages to bring it in at a bargain price



## PERFORMANCE RESULTS



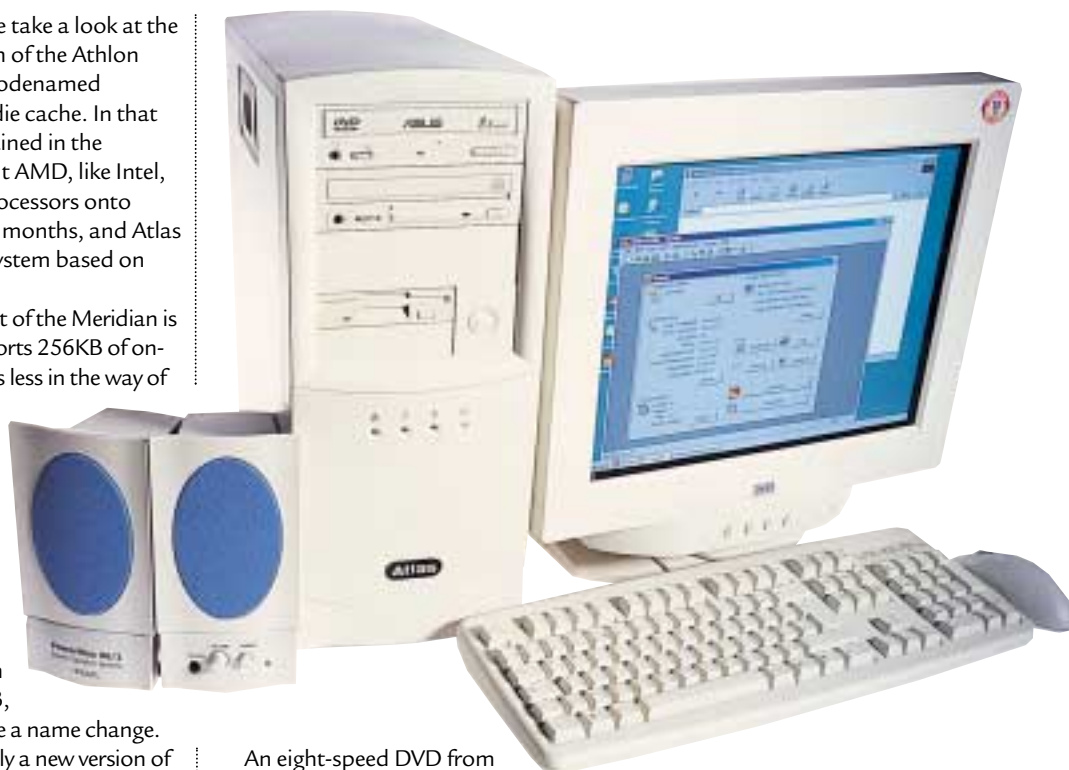
# Atlas Meridian A750T

The Thunderbird makes another appearance in **this great system** and at a keen price.

On page 76 we take a look at the latest version of the Athlon processor, codenamed Thunderbird, with on-die cache. In that instance, it is still contained in the traditional cartridge but AMD, like Intel, will be moving all its processors onto Socket A in the coming months, and Atlas has given us a superb system based on this new form factor.

The CPU at the heart of the Meridian is clocked at 750MHz, sports 256KB of on-die cache, and demands less in the way of power than the traditional Athlon. Atlas has mounted it on the very latest in motherboard technology, an MSI K7T Pro. This ATX board uses VIA's new chipset, the KT133. This has previously been referred to as the KZ133, but has since undergone a name change. VIA's chipset is essentially a new version of its KX133, redesigned for the new form factor. It supports AGP 4x and ATA 66, along with PC133 SDRAM. Unsurprisingly, then, Atlas has opted for components that take full advantage of both, with 128MB of PC133 memory occupying one memory slot, leaving two free, and a 20.5GB IBM Deskstar hard drive.

Accompanying this is a Guillemot 3D Prophet DDR-DVI. This uses the original GeForce 256 chip from nVidia and has 32MB of DDR memory onboard. Single D-SUB, S-Video and DVI connectors are present, ensuring that you will be able to connect to virtually any device. Unusually, none of the PCI slots are occupied, but this machine does not lack any of the functionality of other machines we review. The board has a new Communication Network Riser (CNR) slot at its base. This is an open industry standard designed to take cards that cover audio, USB, network and modem connectors. Into this is placed one of the new generation of CNR V.90-compatible modems. Audio is onboard, courtesy of the VIA VT686A chip. Atlas also provides a pair of basic Teac two-piece speakers that won't win any awards, but for this price we are not going to kick up a fuss. The CNR modem and onboard audio mean that this PC has huge expansion potential – very few users are going to be able to fill the six free PCI slots, but they are there for you to play with nonetheless.



An eight-speed DVD from Asus sits in one of the drive bays, with the audio properly connected to the motherboard, as it should be. There is also a Mitsumi CD-RW – the 4802TE. This writes at four-speed, and rewrites at two-speed. Those figures hardly break the speed barrier these days, but in the lower price bracket this machine occupies it is still a welcome inclusion.

Atlas' choice of monitor is a real inspiration. The CTX 705F has a 17in Trinitron tube and is capable of a 1,280 x 1,024 resolution at 75Hz. The picture is very easy to look at for long periods and it rounds off the whole package very well.

Build quality is excellent – a large heatsink is present on the new Socket A processor, and an extra fan whirrs at the bottom of the case. This should ensure that the whole box is kept cool, avoiding potential overheating problems. Two 3.5in bays and one 5.25in bay remain free for future expansion, figures that make this system as future proof as is currently possible.

Considering that this is a 750MHz processor, the performance is very good indeed. The new VIA chipset, together with PC133 memory, has helped this machine to score a few extra points in our benchmarks. The SYSmark score of 151 compares very favourably to Mesh's 850MHz Thunderbird on page 76, especially when you consider that this is

£500 ex VAT cheaper. 3D performance was similarly impressive, with a 3DMark2000 score of 4,849 and a Quake II score of 78.6fps.

What completes the whole package, though, is its killer price. At only £999 ex VAT, the Atlas Meridian A750T has everything you could ask for – a great monitor, fast performance, the latest technology and large expansion potential.

JASON JENKINS

## DETAILS

★★★★★



**PRICE** £1,173.83 (£999 ex VAT)

**CONTACT** Atlas 07000 285 275

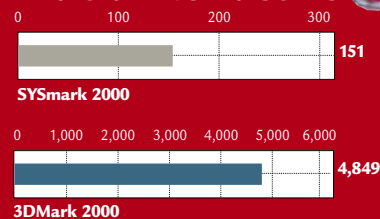
**www.atlasplc.com**

**PROS** Speedy; expansion possibilities; low price

**CONS** You might want slightly better speakers

**OVERALL** A great showcase for the latest technology at a killer price

## PERFORMANCE RESULTS



# Armari R8-2000E

Making use of the **latest technology available**, this is definitely a workstation that bites.

Configuring a high-end workstation can be tough, but once again Armari has successfully risen to the challenge with its R8-2000E. While often over-used these days, the term workstation still conjures up images of serious kit and in this respect, the R8 impresses the instant you heave it out of the box. The system is housed in a huge dark grey S30-T case from Elan Vital and measures 220 x 437mm at the front, but extends back an enormous 570mm. Once the side is removed, the Intel OR840 OutRigger motherboard looks almost as if it's been banished to one corner.

As its name suggests, the motherboard is based around Intel's high-end 840 chipset that, along with support for AGP 4x and UltraDMA66, boasts dual memory channels, theoretically doubling memory bandwidth. Rather than messing around with memory translators and SDRAM, the OR840 takes RDRAM, to which Intel always intended the 840 to talk.

There are two pairs of RIMM memory slots and the dual-channel nature of the 840 demands that each pair has at least one RIMM fitted. Armari has pushed the boat out by popping a 128MB PC800 RIMM in each pair, supplying a total of 256MB. In theory, the board can take up to 2GB of RDRAM.

The business end of things has not one, but two 933MHz Slot 1 Pentium III CPUs, which, along with the RDRAM, makes the R8 a pretty serious proposition both in terms of performance and price.

It goes without saying that there's plenty of room for physical expansion in the case, with no fewer than eight 5.25in

drive bays. Half are occupied by the floppy drive, hard disk, Pioneer 10-speed EIDE DVD-ROM drive and a Mirai CRD-BP2-M 32/12/4 CD-RW, itself connected to a basic Adaptec AHA2930U Ultra SCSI PCI card. Interestingly, the CD-RW features Sanyo's new BURN-Proof technology, which prevents blank discs being ruined by buffer under-run.

The CD-RW drive is the only SCSI device in the system, with Armari instead choosing to use an IBM UltraDMA66 hard disk, which it claims performs as well as the best SCSI models out there. This 30.7GB Deskstar 75GXP spins at 7,200rpm, has an 8.5ms average seek time, 2MB cache and claims an impressive 37Mbits/sec maximum sustained data transfer rate. Armari has installed Windows 2000 Professional on a 3.9GB partition, leaving the rest for data – both volumes are formatted using NTFS.

Joining the SCSI card on the PCI bus is a Creative Labs SoundBlaster Live! 1024 card, which leaves three 32bit PCI slots free. Unusually, for a high-end workstation motherboard, the OR840 doesn't have any 64bit PCI slots, but at least it has onboard 10/100 Ethernet.

Graphics-wise, Armari has fitted a Hercules 3D Prophet II GTS, featuring analog VGA and digital DVI ports, 32MB of memory and the supremely quick GeForce 2 processor. While the card itself conforms to AGP 2x and 4x, the slot on the OR840 motherboard also supports AGP Pro50, which will let up to an additional 50w be delivered to the hungry graphics cards of the future. In order to

do this along with keeping a pair of CPUs ticking over, the OR840 features two

supplemental power connectors: one that additionally draws from the ATX power supply, and a second dedicated to AGP Pro50 that sucks power out of a standard internal drive plug.

Completing the picture is a smart-looking LaCie Electron Blue 19in monitor, with a crisp Mitsubishi Natural Flat DiamondTron tube, BNC and D-SUB connectors, as well as two upstream and three downstream USB ports. With a 95KHz horizontal scanning frequency, it can display up to 1,600 x 1,200 at 75Hz.

It won't surprise you to learn that a system with these specifications goes like the clappers. Scoring 189 in SYSmark 2000 under Windows 2000, it thrashes every other Windows 2000 system we've tested. Considering it does not have a games-optimised OS, the Quake III Arena score is even more impressive: at 1,024 x 768 in 16bit with maximum detail, it delivered 100.2fps or 107.1fps in SMP mode. Of course, you'll need specific applications to make best use of both CPUs, so we fired up 3D Studio Max and rendered a test frame in 14 minutes, compared to 29 on a dual PIII 550 or 24 on a single 1GHz PIII.

The R8-2000E is quick, but with a pair of high-end CPUs and 256MB of expensive RDRAM, you're looking at a lot of money. Even so, we'd dig a little deeper for an Ultra160 SCSI subsystem as, although the IBM drive performs well, UltraDMA66 doesn't have the expandability or bandwidth to use all those drive bays.

GORDON LAING

## DETAILS

★★★★★

**PRICE** £4,598 (£3,914 ex VAT)

**CONTACT** Armari: 020 8993 4111

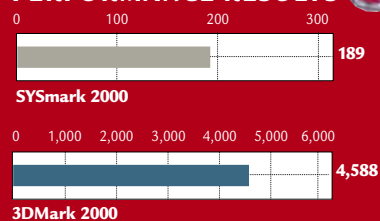
**www.armari.com**

**PROS** Quick components and roomy case

**CONS** A SCSI subsystem could make use of all those empty drive bays

**OVERALL** A well thought out specification for those who need speed, speed, speed!

## PERFORMANCE RESULTS





# Carrera Academy M800

Forego the DIY option because the Academy Pro provides a great ready-made **video-editing solution**.

**D**esktop video-editing systems are thin on the ground. Current choices of out-of-the-box video-editing systems are limited to Apple's iMac DV and a handful of notebooks – Sony's Vaio range and Gateway's Solo 9300 among them. The alternative has been to build your own – extending a multimedia PC, with DV and analog capture and export cards, along with suitable software, but this has been made a minefield by hardware and software incompatibilities.

So Carrera's attempt at producing an integrated video-editing system is

At the heart of the system is the Matrox RT2000 DualHead graphics processor. This is actually two cards – a version of the Matrox Millennium G400 Flex 3D that provides desktop graphics and realtime preview of digital video effects (DVE), and the RT2000 Codec card that takes care of the video capture and output. A cable connecting the two cards routes analog video to the display adaptor and connects to a neat, robust break-out box with in and out ports for Y/C, composite and S-Video leads. Two IEEE1394 FireWire ports on the RT2000 complete the picture.

In use, the benefits of a well-integrated pre-configured system quickly become apparent. The Carrera is supplied with a full version of Adobe Premiere 5.1 and, having

connected a DV camcorder (a Panasonic NV-DA1b) and specified the source for

video capture, we were quickly able to view and capture video, making full use of device control to manipulate the camcorder from within Premiere.

Not everyone has had equal success and the DV-compatibility of the RT2000 has become an issue. Matrox has published an extensive list of compatible devices on its website, but the accuracy of this has also been called into question. Fortunately, Carrera is giving potential purchasers the opportunity to try their camcorders out at its London showroom.

Capturing analog video, you have the choice of working in DV or MPEG-2 I-Frame format at bit rates of 10-25fps. While compression rates are not so good, the advantage of MPEG I-Frame is that the software doesn't have to calculate predicted frames in between reference frames, so everything zips along more quickly. You can also sample at reduced frame rates to keep file sizes down, although quality will suffer. You won't need to worry about the 2GB file size limitation – files are automatically and transparently broken into small segments.

Speed in rendering effects and transitions on the timeline is the major benefit offered by the RT2000. Matrox has capitalised on this by providing more than 500 realtime effects and transitions, including page curls, perspectives, scaling, picture-in-picture and organic wipes.

How much realtime effects will be of benefit to you obviously depends on how much use you make of them. Professionals tend to make scant use of such gimmickry, relying on conventional cut, fade and dissolve transitions. Nonetheless, the ability to preview virtual broadcast-quality effects such as page curls in real time is a neat trick you can't help but admire.

Other productivity tools include ACID Music and DVDit LE from Sonic Foundry and Ulead Cool 3D that goes some way to making up for Premiere's poor titling capabilities. DVDit is a DVD video and DVD-ROM authoring application and you can save around 20 minutes of video on a CD in DVD format. You can also upgrade to the full version that adds menu and titling features.

Overall, SCSI versions of the hard drives and OnStream tape drive and a 21in monitor would make a marked difference to the Carrera, but at a price. At this price point it's well suited both to corporate and event video professionals as well as the dedicated amateur.

KEN MCMAHON



welcome news.

The motherboard is an Asus K7V with VIA KX133 chipset housing an Athlon 800MHz CPU. 256MB of RAM is fitted as one 133MHz SDRAM DIMM, leaving two spare slots for expansion.

Two EIDE hard drives are fitted: for OS and applications, a 22.5GB IBM Deskstar; and for video storage, a 40.1GB Maxtor. Both drives spin at 7,200rpm. Extra storage comes in the form of a Ricoh DVD/CD-RW drive. With this you get four-speed DVD and 24-speed CD-ROM performance, coupled with six-speed CD-R and four-speed CD-RW writing. There's also an internal OnStream IDE 30GB tape backup. This provides 30GB of storage hardware. Data writes to the drive at speeds of 50Mbytes/min and the cost of cartridges works out at around £1 per megabyte, making it a more convenient, higher capacity alternative to DAT. Three blank cartridges are supplied.

## DETAILS

★★★★

**PRICE** £3,288.83 (£2,799 ex VAT)

**CONTACT** Carrera 020 8307 2800

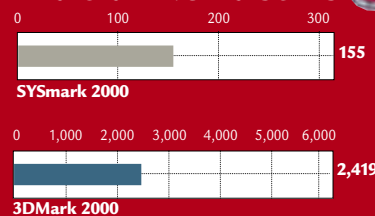
[www.carrera.co.uk](http://www.carrera.co.uk)

**PROS** Well integrated video-editing studio with a raft of realtime effects

**CONS** EIDE drives; some RT2000 compatibility issues

**OVERALL** There is little in the way of competition, but if the performance, integration and value of Carrera's entry sets the standard we've got a lot to look forward to

## PERFORMANCE RESULTS



EXCLUSIVE

# Viglen Biz Pro A7000PWr

A sneak preview of a **great entry-level Athlon system**, from a previously Intel-only company.

**V**iglen has always prided itself on being an Intel-only PC manufacturer – until now.

Following Intel's processor shortage it has decided to sell systems based on AMD's chips alongside its existing Intel range, and PCW has been able to sneak an exclusive look at the company's first Athlon system. The machine on test is the company's base configuration, and it is certainly being sold at a very attractive price. Viglen is aiming the product at businesses and universities that need a system to perform general office tasks, but don't want to pay through the nose for the latest technology. In this light, it lives up to its intended purpose, but there are a couple of issues that stop the Biz Pro A7000PWr being a five-star product.

For the money, Viglen is selling a fairly fast processor, a 700MHz Athlon with 512KB of off-die cache. Looking closely at the processor, the tell-tale letter A is present in the part code, meaning that this Athlon is built using the more recent 0.18micron technology as opposed to older 0.25micron technology. Viglen's R&D department found AMD's 750 chipset to be more stable during testing, and for this reason it has opted for a motherboard based on this chipset as opposed to a VIA solution.

The MSI motherboard inside this case is of the Micro ATX variety. This seems at odds with the case: Viglen has opted for a full-size ATX desktop. This means there is some wasted space inside, with the system's full upgrade potential unrealised. The reason for this is that the off-die cache, slot version of the Athlon consumes a large amount of power, and this just can't be met by the power supplies in Micro ATX cases. Given this, though, we think Viglen should have opted for a full-size ATX desktop motherboard. It's not a huge issue, though, given that the target customers for this system are unlikely to need to open the case and upgrade. After everything is accounted for, two PCI slots are free on the board.

Inserted in one memory slot is 64MB of PC100 SDRAM. This represents fairly good value for the money Viglen is asking, but we would seriously recommend paying the upgrade fee of around £50 ex VAT to add a further 64MB. As it stands, the system still does a fairly good job, but even if you are sticking to pretty basic, mundane everyday tasks, you'll still

appreciate the difference the extra 64MB will bring. There's a further memory slot free for future expansion. A 10GB hard drive sits in a 3.5in bay – definitely on the small size by today's standards, but again, for the money and target market, more than adequate. One of the two 5.25in bays is occupied by a Sony CD-ROM, leaving a further free for the future.

The sound is an onboard version of Creative's SoundBlaster 128, and Viglen supplies two small speakers that can either stand next to the machine or clip on to the side of the supplied monitor. The latter is a Viglen badged ADI E55. It is the same model that Viglen has submitted with most of the review machines we have seen recently, and it's a fairly decent performer at this price. The 17in shadow-mask display is certainly not the best in the world, but it does a good enough job, especially at this price.

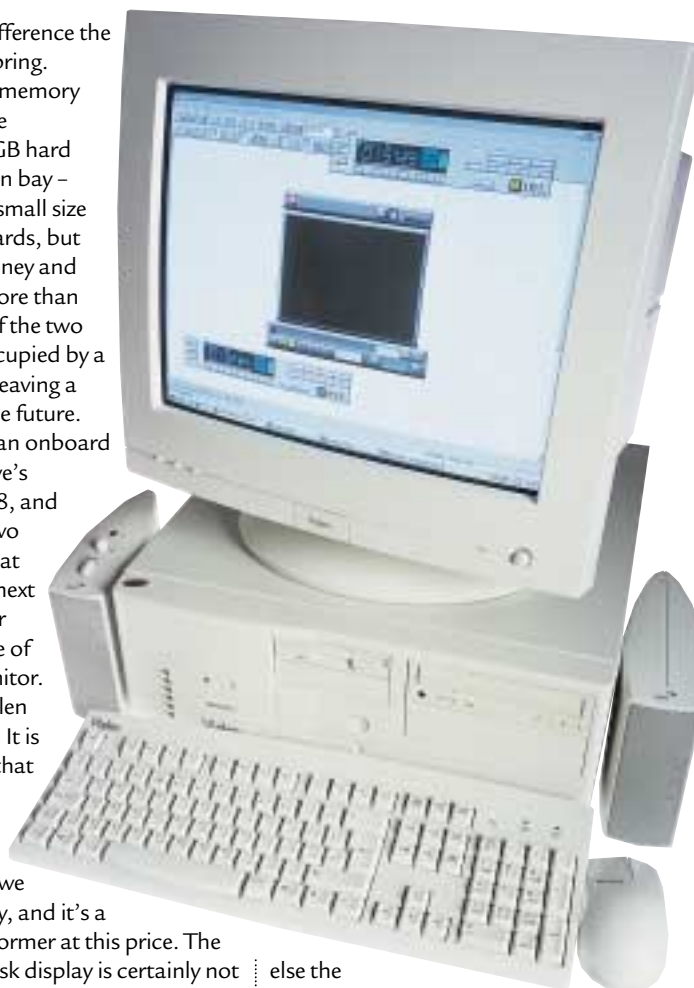
The image is supplied by an 8MB version of ATI's XPERT 98. This has a single D-SUB output. It hardly breaks the speed barrier, but then we would not expect this system to do so. It is still a lot better than onboard graphics – you get an AGP 2x slot ready for a new graphics card should you find the money for one.

Build quality is excellent, and this is especially reassuring considering that this is Viglen's first Athlon venture. The processor itself is kept amply cool by a large heatsink, backed up by two fans. The interior is very tidy indeed, with cables kept well out of the way of any moving parts.

All things considered this is a good package at a very attractive price. We'd liked to have seen an ATX motherboard in this case, and we would also recommend upgrading to 128MB of memory, but for the money we can't complain too loudly. Crucially, though, Viglen has built a system that meets the needs of the Athlon well, and we look forward to seeing what

else the company does with the processor. If you are looking for an entry-level system, then it is certainly well worth taking a look at the Biz Pro.

JASON JENKINS



## DETAILS

★★★★

**PRICE** £799 (£680 ex VAT)

**CONTACT** Viglen 020 8758 7000

**www.viglen.co.uk**

**PROS** Fast processor; good value

**CONS** Micro ATX motherboard in ATX case; could do with more memory

**OVERALL** A good entry-level workhorse and well worth a look

## PERFORMANCE RESULTS



**SYSmark 2000**



**3DMark 2000**



# Dell Inspiron 3800

A worthy successor to the 3700 with a great keyboard and screen plus a good software bundle.

Dell's Inspiron 3700 quickly established itself as a classic machine. Less than a year old, it has a dedicated following here at PCW thanks mainly to its screen, keyboard and versatile construction. It is also available in a range of colours, each of which is more tasteful than the iBook. Now the next generation of neapolitan notebooks, the 3800, has been released.

As with the rest of the Dell range, the 14.1in screen is difficult to fault. It has an impressive viewing angle and a consistent lighting level across its full surface. There are none of the darker corners you sometimes find with poorer displays. This is driven by an 8MB ATi Rage Mobility M-1 chipset.

There's a choice of trackpoint or fingerpad for moving the mouse around the screen. These come complete with alternative click buttons, so whatever your preference you should be happy with this notebook, and if you find either option a distraction they can be turned off through

Windows Control Panel. The keyboard, too, is first class. Full size, it can rival any desktop keyboard, and the keys have a generous travel that makes typing comfortable and satisfying, if such a thing is possible.

One thing about our review system that did not particularly grab us was the colour. On the outside it's conventional enough, but inside you'll find a rusty brown plastic. Dell terms this Sierra Maroon. We preferred the Tahoe Blue and Midnight Grey, but depending on your décor you may opt for Forest Green. Whichever you like, it'll help differentiate your machine from any others in the office.

The hub, as far as this system is concerned, is the 700MHz SpeedStep Pentium III. This is not the first SpeedStep machine we've had in for review, but if you've been living with your head in the sand for the past few months, what it means is your notebook will automatically crank down the speed when you unplug it to prolong the charge of your battery. In this instance, it drops to 550MHz when the plug is pulled, and if your main use is word processing, emailing and other office applications you're unlikely to notice much of a difference when running at 80 per cent like this.

Our test system also benefited from 128MB of system memory in two 64MB modules and a 12GB hard drive. A neat feature is the rubber pad on the base of the system positioned directly below the drive that should offer at least some protection in the event of clumsy fingers dropping it onto a desk. Dell calls this the StrikeZone.

Two bays at the front of the system house a choice of drives. Our review model arrived with a six-speed DVD, although this is an optional extra, and a floppy drive. There's a smart case for holding the unused drive, should you choose not to have both installed at

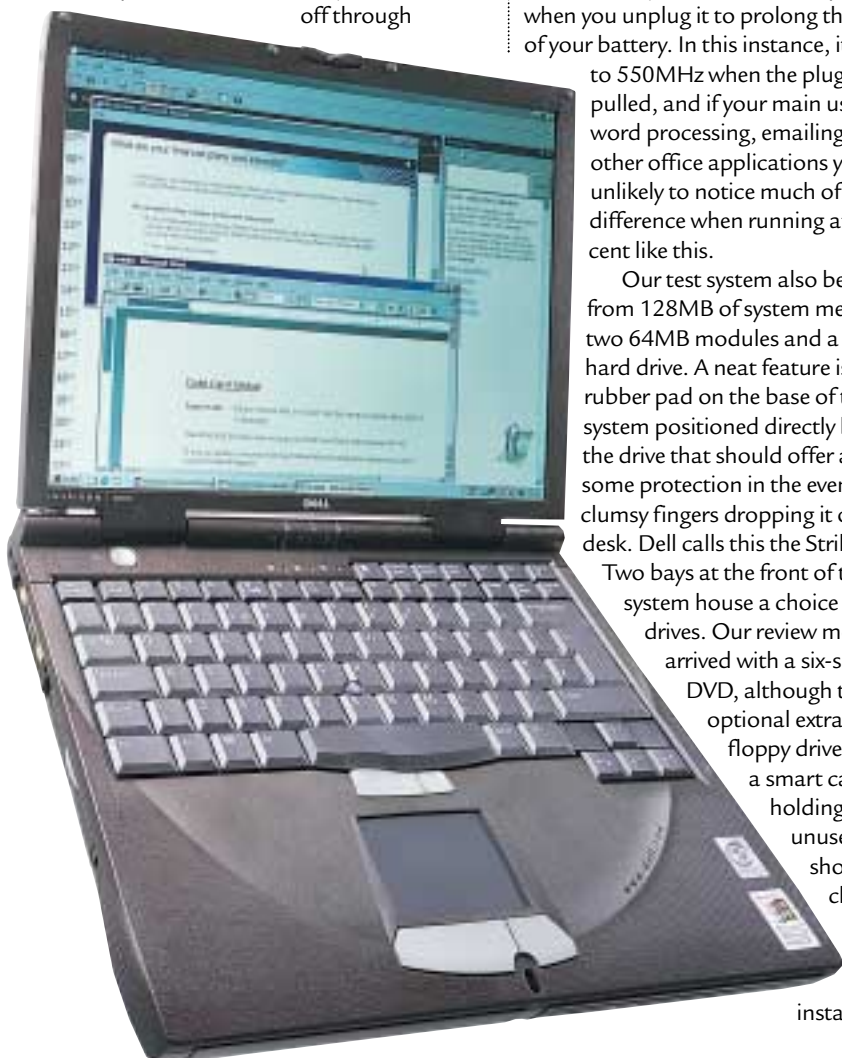
once, and bundled Softex Bay Manager to allow for hot swapping, although this is not pre-installed.

A quick tour around the unit's four sides reveals a proliferation of ports. To the right there's audio sockets for mic, headphone and line in and composite video out, which will be put to good use if you fancy watching DVDs on a television, making this notebook an especially good choice for the business traveller unwilling to pay for hotel movie channels and also lets you effectively explain away £150 of the cost in what you have saved by not buying a consumer DVD player. Behind the keyboard you'll find serial, parallel and a single USB port, external monitor connectivity and the docking interface, and along the left-hand edge there is a Kensington lock point and support for one Type III or two Type II PC Cards. In one of these was a Psion Dacom Gold Card modem while the other held a blanker.

In terms of software, the 3800 comes with Microsoft Works Suite 2000, which includes a full copy of Word 2000 as well as Money 2000, Encarta World Atlas and Autoroute Express Europe, plus Norton AntiVirus 2000.

The 3800 is a well-constructed machine that's pleasant to use. Our only complaint was the slightly oversensitive trackpoint – it was very easy to tap while typing, repositioning the cursor without us realising. That aside, though, the keyboard and screen, the two factors that can make or break a notebook review, are truly deserving of high praise, making this machine a worthy replacement for the excellent 3700. It also comes with a year's collect and return service anywhere in Europe at no extra cost.

NIK RAWLINSON



## DETAILS

★★★★★

**PRICE** £1,902.33 (£1,619 ex VAT)

**CONTACT** Dell 0870 152 4699

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

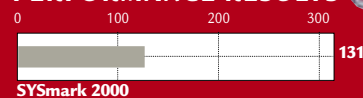
**PROS** Keyboard; screen; flexible configuration options

**CONS** Oversensitive trackpoint

**OVERALL** A great machine at a fair price



## PERFORMANCE RESULTS



SYSmark 2000

# Saintsong Espresso PC

One for gadget freaks everywhere, the PC with a tiny footprint is an amazing piece of engineering.

Since its appearance at the CeBIT show in Hanover, the Espresso has generated quite a buzz on the Internet. The device was even name-checked as an example of the future of PCs by Bill Gates in his WinHEC speech. Naturally, then, we were keen to get our hands on the unit for a full review.

The first thing that hits you about the Espresso is its tiny footprint. About half the size of a ZX Spectrum, the device really is very petite. Even its docking station is tiny, being only slightly larger than the main unit, yet it manages to house both a CD-ROM drive and a floppy disk drive.

When we turned the unit on for the first time we were a bit surprised that it didn't seem to want to boot.

Then we realised that there was no operating system installed. In fact the hard disk hadn't even been partitioned. However, once we had loaded Windows 98 onto the Espresso and installed the drivers from the CD-ROM that ships with the unit, we were quite surprised by how sprightly it was. This is no doubt thanks to the 500MHz Celeron, 64MB of RAM and 6.4GB hard drive – packing such a punch is no mean feat for a unit this size.

The motherboard used by the Espresso is based on the Intel 810 chipset and is an adapted mini board PC often used for industrial applications. We had expected the unit to get quite hot after it had been operating for a while, but this was not the case. In fact, it was reasonably cool to the touch, although the fan was on the noisy side.

Despite its small size, the Espresso doesn't skimp on sockets and ports. The left-hand side houses an earphone and a mic socket while the top edge of the unit is home to the keyboard, mouse, S-Video and D-SUB sockets. The mouse connector isn't necessarily vital as staring up at you from the face of the unit is a standard laptop-style touchpad, above which you'll find two buttons for scrolling up and down through documents or web pages.

Looking at the right-hand side you'll

find two USB ports and the docking port. At the very bottom of the Espresso is a volume control.

A further unit that houses the floppy and CD-ROM drives, parallel and serial ports attaches to the main unit via a connector at the side. It has a further two USB ports as the USB ports on the main unit are obscured when the unit is docked.

Despite its plus points there are a few downsides to the Espresso. For one, it's not the most attractively styled device that we have seen, and the plastic casing feels a touch flimsy.

the one hand it could be seen as a replacement for a laptop, but then there is no built-in screen and no battery power. It's also unlikely that you would use the unit as a full-time desktop PC.

Nevertheless, the Espresso does offer the ability to carry a fully functioning PC around with you from meeting to meeting, or between your home and the office, and the S-Video output is a good addition for those who need to do quick presentations where a projector is not available. The unit could conceivably be

used on the road, as the TV-out would allow you to plug it into those hotel TVs that

have a video in socket. Be

warned though, as with any TV out facility, the picture is

no match for a

monitor and you'll have

to increase the font size in

Windows to read text easily.

At the time of writing, no European distributor had been signed, but the Espresso is selling in Taiwan for around £800. If it's around this price when it debuts in the UK, it should be a winner.

The Espresso is an amazing feat of engineering, and if you can find the right use for it you'll fall in love with it – and be the envy of gadget freaks everywhere.

NIALL MAGENNIS



Also, while 64MB of memory is not to be sniffed at, there doesn't seem to be a way for the user to upgrade the unit's memory. There's no panel that can be removed to give you easy access to the memory slots. The manual said you should contact your dealer for memory upgrades. This is a shame as it uses standard notebook memory.

There are also some issues with the docking station. The Espresso can't be hot docked. Instead you have to turn it off, connect it and then reboot. Also the connection between docking station and the Espresso leaves a lot to be desired. The slot on the docking station is the same size and shape as a standard AGP port with the connector on the Espresso attached directly to the main board of the mini PC. When you connect them together they feel less than secure and we felt that the unit really should have some mechanical locking latch to secure the two devices together.

We really loved the Espresso as its small form factor is a real attraction, but it does fall between two stools in terms of who would actually buy the device. On

## DETAILS

★★★★★

CONTACT [www.saintsong.com.tw](http://www.saintsong.com.tw)

**PROS** An amazingly small footprint for a fully functioning PC; USB ports mean lots of expansion potential; nifty processor for such a small device

**CONS** Doesn't look very attractive; fan is a touch on the noisy side; docking port connection feels fragile

**OVERALL** A true engineering wonder, it really is amazing how Saintsong has managed to pack a fully functioning PC into such a small form factor. However, a laptop could be a better buy

## PERFORMANCE RESULTS



EXCLUSIVE

# Kyocera VP-210

**Seeing is believing, and Kyocera's video phone will let you do just that, all in a tiny mobile package.**

One of the favourite pieces of technology in science fiction films and TV shows is the video phone. It seemed that no self-respecting sci-fi hero could do without his video phone to keep in touch with his colleagues. More often than not, the video phone was strapped to the wrist like a watch, with a small screen displaying the image of the person at the other end of the call, and even though there was never an evident lens in the device, the other person was also treated to an image. What is always most amazing about the video phones in the movies is that, no matter where the device is held, the correspondent is always treated to a perfectly framed image of the caller.

Although video phones have been available for a little while now, it's only been fixed base models. Of course, some people will want to have a video phone in their house so they can see the person they're talking to, but there are a couple of issues with such a setup. First and foremost, you'll only be able to see callers who also have video phones, of which there aren't likely to be many. The other issue is that most people like to relax while they're at home, and the thought of having to look your best all the time in case the phone rings is not appealing.

That said, the idea of having a mobile video phone as seen in the movies has significant benefits. One of the best things about a mobile phone is that it's a lifeline. If you're meeting someone and you're lost, it's easy to give them a call and ask for directions. However, describing to someone where you are isn't always easy, but if you can show them where you are it's a different matter altogether. In fact, the ability to show things to the person at the other end of the phone would be very useful in countless careers. However, what's most amazing about the idea of mobile video phones is that they already exist.

Kyocera is a company best known for its high-quality laser printers, but printers aren't the only thing that this Kyoto-based corporation produces. A few months back we looked at a satellite phone produced by Kyocera, which incorporated a removable GSM phone.

Unfortunately, the Iridium network has recently shut down, but the phone itself was a well-designed and useful unit. Now Kyocera has expanded its development in the mobile communications arena and produced the VP-210 Visual Phone.

Working in this industry makes you very jaded and it takes a very special product to make the PCW staff stop in their tracks with awe, but the VP-210 is one of those products. Without a doubt the VP-210 is a landmark product and represents the future of mobile communications.

When Kyocera first told us about the Visual Phones we expected them to be bulky, unattractive and heavy, but how wrong we were. The VP-210

is a beautifully styled unit, resplendent in silver, giving it the kind of futuristic look you'd expect from a product such as this. The dimensions are only 135 x 50 x 20mm (h x w x d) and it weighs in at a svelte 160g.

A large area of the phone is made up of the TFT screen that measures 40 x 30mm (h x w). This is a truly excellent display, producing an impressive image in full colour. Mounted just above the screen is the lens that captures your image for transmission to the correspondent. Below the screen is the keypad, which is similar to a standard mobile phone.

Making a video call is simple; just press the VP button followed by the number of the phone you want to call then the call button. If you just dial the phone number without first pressing the VP button you'll make a voice-only call. The TFT screen will display the image transmitted from the other phone as well

as a small picture of what your phone is seeing in the corner. This allows you to make sure that your face is framed properly for the other caller. The update appears to be around five frames per second, so it's far from realtime video, but it's impressive nonetheless. The only real problem with the design is the fact that the lens can't be moved; it's always facing in the same direction as the screen,

so it's difficult to frame something other than your face for the other caller to see. Ideally, the lens should be able to swivel from front to back and vice versa. That way you could point it at something and still make sure that the image is adequately framed for the correspondent. There's also a stand at the rear of the phone that clips out, allowing the unit to be placed on a desk for more comfortable conversation.

Obviously you can't hold the phone to your ear while you're making a call since all the person at the other end will see is a very close-up shot of the side of your head, and likewise you won't be able to see them. To overcome this problem the phones ship with hands-free earpiece and microphone sets, much like those available for most GSM phones.

This allows you to talk and listen freely while still looking at the phone's screen. Using the phones in practice didn't even illicit a second glance from passers by, since so many people use their standard mobile phones in this manner, bizarre though it is.

Unfortunately, these Japanese units don't use the GSM standard, although Kyocera is planning to release GSM versions for use with standard mobile phone networks. The VP-210 uses a wireless protocol similar to digital walkie-talkies, which provides good reception but is limited by the range of the units, since there are no cells to bounce the signal off, as with GSM phones. We found that there was a usage range of about half a mile between the two units in a built-up city environment.

Of course, this limits the use of the phones, but in some cases the lack of GSM compatibility is a good thing. GSM phones can't be used in hospitals





because the signal interferes with the equipment, but the VP-210 phone can be used without any such issues.

Unsurprisingly, this is one of the key areas of sale in Japan. Visual Phones have also become essential at dating agencies where clients can see and speak to each other without having to meet face to face.

Of course, it would be a waste to have a CCD and a TFT display in a unit without the ability to capture pictures, and Kyocera hasn't overlooked this feature. Under the menu you'll find a 'snap' mode that allows you to use the phone as a digital camera. Unfortunately, in their present state there's no way of downloading the images to a computer, but again this is a feature that Kyocera plans to implement in future



models. You can, however, scroll through the saved images using the volume up and down buttons at the side of the unit. You can also increase and decrease the contrast of the images and re-save them. Add to this the ability to send captured stills to another phone, and the Visual Phone starts to look like a formidable piece of mobile comms hardware.

Obviously the Visual Phone is a far from mature product, but it is the basis for the next step in mobile technology. Even if Kyocera produced GSM models for Europe tomorrow, the chances are that the bandwidth would not be sufficient to transmit the video. That said, with GPRS not too far away now, the limited GSM bandwidth might not be an issue for long.

Kyocera has to be commended for producing such a pioneering product and one that's been considered the next step in communication for a very long time. Although the units are already available in Japan, there was no release date for the UK at the time of writing, but let's hope that it doesn't take too long for Kyocera to modify the Visual Phones for the UK market. Even though the VP-210 isn't perfect in its current form, it's still a superb product and one that deserves worldwide exposure.

RIYAD EMERAN

## DETAILS

★★★★★

**PRICE** Only available in Japan, approx 40,000yen (£245)

**CONTACT** Kyocera [www.kyocera.co.jp](http://www.kyocera.co.jp)

**PROS** Amazing technology; light and attractively designed; tomorrow's phone today

**CONS** Only available in the Far East; no GSM compatibility yet

**OVERALL** Kyocera has come up with a ground-breaking product that takes mobile communication to the next level. A European GSM version of this phone would be a fantastic product, although we'll probably have to wait for the roll-out of GPRS first

# Kenwood 72X TrueX

**Reading large files quickly is no problem for this CD-ROM drive and Zen's multibeam technology.**

**B**uilt around Zen Research's multibeam technology, this 72-speed TrueX CD-ROM is a very, very fast drive – at least when it comes to reading very large files. A standard CD-ROM drive consists of a single, narrow laser beam that reads the data on the disk. Zen's technology splits the reading laser into seven beams, allowing seven tracks to be read at once. The gathered information is interpreted by a custom chip that processes the information in parallel, as opposed to the serial chips in other CD-ROMs.



We tested the drive's ability to perform various read tasks against a 52-speed Creative CD5220, with mixed results. In a large single file read test, the drive performed miraculously, with 507MB transferred in a mere 54 seconds. The Creative, by contrast, completed the same task in one minute 35 seconds. Transferring mixed small files, though, revealed a more mediocre performance: 214MB took two minutes 17 seconds, compared to the Creative's one minute 16 seconds.

Browsing 44 Paint Shop Pro images, with file sizes totalling 203MB, highlighted a less marked performance deficit, with the Kenwood completing the task in one minute 24 seconds compared to one minute seven seconds from the Creative.

The Kenwood is clearly an excellent drive if you plan to

read very large files, appealing to those who need to access high-quality video without disc caching. For broad-spectrum reading purposes, though, the drive is weaker than existing units. Depending on what you need to use your CD-ROM for will ultimately determine whether the Kenwood would be a wise purchase or not.

SCOTT MONTGOMERY

## DETAILS

★★★★★

**PRICE** £116.32 (£99 ex VAT)

**CONTACT** Kenwood 00 353 61 702018

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

**PROS** A very quiet drive with excellent large file read times

**CONS** It can't read smaller files as quickly as other fast drives; high cost

**OVERALL** If you need a CD-ROM drive to read large files quickly, then this is a good bet. If not, then there are faster, cheaper alternatives out there

# Intel 815 Motherboard

**Intel's been listening to its customers, and has produced a chipset that could turn out to be a star.**

**A**fter the disappointing events surrounding Intel's last chipset, the 820, the company has a lot to make up for with its new release, the 815. This latest offering is an evolution of the 810 chipset, and is intended for use with the latest Flip Chip Pentium IIIs and Celerons. With this release, Intel has tried to address many of the complaints customers had about the 810, and we think it might have finally come up with a winner.

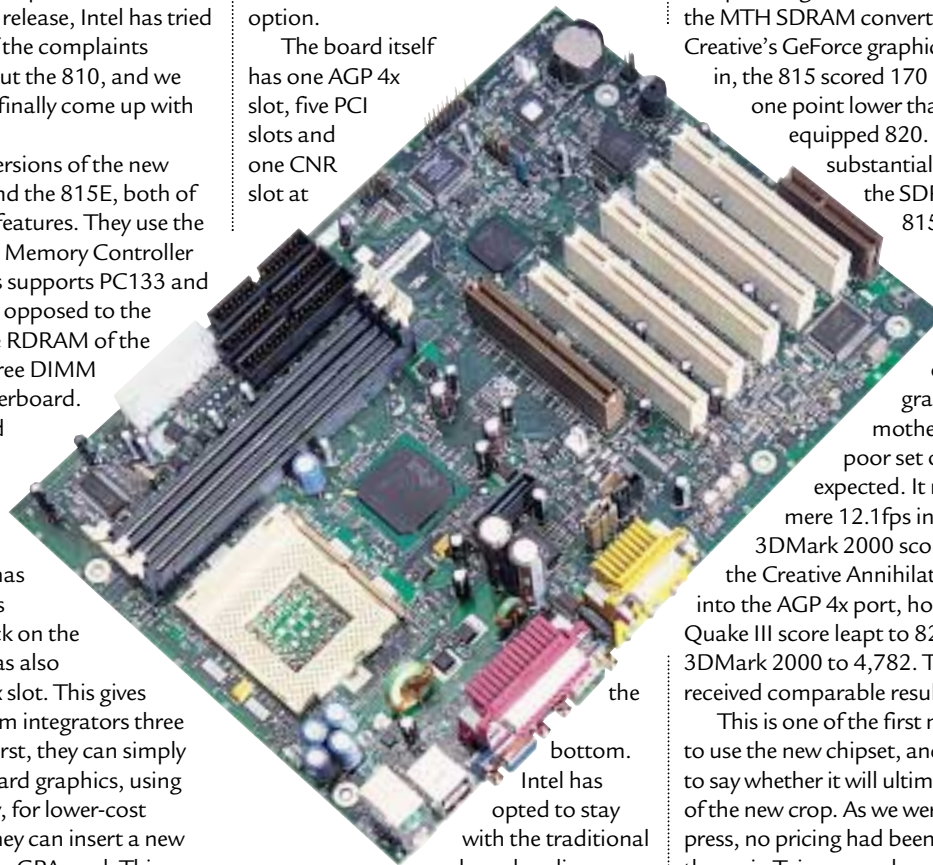
There are two versions of the new chipset – the 815 and the 815E, both of which have similar features. They use the same Graphics and Memory Controller Hub (GMCH). This supports PC133 and PC100 SDRAM (as opposed to the hideously expensive RDRAM of the 820), with up to three DIMM slots on each motherboard. It provides onboard graphics, with a 230MHz RAMDAC and limited 3D acceleration. Intel has finally listened to its customers' feedback on the 810 though, and has also included an AGP 4x slot. This gives end users and system integrators three possible options. First, they can simply stick with the onboard graphics, using the system memory, for lower-cost systems. Second, they can insert a new card, referred to as a GPA card. This plugs straight into the AGP slot and extends the display cache of the motherboard to improve performance. Finally, for faster 3D acceleration, users can plug any AGP 4x graphics card into the AGP slot, disabling the onboard graphics entirely.

A new slot, the Communication Network Riser (CNR), has been introduced. This is a similar concept to the old AMR slots, but has more expansion potential. The slot is designed to take small, cheap CNR cards that can provide extra modem, audio, USB and LAN ports, and many OEMs are expected to take advantage of this to produce lower-cost PCs.

We've taken a look at one of Intel's own motherboards, the D815EEA, based on the new 815E chipset. This has all of the features above, but also sports a second-generation I/O Controller Hub (referred to as ICH2). This supports ATA

100 for the latest hard drives (as well as older ATA 33 and 66 drives), four USB 1.1 ports and integrated LAN options. It also has improved soft Audio, enabling six-channel, Dolby Digital 5.1 sound through traditional onboard connectors or a CNR connector.

The board itself has one AGP 4x slot, five PCI slots and one CNR slot at



the bottom. Intel has opted to stay with the traditional onboard audio connector with this model, and these are in the usual position. There are three DIMM connectors, with the two IDE, and single floppy and ATX power connectors placed at the far right of the board. Intel has made use of the new chipset's functionality and positioned a DVI connector next to the onboard audio. This could connect to a backplate card via an appropriate cable.

We wanted to see how good the new chipset is, and ran a series of tests to compare it to an existing 820 solution. In our 815E system, we used a Flip Chip Pentium III 866 processor, 128MB of PC133 SDRAM, IBM's new 45GB ATA 100 hard drive and a Creative Annihilator Pro. In the 820 system, we used an Asus P3C motherboard with 128MB of PC800 RDRAM, and a Slot 1 Pentium III 866EB with the same components and graphics card drivers. We also tried Asus' SDRAM

converter to see how an 820 board with the now suspended Memory Translator Hub (MTH) compared. The results showed the new chipset in a positive light. Using onboard graphics, the D815EEA managed a SYSmark 2000 score of 156, one point higher than the 820 board with the MTH SDRAM converter. With Creative's GeForce graphics card plugged in, the 815 scored 170 on SYSmark, one point lower than a RAMBUS-equipped 820. Considering the substantially lower cost of the SDRAM in the new 815 motherboard, that is a pretty good set of results.

Using the onboard graphics, the 815 motherboard gave a poor set of 3D results, as expected. It managed a mere 12.1fps in Quake III and a 3DMark 2000 score of 889. With the Creative Annihilator Pro plugged into the AGP 4x port, however, the Quake III score leapt to 82.9fps, and the 3DMark 2000 to 4,782. The 820 board received comparable results.

This is one of the first motherboards to use the new chipset, and so it's difficult to say whether it will ultimately be the best of the new crop. As we were going to press, no pricing had been announced. All the main Taiwanese players will be bringing out their own versions in the near future, and these may well improve on what we have here. This board was very easy to configure, though, and would be a good choice for consumers who don't want to be overwhelmed with too many BIOS options. As for the 815 itself, it looks as if it has the potential to be a great chipset, and we look forward to seeing more PCs based on it.

## DETAILS

★★★★★

**CONTACT** [www.intel.co.uk](http://www.intel.co.uk)

**PROS** AGP 4x slot as well as onboard graphics, supports PC133 SDRAM

**CONS** It's still early days and there are bound to be a few compatibility issues initially

**OVERALL** The 815 is what customers have been asking for in a chipset for ages and Intel has finally delivered

# Sony Cyber-shot DSC-S70

This high-quality 3.3megapixel camera sits on top of the pile when it comes to all-round value.

**S**ony's DSC-S70 is the superior of two new S-series Cyber-shots, where the S stands for stamina, or increased battery life. While most other digital cameras are good for around 60-90 minutes' solid use, the S70's powerful lithium-ion battery lasts for 120-150 minutes; it's also one of Sony's clever InfoLithium models, which tells you exactly how many minutes you've got left. The battery also recharges in as little as 90 minutes, compared to just over half a day for a set of four nickel metal hydride (NiMH) AAs.

Looks-wise, the S70 is a departure from the innovative 2.1 megapixel F505 Cyber-shot (PCW Dec 1999), instead favouring a conventional boxy design. Measuring 125 x 62 x 39mm, and weighing 280g without battery, it's reasonably compact, but there's little on the S70 that's particularly comfortable to grip.

The S70 is Sony's first genuine 3.3megapixel camera, delivering no fewer than 2,048 x 1,536 pixels, which is sufficient to produce a great-looking 10 x 8in photo. There's only one JPEG setting, creating files of around 1.3MB, resulting in only five pictures on the standard stingy 8MB Memory Stick – most 3.3megapixel cameras are supplied with 16MB. If memory is tight, you can switch to lower 1,600 x 1,200, 1,280 x 1,024 and 640 x 480 modes.

An uncompressed TIFF mode delivers 9MB files, while an email mode produces small 320 x 240 pixel images. Interestingly, both modes also generate a normal 2,048 x 1,536 JPEG image at the same time. Finally a text mode saves a mono GIF image for cleanly capturing black or white boards or pages of text.

The S70 and the new 2.1 megapixel S50 are the first Cyber-shots to employ optical viewfinders in addition to their colour LCD displays – handy for saving power and when you can't see the screen in bright conditions. The S70's 2in display is extremely sharp and allows you to zoom in and scroll around images during playback, but it takes a few seconds for the lens to retract first.

Speaking of which, the S70 is equipped with a 3x optical zoom from Carl Zeiss, equivalent in focal length to a 34-102mm lens on a 35mm camera; the actual specification is 7-21mm f2~2.5.

Macro mode works as close as 4cm in wide mode, and there's also the choice of autofocus or seven manual focus steps.

While the F505's longest exposure was a mere 1/8 second, the S70 boasts exposures as long as eight seconds, and 19 other shutter speeds up to 1/1,000 second. Aperture adjustment has been improved with a six-blade



iris (two-blade on the F505), offering nine steps from f2.0 to f8.0, as well as effective control over depth of field using aperture and shutter priority modes. Exposure compensation is available from +/- 2EV in 1/3 stops, compared to the coarser 1/2 stops of the F505 and there's a spot-metering option.

The flash, too, can be adjusted to fire brighter or dimmer than normal, along with the usual force on, off, and red-eye modes; rather impressively, there's also a sync option to an external flash unit. White balance is adjustable and for novelty value you can apply solarisation, sepia, black and white and negative effects to images.

Movie mode captures up to 15 seconds of video at 320 x 240 (measuring 5.2MB) or 60 seconds at 160 x 120, both at 15fps with mono audio. The files are stored as MPEGs, compatible with Windows media player, and the 320 x 240 mode fills your TV screen when connected to the camera's composite video output. It's surprisingly good quality, but sadly the zoom is disabled.

Once connected to your PC over USB, the camera memory is mounted as a removable drive to drag files from; Sony supplies MGI PhotoSuite 8 to get started. Standard top-resolution JPEGs took four seconds to transfer, while uncompressed TIFFs arrived in just over 20 seconds.

Image quality is superb, and standard JPEGs suffer from few undesirable compression artefacts. The lens optical quality is also good, and when teamed up with the high-resolution CCD and improved 12bit A-D

conversion, supplies clean, sharp pictures free from distortion.

Don't underestimate the impact of larger images though. Standard JPEGs are written in a couple of seconds, but

uncompressed TIFFs can take 40 seconds. A movie that is 15 seconds long and 320 x 240 takes 12 seconds to write and six to buffer before playing. The S70 also takes five seconds to boot up.

It's not nearly as

responsive as the older F505, but

such times are typical on most 3.3megapixel cameras.

Overall, the S70's image quality is at least as good as Canon's S20 (PCW June), while boasting far more control in a box that's only slightly bigger. Nikon's CoolPIX 990 (see next page) offers more still, but it's bigger and more expensive. Consequently, until we test forthcoming models from Epson and Olympus, Sony's S70 looks like the best out there.

GORDON LAING

## DETAILS

★★★★★



**PRICE** £750 (£638.30 ex VAT)

**CONTACT** Sony 0990 111 999

**www.sony.co.uk**

**PROS** Great quality; good control; long battery life

**CONS** 8MB memory is half the size of the competition

**OVERALL** The best value all-round 3.3megapixel camera so far



# Nikon CoolPIX 990

With image quality **second-to-none** and features galore, this digital camera won't disappoint.

Nikon's CoolPIX 990 may physically resemble the earlier swivelling 950 model, but there are plenty of differences under the new, tough, magnesium-alloy hood. Most crucially, it's Nikon's first 3.3megapixel digital camera, and it's good enough to produce a great looking A4-sized photo.

As well as the full 2,048 x 1,536 and the 3:2 ratio 2,048 x 1,365 pixel modes, the 990 also offers lower 1,024 x 768 and 640 x 480 modes to save space. There's a choice of three levels of JPEG compression, the best quality producing files measuring just over 1MB at full 2,048 x 1,536 mode. Nikon supplies the standard 990 with a 16MB Compact Flash card that will store around 10, 20 or 40 highest resolution pictures depending on the compression. There's also an uncompressed TIFF mode that produces 9MB files.

Sadly, the 990's CF slot won't take the IBM Microdrive, but at least Nikon has moved the slot to the side of the unit – the 950's slot was underneath, which rendered it inaccessible when the unit was tripod mounted.

Like Nikon's other digital cameras, the 990 comes with a set of four nickel metal hydride (NiMH) AA batteries and a charger that will fill them up in around 12 hours – these last for around 1.5 hours in the 990. This is thrashed by lithium-ions in cameras such as Sony's S70 (see previous page), but a spare set of AAs is about six times cheaper.

Some power is saved on the 990 thanks to a smaller 1.8in display, compared with the 2in screen on the 950; it's still very clear and allows you to zoom in up to four times and scroll around images during playback. There's also an optical viewfinder.

Nikon is well known for its high-quality lenses and the new optics in the 990 don't disappoint. The 3x optical zoom is equivalent to a 38-115mm lens on a 35mm camera; the actual

specification is 8-24mm f2.5~4.0. Like the 950, the 990 will focus as close as 2cm, but zooming has been speeded up by 20 per cent. Nikon has also improved the speed of the autofocus by 30 per cent over the 950 and the 990's incredible 4,896 auto-focusing, or 50 manual-focusing steps are remarkably fine compared with the rest of the market. The 990's continuous or single auto-focus modes can also aim for selectable areas just like the high-end F5 SLR.

A new motor-driven seven-blade iris diaphragm offers 10 aperture settings from f2.5 to f7.0 and fine control over depth of field in aperture-priority mode. Shutter-priority offers no fewer than 14 shutter speeds from 1/1,000 to eight seconds, while manual mode boasts a bulb setting of up to 60 seconds. Yes, that's right, a totally manual mode and the opportunity to use an optional USB cable release lead.

Alternatively, the automatic program does a great job, especially with the choice of 256-segment Matrix, centre-weighted or spot

use the zoom while recording. Burst-capture modes include one that takes up to 80 QVGA images at 30fps.

Surprisingly, the 990 is Nikon's first to employ a USB connection and it's not a moment too soon. The supplied Nikon View software doesn't mount the camera as a PC drive, but it does let you simply drag and drop images. Best quality JPEGs took around five seconds to transfer, while 9MB TIFFs required 35 seconds. Nikon also claims some direct camera control from the PC.

Like Sony's S70, the 990 suffers from prolonged times to handle such large images. While both booted up in five seconds and took 40 seconds to write a TIFF, the 990 was slower, taking 15 seconds to write a 4MB 15-second movie and 15 more seconds just to buffer it before playing. Replaying TIFFs was equally laborious.

This appears to be the price you pay for such quality though. While the 990's images are only fractionally better than the Sony S70, they're still the best we've seen. Where the 990 scores

above and beyond anything else are its controls. Just when you think you've seen it all, you find the unique histogram facility in playback mode – brilliant.

Certainly, Nikon's 990 is neither small nor cheap, but it feels great, and is simply unrivalled in terms of features. If you've got £850 to spend on a high-end digital camera, this is the one to get.

GORDON LAING



metering. There's also exposure compensation from +/- 2EV in 1/3 stops, optional five-step bracketing, and Nikon's Best Shot Selector just to make sure.

The built-in flash can be forced on, off, reduce red-eye, slow-sync or fill-in and there's a terminal to connect to selected external Nikon Speedlights. The 990 is also Nikon's first to feature a movie mode, which can grab up to 40 seconds of 320 x 240 video at 15fps and save them as M-JPEG QuickTime files; these also fill a TV screen when connected to the 990's composite output. There's no sound, but you can

## DETAILS

★★★★★

**PRICE** £849 (£722.55 ex VAT)

**CONTACT** Nikon 0800 230 220

**www.nikon.co.uk**

**PROS** Unrivalled control and superb image quality

**CONS** Large image handling is slow

**OVERALL** Expensive, but it's the best and semi-pros will love it



# Epson PhotoPC 650

This **budget digital camera** offers quality images and is a great buy if you can manage without USB.

It's a couple of years since Epson released the PhotoPC 600, and not only have the version number and design changed with the 650, but also the resolution has been upped from 1,024 x 768 to 1,152 x 864 and the number of quality settings jumps a notch to four.

Familiar functions such as macro and self-timer remain in place, but the internal memory has been removed. This is replaced by a bundled 8MB Compact Flash card, but it retains the easy-to-use sliding switch for selecting LCD framing, image playback or LCD off, and control of a similar horizontal menu is through identical back-mounted buttons. The 1.8in LCD has a reasonable refresh. It runs on four supplied AA batteries or mains power via a lead that is available as an optional extra, although to take advantage of this latter option you'll have to leave the unit's side door open, which could be awkward and expose the camera to damage.

Alternatively, you could invest in Epson's charger and NiMH (nickel metal hydride) battery set, but with so many people out there making rechargeable AA batteries this would depend largely on who is offering the best price. The cheapest option, of course, is to leave the back panel switched off and use the optical viewfinder instead.

More conventional in appearance, it nonetheless feels less sturdy than its elder sibling. There's a tripod mounting point in the base and a major enhancement is the redesigned lens area. This now incorporates a 37mm thread for adding supplementary lenses and filters. The resident lens is rated at f6, equivalent to a 33mm lens on a standard 35mm camera.

At just under 1.1 megapixel resolution, it's good for making 5 x 7in prints and more than adequate for the web. We were impressed with its results, too. At all quality settings colours were vibrant and

pure and there were clean breaks between light and dark areas – poorly handled JPEG compression can sometimes cause interference in these areas. It also has a lossless compression mode for those with more demanding needs, but at this setting you'll get only four images on the bundled card.

Opting for low compression, 1,152 x 864 images, you'll squeeze around 30 on the same 8MB card and 47 with moderate compression, or 88 if you drop the resolution to 640 x 480. The low compression setting is excellent and, even when zoomed in to 200 per cent, images taken using this mode retain smooth edges with

offering that allows you to specify the conditions under which the picture was taken – with a flash, under fluorescent lights, and so forth – and it will make compensations for more realistic colours.

We were a little disappointed that the PhotoPC 650 uses a serial interface. This feels slow when you're used to using USB, but the probable audience for this product will be first-time purchasers and, as they say, what you've never had you'll never miss. We can excuse Epson the choice of interface in light of the price, too. The only trouble we encountered with the interface was that it hung while running through a port replication hub. This was solved by plugging it directly into the PC, though.

iMac users, on the other hand, might have more serious problems, for although the PhotoPC 650 is ready for use under MacOS 7.6 and above, the lack of a USB interface means you'll have no way of getting the two to talk.

If you were paying £400, this would be a pretty unremarkable camera, but at less than half that it's a fantastic bargain. Pictures are sharp with vibrant, realistic colours.

The bundled software is more than adequate for tweaking your work and the whole package is ideal for the first-time user. If you've

been putting off buying a digital camera until the price is right, then you need wait no longer.

NIK RAWLINSON



minimal jaggies. The macro mode will take you as close as 15cm and shutter speeds are handled automatically, ranging from 1/4 to 1/500 seconds without the flash or 1/30 to 1/750 with.

The bundled software is HotShots 1.5, which is similar in function and use to Adobe PhotoDeluxe and acts as a front end to Epson's photo uploading software. This is a great improvement over that offered with the 600. It will organise your photo collection, including images from a scanner or disc, and allows you to perform a variety of editing tasks such as cropping and rotating.

Simple drawing tools allow you to make more drastic changes. One tool we particularly liked was the SmartPix

## DETAILS

★★★★★

PRICE £224.43 (£191 ex VAT)

CONTACT Epson 0800 220 546

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

PROS Inexpensive; easy to use; great output

CONS Serial interface

OVERALL At this price you just can't go wrong



# ATi Radeon

PREVIEW

With a great mix of performance and features, **ATi may have an ace** in the graphics card pack.

**A**Ti has been rather quiet for some time now. Although the Rage Fury MAXX dual-processor card went down quite well a few months ago, we haven't seen anything revolutionary since the initial Rage128 release almost two years ago. The Rage128 was the first 32MB graphics card as well as being the first to support 32bit colour in a 3D environment. Unfortunately, production problems meant that by the time the Rage128 was available in quantity, the competition had caught up and there were better cards on the market. ATi has learnt from this lesson, deciding to be far more careful with the release of the new chipset. It is trying to ensure that when the product is due for release, there will be sufficient quantity to meet the demand. From what we've seen so far, demand will be high.

Over the past year or so nVidia has become the name to beat in the graphics card arena, although getting ahead has proved to be a daunting prospect. With last year's release of the GeForce 256 chipset, nVidia solidified its position as the premiere 3D accelerator chip manufacturer and now, with the release of the GeForce 2, its position is even stronger. What's most amazing is that the GeForce 2 was released before there was even any competition for the original GeForce chip. But things are about to change with the introduction of ATi's Radeon chip.

The Radeon is ATi's next-generation chipset and it's looking very good indeed. We had access to an early board which wasn't running to full speed, but the results were still impressive. The core clock speed of the CPU will be 200MHz, with the memory also running at 200MHz in SDR format and 400MHz in DDR format. This puts the memory speed well ahead of the GeForce 2 that only manages 333MHz. That said, the card we saw was only running the CPU at 175MHz.

Even though the speed of the processor and the memory looks as

though it will be very impressive on the production boards, that's not what makes this new ATi chipset special. Once performance rises above a certain level, it's the feature set that begins to become more important, and thankfully the Radeon looks like it has the most comprehensive feature set yet seen.

What set the original GeForce chipset apart from the competition was the inclusion of a transform and lighting (T&L) engine that took a great deal of load away from the PC CPU. ATi is the first company to produce a

chipset that also sports an on-die transform and lighting engine (the S3 Savage 2000 was supposed to incorporate T&L, but it didn't work on the board we reviewed).

However, ATi has not targeted the standard GeForce chipset and instead is going after the GeForce 2. With this in mind, the Radeon sports some very impressive features such as the Pixel Tapestry Architecture. This allows up to three textures to be applied to a single pixel per clock cycle. Multiple textures per pixel is one of the GeForce 2's strongest features, so the fact that the Radeon can match nVidia's latest chip is quite a boon for ATi.

One of the most disappointing aspects of both the GeForce and GeForce 2 chipsets is that they don't support hardware environment bump-mapping, with only Matrox's G400

chipset sporting this feature. This is particularly odd, since it's a standard DirectX feature and the effect from using it is impressive. Thankfully, ATi has learnt from this situation and has added environment bump-mapping to its feature set along with T&L and multiple textures per pixel. This will make the Radeon the most feature-rich chipset available.

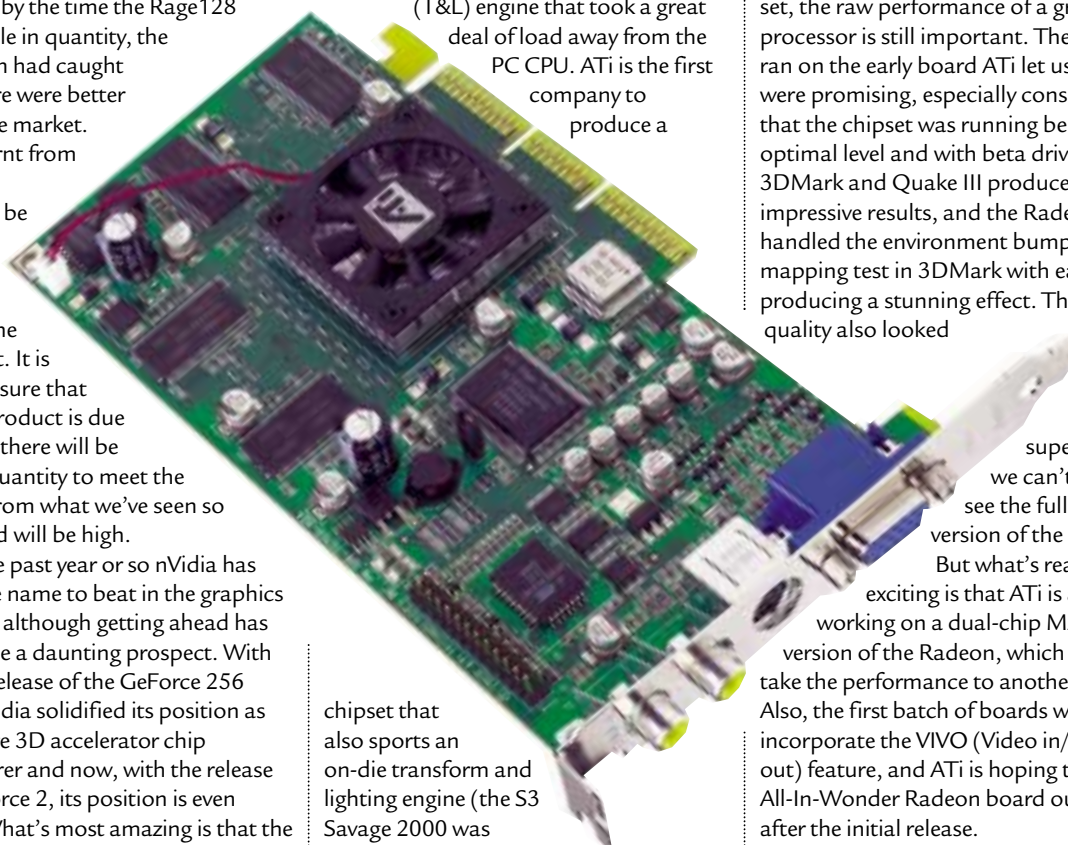
Of course, even with a strong feature set, the raw performance of a graphics processor is still important. The tests we ran on the early board ATi let us have were promising, especially considering that the chipset was running below its optimal level and with beta drivers. Both 3DMark and Quake III produced impressive results, and the Radeon handled the environment bump-mapping test in 3DMark with ease, producing a stunning effect. The image quality also looked

superb and we can't wait to see the full retail version of the card.

But what's really exciting is that ATi is already working on a dual-chip MAXX version of the Radeon, which should take the performance to another level. Also, the first batch of boards will incorporate the VIVO (Video in/Video out) feature, and ATi is hoping to have an All-In-Wonder Radeon board out shortly after the initial release.

We can't make a final decision on the Radeon until we see the production board, but from what we've seen, ATi has regained its status as a major player in the high-performance graphics market.

RIYAD EMERAN



## DETAILS

**CONTACT** ATi 01628 533 115

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

**PROS** Looks fast and sports the most complete 3D graphics feature set yet seen

**CONS** None, if the retail version lives up to its promise, but we'll just have to wait for that

**OVERALL** ATi could be onto a real winner here. As soon as we get the full retail board we'll put it through its paces and make our final judgement



## PREVIEW

# 3dfx Voodoo 5500

Will the hex of its previous models be lifted when its new production model comes into play?

It seems as though there's a never ending supply of new graphics cards arriving at the moment, with the GeForce 2, the ATi Radeon (see previous review) and now the Voodoo5. 3dfx has had a hard time of late, since its Voodoo3 cards didn't deliver the kind of performance and features the world was expecting from what was the premiere 3D acceleration company at the time.

Although initial reviews of the Voodoo3 were promising, the arrival of the Matrox G400

with an interconnect, and for any of you who are getting ideas about hooking two of these boards together like the Voodoo2, forget it – it won't work. Each VSA-100 chip runs at a core frequency of 166MHz with the memory running at the same speed. This is slower than both the nVidia GeForce 2 and the ATi Radeon, but fast frequencies don't necessarily equate to

generation of graphics cards can happily play the latest games at 1,280 x 1,024 or above, the benefits are limited. However, unlike T&L and hardware bump mapping that have been waiting for a killer app to take advantage of them, FSAA can be applied to any game, new or old. And when you consider 3dfx's 3D history, that's a very extensive library.

Performance-wise, we were a little disappointed with the Voodoo5. Running 3DMark at 1,024 x 768 in 16bit colour produced a score of 4,000, compared to the 6,132 scored by the GeForce 2 reference board we looked at last month. With 4-Sample FSAA turned on, this score dropped to 1,583,

Max and nVidia's TNT2 Ultra chipsets made the Voodoo's high life short lived. One of the major criticisms of the Voodoo3 was its lack of 32bit colour in 3D, although this has thankfully been addressed in the new Voodoo5 board. Bizarrely though, 3dfx hasn't taken this opportunity to redress the balance of features the way ATi has, choosing to ignore both transform and lighting (T&L) and hardware environment bump mapping.

At the announcement of the Voodoo5 cards at Comdex in Las Vegas last year, 3dfx claimed that the reason for omitting these features was that there is no software support for them yet. This may be generally true, but the fact is that games supporting these features will arrive, and most people would like to buy a card that has at least marginal future proofing.

The first thing you notice about the Voodoo5 is its size. This is a very large card that resembles the full-size ISA cards of yesteryear. Seated on the board are two VSA-100 graphics chips supported by 64MB of SDR SDRAM. 3dfx has used the SLI (Scan Line Interleave) technology that it pioneered with the Voodoo2 cards to get both chips working in harmony. Of course, this time both chips are on the same board rather than on separate ones

high performance.

The most unusual feature of the board is the

power socket. Since the AGP slot can't supply enough juice for the Voodoo5, it has to be connected to your PC's power supply. This shouldn't cause any problems unless you have a well-stacked system and a small PSU. 3dfx has even been kind enough to supply a power splitter with the board in case you have no plugs free.

3dfx is making a great deal of the full scene anti-aliasing (FSAA) feature of the Voodoo5. Anti-aliasing has been a regular feature in 3D acceleration for some time, used to hide the rough edges produced by the polygons. This feature is one that is generally applied to certain areas of a scene, but with FSAA the entire scene will be anti-aliased, resulting in a much smoother environment. There's no denying that the effect of FSAA is impressive, but the performance hit that results from its implementation is significant. Add to this the fact that the higher the resolution, the less need there is for anti-aliasing. Since most of the next

emphasising the resulting performance hit. Running Quake III resulted in 76fps at 1,024 x 768 in 16bit

colour, compared to 96fps on the GeForce 2 reference board.

This is still an early board with early drivers, so we'll reserve our judgement until we see the full product next month. The release of the production GeForce 2 boards and what we've seen of the ATi Radeon all add up to some stiff competition for 3dfx. The production board will have to have a serious performance boost to be able to see off the competition in this round.

RIYAD EMERAN

## DETAILS

**CONTACT** 3dfx [www.3dfx.com](http://www.3dfx.com)

**PROS** FSAA can be applied to any game, to matter how old

**CONS** No T&L and uninspiring performance

**OVERALL** We expected lightning-fast performance from this card, but we didn't see it. Hopefully the production model will put 3dfx back in the running

# ATi All-In-Wonder 128 Pro

A card for all occasions, but particularly if you want to edit video from an analog source.

**A**Ti's All-in-Wonder Pro is the Swiss army knife of graphics cards. Combining 3D graphics acceleration, DVD playback, still and motion video capture, a Teletext TV tuner and digital VCR, it's hard to think of anything else that ATi could have included – except perhaps a corkscrew. Although, if ATi were aiming to produce a truly versatile video-editing solution, a FireWire port for DV input and device control would round it off nicely.

The card is based on the Rage 128 Pro chipset, which is both AGP 4x and 2x compatible, with 32MB of SDRAM. Improved 3D gaming performance is provided through acceleration of Open GL and support for DirectX 7. In terms of 3D performance, it doesn't set the world alight, managing 12.7fps in our Quake III test at 1,280 x 1,024 in 32bit colour. This card is not supposed to be about blistering 3D performance, though, but it is good to know that it should be able to play new games, even if you have to sacrifice some of the detail.

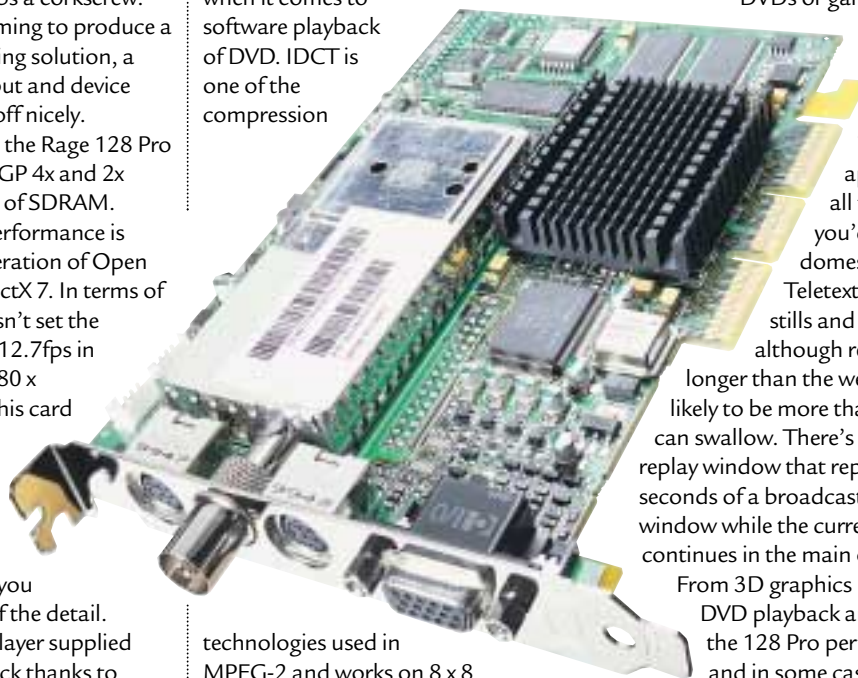
The software DVD player supplied achieves flawless playback thanks to support from the Rage 128 Pro chip that takes on most of the decoding work from the CPU. Video capture, editing and output is supported by the new Rage Theater chip that samples analog video and compresses it on the fly to a number of digital video standards. The TV tuner software allows you to compile personal TV schedules, capture TV clips to your hard drive, and view instant replays in a separate window.

All the card's functions are accessed from ATi's Multimedia Centre software – a floating, tabbed palette that can be docked to the screen edge. This provides access to the display settings, DVD player, the video editor, TV tuner and CD player.

The performance of the software DVD player is difficult, if not impossible, to distinguish from a hardware player and this is testimony to the efficiency of the Rage 128 Pro in offloading a large part of the processing overhead from the CPU. Decoding MPEG-2 (the format used for DVD) video involves a number of steps including parsing, variable length decoding, inverse quantisation, Inverse Discrete Cosine Transform (IDCT), motion compensation and sub-picture

decoding. Finally the image data is converted from the native YUV to the PC-friendly RGB format.

Like other graphics cards, the Rage Pro 128 handles several of these functions, but it's the IDCT function that gives the ATi card the competitive edge when it comes to software playback of DVD. IDCT is one of the compression



technologies used in MPEG-2 and works on 8 x 8 pixel blocks of keyframes in the video stream. At 720 x 576 (PAL) resolution there are more than 5,000 of these 'macroblocks' to be decoded for each keyframe and removing this task from the CPU makes possible software DVD playback with none of the jitter and dropped frames you might see in the absence of dedicated hardware.

Everything you need to capture, edit view and export video is included. The card has video in and out ports and a small breakout box with phono inputs and an S-Video connector is supplied.

Supported capture formats include uncompressed YUV (although at 10Mbytes/sec you'll need a fast hard drive to keep up), MPEG-1 and MPEG-2. Video capture is done using Ulead's Video Studio 4, which is an excellent entry-level video-editing application. ATi claims the Rage Theater chip makes possible capture of video in any of the supported formats with superior compression to the competition. Performance in any case will be limited by the hard drive and processor capabilities of individual systems. We achieved excellent results with capture and

playback from a video source connected to the S-Video port of the breakout box.

For recording video back to a VCR, S-Video and composite video output are available. As well as recording video projects to tape you can make use of these for pure entertainment – watching DVDs or gaming on a domestic

TV at resolutions up to 800 x 600.

Not that you really need a TV. The ATi TV viewer application provides all the functionality you'd expect from a domestic set, including Teletext. You can capture stills and video clips to disc, although recording anything longer than the weather forecast is likely to be more than your hard drive can swallow. There's also a neat instant replay window that replays the last few seconds of a broadcast in a separate window while the current action continues in the main one.

From 3D graphics performance to DVD playback and video capture, the 128 Pro performs as well as, and in some cases better than many single-function boards.

KEN MCMAHON

## DETAILS

★★★★★

**PRICE** £149 (£126.80 ex VAT)

**CONTACT** ATi 01628 533 115

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

**PROS** Flawless DVD playback in software; excellent analog video capture features

**CONS** No IEEE1394/FireWire port

**OVERALL** Given the rise of digital video it's unlikely that its analog video input alone will be much of an attraction for very long, but it's nonetheless a good option if you want to edit video from a variety of analog sources, or are looking for good all-round performance and comprehensive multimedia features

## PERFORMANCE RESULTS

0 25 50 75 100(fps)



Quake III

0 1,000 2,000 3,000 4,000 5,000 6,000



3DMark 2000 1,280 x 1,024 32bit



# Hercules 3D Prophet II vs Asus V7700

The first two graphics cards to take advantage of the **GeForce 2 GTS** chipset go head to head.

Last month we previewed nVidia's reference board for the new GeForce 2 GTS chipset, and in this issue we put the first two retail boards head to head. The GeForce 2 has improved on many of its predecessor's features. The transform and lighting (T&L) engine has been upgraded by the addition of nVidia's Shading Rasterizer, which allows realtime per-pixel shading. Software has to be specially coded for this, however, so this did not affect our benchmarks.

The card has some extra horsepower: the core clock speed has been increased to 200MHz, enhancing the performance of the GeForce 2's Graphics Processing Unit (GPU); and memory frequency has been boosted to 333MHz to complement this.

The Hercules 3D Prophet II looks like a fast graphics card right out of the box. This bright blue card (pictured top) is longer than nVidia's board and has electric blue heatsinks over the DDR memory chips and a similarly coloured heatsink and fan over the GPU. It also has sockets for both S-Video and DVI.

The yellow Asus V7700 (pictured above) is smaller than the 3D Prophet II and doesn't have its immediate visual appeal. Having said that, the Asus has a rather novel, round heatsink and fan over the GPU. In contrast to the 3D Prophet II, the memory chips on the Asus board look positively naked. The version we reviewed came with just one D-SUB port – sufficient for the majority of users, and it helps to keep the price down.

The stylish look of the Hercules heatsinks, though, is less relevant than their cooling function. Their presence on the 3D Prophet II should ensure that this card would be more stable should

you choose to overclock the memory.

We tested the cards using both Quake III Arena and 3DMark at resolutions from 1,024 x 768 with 16bit colour to 1,280 x

1,024 with 32bit colour. Both cards performed similarly, although neither card consistently beat nVidia's reference card. Running

Quake III Arena at 1,280 x 1,024 with 16bit colour, the frame rates for both cards were just under the 42fps mark, where the reference card achieved just over 42fps. At 1,024 x 768 with 32bit colour the Asus came out top with a 3DMark of 4,618 compared to the Prophet II's 4,455 and the

reference card's 4,559. In real terms the difference in the figures isn't that relevant as both cards are performing at such a high level. Each comes with a software DVD player – Asus' with its own DVD2000, and the

Hercules with the latest version of Power DVD. With a fast enough processor, these should allow you to watch DVD movies with no dropped frames.

Both cards come with drivers for Windows 95, 98, NT4 and 2000. Hercules won't support the NT4 and 2000 drivers it ships, however, but they are provided to use at your own risk.

The main difference is one of price. The Hercules card retails at £340 inc VAT, while the Asus comes in at a shade under £300. There are a few extra features on the Hercules: DVI and S-Video outputs, as well as heatsinks on the memory for overclockers. However, the overall performance difference is nominal.

So if you need the extras and have the cash, the Hercules is the desired card. But

if you don't need the DVI or S-Video connectors and want a new graphics card purely for game playing, then the Asus V7700 is the card for you.

SCOTT MONTGOMERY

## DETAILS

### HERCULES 3D PROPHET II GTS

★★★★★

PRICE £339.57 (£289 ex VAT)

CONTACT SMC Direct 01753 550 333

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

**PROS** Heatsinks on memory chips; DVI and S-Video

**CONS** More expensive

**OVERALL** If you want to overclock your GeForce 2 then the presence of heatsinks on the memory of the Prophet II are likely to make this the card to buy

### ASUS V7700

★★★★★

PRICE £297.30 (£253 ex VAT)

CONTACT SMC Direct

01753 550 333 [www.asus.com](http://www.asus.com)

**PROS** Cheaper

**CONS** No heatsinks on the memory chips

**OVERALL** Although still pricey, this card is cheaper than the Prophet II and would also be an excellent choice for those who don't need the extra outputs

## PERFORMANCE RESULTS

### Quake III 1,280 x 1,024 32bit colour & textures

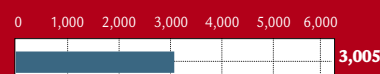


### Hercules 3D Prophet II GTS

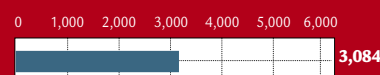


### Asus V7700

### 3DMark 2000 1,280 x 1,024 32bit colour



### Hercules 3D Prophet II GTS



### Asus V7700



# Dragon Mobile Organiser

If you're into training inanimate objects and **updating information on the move** chase the Dragon.

**P**ersonal organisers are one of the must-have accessories for the busy executive, but even if you carry a Psion or a Palm around with you, using the keyboard or handwriting input just isn't always convenient, no matter how proficient you are. Enter the Dragon. Its Naturally Speaking Mobile Organiser is, effectively, a small digital dictation machine. It's compact, fairly simple to use, and out of the box can store around 40 minutes of speech.

What makes it a mobile organiser rather than just a dictation machine is the link to the PC. On the bottom of the unit is what, at first glance, seems to be a USB port. In fact, it's a standard serial link, using a USB plug – how's that for confusion? You can, incidentally, use the handheld as a microphone on your PC, and the package includes a headset, that will work either with the handheld, or if you want to talk directly to the PC via your sound card.

At the software end of things, there's a copy of Dragon's NaturallySpeaking voice-recognition package, along with Mobile Organiser. Installation pops both of these on your hard disk, but you'll need over 200MB spare. During the installation you also have to train the recognition system. That's done by picking a text from a supplied range and reading it into the dictation unit. Thankfully you can press the pause button and then come back to it – even reading at a fairly fast rate, the sample text we used took around 25 minutes to complete. After that, you need to connect the cable and wait while the PC first transfers the file and then learns the nuances of your pronunciation. This process can take as long as an hour on the specified 200MHz Pentium, and rather longer on anything slower. Remember, too, that even if you've trained a PC with your voice already, you

need to do it again, to take into account the microphone characteristics of the recorder. That done, you have a choice of

organisers with which the program will work, including Palm Desktop, Outlook, Goldmine, and ACT.

Using the organiser is pretty simple, though if

session, you'll find that there are errors when you first start to use the system, but the software allows you to correct these, and will improve the recognition as you do. You can change just about every aspect of the items that have been created; it can be discouraging at first, when simple things like a one-line appointment have a few mistakes in them, but perseverance pays, especially if you want to dictate longer items, such as emails, that can be very tedious to create on some pocket-sized devices.

Correcting items on a slower PC can be a little tedious, however, as the system doesn't seem that responsive, probably because the speech database is updated as you enter your changes. Fix any problems, click to OK an item, and when you're done, a simple click on the 'Send' button updates your organiser.

However, it's still not all plain sailing. You can't, for instance, dictate information directly into specific fields in an address book. Instead, information will end up as a text note, so you can cut and paste. And in the time we had to play with the system, we still couldn't manage to get it to properly write an email address.

Those niggles aside, this is certainly a system that works, and the faster your computer, the more useful you'll find it. For those who want to update information on the move, it's a great idea – provided you're prepared to put the time into training it initially.

NIGEL WHITFIELD



you're not used to computer-based dictation, you might need a while to get used to things like remembering to put in full stops and other punctuation. And you need to define the key words, such as 'remind' that help the system decide what type of entry to make in your organiser.

When you've created the notes you want (which can be saved in different folders on the handheld, then you can select which ones you want to transfer) you just plug the unit into the PC and select 'Get items.' As each file is transferred, it's recognised on the fly, and the software presents a list of what it thinks you want it to create.

Even after the mammoth training

## DETAILS

★★★★

**PRICE** £249 (£211.91 ex VAT)

**CONTACT** Dragon Systems 01628 894150

**www.dragonsystems.com**

**PROS** An efficient way to enter information into your organiser from a compact unit

**CONS** Lengthy training; not 100 per cent integrated into the organiser software

**OVERALL** A convenient and mostly accurate way of updating contacts and appointments when you're on the road, but it needs training before use, and you'll need to fiddle with some data even when it's been transmitted to your PIM software

# InFocus LP335

If you want to **improve your image** take a closer look.

**T**he latest micro-projector from InFocus may look like it costs a lot of money, but it's a fantastic unit. It utilises the latest DLP chip from Texas Instruments and this, combined with advances in lamp technology, has enabled the company to bring the image up to a massive 1,000 lumens. This means that pictures it produces can be viewed even with the lights on, and the huge 1,024 x 768 resolution results in an extremely sharp, crisp image. Despite this, it weighs only 2.21kg.

It has every port that you'll ever need – InFocus has shunned yesterday's technology in favour of a DVI connector. Don't worry if you don't have this connector on your graphics card or notebook, however. As standard, the projector ships with a DVI connector that splits into a single D-SUB and USB mouse connector, ensuring that this unit will work with the majority of today's devices. There are also audio in, composite in and S-Video in ports. There's a built-in speaker that works well

enough, although it isn't intended to be of sufficient quality to play your movies on. It will suffice for PowerPoint effects, though. A manual zoom control is located next to the lens, and you can adjust the focus by turning the lens. There's an infra-red receiver on the front of the projector, and this responds to signals sent through the excellent remote control. A circular pressure-sensitive control enables you to move the mouse and a trigger underneath the control acts as the left mouse button. You can also access the projector's menu and change input sources from here.

The menu system is extremely easy to navigate and allows you to alter the picture to your taste. It includes the all-important keystone correction, and gives you the opportunity to leave the image refinement to the projector or take control yourself. InFocus is aiming this at mobile presenters and rich home cinema enthusiasts alike, and the tests we did with both a notebook and



standalone consumer DVD player confirmed that it performs magnificently in both scenarios. It is a huge amount of money, admittedly, but if you need something this small and light then look no further than the LP335.

JASON JENKINS

## DETAILS

★★★★★

**PRICE** £4,876.23 (£4,150 ex VAT)

**CONTACT** InFocus 0800 028 6470

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

**PROS** Small; light; excellent bright image; easy to use

**CONS** High cost

**OVERALL** If you afford it, buy it



# Iomega Klik! Dock

A **tiny PC Card slot** – but unfortunately it's restricted to those who have Click! Drives.

**E**ssentially a PC Card slot in a smart blue box slightly larger than a pack of cigarettes, Klik! Dock connects via a slightly short USB cable and draws power from the mains rather than the PC. Installation was somewhat tricky, with Iomega recommending the uninstallation of existing Iomega software driving a



USB ZipCD and parallel Zip 250. These still worked fine after the installation of the Klik! Dock but the whole process caused several crashes, each of which required a reboot.

You don't get a bundled drive, but then you couldn't expect that at this price. What disappointed us, though, was that Iomega states plainly that it will not work with any PC Card other than a

Klik! Drive. We put this to the test with a

Memory Stick reader from Sony and, sure enough, the drive

disappeared from My Computer. Further evidence, if it was needed, came from System Properties.

The reader appeared as a USB device rather than as a PC Card slot as they do on notebooks. We think this is a little shortsighted – making it a general PC Card reader would increase the appeal and if that's what you're after then you can pick one up from [www.laptopshop.co.uk](http://www.laptopshop.co.uk) for £79 ex VAT.

That said, it performed well, copying

a 7MB directory of mixed files from a hard drive in just 21 seconds, although it continued writing for a further 16 seconds, during which ejecting the disk would be unwise. Again, we put this to the test and invoked a series of unrecoverable blue screens, eventually resorting to a reboot.

If you have a PC Card Klik! Drive there is no doubting this is a sensible investment – it's just a shame you can't use it with other PC Cards.

NIK RAWLINSON

## DETAILS

★★★

**PRICE** £34.99 (£29.78 ex VAT)

**CONTACT** Iomega 0500 973 194

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

**PROS** Quick and convenient

**CONS** Flaky installation on our test machine; restricted to use with Iomega Klik! Drives

**OVERALL** Does what it says on the box, but could have been so much better

# Lexmark Z52

A quality, budget printer that may drive you mad when it tells you it's out of paper.

A talking printer may seem like a strange invention, but unfortunately the most exciting thing Lexmark's latest model says is 'replace paper'. It's a handy feature if the unit is situated at the far end of a room, but by the time we'd finished testing, it had turned from cute to annoying.

Luckily, there are a lot of other things to recommend this top-quality, but reasonably priced unit. For a start, it's the first printer we've seen boasting a resolution of 2,400 x 1,200dpi on all paper types. Image quality is good with little evidence of banding or fading. Even photos were reproduced reasonably faithfully, although we couldn't agree with Lexmark that they were virtually dotless on photo paper.



Lexmark promises some impressive print speeds – 15 mono pages a minute in draft mode and seven in colour. Although our test print documents generally contain a higher concentration of text and images than the manufacturer's own, the Z52 fell a little short. It could only muster almost eight mono pages in draft mode and five in normal mode. That is still more than fast enough for most home users, though, and using the built-in 100-sheet feeder you won't have to hold it by the hand throughout.

The printer boasts parallel and USB connections, so regardless of whether your PC is completely up to date or full of legacy parts, you'll be able to

connect this straight away. Installation is a breeze and the driver software is some of the best we've seen. There's even a shrewd marketing button that takes you direct to Lexmark's website to order more ink.

In the looks department the printer is fairly unspectacular, with a boxy appearance and a reasonably large footprint, but for the price we've few complaints.

RICHARD MCPARTLAND

## DETAILS

★★★★

**PRICE** £139 (£118.29 ex VAT)

**CONTACT** Lexmark 01628 481 500

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

**PROS** Good maximum resolution; excellent driver software; good price

**CONS** Reasonably large and boxy; print speeds didn't stand up to Lexmark's claims

**OVERALL** A good budget performer capable of producing fairly high-quality prints

# Mustek BearPaw 1200

A stylish flatbed scanner but for the money it underperforms on many fronts.

This flatbed scanner offers a true optical resolution of 600 x 1,200dpi, at a colour depth of 42bits. It's a sturdy scanner with blue see-through flanks and a fascia that sports five buttons arranged in the style of a paw print – hence the name. These should allow you to scan, copy, fax or email, but during testing we had a few problems. Pressing any of the buttons resulted in a

program error, and at the time of writing no driver update was available.

The bundled PhotoExpress 3.0 SE presented no problems, provided the image was acquired within the software. Installation was simply a case of plugging the captive USB cable into our PC and going through the standard detection process. The Bearpaw's captive cable may help to keep the price down, but means if a fault develops, you'll have to return the entire unit for repair.

We tested the scanner using the driver's default setting of 600dpi and a 24bit colour depth.

Unfortunately, the test results left a lot to be desired. Our test target was reproduced with a red tint, with the white background suffering most visibly. There was also clear evidence of banding, with the image suffering from an uneven luminance. The Bearpaw was better at reproducing colours, although it struggled to recreate light green. Text was reproduced adequately, although we have seen better results elsewhere. When

it came to reproducing our Modulation Transfer Function (MTF) patterns (closely drawn lines that test the true resolution of the unit), there was still huge room for improvement.

TextBridge Classic 2.0, for Optical Character Recognition, and Trellix Web, for those who want a simple website creation tool, are included.

Mustek's scanner does a basic job and looks stylish. However, for the money, it underperforms.

JALAL WERFALLI



## DETAILS

★★

**PRICE** £111.62 (£95 ex VAT)

**CONTACT** evesham.com 0800 0353 353

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

**PROS** Sturdy surround and styling

**CONS** High price; buggy driver; test results could be better

**OVERALL** Overpriced and not the best, but image-conscious users might be interested



# Windows ME Beta 3

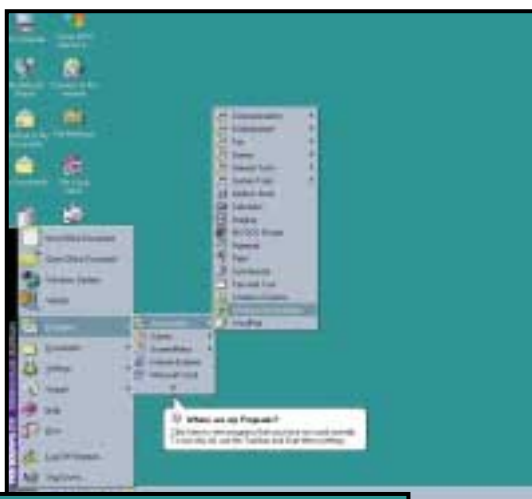
**Microsoft gets creative** with Windows Millennium Edition as its latest project nears completion.

**W**indows ME has been much talked about and a long time in coming. Many users are billing it as Windows 98 Third Edition while others, with a certain amount of cynicism, claim it to be Windows 95 Service Pack 5. Microsoft faces an uphill struggle to convince these users that there are enough new features in ME to make it worth their while.

Microsoft may have 'bet the ranch' on Windows 2000, aiming it squarely at business users rather than home consumers, but it is precisely those home users to whom the final release of Windows ME is expected to appeal.

If you were hoping to see a radical user interface overhaul, you'll be disappointed. Like it or loathe it, the Windows 9x interface is by now familiar to us all and it is this familiarity that is one of the OS' primary strengths. However, the engineers in Redmond have had their leads slackened and their creativity shines through in some areas, not least in the new media player.

Windows ME is very entertainment centric, so it's not surprising that this key applet has grown in importance. Used for playing back not only CDs but also Internet content, it will quickly become a familiar part of your OS. However, to save things from becoming stale, Microsoft allows you to change the whole look and even shape of the Media Player interface by using a variety of skins, perhaps inspired by the likes of the Sonique MP3 player. More important than the look, however, is the functionality, and here Millennium lets you build an entire music library on your hard drive. Media Player includes the option to rip tracks to Windows Media Format (WMF), which comes out smaller than the average MP3 variant of an identical track yet retains compatibility with many solid-state players. Drive space permitting, Media Player means you could have a copy of your entire CD collection on your work PC while leaving your valuable discs at home.



*The latest incarnation of the OS retains the familiar Windows 9x interface (left). In the event of a mistake System Restore can retrieve the system's last known configuration (bottom)*



The fact that Microsoft sees media as an important factor is backed up by the inclusion of Movie Maker, an easy-to-use application for organising your media, whether they be photos, movie clips or sound, and building them into a presentation. It's like a stripped down version of the software that ships with Pinnacle's video-capture cards and, although by no means as complex, should be more than adequate for piecing together snippets of shaky holiday videos into a single cohesive production. It's not a fiddly operation, either. Your media assets appear in a library and you then merely drag them onto the timeline. Hit Play and you're done.

Microsoft may have come off worst in its scrap with the US Department of Justice, but that hasn't stopped the bundling of Internet Explorer 5.5, and neither should it – Windows was not the first OS to ship sharing its installation CDs with a browser. As became evident in our full review of the IE5.5 beta in the July 2000 issue, there are far-reaching changes under the hood but they are at

the mercy of web designers. To be put to use they must be called from pages and, with web developers notoriously nervous when it comes to implementing new features, it's likely their use will depend on there being an installation base of

sufficient size to make accessibility concerns a no brainer.

There is no DOS in Windows Millennium. You can still access a command line through a Window but you can't boot to the familiar C prompt. This is a move that sees Scandisk shift into Windows mode, even after an improper shutdown. The familiar contents of the autoexec.bat and config.sys files have been moved into the Windows system. Microsoft claims this will make the OS start faster and we must admit that in our tests we did seem to spend less time sitting around waiting for things to happen, although whether this is just because it was a fresh installation is difficult to say.

Some aspects of Windows 2000 have made it into this consumer package. Menus will personalise, including the start menu, to include only those applications you regularly use. This is a love or hate feature so if you fall into the latter category you'll be glad to hear it can be disabled. The Start menu can be further customised from the Settings menu – you can specify precisely what should appear, so if you never use the Recent Documents list you can make it disappear and perhaps replace it with the contents of your Favourites folder.

If you have a DEL-key disaster all is not lost. Millennium benefits from inbuilt System Restore utilities. Working along similar lines to the commercially available Second Chance and GoBack software this takes snapshots of the system status, allowing you to restore the last known working configuration should you delete a vital application file, or perhaps more likely, install some unfriendly software.

## BETA

System File Protection has now been introduced. We've all experienced the damage that can be done when a rogue installation overwrites a core DLL or other file crucial to running Windows. This new feature sits quietly in the background watching everything that goes on and repairing any such damage. In theory it should mean that you can install and uninstall third-party applications without a second thought, but there are times when an updated DLL has been included with your new application and Microsoft must ensure that its system is graceful enough to recognise when the core Windows files are outdated and in need of replacement.

The Printers folder has been supplemented by a new Scanners and Cameras folder. This has been a long time coming and is one of those features you probably never knew you were missing until now. It keeps you just a couple of clicks away from what are fast becoming two of the most popular peripherals going, which in this age when seemingly everyone is furnishing their own corner of cyberspace is a welcome move.

Microsoft has recognised that more and more families are now living in two-PC households. More often than not, when you buy a new computer you hang on to your old machine for the kids or parents (delete as appropriate). The trouble is that running two machines inevitably means fighting for access to the Internet. After all, with only one phone line coming into most homes you can't have more than one PC online at a time. With this in mind, Millennium makes it easier to network your machines, using the Home Networking Wizard. This will take you step by step through assigning computer and group names and specifying which parts of your drives you are willing to share with other computers on the same network.

If you have neither the means nor the inclination to physically connect the PCs – perhaps they are on separate sites – you can still put Millennium to good use. There's a fair chance, for example, that you'll want to collect your POP3 mail through your client at work. In the past doing this meant entering all of your



*ME's Media Player allows you to change the look and shape of its interface with a range of different skins*

POP3 and outgoing server settings twice, once on the PC at home and once again at work, but the new duplicate function will copy all your Internet Explorer and Outlook Express settings to a floppy, ready for importing directly into the same applications on the second machine. Not only is this easier than remembering the entries yourself, but it's also quicker than having to manually re-enter the variables.

Should you need to delve into the workings of Windows Millennium, the Control Panel has been made far more user friendly. Opening it presents just the most commonly used components, which is great for first timers who may be baffled when faced with the full might of the standard Panel contents. More experienced users can make use of a hyperlink to display all functions.

The Windows help system has been dramatically improved. This is now visually far more appealing and has a distinctive web feel to it. There are links to articles on Microsoft's website, which in theory should mean that you are always accessing the most up-to-date information. It includes a range of tours, which will be a welcome feature if the manual follows similar lines to those boxed up with Microsoft's other revisions of the OS in recent years. These have been slim, to say the least.

Perhaps the biggest problem Microsoft has on its hands is the fact that many of the pertinent features of

Windows ME have been available for some time to users of Windows 98. The Media Player, albeit a beta, is available for download from Microsoft's website and there is a good chance that if you have the hardware necessary for capturing moving video you'll also have enough in the way of software to make Movie Maker pretty much redundant. Internet

Explorer 5.5 too, has been available to download for some time. With so much recycled content, Windows Millennium is starting to look more like an impressive bundle of all the upgrades you have not yet got around to installing and, as some of these components can be found on magazine cover discs, you have to ask yourself whether you'll make enough use of those that are not to be worth the cost.

For Windows 95 users the answer to that question is a resounding 'yes', but if you're happily running with a stable installation of 98SE then perhaps you'll have to think more carefully. There is no denying that many of ME's features are welcome advances but many are overdue and a lot of users have already found alternatives rather than wait.

NIK RAWLINSON

## DETAILS

★★★

**CONTACT** Microsoft 0345 00 2000

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

**PROS** Familiar, some neat enhancements

**CONS** Much of the content of ME is already available elsewhere

**OVERALL** Undoubtedly a worthy upgrade from Windows 95, but if you're currently running Windows 98SE the decision might not be so clear cut. We've only given it three stars, here, but if the price is right that could improve in the final review

# Dreamweaver UltraDev

Macromedia is **taking the dynamic route** with UltraDev's ability to access live data.

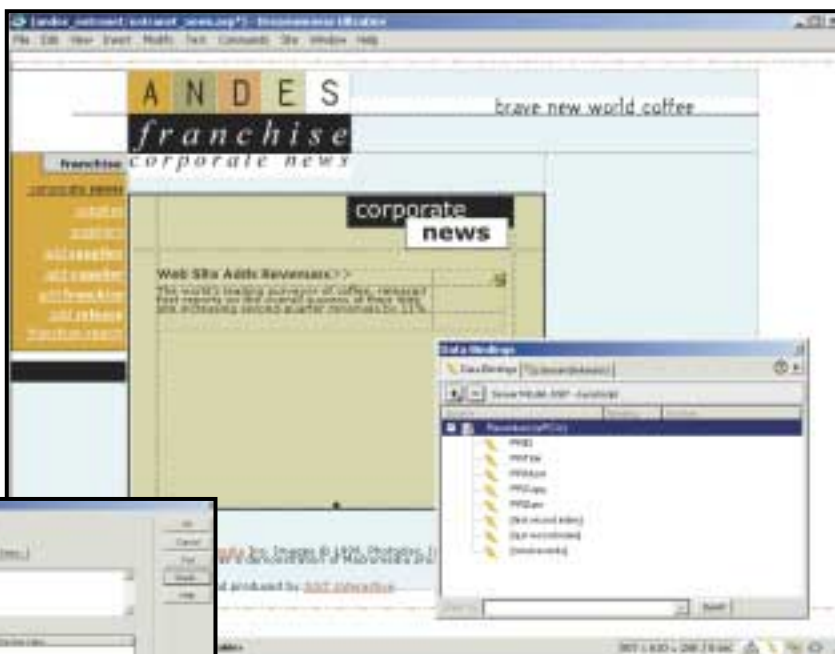
**D**reamweaver is the tool of choice for many web professionals, thanks to its unusual combination of strong visual design tools and high-quality generated code. It is also highly extensible, both through custom scripts and by writing your own C-level functions. Dreamweaver defuses the usual debate about visual tools versus text-based coding by bundling a strong HTML editor with the product: Homesite for Windows, or BBEdit on the Macintosh.

Accessing live data has until now been a gap in Dreamweaver's feature list. This has not caused much upset, as you could always add your own scripts to Dreamweaver pages, and generally the editor would assume you knew what you were doing and leave the code alone. This only helps if you have the time and inclination to code your own server-side scripts for database access or other dynamic content. Dreamweaver

UltraDev now brings this within reach of ordinary users, by providing integrated RAD tools. In other respects this is still Dreamweaver 3, so you can think of it as a deluxe edition of the standard item.

Not long ago, Macromedia released Drumbeat, which it acquired by taking over Elemental Software. Drumbeat provided exactly the kind of dynamic content that Dreamweaver lacked. Clearly, Macromedia needed to integrate the two products, and integration in this case means ditching Drumbeat and upgrading Dreamweaver. Some Drumbeat users are most unhappy about this, particularly since Drumbeat does not work properly on Windows 2000. In addition, some features of Drumbeat, such as the ecommerce edition, are not part of UltraDev. On the other hand, most people would rather work with an improved Dreamweaver than have to learn a different product. Whatever, Drumbeat is dead and UltraDev is now what you get.

Here is how it works. When you define a new website in Dreamweaver UltraDev, there is a new set of properties called App Server Info. Here you can



**UltraDev now adds dynamic data to Dreamweaver's impressive feature roster**



**Use this dialog to define an UltraDev recordset. You will need to know SQL for more than basic usage**

choose a server model. The choices are Active Server Pages 2.0 (ASP), Java Server Pages 1.0 (JSP), or Cold Fusion 4.0. All three refer to ways of interpreting scripts on the server, before sending HTML to the browser. Sadly, PHP, an emerging open-source alternative to these three systems, is not included.

Note that Dreamweaver UltraDev on its own does not supply any of these server-side technologies. Instead, they are separate third-party products that must be installed on your chosen web server. ASP is widely available, since it is a free add-on for Microsoft's Internet Information Server and Personal Web Server, part of Windows NT/2000 and Windows 95/98 respectively. Java Server Pages are supported by Sun's Java web server, or by installing Allaire's JRun add-on. Cold Fusion is also an Allaire product. Not all ISPs support these products and very few of the basic dial-up accounts provide such services, so if you want to use UltraDev on the Internet, have a discussion with your ISP first.

Once the site is defined, you design pages in the usual Dreamweaver manner, but with some additional resources. These are obtained from a tabbed

window offering Data Bindings and Server Behaviors. The Data Bindings tab lets you define data connections such as recordsets and stored procedures. There is also access to server-side content such as the HTTP Request header, which includes information such as which browser is being used. The type of data connection available depends on the server model you are using. ASP uses Active Data Objects (ADO), JSP uses JDBC, and Cold Fusion supports both. If you are running Windows, ODBC is always available. For ASP, you can also specify VBScript or JavaScript for server-side scripting. When you define a recordset, there are limited visual tools or you can type in an SQL query.

The next step is to add dynamic content. For example, you might have a website where you want to display a name and an image from a database on each page. To do this, type some text on the page as a placeholder and select it. Then find the Name field in the appropriate recordset in the Data Bindings window and drag it to the page. At runtime, the placeholder text will be replaced by the value of the field. You can do the same with an image, provided the database contains not the image, but a path name accessible to the web server. A live data option lets you retrieve values at design-time, provided that a web server is online.



BETA

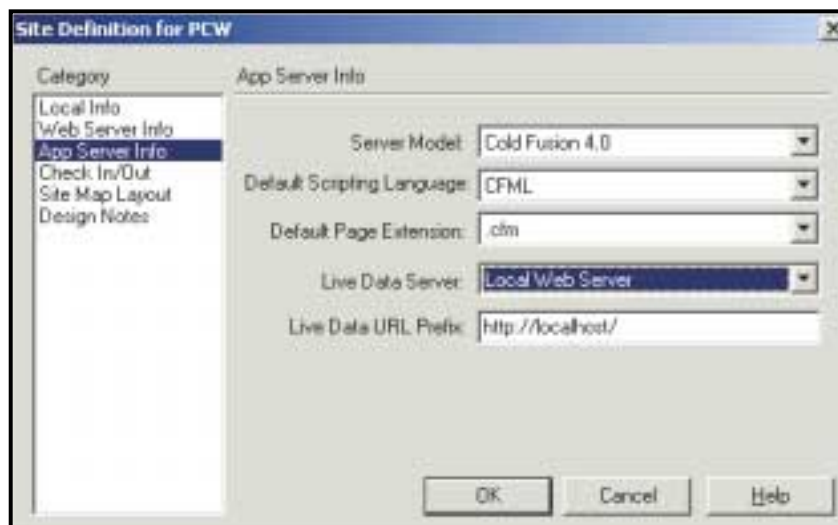
After defining dynamic content, you will want to add functionality such as navigation controls, search facilities and, possibly, insert and update commands. These features are provided by the Server Behaviors window. Standard database functions are listed, along with ways to show more than one record on a page through lists or repeated regions.

Many functions are linked to HTML forms. For instance, you can create a form that inserts or updates a record when the user clicks the Submit button. In a typical web application, there is no concept of a current record, so if you are updating a record you need to provide a unique key field to tell the database which record to update.

An irritation is that recordsets have to be defined individually for each page. In the final version it will apparently be possible to copy and paste recordsets across pages. This does give a clue as to how UltraDev works. Each page has its own script to define a recordset. For reasonable performance, it is essential to keep recordsets as small as possible.

A nice feature of UltraDev is that you can apply formatting to fields such as dates and numbers. To do so, first bind some text to the field. Then you can select a format from a drop-down list, including Currency, Percent, Trim, and other common-sense options.

In a web application, you frequently need to pass parameters, such as form



*The App Server Info site properties determine which server technology is used. You can convert a whole site simply by editing this property sheet*

and session variables. A common scenario is where you have a page that lists records in a table and an option to display the detail for any record on a separate page. To do this you would pass a parameter from the listing page to the detail page.

The Data Bindings window also provides access to server variables. In ASP these are represented by Request, Session and Application objects. If you want information about the user's browser to appear on a web page, you can bind the HTTP\_USER\_AGENT property to a text placeholder.

A problem with Drumbeat was that there was too much black box functionality. In UltraDev, you can edit the generated scripts in the same way as you would edit HTML code. This means that in principle anything you can do with ASP, JSP or Cold Fusion you can also do in UltraDev, although you begin to lose the benefit of the RAD tools.

There are problems with the Dreamweaver approach. The built-in scripts only provide a basic level of

functionality and

serious web developers will soon find they need to dive into the code. In the beta version under test there appears to be no built-in provision for secure user log-in, an essential part of most real-world databases, and very little in the way of data validation. The question then is whether there is any real benefit in

starting with Dreamweaver, or whether it is better to use specialist tools or even a good programmer's editor from the outset. That question hinges on the quality of Dreamweaver's application code and in this respect the beta is not promising. A typical ASP developer will produce clearer and more efficient code than Dreamweaver's generic scripts.

Another problem is that all the script ends up in the web pages themselves, whereas scalable and maintainable web applications minimise the amount of script in web pages and place code into server components instead.

However, Dreamweaver's extensibility means there are likely to be improved and more sophisticated Server Behaviors to address these issues. The real point is that Dreamweaver is primarily for design, not for web application development. That makes Dreamweaver UltraDev excellent for simple dynamic content, but no substitute for more advanced tools.

TIM ANDERSON



*Server Behaviors let you add standard functionality to data-aware pages. The Get More Server Behaviors option invites you to download new Behaviors from the web*

values or a key field, from one page to another. UltraDev recordsets can easily use these values. When you define a recordset, you can set a filter, which in effect means an SQL string with parameters. The value of the parameters can come from sources including form variables, URL parameters, cookie values

## DETAILS

★★★★★

**PRICE** £468.83 (£399 ex VAT). Dreamweaver and Drumbeat upgrade deals available

**CONTACT** Macromedia 0870 6001041

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

**PROS** Supports ASP, JSP and Cold Fusion; live data at design-time; extensible environment allows third-party enhancements; runs on Windows and Macintosh

**CONS** Inefficient generated scripts; real-world applications are likely to need manual coding; no built-in ecommerce support

**OVERALL** Dreamweaver is fantastic but UltraDev's database features are only adequate for simple applications

# Red Hat Linux 6.2 Deluxe

Red Hat used to be a **big fish in a small pond**, but version 6.2 must prove itself seaworthy.

**R**ed Hat is one of the longest-established Linux distributions and the first to be split into packages – archived bundles containing all the programs and supplementary files forming an application, allowing the user to add, remove or upgrade individual subsystems in a single operation. This modularity and upgradability made it the first Linux for non-experts and proved highly successful, to the extent that it remains the most widely used distribution in America and, in some ways, the *de facto* ‘standard’ Linux.

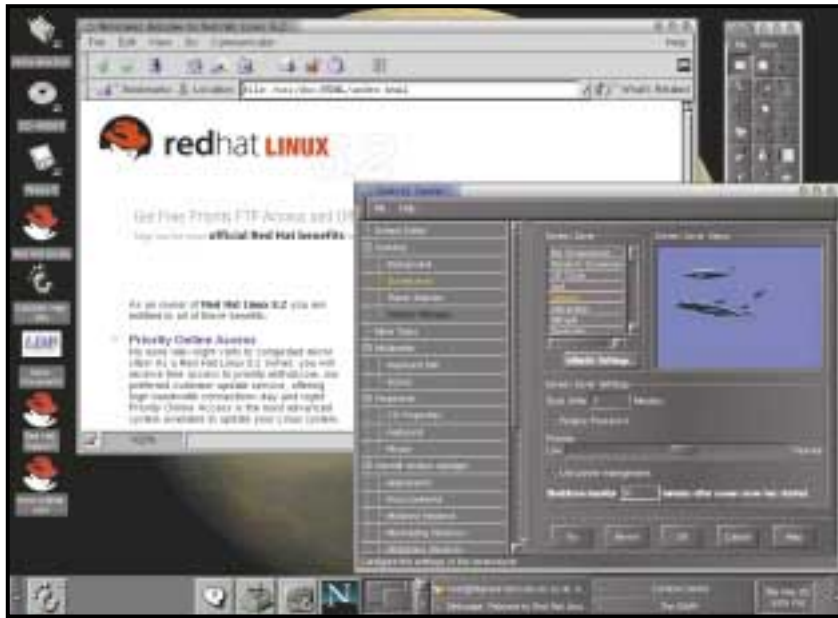
In the past few years, though, rival distributions have surpassed it in some areas and the company’s rigorous stance against including commercial components has imposed some restrictions.

Now Red Hat is playing catch-up. Version 6.0 moved to the 2.2 kernel and version 6.1 aped Caldera and added a graphical installation program, Anaconda. This latest version, 6.2 (codenamed Zoot), smoothes out some wrinkles caused by these changes, adds an interactive startup sequence allowing troublesome components to be deactivated and claims better hardware detection. KDE is offered as an alternative GUI, although GNOME – now on its second release – is the recommended default.

Installation is quite easy. A boot floppy is provided, but the CD is bootable and after a prompt launches straight into graphics mode. Like Corel LinuxOS, there’s an option to install Linux into a FAT filesystem if you want to keep Windows and don’t want to repartition your drive – although this reduces performance. The installer’s partitioning tool is pretty basic, though, and only FIPS (Federal Information Processing Standard) is supplied for non-destructive repartitioning; we recommend buying PartitionMagic for this.

There is a selection of pre-configured installations, including server, GNOME and KDE workstations and a custom option which allows packages to be individually selected. The installer can update an existing Red Hat installation from version 2.0 upwards, which is a neat touch. We tried this on 6.0 and 6.1 installations and it worked well.

There were some niggles, though. On a recent notebook PC, all the hardware, including graphics, sound, PC Card slots, USB and power management was



*Red Hat 6.2 offers a choice of GUIs as well as a vast array of skins for that personal touch*

correctly detected and configured, but on an older Cyrix machine, vanilla NE2000 and SoundBlaster 16 cards were missed – although the ‘Getting Started’ manual contained simple instructions on how to add them later.

Unless you choose a custom install, there’s no option as to where to install the LILO boot manager and it silently overwrote PowerQuest’s BootMagic. You can choose whether to boot into text or graphics mode, but misconfiguration of the X server on the Cyrix desktop meant that graphics mode failed and had to be configured manually from the command line.

Once installed, the GNOME desktop is pretty good. There isn’t the same range of integrated accessories and utilities as with KDE, but a range of helpful non-GNOME tools is included and the GNOME tools include an excellent help system, file manager and a full spreadsheet, Gnumeric.

The choice of window managers and graphical ‘skins’, wallpapers and screensavers is stunning: GNOME looks more attractive than KDE and is vastly more customisable. The desktop also holds links to helpful websites and local documentation and icons for CD and floppy drives. If you choose to install KDE instead, or even alongside, you get only the default KDE desktop.

The basic version of Red Hat can be downloaded as a CD image from the

company’s website or installed over the Internet. The Deluxe boxed edition adds 90 days of telephone support, novice-level printed manuals and several additional CDs: documentation and source code as well as free ‘PowerTools’ and commercial workstation applications. The Professional edition doubles the period of support, which also covers Apache configuration and includes more server-based tools.

Red Hat remains a solid distribution, but it no longer has the technological edge. SuSE is easier to install and includes vastly more software, Caldera is better integrated and has more corporate features and Corel, although immature, is the most user-friendly and Windows-like Linux around.

LIAM PROVEN

## DETAILS

★★★

**PRICE** £64 (£54.47 exVAT)

**CONTACT** Red Hat 01483 300169

<http://europe.redhat.com/>

**SYSTEM REQUIREMENTS** x86 processor with 16MB of RAM and 500MB of disk space

**PROS** Easier than ever; widely supported

**CONS** Poorer integration, features and user-friendliness than the competition

**OVERALL** Red Hat is the Linux baseline: if you’re already familiar with it, it’s still a sound choice, but other variants offer more

# Snap! Server 4000

If **capacity is your priority** and **complexity is not**, then this easy-to-configure server could be for you.

**T**he Quantum Snap! Server 2000 was the company's first tentative step into the world of Network Attached Storage. The Snap! Server 4000 reviewed here is a marked improvement over its predecessor and offers a huge 120GB of storage.

One of the main differences is its physical size and shape. Where the previous version would have looked more at home in the Tate Modern than the average small company, the 4000 is a simple 2U-high, rack-mountable box.

Setting up the hardware is very easy. Simply inserting the supplied CD into a Windows-based PC autoruns the Snap! Assist setup program. It then scans the network for any unconfigured servers – in our case via IPX – and when one is found a wizard is started to guide you through the rest of the configuration.

Configuration completes four tasks: naming the server, setting the administrator, setting the password, setting the time and date, and assigning an IP address. The Dynamic Host Configuration Protocol (DHCP) can be used to assign the address automatically.

Once this has been completed you can fire up the web management through a normal browser. The management interface, although it may not be to everyone's liking, does cover all the basic requirements. It initially comes across as a little simplistic, but, after you have delved into all the available modules, it becomes apparent that there is more there. From here you can set up the disk utilities as well as security and network settings.

Security was our only major bane with the product. By default, the Snap! 4000 is set up with no less than three administrator accounts – any of which can be used to access sensitive information and configuration options. Initially, the setup program sets them all with the same password, but later on in the game the same job would take three operations.

As a result we would advise you to remove two of the accounts and rename the third, as one administration account is all that's needed.

On top of this, when connecting to the management interface, all the usernames and passwords are sent across

the network as clear text. There is no option to change this and anyone with a readily downloadable packet sniffer could pick up passwords and compromise your security.

A better approach would have been to provide secure communication and a method for the administrator to change the TCP port – default web traffic runs on port 80 – that the interface runs on.

Thankfully, these are the only real issues we come across with the box. The 120GB of storage comes in the form of four 30GB drives, which allow for RAID 5 (striping with parity), RAID 0 (striping), RAID 1 (mirroring), or you could simply use each of the drives as standalone storage.

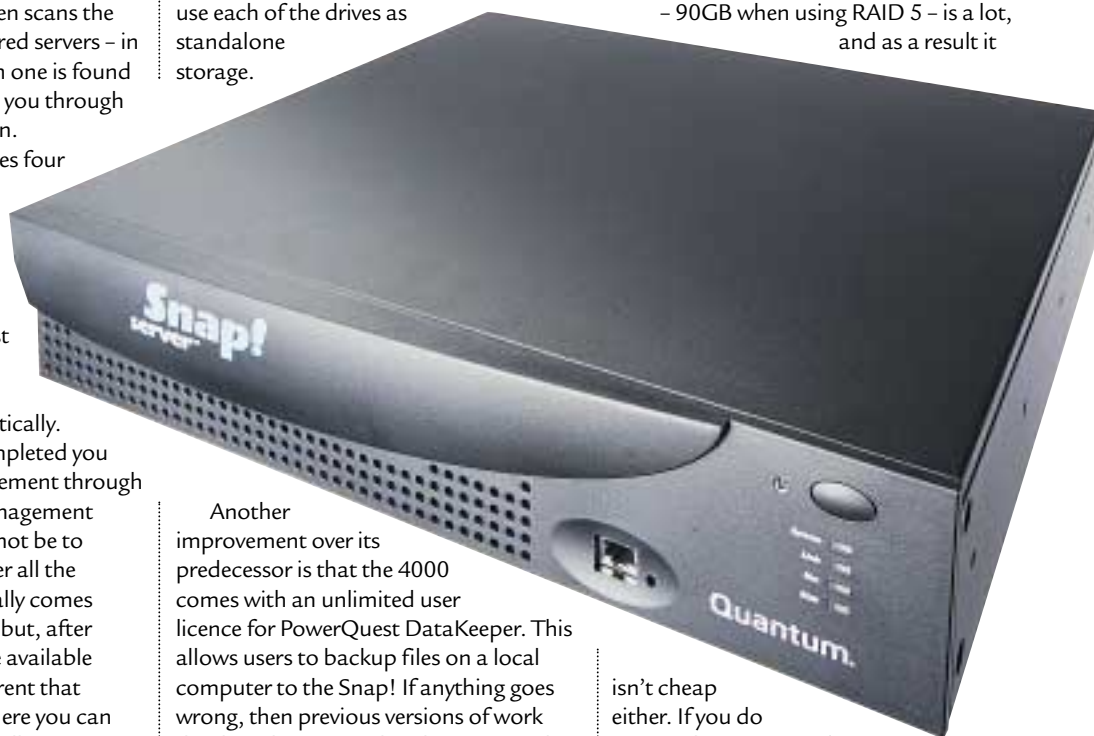
Another improvement over its predecessor is that the 4000 comes with an unlimited user licence for PowerQuest DataKeeper. This allows users to backup files on a local computer to the Snap! If anything goes wrong, then previous versions of work that have been stored and compressed will be available.

One of the main problems with networking, especially when you introduce new equipment, is keeping an up-to-date list of users. In this respect the Snap! Server does well and offers a number of approaches. An internal database allows you to input all your user information by hand, but, if you prefer, you can also import an NT Domain or a NetWare Server. Both of these approaches pass the authentication requests onto the relevant third party. With this you don't have to recreate users that already exist elsewhere on the network. Additionally, be aware that NetWare authentication works through Bindary, not NDS, so recent NetWare

installations could cause problems.

Whatever method you choose to adopt, the web interface is used to apply permissions to shares on the server. These permissions also work for users who access the server from a web browser. By entering their authentication details in a pop-up password box, users can gain access to their files, although only a method for downloading is provided. For security reasons Quantum does allow this option to be switched off.

The Snap! Server 4000 is a definite improvement over its predecessor, but depending on the size of your network it may seem like overkill. 120GB of storage – 90GB when using RAID 5 – is a lot, and as a result it



isn't cheap either. If you do require this amount of storage, but do not want the associated complexity then you could certainly do a lot worse.

DAVID RAE

## DETAILS

★★★

**PRICE** £3,873.98 (£3,297 ex VAT)

**CONTACT** Quantum 01344 353 500

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

**PROS** Simple and quick to install and manage; ability to import user detail; RAID capability

**CONS** Default security needs hardening

**OVERALL** If you need the space it's worth a look