reviews

This month sees the launch of the world's first **TWO-MEGAPIXEL DIGITAL CAMERA,** arriving in the *PCW* offices direct from Japan. It promises bigger photo-resolution printed results than ever before and poses a real challenge to traditional film cameras. Corel puts in an appearance this month, with a beta version of **DRAW 9,** the latest development in its successful graphics package. We also feature one of the UK's **FIRST REVIEWS** of the 3D graphics software, **BRYCE 4.**

A host of notebooks accompany three ground-breaking PCs: we take a look at the **PANRIX PENTIUM III XEON** workstation, contrasting with an upright flat-panel-and-computer-in-one from **AJP,** and a **£299 BARGAIN** that's just right for the home hobbyist. Web developers will be eager to see **HEADLINE STUDIO 2**, the simple way to generate online animated banners. And, if you're trying to decide whether you should opt for a fax machine or some snazzy software to do the same job from your PC, then be sure to check out this month's **HEAD TO HEAD** where we consider just that dilemma.

NIK RAWLINSON, REVIEWS EDITOR
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VNU European Labs

VNU Labs tests all kinds of hardware and software, from PCs to modems to databases. All our tests simulate real-world use and for the most part are based around industry-standard applications such as Word, Excel, PageMaker and Paradox. Our current PC tests for both Windows 95 and NT are the SYSmark tests from BAPCo. In all our performance graphs, larger bars mean better scores.

Contents

Ratings

★★★★★ **Highly recommended**
★★★★ **Great buy**
★★★ **Good buy**
★★ **Shop around**
★ **Not recommended**

Panrix PowerStation 500

A collossus of a system marketed as a server CPU and power workstation.

The launch of the Pentium III Xeon was inevitable. But the immediate question that sprang to mind when we heard of the launch was whether it would be much benefit. After all, the Xeon is intended as a server processor, and SSE (streaming SIMD instructions — the instruction set formerly known as KNI) does nothing for performance in that area. But Intel is now pushing the Xeon as a power workstation as well as a server CPU, and the PowerStation is an NT4 box aimed at this market.

If a system's quality was directly proportional to its size, we wouldn't have needed to switch the PowerStation on to give it the thumbs-up. The case is a huge full-tower affair with six 5.25in front panel drive bays, two of which are occupied by a Zip 100 and a Plextor 40-speed CD-ROM drive. Given its size, 3.5in drive bays are a little thin on the ground, with only two spaces free, but there are mounting points for extra drive cages.

The heart of the system is the SuperMicro S2DGU motherboard, a dual-processor-capable board sporting the 440GX AGP chipset with integrated Adaptec Ultra2 SCSI. Ultra2 uses an LVD (low voltage differential) interface, bolstering signal integrity to allow a maximum sustained data transfer rate of 80Mb/sec. Making the most of the interface is an 18Gb IBM UltraStar 18ZX hard disk, operating at 10,000rpm and replete with a 4Mb data buffer. This is a fast drive that also gets fairly warm, but Panrix has gone to town with cooling: the drive, mounted in a bay at the top rear of the case, is serviced by a row of three miniature fans. Cooling in general is not going to be a problem — there are a total of eight fans in the system.

Dominating the interior of the PowerStation is, of course, the PIII Xeon,

▼ **THE PANRIX POWERSTATION 500: A TOWER TO SELL YOUR GRANNY FOR**

a huge beast, the height of which can only just be accommodated while still being able to get the side of the case back on. The Xeon fitted is the 'entry level' 500MHz version with 512Kb cache running at core speed. PIII Xeons are also available with 1Mb and 2Mb cache, but these cost silly money and aren't viable for a workstation. Clock speeds are forever rising, of course, and by the time you read this, the 550MHz variant will be available. A single 256Mb SDRAM DIMM nestling in one of the board's four sockets completes the core components.

The PowerStation's graphics are catered for by an ATi Xpert 128 with 16Mb SDRAM. The Rage 128 chipset is currently the fastest viable 2D/3D chipset for a serious machine, since 3Dfx still hasn't managed to get a full OpenGL ICD out the door. The Xpert128 drives a Formac ProNitron 19/500 19in monitor, which is a rebadged Sony Trinitron unit. This gives excellent picture quality, but there was some ghosting at resolutions over 1024 x 768.

Occupying the PowerStation's PCI slots are a 3Com Fast Etherlink XL network adaptor, a Diamond V.90 PCI modem and a SoundBlaster PCI 128. The SoundBlaster drives two Yamaha YST-M15 speakers.

Software, apart from NT4 Workstation SP3 (with SP4 on the drive but not installed) is Lotus SmartSuite Millennium Edition.

Running our usual SYSmark 98 benchmarks produced a stunningly fast score of 227 for the PowerStation, 13 percent faster than the previous highest-scoring machine, the Dan 500MHz standard PIII reviewed in last month's *PCW*. The price of the PowerStation is one where competition from the likes of SGI's Intel boxes starts to become a factor, but this machine will be considerably faster than an SGI 320 (reviewed in the April issue) for computationally intensive applications, and more expandable to boot. As it is, the PowerStation is supremely fast and doesn't contain a single duff component. It doesn't have the looks of an SGI, but it's got it where it counts.

DAVID FEARON
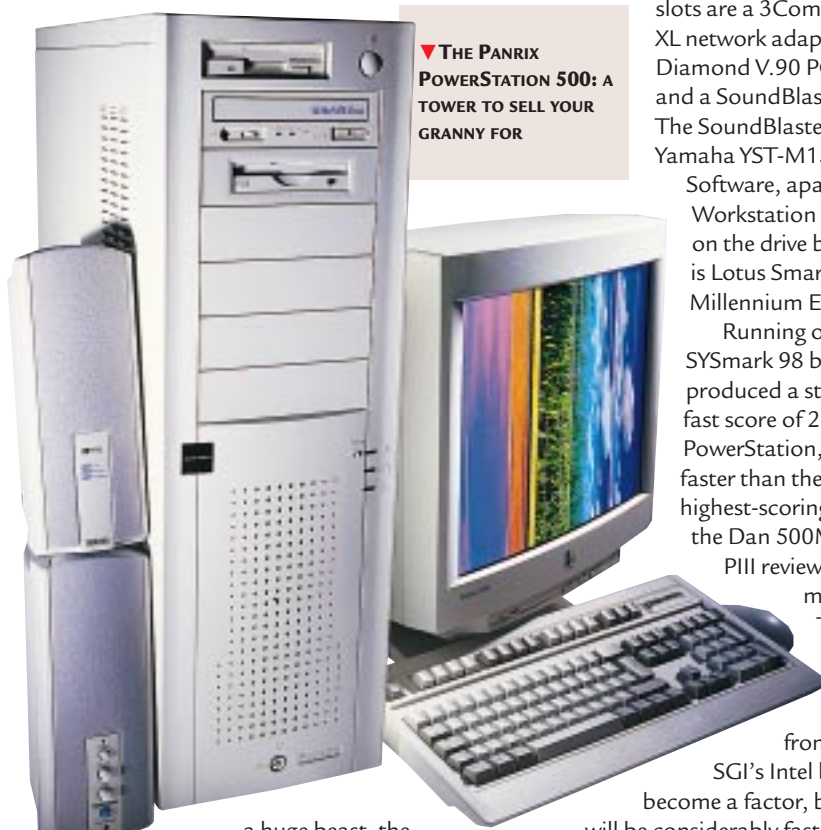
PCW DETAILS

★★★★

Price £3,935 (£3,349 ex VAT)
Contact Panrix 01132 444958
www.panrix.com
Good Points Extremely fast. Superb components. Excellent case.
Bad Points The PIII Xeon isn't the most cost-effective CPU.
Conclusion The PowerStation is stuffed with top-notch components, and performance speaks for itself. A workstation to sell your granny for.
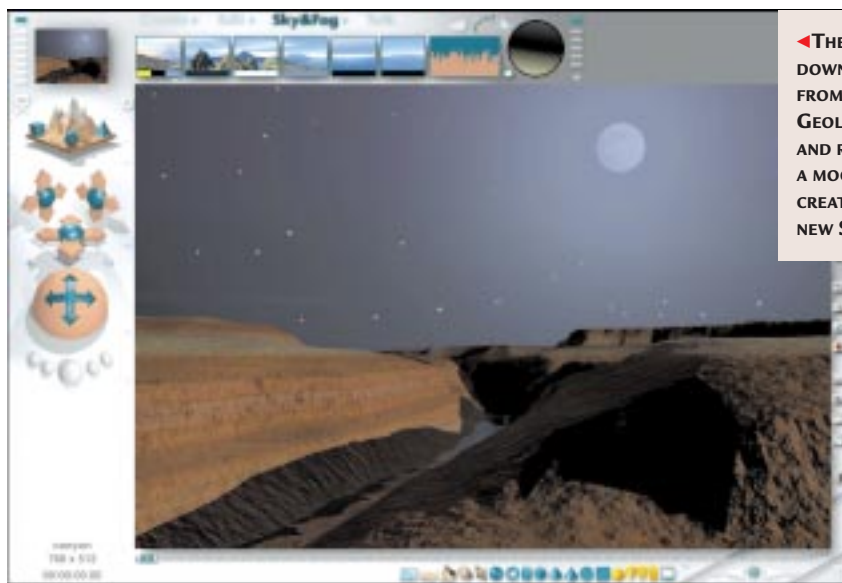
PERFORMANCE RESULTS

0	50	100	150	200	
SYSmark 98					227

BAPCo SYSmark Windows 98 test scores

Metacreations Bryce 4
3D graphics

The new Bryce boasts some innovative advances.

◄ **THE GRAND CANYON, DOWNLOADED DIRECT FROM THE US GEOLOGICAL SURVEY, AND RENDERED UNDER A MOONLIT SKY CREATED USING THE NEW SKYLAB**

With each new version of Bryce it becomes less distinguishable from other professional 3D graphics packages. However, even following a fourth upgrade it still retains a great deal of its distinctive (not to say peculiar) character.

The most significant technical enhancements are a Sky Lab for generating more sophisticated skies, a RaySpray, which allows you to render parts of a model using a spray-gun-type tool, a clever previewing system for checking animations before they are properly rendered, a more sophisticated fractal generator for creating a host of new and richer landscape geometries, and, perhaps to many users of earlier versions the most welcome addition, powerful support for importing and exporting files.

Looking at the last of these enhancements first, Bryce 4 now truly covers the field when it comes to offering ways of integrating with other software, and ways of publishing the content it generates. All the major 3D file formats are now supported: Lightwave, 3D Studio (the old 3DS format, but not the new MAX one), Truespace, VRML (version 1), AutoCad DXF and Wavefront. There is also exceptionally good support for internet publishing, including facilities for

outputting scenes in Metacreations' own 3D streaming format, Metastream, and animations in RealMovie format for playback using the RealPlayer.

There is also an import filter for US Geological Survey data files (Digital Elevation Maps, or DEM files). These are available for free from the USGS's web and ftp sites. The scene depicted here is based on a DEM for the Grand Canyon, which I downloaded from the USGS ftp server. (Sadly, the UK equivalent, Ordnance Survey, appears not to offer a similar service, at least not for free.)

The other new feature used to generate the image shown here was the Sky Lab. This allows you to do all sorts of things, such as add a star and even a comet field. You can position the sun or moon so it appears in the scene, give it a halo, and in the case of the moon decide its phase (whether new, half or full) and whether to make the surface visible.

The 'Rayspray' tool is fun but, it has to be said, a bit of a gimmick. You need a very powerful system in order to get much out of it; indeed, as with any 3D graphics package, you will find that all of Bryce's facilities make enormous demands on your hardware: the scene shown here took almost half an hour to render on a 300MHz Pentium II

system with 64Mb of RAM. A more significant enhancement is the new 'fractal noise' generator available in the Deep Terrain Editor (DTE). The DTE is a very powerful but complex tool and only devoted, indeed obsessive, Bryce users will ever master it. However, you can take advantage of the enhanced fractal generator via the new library of 20 preset terrain models that comes with Bryce. Indeed, Metacreations is as generous as ever in its supply of sample files and libraries. There is also extensive creative as well as technical support on the company's web site through a facility called BryceTalk.

Bryce is a big package, and some parts of it, such as Undo and Help, have failed to develop as fast as others. The texture editor is still too complex and there are inconsistencies creeping into what was a very elegant interface. But at the price (under £180), it remains an unbeatable 3D tool, offering something to the professional and amateur alike.

BENJAMIN WOOLLEY

PCW DETAILS

★★★★★

Price *£179 (£152.34 ex VAT)*
Contact *Computers Unlimited 0181 358 5857*
www.metacreations.com/products /bryce4
Good Points *Powerful, inexpensive, fun.*
Bad Points *Vastly improved interface. Excellent new features.*
Bad Points *Some facilities are now too primitive for a package this sophisticated.*
Conclusion *A great way to get into 3D.*
System Specification *Windows Pentium-class CPU, Windows 95/98/NT4 with Service Pack 3, 32Mb free RAM (64 Mb recommended,) 75Mb hard-disk space, CD-ROM, 16-bit graphics card. Power Mac Mac OS 7.1 or later, 32Mb free RAM (64Mb recommended), 75Mb hard-disk space, CD-ROM, 16-bit graphics card.*

RECOMMENDED
PERSONAL COMPUTER WORLD

PREVIEW

Toshiba Portégé 3020CT

Mobile computing moves forward with the feisty Portégé 3020CT.

As first impressions go, when we took the Portégé 3020CT out of its packaging, we thought we'd received a personal digital assistant (PDA) running Windows CE. How wrong we were. Not only is this feisty little number running the full Windows 98, but it also has a stunning set of vital statistics.

Measuring just 257x216x19.8mm and weighing only 1.32kg *with* its lithium-ion battery, you could forgive us for our initial error. When you consider that the HP Jornada 820 PDA is just a tad lighter and smaller with a much reduced screen, the cost implications of buying a fully functional notebook have to be overlooked. There are sacrifices for such a compact device, in that any removable-media drives will have to be plugged in externally to either the proprietary floppy drive connector or the supplied mini I/O port replicator. Toshiba also offers an optional PC Card CD-ROM drive to complete the colour co-ordination, but you're not forced to take this option if you have another external CD-ROM drive.

At the core of the Portégé is a mobile Pentium processor clocking at an impressive 300MHz, although there's only 32Mb of system memory. To be fair, this is not proposed as a desktop replacement, but it's not far off the capabilities of some of its contemporaries. Somehow, some way, Toshiba has managed to squeeze a 6.05Gb 2.5in EIDE hard disk inside, and with an average 13ms access time you'll observe no apparent performance concessions to your data transfer rates. All this power in such a small package must have taunted the designers when it came to considering heat dissipation issues on this prototype model. Although the chassis is constructed mainly of plastic, it does warm up to quite an alarming level.

Graphics are catered for admirably by NeoMagic's mobile MagicGraph 128XD chipset featuring 2Mb of video memory, powerful enough to externally display resolutions up to 1024 x 768 at a stable refresh of 75Hz. The Portégé's own display, although possessing only a native resolution of 800 x 600 with a 10.4in diagonal view, is bright and even across its whole surface. Even more impressive was that for a non-transflective design, its brightly contrasted image made outdoor use a perfectly viable option.

The sleek design has a fresh feel to its exterior, with a buffed silver-coloured metallic coating and discrete brand lettering. A long history of achievements in mobile computing, coupled with the splendour of inspired, quality design, has not been betrayed.

The tight keyboard is responsive and comfortable to use, with a subtle give to your strokes allowing for a flowed typing experience. There's even space in the design for resting your wrists. The pointing device has been reduced to a nipple in the middle of the keyboard that proved highly accurate in use. What seems unecessary, however, is the decision to place the left/right mouse buttons one above the other. You do quickly adapt to this, but there's just no reason to alienate this aspect of your practiced working habit.

Wherever there's a revealing piece of chassis space, the designers have attempted to place the oft-expected minimum notebook devices. Although there are still two PCMCIA slots, their forced positioning to either side of the notebook means no support for the older Type III PC Cards. One USB port, an infra-red port, microphone and headphone connectors with a useful front-mounted volume control complete the internally constructed features. A serial, parallel, PS/2 and external VGA connector feature on the mini I/O port replicator.

As this is an engineering sample, the performance result is just a guide to what can be achieved by this marvellous product. And with memory expansion up to a possible 96Mb, whatever the finely-tuned final version kicks out, you'll still have room for improvement.

IAN ROBSON

PCW DETAILS

★★★★★

Price £1874.12 (£1595 ex VAT)
Contact Toshiba Information Systems 01932 828828
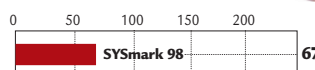*www.toshiba.co.uk/computers*
Good Points Huge hard disk. Excellent display.
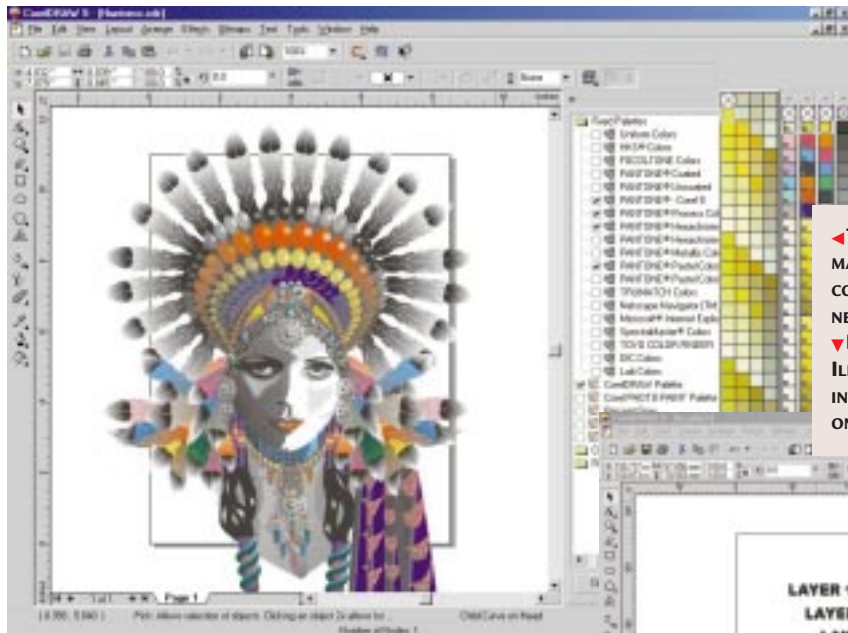**Bad Points** All removable media drives external.
Conclusion Toshiba has proved yet again that producing a sub-notebook needn't be at the expense of practical usage.

PERFORMANCE RESULTS

	0	50	100	150	200	
SYSmark 98						67

CorelDraw 9

**A significant upgrade to draw in graphics professionals who only had eyes for Adobe.**

test PSD and imported the five-layered file as a group of six objects, each individually editable.

The interactive fill tool now works in the same way as Draw 9's other interactive tools. You can drag a colour

◄ THE WIDESPREAD INTRODUCTION OF DOCKERS MAKES FOR A LESS CLUTTERED SCREEN. MULTIPLE COLOUR PALETTES CAN BE EXPANDED FOR USE AS YOU NEED THEM

▼ DRAW 9 ALLOWS YOU TO IMPORT AND EXPORT ILLUSTRATOR AND PHOTOSHOP FILES WITH LAYERS INTACT. HERE, A FILTER EFFECT HAS BEEN APPLIED TO ONE LAYER OF A PHOTOSHOP BITMAP
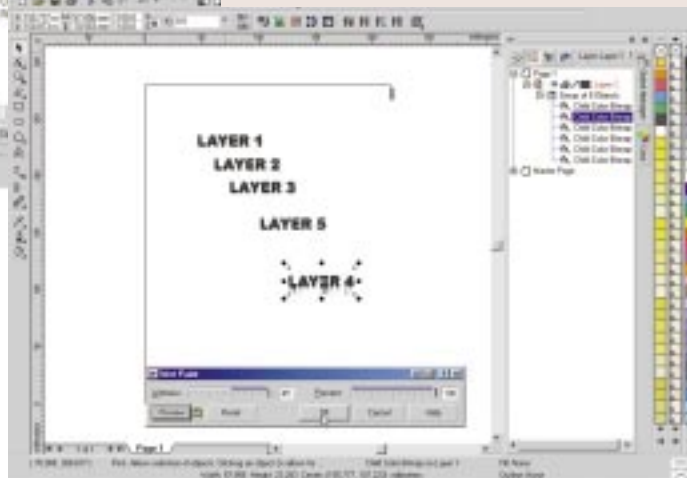
CorelDraw was first released ten years ago, which means that we've had roughly one upgrade a year for the last decade. Corel could never be accused of slacking in the R&D department. The first version of Draw most people remember, 3, was released in 1992. 1995 brought the 32-bit version 6 and 1998 marked the company's inauspicious entry into the Mac market with a PowerPC version of Draw.

CorelDraw 9 is a major step forward. It includes several big new features which, combined with productivity and performance enhancements, make for a significant upgrade. With this new version, Corel aims to make Draw more attractive to graphics professionals (who are mostly currently using Illustrator or FreeHand) by bringing its feature set up to date, extending file compatibility and improving pre-press output options and electronic publishing features. The PC and MacOS version now share a common interface and, according to Corel, code, though the Mac version won't see the light of day until late summer.

Corel has concentrated a good deal of effort on making Draw a more attractive proposition to users of its competitors' products and, it seems, has its sights set primarily on Adobe. True, Adobe products comprise a small fraction of the 70 import and 40 export filters now included. But the ability to import Illustrator documents complete with layers, edit them and re-export them in Illustrator format counts for a lot. It's also promising default workspace configurations, including one that will look more than familiar to Illustrator users. Corel has some more work to do before this promise is fulfilled, however. Of a sample selection of five Illustrator documents, the beta failed to open two at all and, while it imported the layers in the remaining three, flattened all the elements onto one of them.

It doesn't stop with vector formats. You can import a PhotoShop PSD, layers intact, edit and export, though why you might want to do this is less clear. In any case Draw 9 had no problem with our

Corel has clearly been keeping a close eye on developments at Adobe

from the colour palette directly to the foreground or background handles in the dialogue to change the foreground or background colour of a pattern fill. Drag-and-drop colour functionality has been generally extended. You can, say, drag colours from the colour palette onto layers in the object manager and to guides. Guides can be individually coloured, so you could specify red for cutting guides, blue for folds.

The few remaining roll-ups still in existence have been replaced by dockers. The colour roll-up is now a docker, as are all the colour palettes. There are dockers for just about everything, from the new natural media drawing tools to lens effects and transformation tools. This completely eradicates palette clutter and provides fairly instantaneous access.

To further free up screen space you can replace the title bar on docker windows with a slimmed down 'gripper bar' and select the object manager's

Layer Only View mode which dispenses with all the ancillary information and shows layers only.

Top of the list of productivity enhancements must be the adoption of Microsoft's Visual Basic for Applications (VBA) 6.0. Although CorelScript is still included, VBA's superior features for automation of common tasks and customisation will surely mark the end for CorelScript.

One of Corel's main aims with version 9 is to increase its appeal to professional users and, to this end, a number of features have been introduced. Envoy has finally been abandoned and Adobe's Acrobat portable document format embraced. You can create a PDF directly from Draw 9 without the need to first print a PostScript file to disk and run it through Acrobat Distiller.

Draw 9 offers similar text and font options as well as image compression controls that Distiller users will be familiar with. Also, you can choose to create bookmarks and thumbnails, include hyperlinks created in the object properties dialogue and create job tickets detailing pre-press output requirements. There are also three PDF 'style' default settings for producing PDF optimised for pre-press, web and document distribution.

Draw's already excellent printing facilities have been further improved, primarily by the addition of 'preflight' error checking of the sort now commonplace in page layout software. The document is analysed and potential problems, such as missing fonts, incorrect trapping, incorrectly specified colours and other print-related issues are brought to your attention, saving time and money otherwise wasted on a worthless set of films and colour proofs.

The Prepare For Service Bureau wizard now collects fonts, linked pictures and any other files a service bureau is likely to need to output your file. Other print enhancements include more flexible imposition layout, print multiple documents, downsample bitmap images, rasterise page and an enhanced duplexing wizard. It says something for
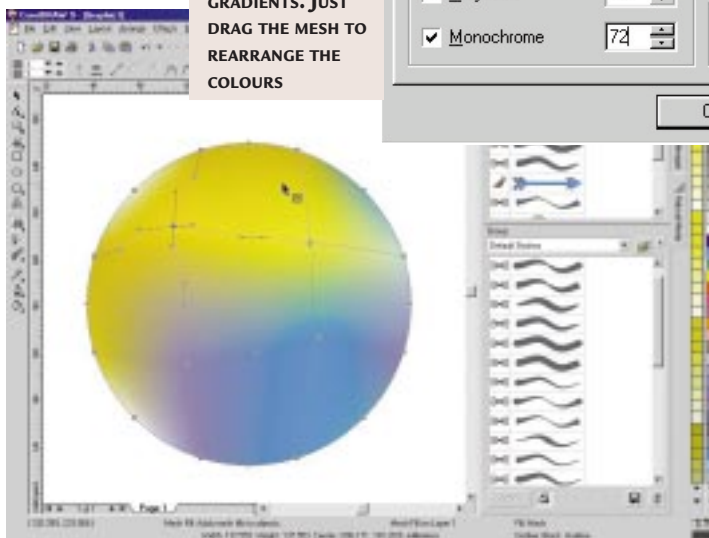
Corel that the company has gone to such lengths to improve on features that the competition doesn't have to begin with. They, of course, would counter that as most vector graphics are destined for a page layout application, that's where you need the output options. It would be a fair point if most layout packages offered this level of output control. They don't.

As for the introduction of groundbreaking creative tools, once again Corel has clearly been keeping a close eye on developments at Adobe. The biggest difference between Draw's new mesh fill tool and the Adobe equivalent which is new to the recently launched Illustrator 8 is that the latter is preceded by the word 'gradient'. In every other respect they are virtually identical. Meshes are basically complex gradient fills. You can define points of colour on a flexible grid or mesh and, by editing the nodes at the grid intersection, control the way in which one colour blends into its neighbour. In this way, it's possible to build up natural-looking airbrush effects.

Convert Outlines To Object allows you to convert an outline path to an object which can then be filled. As well as creating special line fills, this feature can be quite useful for the manual

trapping of complex objects. Draw's natural media tool produces paint-style effects to stroked paths using prests, brushes and calligraphic effects. Brushes closely mimic Illustrator's artistic brushes and allow you to apply any object to a path. You can define a flower as a brush and 'paint' a number of paths all with slightly varied curves and direction to create a bunch of flowers consisting of a collection of unique blooms. Although the beta collection of brushes was restricted to a wide selection of calligraphic strokes and one arrow, in practice it works well and the brush library will no doubt be extended.

As usual Corel has done everything necessary, and more, to ensure that Draw is a match for the competition. Existing users will be delighted and the first-time-buyer market is now a three-horse race. It remains to be seen if Corel can, as is quite clearly its intention, persuade Illustrator and FreeHand users to defect.

KEN MCMAHON

PCW DETAILS

★★★★
Price £464.13 (£395 ex VAT); £299 u/g
Contact Corel 0800 581028
www.corel.com
System Specification Windows 95/98/NT4.0, P133, 32Mb RAM, 100Mb hard-disk space, 2X CD-ROM.
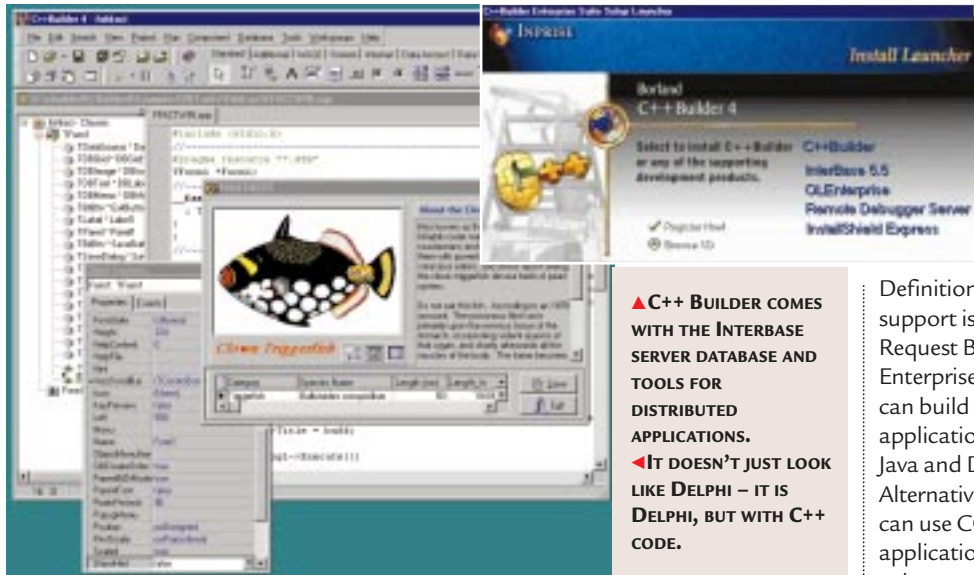**Good Points** Vastly improved interface. Excellent new features.
Bad Points Follows where Adobe leads.
Conclusion A big jump up from 8 and well worth the move.

C++ Builder 4

A visual development tool with some significant enhancements.

▲**C++ Builder comes with the Interbase server database and tools for distributed applications.**
◄**It doesn't just look like Delphi – it is Delphi, but with C++ code.**

C++ Builder is a visual development tool from Inprise Corporation, or should that be Borland? If you are not confused, you should be. The company once known as Borland renamed itself Inprise, to reflect a change in focus away from mass-market Windows development tools and towards cross-platform enterprise systems commanding high deployment fees. Last February it remembered that those mass-market tools are its best and most profitable products, and revived the Borland name as a separate group, borland.com. So this is Borland C++ Builder, copyright Inprise Corporation.

The main use of C++ Builder is as a general-purpose RAD (Rapid Application Development) tool with the same visual form builder as Delphi, but using C++ rather than Pascal. More precisely, the VCL (Visual Component Library) in C++ Builder is the same as in Delphi, written in Pascal, but with clever trickery that lets you program the components as if they were C++. As a bonus, third-party add-ons designed for Delphi adapt easily to C++ Builder. You can even write Pascal units within C++ Builder, as Delphi and C++ Builder share the same compiler.

No surprise, then, that many of the new features in C++ Builder are the same

as those in Delphi 4.0. New action list components let you centralise the management of menu and toolbar items. There is new support for data-bound ActiveX controls, events in automation objects, and service applications for Windows NT. The updated BDE (Borland Database Engine) has support for Access 97 and, in the Enterprise version, Oracle 8. Together these add up to significant enhancements that keep C++ Builder up to date. Other new features are solely for C++ developers. One significant change is that the default data alignment has changed from 4 bytes to 8 bytes. This affects the size of structures and classes, and has been done solely for better compatibility with Visual C++, at the expense of worse compatibility with libraries compiled with old versions of C++ Builder. Other changes to the compiler, linker and runtime library have the same goal, and to underline the point a Visual C++ to C++ Builder project converter is included. Note that this will not covert a project to use the VCL; it merely enables you to edit and compile a Visual C++ project in C++ Builder. There is support for MFC (Microsoft Foundation Classes) and even an MFC project wizard, but if you choose this route you're on your own with the code editor thereafter.

> ## *The new debugger can do remote and multiple process debugging*

C++ Builder is also a tool for building distributed applications through COM or CORBA, although for this you need the high-end Enterprise edition. There are project wizards for CORBA clients, servers, and IDL (Interface Definition Language) files. Key to this support is the Visibroker ORB (Object Request Broker), bundled with the Enterprise version. Using CORBA, you can build cross-platform distributed applications that communicate with Java and Delphi clients and servers. Alternatively, Windows developers can use COM to create distributed applications. Here, the most significant enhancement is specific support for MTS (Microsoft Transaction Server), an essential part of robust, scaleable COM-based applications. The new debugger can do remote and multiple process debugging, ideal for distributed projects.

The two obvious competitors to C++ Builder are Delphi and Microsoft Visual C++. Delphi uses a different language, but in most respects is a little ahead of C++Builder, easier to learn and with faster compilation. There are still good reasons to use C++ Builder, either because you prefer the language, or to take advantage of C++ libraries, including MFC. Visual C++ is harder to compare directly. For productivity, C++ Builder easily comes off best, but then, Visual C++ does not pretend to be a RAD tool.

Tim Anderson

PCW DETAILS

★★★★

Price *Standard £99.00 (£84.26 ex VAT) Professional £527.57 (£449.00 ex VAT) Enterprise £1,996.33 (£1,699 ex VAT)*
Contact *Borland/Inprise 0800 454065 www.borland.com*
Good Points *Fast visual application building. Fast compilation. Supports both COM and CORBA.*
Bad Points *Uses Pascal for its component library. Visual C++ is better for MFC work.*
Conclusion *The best RAD tool for C++ developers, and ideal for those learning the language.*
System Specification *Pentium 90 or higher, 32Mb, Windows 95/98 or NT 4.0.*

Canon BJC 6000

A good office worker.

Canon is one of the big names in colour inkjet printing, but it has always lagged behind rival Epson in terms of resolution. It aims to close the gap with the BJC 6000, which can achieve a maximum resolution of 1440dpi. It has also added optional six-colour printing to improve output quality, and claims print speeds of 8ppm mono and 5ppm colour.

The first thing to note is that the BJC 6000 can only achieve a print resolution of 1440dpi using a standard colour cartridge, which means that if you want hi-res printing, you'll have to stick to four colours. If you want the two extra shades offered by the photo colour cartridge, the maximum resolution is 720dpi.

Each of the inks within the cartridges is stored in a separate tank, so you can replace colours individually, which is more economical than

swapping out the whole cartridge when one colour is exhausted. However, if you do opt for six-colour printing, you'll find that the black ink tank is very small and runs out fast.

As far as print speed is concerned, Canon's estimates are as exaggerated as we've come to expect from inkjet printer manufacturers: in our tests, we found we could only output 1.7ppm of text and it took about 16 minutes for an A4 colour photo at maximum resolution on special paper.

To be fair, speed is not the essence of colour printing, but on standard paper print quality was nothing special either; there is severe grey banding on our all-black output and colours are less than vibrant. If you're prepared to splash out 60p per sheet for glossy paper, you do get better results, with vivid colours and realistic skin tones.

The BJC 6000 is fully networkable,

and an optional Axis PrintPoint 140 BJC print server allows the whole office to share the printer.

URSULA TOLAINI

PCW DETAILS

★★★★

Price £251 (£213.62 ex VAT)
Contact Canon 0181 773 6000
www.canon.co.uk
Good Points *Maximum resolution of 1440dpi. Six-colour printing*
Bad Points *Limited black ink capacity in photo cartridge. Poor results on plain paper.*
Conclusion *A good choice for an above average quality office printer, but for the best-quality results Epson's printers still win hands down.*

Canon BJC 4400 Photo

Photoprinting without breaking the bank.

As the name suggests, the Canon BJC 4400 Photo is designed to print out photographs. It comes bundled with MGI's photo editing software PhotoSuite II, a sample of Canon's glossy paper and a photo ink

cartridge, to offer a low-cost entry to photo printing.

It offers a maximum resolution of 720x360dpi, but it's also a lot cheaper than most high-resolution inkjet printers. The photo ink cartridge sticks with the four standard colours — cyan, magenta, yellow and black — but uses special low-density inks which allow the printer the vary the height of the dots of ink to offer improved shading. Canon also claims that its Drop Modulation Technology, used in all its new printers to vary dot size, produces sharper images.

In terms of ease of use, it's irritating to have to swap out the standard cartridge for the photo version each time you want to print a photograph, but the proof of a printer is in the output quality. On standard paper the 4400 is unimpressive, but results did perk up when we swapped over to special paper. We did find a bit of horizontal banding on our A4 colour photo on glossy paper, and there was some discolouration at the bottom of the

page, where each ink appeared to have separated out, but overall colours are bright and clear and skin tones lifelike.

Text printing was particularly impressive and the solid block of black was really good, with no evidence of banding. It managed to print 1.86ppm of text and took 10 minutes per page for an A4 colour photo on special paper. One nice extra is the ability to turn the 4400 into a 360dpi scanner by slotting in an optional IS-22 scanner cartridge.

URSULA TOLAINI

PCW DETAILS

★★★

Price £175 (£148.94 ex VAT)
Contact Canon 0181 773 6000
www.canon.co.uk
Good Points *Low-cost photo printing. Good-quality printing on special paper.*
Bad Points *Needs glossy paper for best results. Have to swap cartridges for photo printing.*
Conclusion *If you're looking for a cheap way to print out photos, the BJC 4400 Photo certainly offers a good deal, but you'll have to spend a bit more for top-quality results.*

AJP NeoPC

A space-saving flatpanel computer that's easy on the eye.

The NeoPC from AJP is only the second flatpanel computer we've seen here at *PCW* this year, and although very different from the MultiQ reviewed in January's issue, you can definitely see the concept taking off once the manufacturers get it right. Already, the AJP is not far off.

Falling halfway between a desktop and a laptop, the NeoPC is an upright box with a 15.1in TFT (Thin Film Transistor) screen bolted to the front. Initially, due to the high price and top specification, the NeoPC is likely to appeal to trend-conscious executives who want to save a bit of space (while impressing the colleagues) and salespeople who need a bit more power in their presentations.

Although there is a sturdy handle built into the top of the box, the unit is too heavy to carry around for more than a short time and requires that the keyboard and mouse be carried separately, although it's still much more mobile than a desktop.

The unit sent in for testing came with a Pentium III 500MHz processor, 128Mb of RAM and a fast 10Gb hard drive, so it's no wonder it beat the MultiQ by a long shot with a SYSmark 98 rating of 192. 3D graphics performance was healthy too, scoring 1036 3DMarks thanks to the supplied ATi Rage LT Pro AGP 2X chipset. The Rage Pro won't give you the full OpenGL experience just yet (the beta OpenGL drivers made the benchmarks crash), but it will handle most mainstream 3D applications brilliantly.

The immediate benefit of the flatpanel is that you suddenly find twice as much space on the average desk, but it's also worth pointing out that the quality of the screen is superb and is much better for your eyes in the long term than the traditional CRT (Cathode Ray Tube) monitor. The viewing angle isn't bad either, making the NeoPC ideal for presentations.

The graphics card comes with 4Mb of memory, allowing a resolution of 1024 x 768 with 16 million colours, and an external monitor can be used simultaneously at 1280 x 1024 with 24-bit colour. Sound is supplied by a SoundBlaster Pro compatible PCI sound card with 3D sound features, although the built-in speakers let the side down. The inclusion of volume up and down buttons on the front of the unit is a convenient bonus.

Unfortunately, the model shipped to us came with a poor-quality Cherry keyboard and an even worse Microsoft mouse that had a very flimsy feel to it. It would be a good idea to go for the optional wireless keyboard, as the power button and volume controls on the NeoPC are located just underneath the screen and just above the keyboard, making access to them quite difficult. The wireless keyboard communicates with the NeoPC via an infra-red port located near these buttons.

To get all the components of a desktop into the little box behind the screen, AJP has borrowed from laptop technology, with the added bonus that the NeoPC has convenient features such as full power management and PC Card slots. Although PC Card peripherals will be more expensive than their desktop counterparts, the mobility benefits and the added expansion opportunities are bound to suit the market that the NeoPC will initially be targetting.

As well as PC Card slots, there is one shared PCI/ISA expansion slot. And coupled with all this expansion potential, there is a full complement of ports at the rear of the unit, covered by a plastic strip, including serial, parallel, USB, PS/2 keyboard and mouse, and gameport. The test unit also came with an RJ-45 network port.

The NeoPC really does live up to AJP's moniker of 'The Next Generation Desktop'
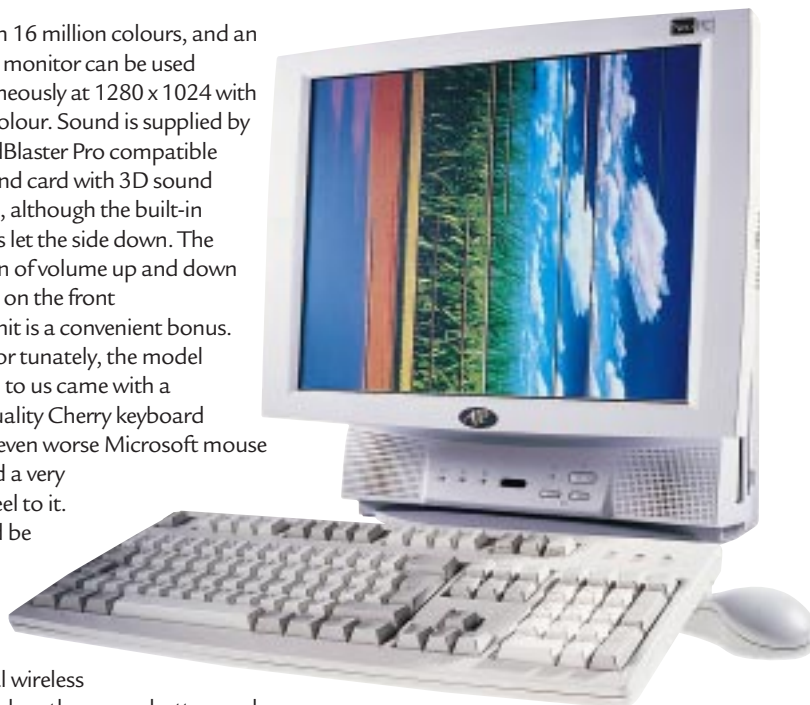
The NeoPC really does live up to AJP's moniker of 'The Next Generation Desktop'. Although initially pricey, it's easy to see the design catching on. Flat screens are slowly replacing CRT monitors in the mainstream, and AJP's use of PC Card slots, an IR port and USB ports means that this computer will still be useful a few years down the line.

BARRY DE LA ROSA

PCW DETAILS

★★★★

Price £2,206.65 (£1,878 ex VAT)
Contact AJP 0181 208 9744
www.ajp.co.uk
Good Points *Powerful, with plenty of features and an excellent screen.*
Bad Points *Buttons hard to access. Poor keyboard and mouse.*
Conclusion *A space-saving computer that's easy to move around, offering the power of a desktop with the convenience of a laptop.*

PERFORMANCE RESULTS

	0	50	100	150	200	
SYSmark 98						**192**

	0	500	1000	1500	2000	
3DMark						**1036**
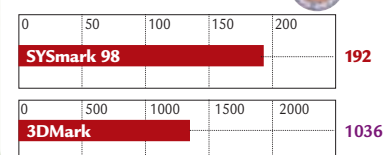
TMC TI5VGF (v1.0) cache

PCI proves itself on this PC99-compliant motherboard.

Taking full advantage of the PC99 guidelines, TMC has dropped all the ISA slots on its TI5VGF (v1.0) Socket 7 motherboard in favour of six PCI bus slots on a standard ATX form factor board.

Adopting the faster PCI peripheral card alternatives is one advantage. As if to rub salt into ISA's wounds, you will also be able to take advantage of PCI's advanced resourcing support through the OS.

Most peripheral cards will require the allocation of one of 16 interrupt requests (IRQs), rather like priority channels to the processor, to get attention when they want to do something. The motherboard's integrated circuitry alone can take up over half the available IRQs, with more complex peripheral cards taking two. Whereas ISA peripheral cards would snatch an IRQ and keep it to themselves, the OS can adopt PCI steering that allows for the sharing of IRQs between PCI devices.

Another striking feature is a whopping 2Mb onboard cache running at the same speed as the system bus, although AMD's K6-2 series of processors will make little use of this with their own processor-packaged Level 2 cache.

With the release of the K6-III, it's a whole new ball game. The core speed Level 2 cache re-enables the functionality of the motherboard cache through Tri-Level support, in essence turning it into a Level 3 cache. Performance improvements of almost 15 percent can be seen when the onboard cache is enabled via the BIOS — much more than the reserved claims made by AMD. With three DIMM slots, DIP switches for personalised settings and the welcome return of low-level formatting through the BIOS software, TMC hasn't shirked its responsibilities elsewhere, either.

IAN ROBSON

PCW DETAILS

★★★★★

Price *£93.99 (£79.99 ex VAT)*
Contact *TMC Technology (UK)*
01438 842305
www.tmc-uk.com
Good Points *Performance boosting 2Mb on-board cache.*
Bad Points *Installation instructions unclear.*
Conclusion *Performance-hungry users won't be disappointed with this quality build and innovative design.*

RECOMMENDED
PERSONAL COMPUTER WORLD

Toshiba Satellite 2520CDT

A sturdy, well-equipped notebook for those in need of retail therapy.

Toshiba's Satellite 2520CDT has been developed as an entry-level model particularly for consumers likely to purchase through the retail channel. While sharing many of the design aspects of the other Satellite models, this machine is not dockable, but is still considered a complete solution for the home business or small office user. Processing power, courtesy of AMD's 300MHz K6-2, is slightly let down by the standard supply of 32Mb system memory. The 2520 caters for a maximum of 160Mb RAM and in our review machine the standard quota was doubled to 64Mb, allowing it to attain far more acceptable levels of performance, although with a mere 2Mb video memory it is never likely to find much of a role as a desktop replacement. That said, its S3 Virge M5 graphics sub-system is capable of supporting external interlaced displays at resolutions up to 1280 x 1024, refreshing at 60Hz simultaneously with its own internal display. This is at the much-reduced 256-colour support, but for simple presentations it's still quite a tempting feature.

A 12.1in colour TFT screen with a native resolution of 800 x 600 is housed in an extremely sturdy plastic casing. Image quality is remarkably good, with a bright and even display across its whole surface. The rest of the chassis is also built to industry standards. The reassuringly thick plastic shell is likely to withstand the more sluggish user. It still manages to retain some of its sleek curves, and one eye-catching feature is the integrated speakers, located above the full keyboard. These managed to reproduce quite acceptable resonance for their size. Completing the minimum user requirements is a 4.03Gb hard disk, a 24X CD-ROM drive, a floppy drive and all the usual I/O ports, which includes one infra-red and one USB. An innovative touch was to include a built-in 56Kbps modem, leaving the two PC Card slots free for other peripheral device use.

IAN ROBSON

PCW DETAILS

★★★★

Price *£1,495 (£1,272.34 ex VAT)*
Contact *Toshiba Information Systems*
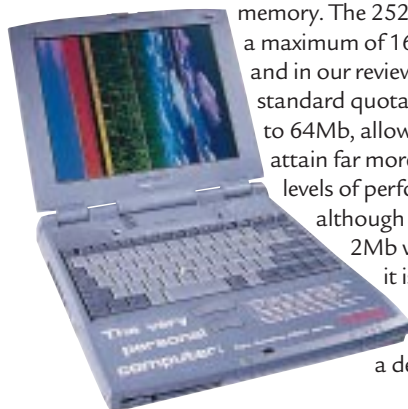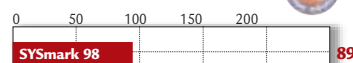*01932 828828*
www.toshiba.co.uk/computers
Good Points *Sturdy build. Built-in modem.*
Bad Points *Standard supplied memory quota needs boosting.*
Conclusion *A fully-equipped and sturdily built notebook that will serve its purpose quite admirably.*

PERFORMANCE RESULTS

0	50	100	150	200	
SYSmark 98					89

Route 66 Britain 99

Get your kicks with this user-friendly route planning package.

The tag line on the box reads 'From Street to Street' and this highlights one of Route 66's many assets — the ability to roll your mouse across roads and even small residential streets, and to have the road highlighted and the name displayed.

Route 66 is very easy to use. With the Waypoints tool, users need only click on the origin and destination of their journey. A more powerful form-based interface allows the user to specify a number of destinations and select whether they are travelling by lorry or car. This approach also gives options for calculating the fastest, shortest, cheapest or most economical route ('cheapest' considers wear and tear on the car; 'most economical' only considers petrol costs). It also allows users to specify whether the multiple destinations should be visited in the order selected or the most efficient order. By selecting the Distance tool and a point on the map, moving the pointer around the screen will then continuously measure and update the distance between the pointer and the original location. This is an as-the-crow-flies measurement rather than the distance you would have to travel to make the same journey by road. Route 66 will show detailed directions that can be printed. Roundabout descriptions are a little confusing: 'turn 2/4 on roundabout' means take the second exit. 'Second exit' would have been easier to comprehend. Business users should appreciate this package, however, while day trippers will enjoy planning routes to different places of interest, including a rather mysterious 'Buckingham Palast'.

NIK RAWLINSON

PCW DETAILS

★★★★

Price £49.95 (£42.51 ex VAT)
Contact Route 66; 00 31 318 64 55 69 (Netherlands) www.route66.nl
Good Points Easy to use. Very detailed.
Bad Points Directions could be clearer.
Conclusion A useful product at a reasonable price.

Pico Mini-Note

Another entrant in the busy 'small' notebook market.

The introduction of the Toshiba Libretto helped to redefine the concept of 'small' in the notebook market. Since then, this segment has seen a flurry of similar products. The Pico Mini-Note is the latest entrant. Weighing less than 1.5kg, the Mini-Note has a 10.4in TFT screen which is quite adequate for regular office work. It supports a maximum optimum resolution of 1024 x 600. The screen is not very bright, however, which might pose a problem in brightly-lit environments.

The keyboard, despite its small size, is quite easy to use and responsive, but the nipple controlling the mouse is not so user-friendly. Although the internal components of the Pico Mini-Note are generally not easy to upgrade, the hard drive can nonetheless be accessed by removing a screw at the bottom of the case. Pico does, however, offer various optional component upgrades at the time of purchase. The Mini-Note is powered by a 266MHz Pentium II, has 64Mb of RAM and a 4Gb internal hard drive. The 24X CD-ROM is connected through a PC Card slot that can alternatively accommodate a modem, and a separate floppy drive is connected through the parallel port. The Silicon Motion Lynx graphics adapter provides a good 2D display.

Despite the small form factor of the Pico Mini-Note, heat is not a problem. Neither the underside of the notebook nor the screen becomes uncomfortably hot even after prolonged use.

Performance of this notebook isn't quite earth shattering, but should suit most business-application users.

AJITH RAM

PCW DETAILS

★★★★

Price £1,181.57 (£1,005 ex VAT)
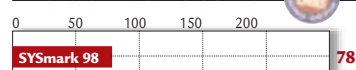**Contact** Pico 01483 402111 www.picodirect.co.uk
Good Points Low price. Good performance. Small size. Responsive keyboard.
Bad Points Performance is not optimum due to a fairly run-of-the-mill processor.
Conclusion A small but versatile notebook that's worth looking at.

PERFORMANCE RESULTS

	0	50	100	150	200	
SYSmark 98						78

Backpack CD-Rewriter

A 4X parallel port CD-Rewriter with flexibility and versatility.

External storage for backup purposes is a must-have, and the advantage of using a CD-Rewriter, such as the Backpack CD-Rewriter from MicroSolutions, is that you can back-up data and make compilations of your favourite music CDs as well. There are a number of CD-Rewriters on the market, many of which use a SCSI interface, which may leave you wondering why you would want to buy a parallel port CD-Rewriter when surely a SCSI connection would be better for fast data transfer?

MicroSolutions has come up with a new controller chip to solve the speed problem. The company claims that this will allow a 650Mb CD to be created in 20 minutes. But when we tried it out using the supplied Easy CD Creator software, a 650Mb CD took 40 minutes

on a Pentium II 350MHz with 64Mb SDRAM. Still, even compared to SCSI CD-RWs, that's not to be sniffed at.

The new controller does allow the Backpack to write at 4X on nearly any Pentium-based PC or notebook with a standard EPP/ECP port. It will rewrite at 2X and read CD-ROMs at 6X. As it makes use of DMA for transfers through the parallel port, it doesn't tie up the CPU as much — useful if you want to carry on working while creating a CD.

There are advantages in not being tied to an expansion card, but the Backpack is really too heavy and bulky to be very portable. Half-size drives are on the production line, however. The software bundle includes Direct CD and Easy CD Creator.

LYNLEY ORAM

PCW DETAILS

★★★★

Price *£390 (£331.91 ex VAT)*
Contact *MicroSolutions*
001 815 756 3411
www.micro-solutions.com
Good Points *External. No expansion card required. Compatible even with a wide range of Pentium-based PCs and notebooks.*
Bad Points *Not as fast as it claims. Poorly documented and structured installation routine.*
Conclusion *As a removable storage option, it is flexible and versatile, and as a bonus you can make your own music CDs.*

Hi-Grade Notino AS7400

Heavyweight notebook provides a worthy desktop replacement.

The first thing you notice is that this 366MHZ mobile PII notebook is large and heavy. The pay-off, though, is that it's a true desktop replacement. A Matsushita DVD-ROM drive should keep you happy, and the TV-out sockets mean you're not forced to watch it on the 14.1in TFT XGA display with a 1024 x 768 native resolution. This is driven by a Rage LT Pro AGP x2 graphics chip with 4Mb SGRAM memory and hardware DVD MPEG-2 playback. Storage is handled by a generous 6Gb IDE drive, while the 96Mb RAM should see most users satisfied for at least the next couple of

years. If you feel the need, it can be expanded to a maximum of 288Mb. Lotus SmartSuite Millennium is pre-installed, and a DataFax modem is supplied in the form of a 56K V.90 PCMCIA card in one of two available slots.

A nice touch is the IR ports on both the front and the back of the unit, making access easy without forcing the user to turn the machine around. All jacks for sound input and output can be found clustered together to the left of the machine, while a flap to the rear conceals the usual serial, parallel, USB and external monitor ports. This also hides the docking port (a sliding door gives access without the need to flip the flap). The keyboard incorporated a euro key but was a little

disappointing, giving little in the way of feedback. Overall, though, we were impressed.

NIK RAWLINSON

PCW DETAILS

★★★★

Price *£2,348.83 (£1,999 ex VAT)*
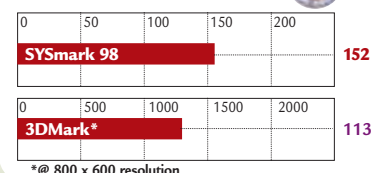**Contact** *Hi-Grade 0181 532 6100*
www.higrade.com
Good Points *Hardware DVD decoding. Fairly fast for a notebook.*
Bad Points *Disappointing keyboard. Heavy. Could not achieve desired resolution for graphics tests.*
Conclusion *A worthy desktop replacement.*

PERFORMANCE RESULTS

	0	50	100	150	200	
SYSmark 98						**152**

	0	500	1000	1500	2000	
3DMark*						**1136**

*@ 800 x 600 resolution

Headline Studio 2

The fast track to fine animation.

Generating banners and animations can be a time-consuming process, often requiring the user to build up the various stages individually on a frame-by-frame basis. Creating a two-second animation could take half a day, but with MetaCreations's Headline Studio, that process can be completed in around 30 seconds. The screen consists of a number of pallettes controlling colour, effects,

fonts, tools and download rates, alongside the actual working area. The size of the banner is illustrated by a red outline; objects falling outside of this will be cropped. Space-saving features include the ability to reduce the levels of colour from 256 (the maximum for a GIF) through a variety of increments down to 4, and specify, between 1 and 100, the number of frames in the animation. The effect such changes make can be monitored using the download capacity options that simulate every link between a 28.8Kbps modem and a T1 line.

The centrepiece of the package is the timeline. This defines the beginning and end of the animation and allows the user to skip through to the precise point they need. It also controls playback of the work

in progress. After placing an object in the work area, a range of effects such as blurring, size change or a variation in opacity can be applied. Any number of effects can be applied simultaneously. Getting an object to move across the screen is as simple as dragging it from the start point to its destination. Headline Studio 2 will remember the track and append it to the final animation.

NIK RAWLINSON

PCW DETAILS

★★★★

Price £210.33 (£179 ex VAT)
Contact Computers Unlimited
0181 358 5857
www.metacreations.com
Good Points Easy to use. Quick. Effective.
Bad Points Fiddly interface. Expensive.
Conclusion Dramatically reduces time spent creating animations. Well worth considering.

Ask A4 Compact

Enter presentation heaven with the lightweight A4 Compact projector.

The LCD projector seemed like a good idea. You took red, green and blue LCD screens, sent a strong beam of light through each, merged the result via a prism, and focused it on to a distant screen. Hey presto... you had a wall-sized computer display.

Sadly, you needed a big budget to buy one (prices were upwards of £7,000) and big muscles to carry it. The LCD projector was consigned to presentation hell, where all music sounds as if it has been generated by a tone-deaf computer with a grudge against humans, and all talk centres on bullet points and bar charts. In short, it was a yawn.

The Ask A4 Compact shows the LCD projector escaping into a wider world of beauty, action and mellifluous sound. It weighs just 3.5kg, packs into a shoulder bag, offers true SVGA (800 x 600) resolution, and is priced within the budget of a small firm — the word is that

prices will fall further. Norway-based Ask claims its 560-lumen light source is one of the brightest available. It comes with a remote control, RGB computer and stereo audio input, and a monitor output so that you can have a separate computer display. Better still, options

include input from video or TV, so that you can use it as a mini cinema.

Naturally, companies who use the projector primarily for presentations will need this latter function to show corporate videos. We would be the last to suggest that executives might be influenced in their buying decision by the fact that the A4 Compact can also be taken home to show movies. That would be a tax-free perk, wouldn't it?

CLIVE AKASS

PCW DETAILS

★★★★

Price £5,047 (£4295 ex VAT) list;
£3,872 (£3,295 ex VAT) street
Contact Ask 0753 701050 www.ask.com
Good Points Sturdy, elegant design.
Bad Points Still beyond most private pockets.
Conclusion Honestly, boss, it will be really useful.

Novatec 300 Office PC
Budget system

For the hobbyist or those looking for a second PC.

The Novatech 300 is great for the hobbyist. Without a monitor or an OS it's not quite a whole system, so it's not going to compete with the off-the-shelf all-in-one solutions we review in group tests. We're also a bit dubious about including the word 'Office' in the name when it doesn't include any bundled software, but for users who want to experiment in setting up a cheap mail server, or who are looking for a better than bare bones system upon which to build a custom machine, this is a great start. Many users will, after all, have an old 14in monitor they can add.

The brain of the 300 is a Cyrix MII/IBM 6x86MX processor clocked at 300MHz. This has no onboard cache and so makes use of the 1Mb L2 cache on the motherboard. With an eye on the future, this 100MHz motherboard can accept all processors up to a 400MHz AMD K6-2.

The spine of this PC is an SiS 530 chipset on a Super 7 board. The 3D graphics processor is built in, and shares the main system memory: the BIOS allows you to select 2Mb, 4Mb or 8Mb of the installed SDRAM to be allocated to video. Upon arrival this was set to 8Mb, leaving only 24Mb available to play with. Although this may be a little stingy for Windows, it should be more than adequate for a more conservative OS, such as Linux. Users who dislike this approach will welcome the motherboard's option to go for standalone video RAM instead. The 32Mb RAM installed is supplied on a single DIMM, offering opportunities to upgrade this at a later date using the remaining vacant slot.

The motherboard also hosts the onboard sound chip, an Elite 3DX. There are no speakers, but at this price you can't really expect that. The keyboard is fairly average. It includes a euro key and is comfortable enough to type on for extended periods. We were disappointed,

though, that Novatech had not supplied a 5-pin DIN to PS/2 adapter so that we could connect it to the PC. The SpaceWalker mouse, meanwhile, is excellent, fitting well into the palm of the hand and rolling smoothly. The case interior is tidy and well ordered. Cables are held back in place with ties, leaving unobstructed access to the memory and expansion slots. With everything onboard, the two PCI and one shared slots all sit empty, offering plenty of scope for customisation in the future. A 40X speed CD-ROM drive and standard floppy cater for data input, and a further two external bays — one 5.25in and one 3.5in — allow for the addition of further drives at a later date. The hard drive is mounted vertically within the case, keeping well out of the way of the horizontal drive cage and leaving room for another 3.5in internal device to be fitted.

The Fujitsu hard drive itself runs to an adequate 3.24Gb, which should suit most needs.

Inspecting the insides of the MicroATX mini tower case is easy, as the external housing swivels backwards or can be lifted clear of the internal chassis for unobstructed access. Around the back are a couple of USB ports, two PS/2 connections for mouse and keyboard, parallel and game ports. There is only one serial port, which is a shame, as fitting an external modem would gobble it up right away. The motherboard hosts connectors for a second port, which could be mounted on a blanking plate if you're willing to sacrifice an expansion slot. As the machine's sound capabilities are welded onto the motherboard, integrated

mic, audio in and audio out ports also find a home for themselves on the back panel.

If anyone had told us there was a £299 PC on the market, we might have laughed, expecting a poor-quality machine in which every cut-able corner had been snipped to the nth degree. That is not the case here. For the hobbyist on a tight budget, or users after a second machine to play around with, this represents a great buy.

NIK RAWLINSON

> *If anyone had told us there was a £299 PC on the market, we might have laughed*

PCW DETAILS

★★★

Price £351.33 (£299 ex VAT)
Contact Novatech 0800 072 7771
www.novatech.co.uk
Good Points *Inexpensive. Well-organised interior.*
Bad Points *It had difficulty completing our performance tests. No monitor. No OS bundled.*
Conclusion *Great for the hobbyist, although there are more suitable buys for the first-timer.*

HP PhotoSmart C30

Digital photography at a price you can snap up.

Opting for an RGB filter rather than the CMY alternative, HP has produced a camera well suited to putting snaps on a web site. The supplied 4Mb CompactFlash memory card is sufficient to capture between 8 Superfine and 40 Basic quality images. Its highest resolution of 1152x872 pixels will be enough to produce 'photo quality' 3in x 5in prints.

While it boasts an impressive 500 photos on a single set of AA batteries, the quality of the images the C30 produces sadly lets it down. Colours were not true to the original subject matter and were not as sharp as those produced by many other digital cameras. That said, at £399 the C30 is affordable enough to put digital photography within the reach of the average home user.

Close-ups are handled by the 2X digital zoom. An optical zoom would have been preferable, but would have been reflected by a higher price tag. We were also a little disappointed by the LCD on this generally unattractive unit. It has a slow refresh, updating only every second or so. The shutter is also slow to react: press the button, and the picture will be taken a second later — no good for action shots. The built-in flash has a red eye reduction facility, and the C30 is bundled with a power adaptor, batteries, cables for PC and video connection, and a shoulder strap. The 10-second self-timer allows the user to be in his or her own photos, while the bundled Microsoft Picture It! 99 software and HP PhotoSmart Photo Finishing Software make downloading and organising your snaps a breeze.

NIK RAWLINSON

PCW DETAILS

★★★

Price £468.83 (£399 ex VAT)
Contact Hewlett-Packard 0990 474747
www.photosmart.com
Good Points Easy to use. Excellent PhotoSmart software. Conservative battery consumption.
Bad Points Disappointing pictures. Slow to react to shutter button.
Conclusion A reasonable buy for rough-and-ready web shots.

NaturallySpeaking Mobile

A voice recognition package that transcribes from a digital recorder.

Now is around the auspices of the working odious piece of the place... er, no, I won't try to dictate this review. Neither shall I be unfair to Dragon NaturallySpeaking Mobile that, like all voice-recognition packages, requires a certain amount of perseverance to get it to work. In return, it sometimes throws out some wild poetry.

NaturallySpeaking was one of the first commercial packages to take dictation in continuous speech, as opposed to Talking...Like...This. You still have to adapt your voice though, just as you would for a human transcriber (who, like the machine, would still get some words wrong).

Early adopters have tended to be people who need it most: non-typists, the handicapped, and people who have to transcribe screeds of boring text. I have been thinking onto a keyboard for years and find the effort of dictation disruptive. But Dragon's latest product, NaturallySpeaking Mobile, which transcribes from a digital recorder, is potentially so useful that I am determined to have another stab.

It is not a new idea. A UK firm demonstrated a similar system three years ago, and at Comdex last year Dragon named a number of digital recorders, including a Sony minidisk, that can be used for the purpose. If you have one of these, or are thinking of getting one, check with Dragon's web site for compatibility with NaturallySpeaking Preferred Edition, which costs £129 inc VAT.

The Mobile edition is basically this plus a solid-state recorder that fits snugly into the hand like a cellphone. It holds 40 minutes of dictation as it comes and more than an hour more using a plug-in SmartMedia card. This is far less than a minidisk machine, but at £199 including VAT and software, it is also far cheaper. I have yet to reach a useful accuracy, but I am told that it is possible. I propose to persevere and I'll keep you posted.

CLIVE AKASS

PCW DETAILS

★★★

Price £199 (£169.36 ex VAT)
Contact Dragon Systems UK
01242 678575 *www.dragonsystems.com*
Good Points Voice recorder is a big advance.
Bad Points Learning can be aggravating.
Conclusion Be prepared to work at making it work.

Fax machines *vs* the PC-based solution

Despite the rise of email, we have yet to see the corresponding demise of the fax. But the very means you use to send and receive electronic mail, your modem, provides you with an alternative to the humble fax machine. A fax/modem allows you to use your PC to send and receive fax messages, but before you turn your back on the fax we take you through the pros and cons of each method.

? The case for the fax machine

The first obvious advantage of choosing a standalone fax machine is that you don't need to own a PC to use one. But if you already have a PC, there are still benefits to sticking with a traditional fax machine.

For instance, you can free up your PC's system resources for more important tasks: you don't have to use up space on your hard drive storing faxes, and valuable memory isn't wasted running software to help your modem pick up and send faxes. Most cheap modems do come with software that allows them to act as fax machines, and if you want to leave your fax line open, your PC must be switched on and the bundled fax software must be running in the background. But if you're running a memory-hungry

You don't need a PC to be able to use a standalone fax machine

application, and your fax software kicks in to allow you to receive, your PC could crash, losing all your unsaved data.

If you use a single connection to link up to the net and receive faxes, then your modem will have to support DSVD (Digital Simultaneous Voice and Data) which splits the bandwidth to accommodate both access to the internet and fax calls. Unfortunately, splitting an already slim bandwidth slows down performance to a snail's pace. On the other hand, leaving your fax machine plugged in to a separate phone socket keeps your fax line open all the time, ready to receive messages.

The role of a fax machine

doesn't stop there: many act as both telephone and answerphone too, so while a modem might look like a cheap solution, when you look at all the tasks a fax performs, then the relatively higher price tag is justified. A fax machine is also handy for any hardcopy documents you need to sign and return.

If you move into the realm of the multifunction device, which combines a fax with scanner,

copier and printer, the benefits for a small office are manifold. These all-in-one peripherals are more expensive than a basic fax machine, but they're generally a lot cheaper than the sum of their parts. A multifunction device twinned with your PC provides you with everything you'll need to set up an office at home or for a small business. Obviously, the more people you have sharing each device, the less efficient it will become, but it's a cost-effective solution for the smaller workgroup.

Hewlett-Packard's OfficeJet 700 is pretty pricey at £506.43, but it combines a colour and a black-and-white fax with a 600x300dpi colour printer, 300dpi optical resolution scanner, and copier. The black-and-white fax works both with or without a PC, though you do need a PC for colour faxing. It can store up to 50 pages of faxes, so you don't need to worry about leaving your PC up and running to receive your messages.

If this price seems steep, Xerox has a budget all-in-one device. The Document WorkCentre 155c costs just £249. It combines a standalone fax, which can also work with your PC, plus memory to store up to 21 pages, with a copier, scanner and colour printer.

One disadvantage of the all-in-one route is that if your multifunction device does break down, you are left without access to any of its features. This criticism

Œ **HP's OFFICEJET 700 MULTIFUNCTION DEVICE ADDS A FEW EXTRAS TO THE STANDARD FAX MACHINE, INCLUDING COLOUR PRINTING AND SCANNING, MAKING THE WHOLE CONCEPT EVEN MORE ATTRACTIVE FOR A SMALL BUSINESS OR HOME USER**

P **XEROX'S DOCUMENT WORKCENTRE 155C OFFERS A COMBINATION FAX, COPIER, SCANNER AND COLOUR PRINTER FOR UNDER £300**
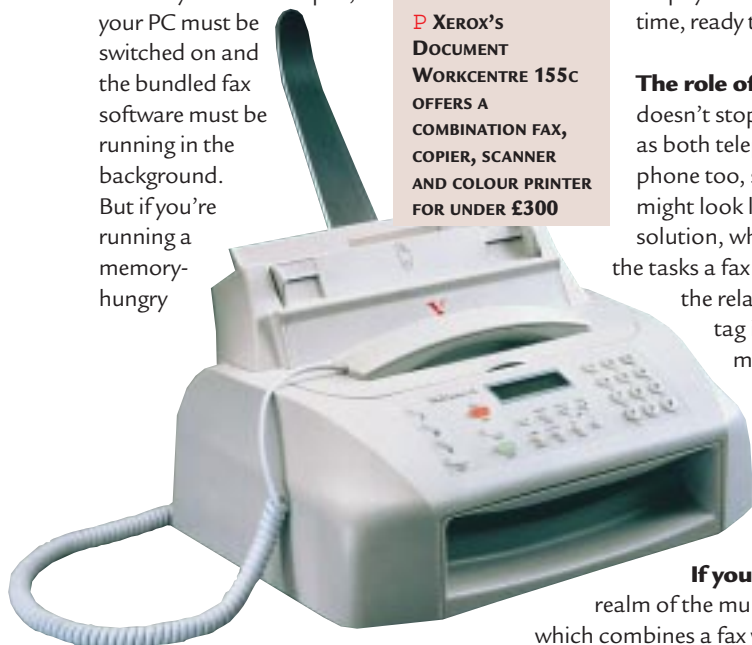
Faxing from Windows

Anyone who has Windows 98 installed will have noticed that the old fax program found in 95, Microsoft Fax, has disappeared. This was part of the Windows Messaging email system and provided a full-featured fax program, but in Windows 98 Windows Messaging has been replaced by Outlook Express, a new email client that's also part of Internet Explorer 4. If you have upgraded from Windows 95 to Windows 98 you should still have Microsoft Fax installed on your PC anyway, so you can continue to use it in exactly

the same way as before. If you do want to send a fax from Windows 98, you have to use one of three methods: Use Outlook in Microsoft Office, use the software that came with your modem, or buy a separate fax program. If you have Microsoft Office 97 loaded on your PC, all you have to do is install Outlook and you can use its default fax program, which is Microsoft Fax, so it's just like using Windows 95. Most modem manufacturers provide fax software with their products, and while these may not offer all the features found in

models like the Pace 56 Solo or the Olitec Smart Modem Deluxe, they should be sufficient for basic faxing needs. However, you will suffer from the problem of leaving software running in

the background if you want to receive a fax. Finally, there are third-party fax software packages you can buy to allow you to fax from your PC, such as Symantec WinFax Pro at £116.

can be levelled at any purely PC-based fax solution, because if your computer falls ill, then your fax machine is out of order too. If you keep all your office equipment separate by opting for a standalone fax, at least you can rely on it even if your PC gives up the ghost. So when modern technology lets you down once again, you might be glad that you chose the old-fashioned route and opted for a trusty fax.

? The case for a PC-based fax

If you want to keep it simple and use your PC to handle all your messages, then a fax modem is your best bet. As we have mentioned, there are drawbacks with cheaper fax modems that require you to leave your computer on with software running in the background to enable you to get incoming faxes. But a new

generation of modems is addressing this problem by storing faxes for you even when your computer is off.

The Pace 56 Solo external 56Kbits/sec modem can store up to 30 pages of faxes or 30 minutes' worth of voice messages for you. It allows you to print out faxes directly without the need to view them first, but both computer and printer must be switched on to output hard copies. If you just want to know how many faxes you have, you can press a button on the front of the modem to find out. At £199 the Pace 56 Solo is a lot cheaper than a multifunction device, though you can pick up a standalone fax for less. For example, the Brother FAX-510 thermal fax machine costs only £175.08.

Olitec's Deluxe Smart Memory Modem offers much the same functionality as the Pace 56 Solo, combining a V.90 56Kbits/sec modem with a fax and answerphone that work even when your computer is powered down. At £139.95 it's even cheaper than the Pace modem and offers more fax storage, holding 100 pages, but you can only record 20 minutes of voice messages.

One real bonus of choosing a fax modem to handle your faxes is that it will also give you access to the internet. Both Olitec's and Pace's are 56kbits/sec modems, but it's important to note that the maximum fax transmission speed they can provide is 14,400bps. This is faster than the FAX-510 though, which can only achieve 9,600bps.

A fax modem will also give you access to the internet

If you want hard copies of your faxes, you'll have to have a printer hooked up to your PC, but this does mean you have control over the quality of the final printouts. More expensive plain paper faxes allow you to print faxes onto standard A4 copier paper, but the cheaper thermal units can only use special rolls of paper which is flimsy, curls easily and degrades over time.

If you need to file faxes to keep for some time, you'll have to opt for a more

Sending a fax via the web

You can avoid choosing between a fax and fax modem by letting a web-based faxing service take the strain. Digital Mail is a UK company that offers a range of services that can handle both receiving and sending your fax messages via the internet. It charges £49.95 per year to turn your email account into a full messaging centre. Its CommsGate service provides you with two telephone numbers, one for voice and one for faxes, either or both of which can be diverted to preset telephone numbers. If a call is unanswered, the message is taken and forwarded to your email account. This enables you to pick up all your

messages from anywhere in the world when you check your email, but as you can only receive faxes, not send them out too, this is a one-way service.

Digital Mail also offers a Virtual Fax Box service for £7.75 per month, plus communication charges, that allows you to both send and receive faxes via the web. All you have to do is create an email and include the fax number you want to send it to in the special Digital Mail domain name, and its server will recognise the type of message you want to send and route it to the right fax machine. This service includes a Universal Notifier,

which informs you when a message comes into your mailbox via a voice call, fax, email or SMS message — ideal if you spend a lot of time out of the office.

H **DIGITAL MAIL PROVIDES WEB-BASED SOLUTIONS FOR ALL YOUR MESSAGING NEEDS, FROM TAKING YOUR CALLS TO SENDING OUT YOUR FAX MESSAGES**

expensive plain paper fax, or a multifunction device.

If you are more concerned about the quality of the fax you are sending, then a fax modem is a good choice. In a traditional fax machine a row of sensors, like those in a scanner, read the image you are sending and convert it into data. If there's a flaw in your fax's sensors or the page is inadvertently skewed during sending, then the quality of the sent fax will be affected. Very fine type or detailed graphics are also hard for the sensors to deal with.

A fax modem takes pre-imaged data as supplied by the fax modem driver

(which is just like a printer driver). It works at whatever fax resolution you have selected (usually Regular to Fine or Superfine) and graphics and text are created 'cleanly' at that resolution, so the final result should be picture perfect.

Choosing a fax modem is probably the cheapest option, and with the latest, more expensive models you can receive

... graphics and text are created 'cleanly', so the final result should be picture perfect

faxes even when your PC is switched off. You can also choose the quality of sent faxes, and print out those you receive to good-quality paper using your own printer. However, as the real problem with cheaper solutions is with receiving faxes rather than sending them, perhaps the failsafe solution is to invest in a cheap fax machine to handle incoming faxes, but send out all your faxes from the comfort of your desktop.

URSULA TOLAINI

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