





# 7<sup>th</sup> heaven?

AMD's bold claims for the first-ever **seventh generation processors** — that they are PIII beaters — are put to the test as the Athlon is asked to account for all the hype.

**A**MD has generated a lot of hype around its latest processor, the Athlon, codenamed the K7. The claims have been ambitious. AMD says the first ever seventh generation processors will outperform Intel's sixth generation Pentium III. The processors are very new and the motherboards are even newer, but we have managed to persuade some manufacturers to part with their prize possessions and allow us to put the first Athlon machines through their paces.

We were most interested in whether our vigorous benchmark programs would find the Athlon as fast as AMD claims, and whether it really does outperform the Pentium III. With regard to the machines themselves, we wanted to see if the manufacturers had maximised the potential of the chip with high-quality supporting components.

The choice of graphics card was especially important, because we wanted to see whether the improved 3DNow! instructions really did make a difference. We also asked for some kind of backup

device to be included, to ensure that each machine in the group test had a well rounded specification.

## Contents

- 148** From K5 failure to K7 confidence
- 150** Atlas Meridian K7-600
- 151** Carrera Octane M600
- 154** Evesham Vale Athlon 600
- 155** Mesh Matrix 600D
- 160** Panrix Magnum 600
- 165** PCW Labs report
- 166** Table of features
- 168** Editor's Choice

• Tested and reviewed by Riyad Emeran and Jason Jenkins

## Ratings

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



# AMD: the long road from K5 failure to **K7 confidence**

In producing the Athlon, Advanced Micro Devices (AMD) has built upon the expertise it acquired through years of making processors. Founded in 1969 by Jerry Sanders and seven others, it has grown from humble beginnings in the founders' lounge to a multinational company that employs over 13,000 people worldwide and represents Intel's greatest threat in the processor market.

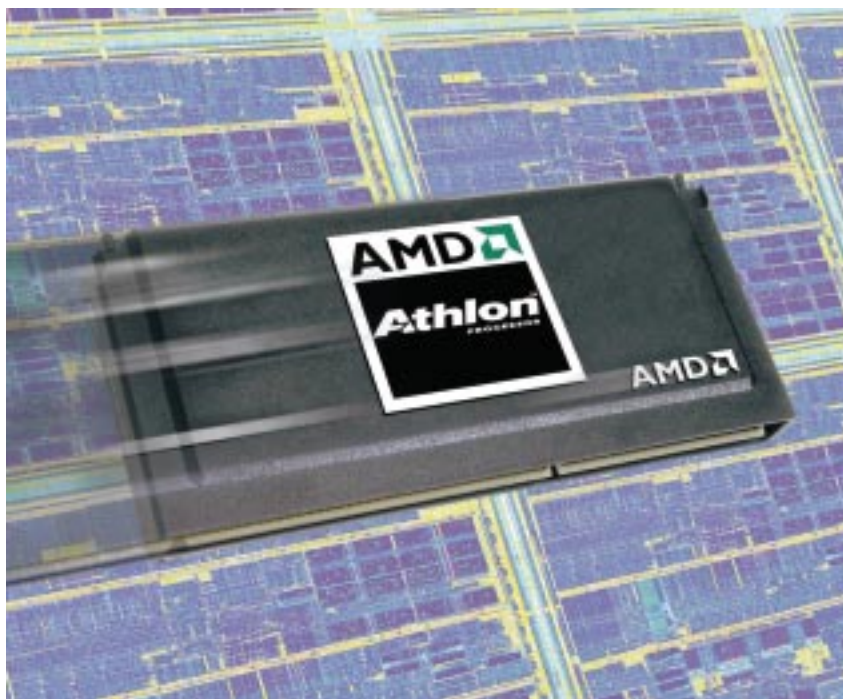
**Always involved** in the design and manufacture of processors for a variety of markets, AMD's recent history begins with the K5 processor. Up until this point, the company had been producing 286, 386 and 486 processors that were directly derived from Intel's own designs.

The K5 was AMD's first independently produced x86 processor and was intended to break Intel's domination of the market by being faster and cheaper than Intel's range. This was more difficult than the company had hoped for, however, and the chip was late to market. Running at various speeds between 75MHz and 116MHz, the chip suffered from performance and reliability problems that meant it never really threatened Intel's grip on the market.

**After the relative failure** of the K5, AMD realised it had to do better. The answer to its design problems presented itself in the form of the acquisition of Nexgen in 1996. Using Nexgen's chip designs as the basis for a new family of CPUs, the K6 has been more successful.

There are two versions still available today. The K6-2 – launched in May 1998 to compete with the Pentium II, which had been released one year earlier – was hampered by a lack of fast Level 2 cache, although the low price made it a very attractive option.

As AMD started to win market share, Intel was forced to introduce the Celeron processor – essentially a budget version of the Pentium II – to avoid losing the budget market. The use of the 3DNow! instructions was intended to improve 3D performance for software that was specially optimised, a factor that made the K6-2 more attractive to gamers. Intel



has emulated this idea in its Pentium III through the KNI instruction set, which does pretty much the same thing.

By the time of the K6-III launch earlier this year, AMD had established itself as the only serious rival to Intel in the Windows-compatible processor market, with National Semiconductor selling the other main player – Cyrix – to Taiwanese company VIA.

Despite the technological advances, however, life has been far from plain sailing for AMD. Aside from trying to persuade manufacturers to adopt the technology and the public to buy machines that do not have the Intel Inside logo on them, its main problem has been producing the chips in sufficient quantity to meet demand.

**Recent financial results** have not been good, with the latest showing a net loss of \$162m for the second quarter. AMD says a combination of production problems and high research and development costs for the Athlon have caused these losses, although they were not as bad as some pundits predicted. This is undoubtedly true, but sales cannot have been helped by the fact that customers are simply opting for Intel in

greater numbers, aided by Intel's massive marketing presence.

However, AMD is planning a marketing assault of its own for the Athlon. The brand name will be extended to reflect the different uses that AMD intends the chip to have. The 600MHz Athlon chips reviewed in this issue will remain the CPU for high-performance consumer and small-business PCs, with the Athlon Professional catering for the enterprise sector equivalents. The Athlon Select name will cater for budget machines and the Athlon Ultra will be found inside AMD-based servers and high-end workstations.

**It's going to be** an interesting time for processor technology. AMD is growing increasingly confident of being able to produce 1GHz copper-based processors by the end of the year. The company has invested heavily in the Athlon's future, including building a \$1.9bn factory in Dresden which opens later this year. This should help it overcome the production difficulties that have dogged it in the past. Provided AMD has learnt from its other mistakes, the Athlon should prove to be the revitalising force that it needs.

## Atlas Meridian K7-600

**A**tlas has chosen to house its Athlon PC inside an impressive full-tower case. This is a wise move, since it provides expanded upgrade potential as well as extensive cooling for the system components. As things stand, there are two external 5.25in bays free and three internal 3.5in bays. Even with all this expansion potential, the motherboard is completely unobstructed. Only the CD audio cable spoils the effect, being routed across the board rather than around it.

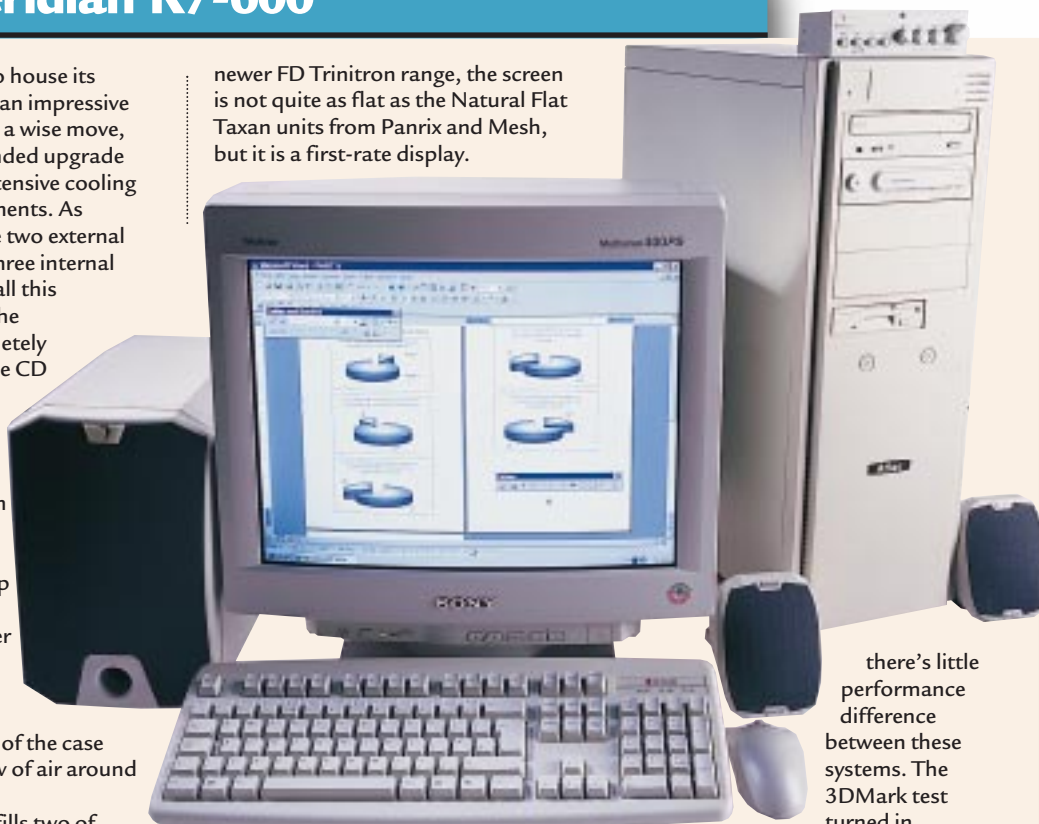
The 600MHz Athlon processor is housed in the familiar MSI motherboard. The chip is cooled by an active heatsink and the power supply fan that blows across its surface. There's a third fan located at the bottom of the case to ensure a steady flow of air around the system.

256Mb of SDRAM fills two of the three DIMM sockets on the motherboard, which should be more than enough memory to run any application well into the future. Like the Mesh offering in this test, Atlas has chosen the full SoundBlaster Live! card as the sound solution. This card offers excellent digital and wavetable effects, and has the added advantage of digital in and out ports for mastering to MiniDisc or DAT. A set of Diamond Pro Media 4030 speakers amplify the signal from the SoundBlaster – a decent speaker set with crisp and clear sound reproduction.

However, you won't be able to make use of the SoundBlaster's surround sound capabilities since there are only two satellites and a subwoofer in the set. Another pair of speakers can easily be added to rectify this.

**A good monitor** should be paramount when buying a PC, and the Sony Multiscan 400PS is a fine example of a 19in unit. Sony invented the aperture grille tube and makes some of the best CRT displays available. The 400PS produces a superb image with vivid and rich colours, while the screen is free from reflections. Since this is a standard Trinitron display rather than the

newer FD Trinitron range, the screen is not quite as flat as the Natural Flat Taxan units from Panix and Mesh, but it is a first-rate display.



there's little performance difference between these systems. The 3DMark test turned in

Driving the Sony monitor is an Asus AGP graphics card using the nVidia Riva TNT2 chipset. This is a fast card in both 2D and 3D applications, with 32Mb of memory to help move those large textures around. It also has composite and S-Video TV outputs.

Yet again, IBM has proved to be the hard disk manufacturer of choice. This time, a 22Gb DeskStar EIDE unit has been fitted. As well as a substantial capacity, this unit boasts a 7200rpm spindle speed and GMR heads. An OnStream DI30 is provided for hard disk backup and security. The DI30 is an internal tape backup unit that has a native capacity of 15Gb and a compressed capacity of up to 30Gb.

Directly above the OnStream drive is a Hitachi GD2500 6X DVD-ROM drive. Even though not much is being released on DVD apart from movies, it's only a matter of time before CD-ROMs are abandoned, and a little future proofing is a good thing.

Lotus SmartSuite Millennium is bundled to get your office productivity off to a flying start.

**The Atlas produced** exactly the same SYSmark score as the Mesh – an impressive 255 – proving that

Athlon-optimised scores of 5892 and 3974 at 1024x768 and 1280x1024 respectively, in 16bit colour mode. Again, these scores are impressive, but not as impressive as those from the Evesham.

**Atlas has built a very strong system.** Performance is good, the system case has masses of expandability, and the build quality is impressive. All the supporting components are high-quality, but it is the inclusion of the 30Gb OnStream tape backup device that makes the Atlas that little bit more special.

### PCW DETAILS

#### Atlas Athlon 600

**Price** £2,340.82 (£1,999 ex VAT)

**Supplier** Atlas 0181 532 6515

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

**Good Points** Full-tower case, excellent backup device

**Bad Points** 3D performance could be better

**Conclusion** A thoughtfully built PC with some great components

<b>Build quality</b>	★★★★
<b>Performance</b>	★★★★★
<b>Value for money</b>	★★★★
<b>Overall</b>	★★★★





## Carrera Octane M600



**T**he Carrera name has lately become synonymous with cutting edge technology and the Octane M600 strengthens its position. Like all the systems in this group test, the Carrera is based on a 600MHz AMD Athlon in an MSI motherboard. The processor is supported by 256Mb of PC100 SDRAM that fills two of the three DIMM slots. With this much memory, you shouldn't have any problem running software for quite a while.

Inside, things are pretty tidy, with no cables hindering access to the motherboard. Even the CD audio cable has been thoughtfully routed around the board to the sound card.

The EIDE controller on the motherboard supports the UDMA66 standard, so the 18Gb Western Digital Expert hard disk can be used to its full potential. Western Digital licenses the GMR head technology from IBM, so this drive shares the same impressive data density of the IBM range, as well as a 7,200rpm spindle speed.

The single AGP slot is filled by a 32Mb Maxi Gamer Xentor graphics card. Based on the nVidia Riva TNT2 Ultra chipset, this card produces very impressive performance in both 2D and 3D applications, making it ideal for both serious applications and heavy-duty gaming.

**The LG Studioworks 910SC** isn't the best 19in monitor available, but it's still a fine example of a shadow mask display. Even though the screen is more curved than the aperture grille monitors in this test, the focus is clear and the colours bright. Controlling the OSD is simple and intuitive, using the four buttons on the left of the front fascia, while the contrast and brightness controls are dealt with by independent analog wheels under the fascia.

**Breaking with tradition**, Carrera has opted for an Aureal Vortex 2 sound card instead of a Creative Labs SoundBlaster Live! But this is no bad thing, as the Vortex 2 is a great card with superb 3D effects for games. It also sports an optical digital output so you can master to MiniDisc or DAT.

A set of Altec Lansing ACS54 speakers complements the Vortex 2, comprising four satellites and one subwoofer. This package is aimed at much the same market as the Creative 4 Point Surround speakers, but overall sound quality is superior.

The last expansion card is a 56K PCI modem that's coupled with a year's free Internet access, so the system really is Internet-ready straight out of the box. That said, free Internet access is easy to come

by these days, but it's still a bonus to have everything set up the minute you buy your PC.

Filling the top 5.25in drive bay is a Panasonic DVD-ROM drive with 6X and 32X performance for DVD and CD media respectively. Below this is an Iomega Zip 100 drive. Although 100Mb isn't a huge amount of space, the Zip is still a decent data transport device due to its high market penetration.

Lotus SmartSuite Millennium is the productivity bundle, and although it's not as popular a solution as Microsoft Office, it's still a very capable package.

A Key Tronic keyboard and a Microsoft Intellimouse make up the input devices, both being quality components. And rounding things off is a two year on-site warranty, adding piece of mind to an already impressive package.

**Performance proved to be excellent**, with the Carrera turning in a SYSmark score of 259, just one point behind the Panrix. Unlike the Panrix, however, 3D performance was superb, with 3DMark scores of 6506 at 1024x768 and 4349 at 1280 x1024, both in 16-bit colour.

Although it's not as feature-packed as the Mesh, the Octane M600 costs almost £300 less and actually performs slightly better. Ultimately, if you're after cutting edge technology at a bargain price, the Carrera is definitely worth investigating.

### PCW DETAILS

#### Carrera Octane M600

**Price** £2,055.07 (£1,749 ex VAT)

**Supplier** Carrera 0181 307 2800

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

**Good Points** Great performance, excellent value

**Bad Points** Average monitor

**Conclusion** A value-packed, high-performance PC that can turn its hand to anything

<b>Build quality</b>	★★★★★
<b>Performance</b>	★★★★★
<b>Value for money</b>	★★★★★
<b>Overall</b>	★★★★★

## Evesham Vale Athlon 600

**E**vesham has thought long and hard about how to get the most out of the Athlon processor and this configuration shows it off well. Build quality is impressive. Cables have been grouped together and wrapped in a plastic cover to keep them out of the way, giving easy access to expansion slots, memory slots and the processor, and leaving room for air to circulate.

The MSI motherboard leaves plenty of room for upgrades with three PCI slots free and the two ISA slots unused. The 128Mb SDRAM module runs, in common with all the other manufacturers in this test, at 100MHz. The coming months should see the adoption of memory that will be able to take full advantage of the 200MHz Alpha-based system bus.

**Removable storage** is provided by a Castlewood ORB drive. This is a similar unit to the Iomega Jaz2 drive, although the capacity is slightly higher at 2.2Gb than the 2Gb on Iomega's unit. In the Orb's favour, the cartridge consists of a single disk platter, whereas the Jaz2 cartridges have two. The data density is higher and performance should subsequently be better. Unfortunately, the ORB is not a widely adopted standard like the Jaz and Jaz2. Evesham has broken ranks with the rest of the pack and

installed a Maxtor hard disk instead of an IBM one. It's still an impressive drive although, with a capacity of 20Gb, it should be a fair while before you need to upgrade.

The final EIDE device is a Panasonic DVD-ROM drive. With 6x DVD performance and 32x CD-ROM capability, it should make short work of software installs.

**The sound** from the Creative Labs 4 Point Surround speakers could be clearer, but you do, after all, get four speakers and a subwoofer. Having said that, if you are short on space, a pair of better quality speakers may be more prudent.

The Key Tronic keyboard is ergonomically shaped. The bottom of the keyboard extends slightly to provide a handy rest for your hands and the top curves upwards. However, the keys are unusually stiff, which could become wearing.

The 19in Taxan Ergovision 975 monitor is a good choice, although it does have some faults. This shadow mask unit is quite reflective but still displays colours vividly. No dark patches are evident and focus is generally sharp, but it does suffer slightly in the bottom right corner. The refresh

rate is respectable – 85Hz at a resolution of 1280x1024, and even at 1600x1200 it doesn't give up displaying at 72Hz. A powered USB hub forms part of the base, allowing you to daisy chain USB devices.

A Diamond Supra Express V.90 modem makes the Evesham Internet-ready straight from the box.

**We ran a few extra tests** on this machine to see how software optimisation affected the Athlon's performance. Our 3DMark test was run with and without optimisation for the 19 new 3DNow! instructions. It had a great effect on this machine, increasing the score by 431 points at the standard resolution of 1024x768 in 16bit colour, although the performance benefit decreased as we increased the resolution and colour depth. The high scores were due not only to the Athlon's high clock speed, but to the fact that AMD has designed the chip specifically to improve floating-point performance, which is crucial in games. The excellent Xentor32 Ultra graphics card, based on the nVIDIA Riva TNT2 Ultra chipset, also helps. It has motion compensation for DVD playback, which works well, producing no dropped frames.

The SYSmark result was among the best we have ever seen, with improvements across both the office productivity and content creation parts of the tests.

Our pre-release version of the Evesham system was occasionally prone to instability, but this will be fixed by the time the machine is available to buy.

### PCW DETAILS

#### Evesham

**Price** £1,996.33 (£1,699 ex VAT)

**Contact** Evesham Vale 01386 769600

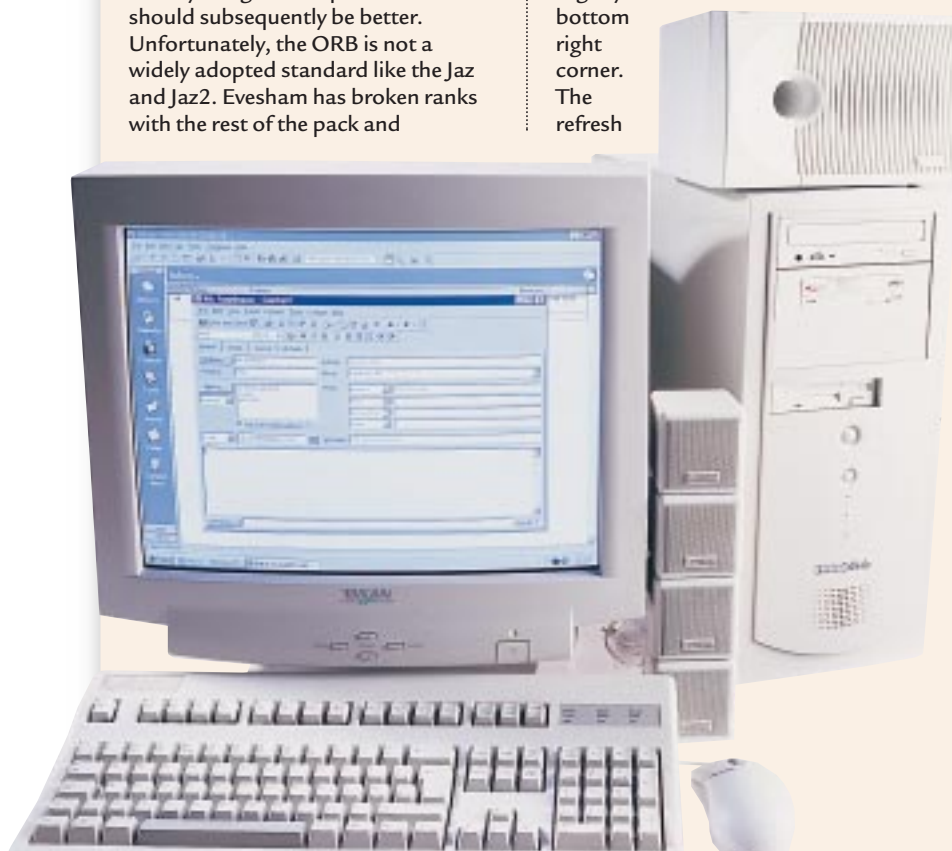
[www.evesham.com](http://www.evesham.com)

**Good Points** Blistering 3D performance

**Bad Points** Monitor could be better and ORB drive may be undesirable

**Conclusion** A well built, good value machine for someone who knows what they're doing

<b>Build quality</b>	★★★★
<b>Performance</b>	★★★★★
<b>Value for Money</b>	★★★★★
<b>Overall</b>	★★★★





## Mesh Matrix 600D

**L**ike all the manufacturers in this group test, Mesh pulled out all the stops to show off AMD's new super chip. Beating at the heart of the 600D is, unsurprisingly, a 600MHz AMD Athlon processor. The motherboard is the same MSI model that all these machines sport, although this may differ in the production model. One of the three DIMM sockets is occupied by 128Mb of PC100 SDRAM, allowing a further 512Mb to be added.

Filling the single AGP slot is a 32Mb Matrox G400 graphics adaptor. This is a great 2D/3D card with dual monitor support. Unlike previous dual monitor graphics cards, the G400 supports multiple displays at different refresh rates, so if your second monitor is smaller than your primary unit, you won't have to run your main display at a low refresh rate. The G400 didn't perform as well as the TNT2 Ultra cards, but if Mesh had supplied the G400 Max the story could have been different.

Connected to the G400 is one of the best monitors we have seen, the Taxan Ergovision 980 TCO99. This 19in unit is based on Mitsubishi's Natural Flat Diamondtron tube and the image quality is nothing short of stunning. The focus is perfect across the whole screen surface and although there was a small colour registration problem, it was probably due to rough transit since a brief adjustment in the OSD rectified the situation. There's also a USB hub integrated into the monitor base for easy USB connection.

**A full retail** SoundBlaster Live! takes care of sound, coming complete with the digital connector daughter card. This adds SP/DIF in and out ports, as well as digital DIN in and out. This makes it an ideal for digital sound editing, since tracks can be copied to and from the PC without a loss of quality. Also, with MP3 becoming popular, it allows users to copy their MP3 files to MiniDisc for on-the-move listening. Unfortunately, the Creative PC Works 4 Point surround speakers aren't the best units around, although they will at least give a surround sound effect.

The other PCI card is a Diamond SupraExpress V.90 modem.

Storage is handled by a 7,200rpm IBM hard disk providing 22Gb, although a bit of disk partitioning would have made more efficient use of the space. That said, this is a fast and capacious drive that should keep almost anyone happy for some time to come. To supplement the hard disk, Mesh has installed one of the best removable storage drives on the market, the Panasonic LF-D101 DVD-RAM. A true multi-purpose device, it can read both DVD-ROM and CD-ROM discs but its main use will be writing and reading

high performance with a SYSmark score of 255. We received a patch for 3DMark with enhancements for the Athlon architecture. It did make a small difference, with the Mesh scoring 5,338 at 1,024x768 in 16bit colour compared to 5,262 without it.

The Mesh Matrix 600D is a fine example of what can be done with AMD's new chip.



DVD-RAM discs. These can store up to 2.6Gb on each side – ideal for transporting large files or safeguarding important ones. Since the DVD-RAM drive is a SCSI device, Mesh has installed an ISA Adaptec 1520 SCSI card, which is fast enough to make the most of it. Strangely, there's also a DVD-ROM drive in the shape of a Pioneer DVD-113. Even though the DVD-RAM drive can read every type of media, Mesh felt the 6x DVD and 32x CD read was preferable to the 1x DVD and 20x CD performance of the RAM drive.

Corel WordPerfect Office 2000 is bundled with the system and there's a one year on-site warranty.

The Athlon lives up to its predicted

### PCW DETAILS

#### Mesh Matrix 600D

**Price** £2,348.83 (£1,999 ex VAT)

**Supplier** Mesh 0208 208 4706

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

**Good Points** Superb monitor and great peripherals

**Bad Points** None

**Conclusion** An expertly built machine with a great monitor. A perfect example of an Athlon workstation

<b>Build quality</b>	★★★★★
<b>Performance</b>	★★★★★
<b>Value for Money</b>	★★★★★
<b>Overall</b>	★★★★★



## Panrix Magnum 600

This Panrix machine looks like a cross between a server and a desktop. The case is excellent. The rear is covered by a plastic flap that is easily removed via a single thumbscrew. Once the back cover is off, the side cover slips away easily without removing any more screws.

The internal Zip drive and two 5.25in expansion bays are covered by a double hinged door that folds flush against the side of the system case. The blanking plates for the free 5.25in expansion bays are easily removable for system upgrades.

Inside the case, it's obvious that

been better to route the cable round the side of the case. The rest of the cables are grouped together tidily enough, although not as tidily as others in this test. The motherboard is the same MSI model as the rest of these machines, as it was the first Slot A board available. Slot A shares a similar form factor with the Intel Slot 1 standard, but the two are not interchangeable.

The two PS/2 ports feel insecure, wobbling as if they will not stand up to much abuse, although once the

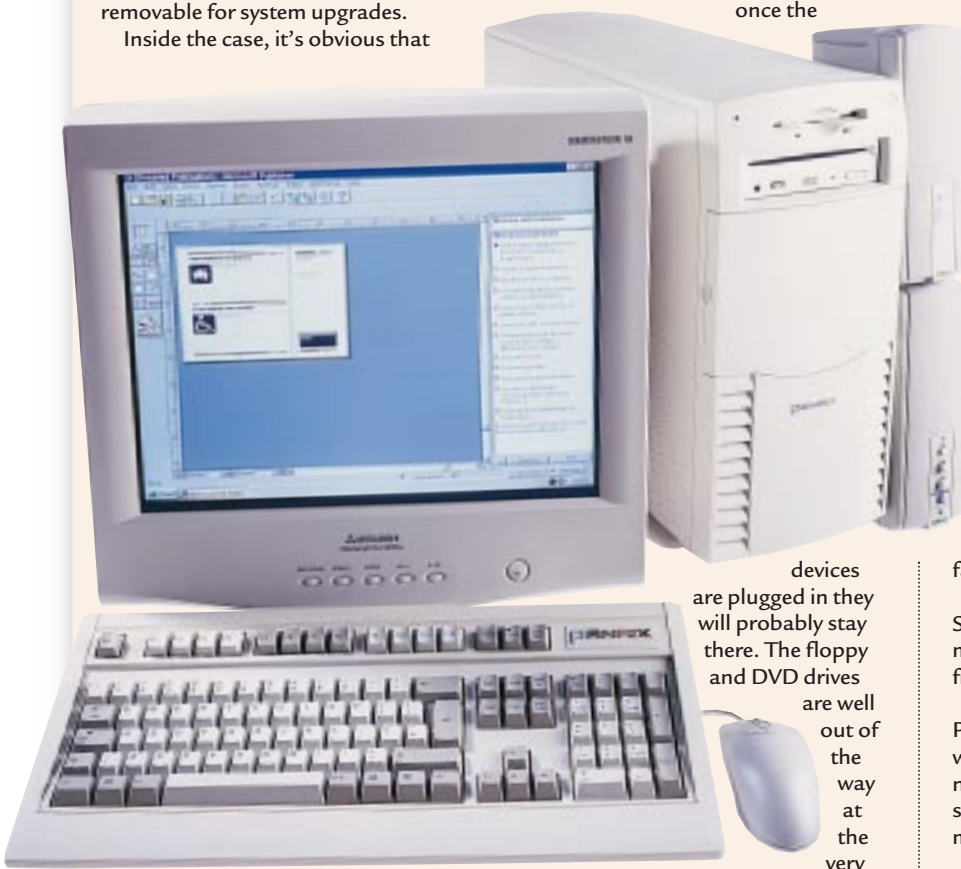
Diamond SupraExpress V.90 modem.

The monitor is a good choice. The aperture grille Mitsubishi Diamond Pro 900u is based on the same 19in Natural Flat tube as the Taxan supplied with the Mesh PC. The display is excellent, apart from a slightly dark patch at the bottom right on our review model. The cables are sufficiently recessed for the monitor to be placed flush against the wall. At the rear, you'll find USB ports, along with D-SUB and BNC connectors. A handy button allows you to switch between D-SUB and BNC with one touch. The rest of the controls are not so user-friendly, with the menu system being quite tricky to navigate although all the options you would expect from a high-end monitor are present.

**The most disappointing** aspect of this machine is the graphics card. Panrix has installed a Matrox G400, but only opted for the 16Mb version which appears somewhat outclassed by the 32Mb competition. When tested under 3DMark, the Panrix just couldn't compete with the better specified rival cards. However, the SYSmark score of 260 was the fastest on test.

A copy of Microsoft Office 2000 SBE adds a fair amount of value and makes the Panrix a productive tool from the outset.

On the whole, however, the Panrix PC is a little disappointing compared with the competition. There's nothing intrinsically wrong with this system, but it doesn't offer quite as much as the other units on test.



devices are plugged in they will probably stay there. The floppy and DVD drives are well out of the way at the very

system cooling is of paramount importance because there are four fans – the usual fan in the power supply, plus one directly underneath. A third sits at the base of the front of the machine and the CPU has a dedicated fan of its own. With this amount of air circulating, there's little danger of overheating.

**Build quality is generally good**, but is let down slightly by poor routing. The power cable for one of the fans is stretched from the socket on the far side of the motherboard across the processor itself, blocking the memory slots. It would have

top of the case, making it easy to install devices in the free bays. The AOpen 6x DVD drive sports a slot loading mechanism rather than a tray. DVD movies play with no dropped frames, although we think the Matrox DVD player could be more user-friendly. The SoundBlaster Live! Value is a good card but lacks digital ports, while the Yamaha YST-M20 speakers are high quality but there's no subwoofer or surround option.

The 22Gb IBM Deskstar drive makes another appearance, providing more than enough space to store Internet downloads via the

### PCW DETAILS

#### Panrix

**Price** £2,344.13 (£1,995 ex VAT)

**Contact** Panrix 0113 244 4958

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

**Good points** Good software bundle

**Bad points** Should have opted for a better Matrox graphics card

**Conclusion** A good, generally well built machine, but Panrix has not used the Athlon to its full potential

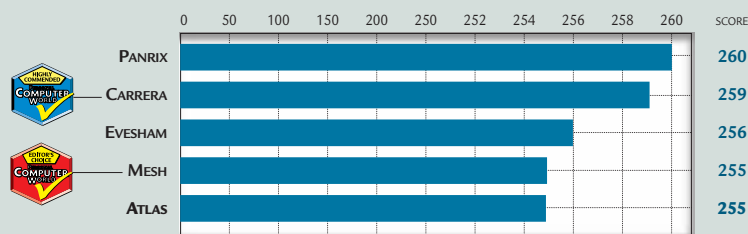
<b>Build quality</b>	★★★★
<b>Performance</b>	★★★★
<b>Value for Money</b>	★★★★
<b>Overall</b>	★★★★



# PCW Labs report



## SYSmark 98



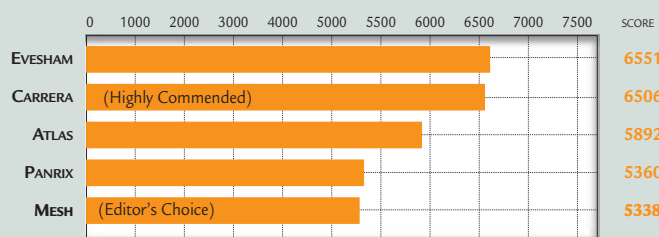
All of these results are within the margins of error set by Bapco, so the difference between the machines is of little consequence. This is not surprising, given that all the

machines had exactly the same processor and motherboard. What these results do show, however, is the large performance boost that the Athlon has delivered across the board.

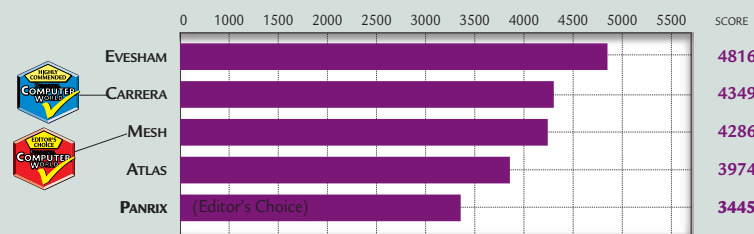
AMD's claim that the Athlon improves 3D performance is certainly borne out by these results. The TNT2 Ultra based cards in the Evesham and Carrera machines

have particularly benefited from the Athlon processor, showing what can be achieved when a good graphics card is married with a fast chip designed with 3D performance in mind.

## 3DMark 99 Max 1024x768



## 3DMark 99 Max 1280x1024



We really wanted to put the Athlon through its paces, so we increased the resolution to see whether the processor could reproduce the same fast results at a higher setting.

We were not disappointed. The results demonstrate that these latest machines can certainly keep up with the extra demands posed by this higher display mode.

## How we did the tests



• **SYSmark** measures the time it takes the PC to perform a variety of tasks in 14 common office and content creation applications. Each test is run three times to ensure consistent results. The applications are:

**Office productivity:** CorelDraw 8, Microsoft Excel 97, Dragon Systems NaturallySpeaking 2.02, Netscape Communicator 4.05 Standard Edition, Caere OmniPage Pro 8.0, Corel Paradox 8, Microsoft PowerPoint 97, Word 97.

**Content creation:** MetaCreations Bryce 2, Avid Elastic Reality 3.1, Macromedia Extreme 3D 2, Adobe Photoshop 4.01, Adobe Premiere 4.2, Xing Technology XingMPEG Encoder 2.1.

Performance depends on processor speed, RAM, graphics card and disk I/O. As the software packages are widely available, the scores reflect how the PC will perform in a real-world situation.

• **3DMark99 Max** is an instruction set-optimised version of 3DMark99 from Futuremark Corporation, which tests the

machines' 3D capabilities. When applicable, the suite of tests will draw upon AMD's 3DNow! or Intel's KNI instruction sets. A Real World DirectX 6.1 3D games engine is used to produce one result from a balanced testing methodology that includes image quality, rendering speed, CPU capability and, depending on hardware support, a test for embossed bump-mapping.

All 3DMark99 Max benchmarks are performed at a resolution of 1024x768 in 16bit colour depth, with the test suites set to loop three times. For this particular group test we also ran an additional benchmark at a resolution of 1280x1024 in 16bit colour. As with the SYSmark results, the higher the score, the better the result. However, due to the implementation of instruction set optimisation, no comparison can be made between the results from the original 3DMark99 and the Max version.

➤ More details at [www.bapco.com](http://www.bapco.com) and [www.3dmark.com](http://www.3dmark.com)

# Table of features



MANUFACTURER	ATLAS	CARRERA	EVESHAM VALE	MESH	PANRIX
MODEL NAME	MERIDIAN K7-600	OCTANE M600	ATHLON 600	MATRIX 600D	MAGNUM 600
Price (exc VAT)	£1,999	£1,749	£1,699	£1,999	£1,995
Price (inc VAT)	£2,348.83	£2,055.08	£1,996.33	£2,348.83	£2,344.13
Telephone	07000 285 275	0181 307 2800	01386 769600	0181 208 4706	0113 244 4958
URL	<a href="http://www.atlasplc.com">www.atlasplc.com</a>	<a href="http://www.carrera.co.uk">www.carrera.co.uk</a>	<a href="http://www.evesham.com">www.evesham.com</a>	<a href="http://www.meshplc.co.uk">www.meshplc.co.uk</a>	<a href="http://www.panrix.com">www.panrix.com</a>
<b>HARDWARE SPECS</b>					
Processor	AMD Athlon 600 MHz	AMD Athlon 600MHz	AMD Athlon 600MHz	AMD Athlon 600MHz	AMD Athlon 600MHz
RAM/type	256Mb/SDRAM	256Mb/SDRAM	128Mb/SDRAM	128Mb/SDRAM PC100	128Mb/SDRAM
Full RAM slots/spare RAM slots	2/1	2/3	1/2	1/2	1/3
Max memory in this configuration	512Mb	512Mb	640Mb	640Mb	640Mb
Max memory supported	768Mb	768Mb	768Mb	768Mb	768Mb
Hard disk manufacturer + model	IBM Deskstar	W D Expert	Maxtor 5120	IBM Deskstar	IBM Deskstar
Hard disk size/interface	22Gb/EIDE	18Gb/EIDE	20Gb/EIDE	22Gb/EIDE	22Gb/EIDE
Storage drive model + manufacturer	ADR Onstream	lomega Zip	Castlewood ORB	Panasonic LF-D101E	lomega Zip
Size of storage drive media	30Gb	100Mb	2.2Gb	2.6Gb single/5.2Gb double	100Mb
Storage drive interface	EIDE	EIDE	EIDE	SCSI	EIDE
<b>MOTHERBOARD COMPONENTS</b>					
Motherboard manufacturer	MSI	MSI	MSI	MSI	MSI
L2 cache	512K	512K	512K	512K	512K
<b>EXPANSION AND I/O</b>					
No of 3.5/5.25in bays	5/4	3/4	3/3	2/3	1/3
No of free 3.5/5.25in bays	3/2	1/2	1/1	3/1	0/2
No of PCI/ISA/shared slots	5/2/1	4/1/1	5/2/1	3/2/1	5/2/1
No of free PCI/ISA/shared slots	3/2/1	2/1/1	3/2/1	1/2/0	2/2/1
No of USB/serial/parallel/PS2	2/2/1/2	2/2/1/2	2/2/1/2	2/2/1/2	2/1/1/2
<b>MULTIMEDIA</b>					
CD-ROM manufacturer + model	Hitachi GD2500	Panasonic 8583B	Panasonic SR-8584	Pioneer DVD-113	AOpen DVD 9632
CD-ROM speed/interface	6x DVD; 24x CD/EIDE	6x DVD; 32x CD/EIDE	6x DVD; 32x CD/EIDE	6x DVD; 32x CD/EIDE	6x DVD; 32x CD/EIDE
Sound card manufacturer	Creative	Aureal	Creative	Creative	Creative
Sound card model	SoundBlaster Live!	Vortex 2	SoundBlaster Live! Value	SoundBlaster Live!	SoundBlaster Live! Value
Speakers manufacturer + model	Diamond Pro Media 4030	Altec Lansing AC554	PC Works 4 Point Surround	PC Works 4 Point Surround	Yamaha M20
Graphics card manufacturer + model	Asus V3800	Xentor 32 Ultra	Xentor32 Ultra	Matrox G400	Matrox G400
Chipset	Nvidia Riva TNT2	Nvidia Riva TNT2 Ultra	Nvidia Riva TNT2 Ultra	MGAG400	MGAG400
RAM/max RAM/type	32Mb/32Mb/SDRAM	32Mb/32Mb/SDRAM	32Mb/32Mb/SDRAM	32Mb/32Mb/SDRAM	16Mb/16Mb/SGRAM
Graphics card interface	AGP	AGP	AGP	AGP	AGP
Monitor manufacturer + model	Sony Multiscan 400PS	LG Studioworks 910SC	Taxan Ergovision 975	Taxan Ergovision 980	Mitsubishi Diamond 900u
Monitor size/max viewable diagonal	19in/18in	19in/18in	19in/18in	19in/18in	19in/18in
Max refresh rate at 1024x768	85Hz	120Hz	117Hz	133Hz	90Hz
Max refresh rate at 1280x1,024	85Hz	85Hz	88Hz	100Hz	85Hz
Max refresh rate at 1600x1,200	75Hz	75Hz	75Hz	85Hz	75Hz
<b>OTHER INFORMATION</b>					
Modem manufacturer + model	Accord 56K	E-Tech 56K	Diamond Supra Express 56i	Diamond Supra Express 56i	Diamond Supra Express 56i
Highest supported modem standard	V.90	V.90	V.90	V.90	V.90
Misc hardware	None	Headset	none	Adaptec 1520 SCSI Controller	none
Bundled software	Lotus SmartSuite Millennium	Lotus SmartSuite Millennium	none	WordPerfect Office 2000	MS Office 2000
Standard warranty	1 year on-site	2 years on-site	2 years on-site	1 year on-site UK only	1 year on-site
Warranty options	3 years on-site	3 years on-site	3 years on-site	3 years on-site	3 years on-site
Technical support tel no	07000 285275	0181 307 2830	0800 496 4636	0181 208 4795	0113 244 4948
Technical support hours	Mon-Fri 9am-5.30 pm	Mon-Fri 9am-6pm	Mon-Sat 9am-5.30pm	Mon-Fri 9am-6pm	Mon-Fri 9.30-5.30 Sat 10-4

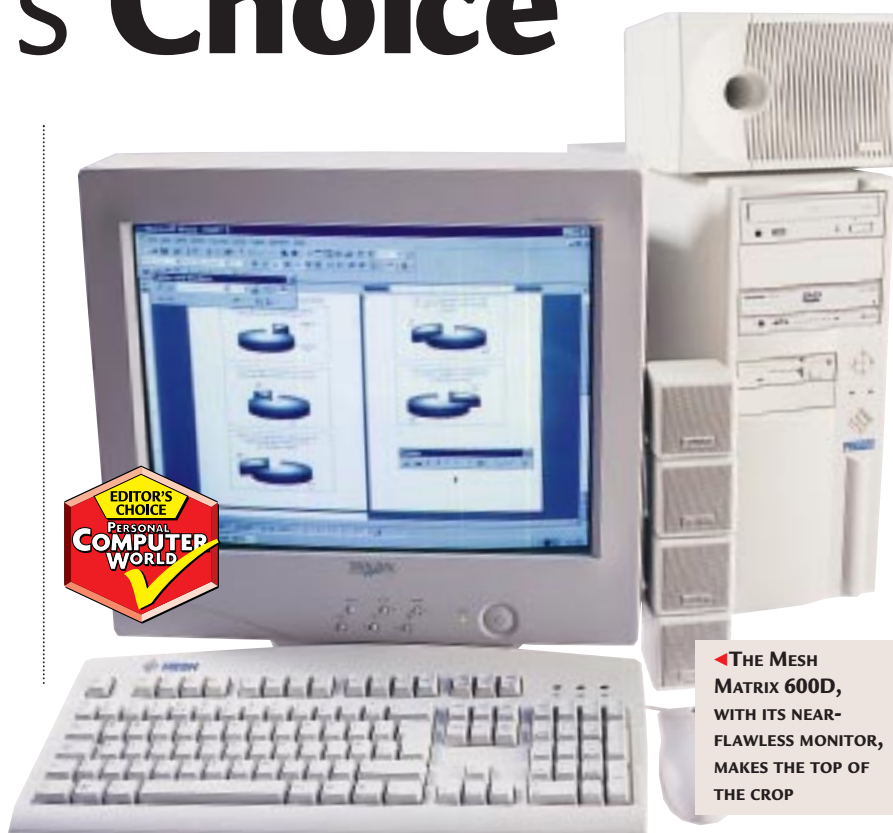


# Editor's Choice

It wasn't easy picking a winner, since we'd have been happy with any of the systems supplied. All the manufacturers pulled out all the stops to produce cutting edge machines based on AMD's new wonder-chip. And if this test has proved anything, it's that the AMD Athlon is going to be a force to be reckoned with. It's a faster CPU than Intel's 600MHz Pentium III and it costs less.

Of course, as with all technological advances, the extra features sported by the Athlon are only of any use if software developers make use of them. Unfortunately, there's no software that makes use of the Athlon's third FPU as yet, but when optimised code does start to appear, we should see even better performance from this chip.

It was refreshing to see all the manufacturers in this test surround the new CPU with high-quality supporting components, and build quality across the board was very impressive. Few compromises were made by any of the vendors and the prices weren't as high as we'd expected. If you're happy to forsake the Intel Inside logo on your PC, an Athlon-based system could be for you.



◀ **THE MESH MATRIX 600D, WITH ITS NEAR-FLAWLESS MONITOR, MAKES THE TOP OF THE CROP**

◀ **Editor's Choice goes to the Mesh Matrix 600D.** Mesh put together a truly staggering system with just about every base covered. The Taxan Ergovision 980 monitor is superb, while the 32Mb Matrox Millennium G400 graphics card offered the option of adding a second display. The build quality is excellent, so upgrading will be the

to 5.2Gb removable optical discs.

Mesh has thought long and hard about this machine and come up trumps. If you're looking for the ultimate AMD Athlon-based system, this is it.

◀ **The battle for our Highly Commended award** was closely fought between Carrera and Evesham. Both machines offered superb value for money and impressive performance. Ultimately, though, the extra memory and office suite supplied with the

**Carrera Octane M600** just about swung the balance in its favour.

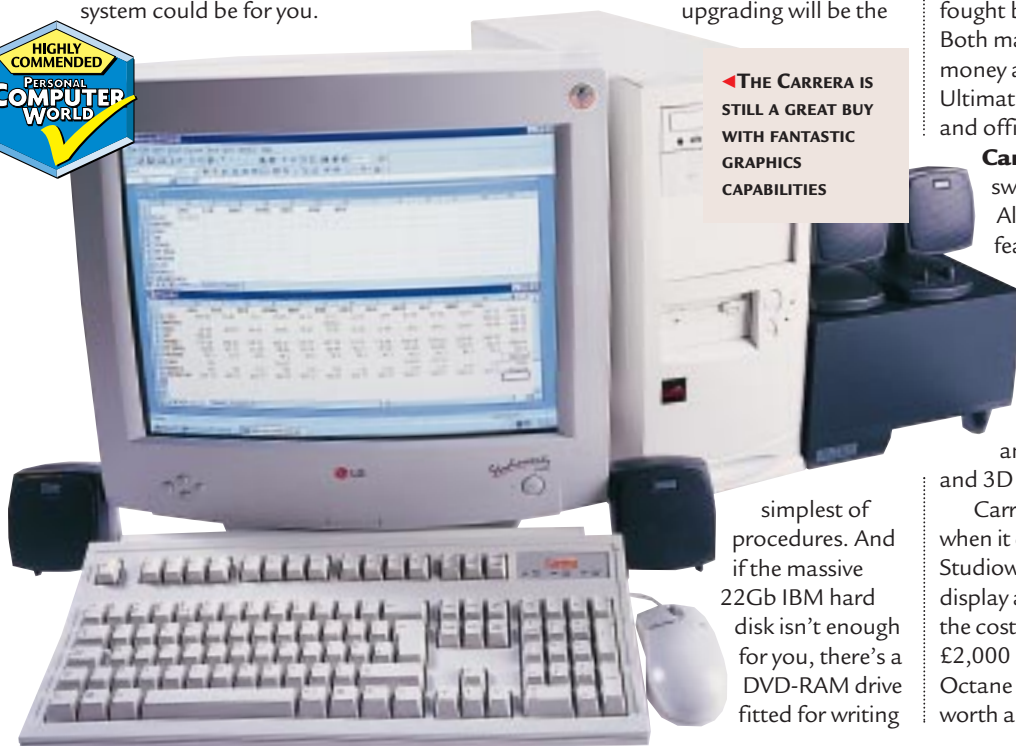
Although the Octane isn't as fully featured as the Mesh Matrix 600D,

it's still a great system. With 256Mb of RAM supporting the CPU, you won't need to upgrade for a long time.

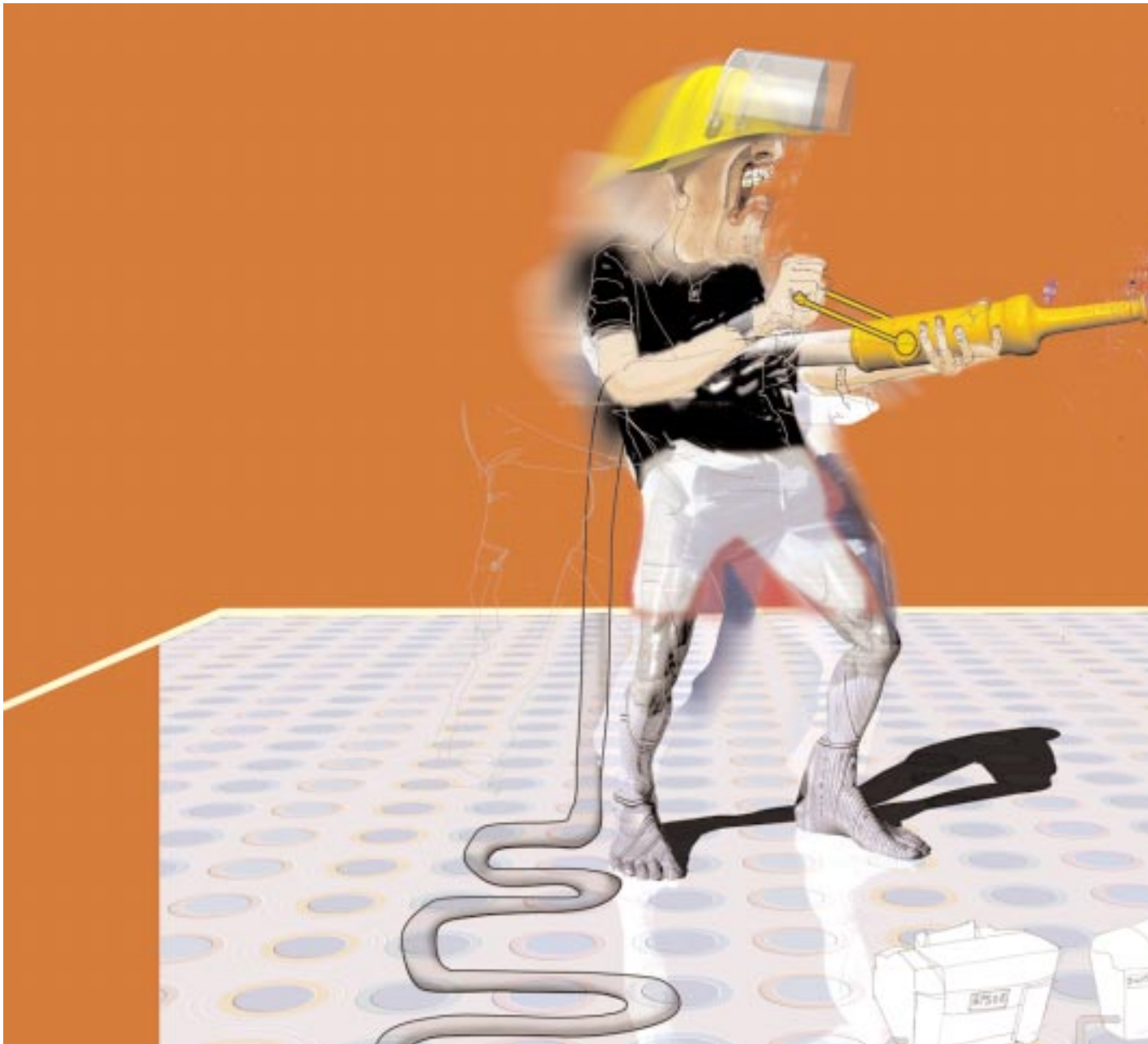
Add to this the excellent Maxi Gamer Xentor graphics card, and you have incredibly fast 2D and 3D graphical performance.

Carrera hasn't pushed the boat out when it comes to its monitor, but the LG Studioworks 910SC is still a fine 19in display and its inclusion has helped keep the cost of the system down. At just over £2,000 including VAT, the Carrera Octane M600 is a great buy and well worth a close look.

simplest of procedures. And if the massive 22Gb IBM hard disk isn't enough for you, there's a DVD-RAM drive fitted for writing



◀ **THE CARRERA IS STILL A GREAT BUY WITH FANTASTIC GRAPHICS CAPABILITIES**



# Photo Finish





## Twelve of the best **photo-capable printers**, from budget to high-end, strike a pose for our team of testers.

**I**f your inkjet printer is more than a couple of years old, it could be worthwhile upgrading. While the twelve printers we have included in this group test still rely on tried and tested thermal or piezo-electric heads, the technology behind them has moved on in leaps and bounds.

Not only are modern printers faster than ever before, but they also place much finer drops of ink on the page, which results in far more realistic photo reproduction. To prove the point, Lexmark and Epson have both sponsored photography exhibitions in recent years in which the exhibits were produced on their own printers. Indeed, Lexmark's latest line is endorsed by David Bailey.

But it's not only inkdrop sizes that are shrinking — prices are getting smaller too, and now it's easy to find yourself a photo-capable printer for around £150. Here, we take an in-depth look at a dozen of the latest to hit the shelves in the budget, photo printing and office printing markets, running them through a variety of tests to discover which is the best for you.

## Ratings

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

## Contents

- 174 Budget printers:**  
Canon BJC-1000  
Epson Stylus Color 440  
Hewlett-Packard DeskJet 610C  
Lexmark Z11
- 176 Small business printers:**  
Canon BJC-6000  
Epson Stylus Color 900  
Hewlett-Packard 895CXi  
Xerox Docuprint C15
- 178 Photo printers:**  
Canon BJC-7100
- 180 Epson Stylus Photo 750  
Hewlett-Packard DeskJet 880C  
Lexmark Z51**
- 182 Photo samples**
- 183 CorelDraw samples / text samples**
- 184 Test results / How we did the tests**
- 186 Table of features**
- 188 Reaction to sunlight**
- 188 Running costs**
- 190 Editor's Choice**  
• *Reviews: Nik Rawlinson*  
• *Testing: David Eade, Matthew Howard*

## Canon BJC-1000

The BJC-1000 holds only one CMY cartridge, and the black cartridge is an optional extra, so to get a true measurement of how this printer performs in its pure 'vanilla' configuration, we tested its text output using composite black. Although there was a lot of feathering at standard resolution on photocopy paper, it looked as though we had used a black cartridge; and when



we switched to inkjet paper, the characters were crisp and dark. The BJC-1000 won't clutter your desk, but you will have to clear a space for the print-outs — there is no output tray, so they arrive on the desk. Installation started off well, but the routine refused to recognise that we were using the correct installation CD. Once we had convinced it that we were, set-up continued. The driver is easy to use: you select the type of document being printed, and it will change the cartridge and media information itself. This can be fine-tuned using drop-down menus. Colours were vivid on Canon's inkjet paper, but on photo paper the photograph was rather grainy. That said, the photo's fades were smooth,

colours didn't run into each other and skin tones were good, but on photocopy paper the Best quality composite black text was highly feathered.

BUDGET

### PCW DETAILS

★★★★

**Price** £104.58 (£89 ex VAT)  
**Contact** Canon 0121 666 6262  
[www.canon.co.uk](http://www.canon.co.uk)

**Good Points** Good colours on inkjet paper

**Bad Points** Highly feathered text on photocopy paper

**Conclusion** The lack of a black cartridge was disappointing

## Epson Stylus Color 440



Installing this two-cartridge printer from the driver CD was simple. The comprehensive driver gave easy access to head alignment and nozzle cleaning from the software. It lets you select paper types using drop-down menus, and it will change the quality settings available. Reduction and enlargement of between 10 per cent and 400 per cent is possible. Best and Standard quality text on photocopy paper was too feathered to send out as a business



letter. On inkjet paper, though, the 440 really came through. Text was crisp and dark, with even 4pt text being easily legible. We were impressed with its photo quality output on Epson's own photo paper. But although colours were vivid, the output was a little grainy. On the positive side, skin tones were realistic and fades were smooth and uniform, and our business graphics looked great on inkjet paper, easily rivalling some of the business printers in this group test, and we would not have been shy to use photocopy paper to print them, either, as colours remained bright and of uniform density. The 440 is not the fastest kid on the block, but when printing text it beats everything seen

here from Canon. When printing the CorelDraw business graphics it also beats HP's budget offering [below], shaving almost five minutes off the job completion time.

BUDGET

### PCW DETAILS

★★★★★

**Price** £99.01 (£84.26 ex VAT)  
**Contact** Epson 0800 220546  
[www.epson.co.uk](http://www.epson.co.uk)

**Good Points** Excellent inkjet paper performance

**Bad Points** Text feathering on photocopy paper in Best quality

**Conclusion** Our budget pick of the bunch

## HP DeskJet 610C

HP printers are always a dream to set up, and this entry-level replacement for the DeskJet 420C is no exception. A Getting Started poster showed us exactly how to install the cables, drivers and cartridges. The 610C is a two-cartridge printer that even has support for the euro symbol under DOS. The driver is easy to use, with drop-down menus for paper size and type, and selection buttons with illustrative icons for selecting the print quality.



Printer services such as alignment and head cleaning can also be found in the driver, and the front loading and catching input and output paper trays hold 100 and 50 pages respectively. In common with the other HP devices tested here, the 610C's paper path is as far from straight as you can get. Standard quality text on photocopy paper was excellent. Feathering was minimal, and in a business environment we would have had no hesitation in sending out our print. Even the draft text impressed, although in some places larger fonts suffered from slight alignment problems. The inkjet paper Best quality colours of our CorelDraw test were not as good as those produced by the Epson 440 and we

were very disappointed with the grainy, dark photo that suffered badly at the hands of the 610C's relatively low 600x600 resolution. Even PhotoREt couldn't save it.

BUDGET

### PCW DETAILS

★★★★★

**Price** £79 (£67.23 ex VAT)  
**Contact** Hewlett-Packard  
0990 474747 [www.hp.com](http://www.hp.com)

**Good Points** Euro support under DOS. Good text output

**Bad Points** Poor-quality photo reproduction

**Conclusion** If all you want to print is text, this is a good choice



## Lexmark Z11

**The Z11 squeezes** 1200x1200 dots into every square inch. It's easy to install and its driver is simple to use:

paper sizes are represented by icons, and a series of selection buttons specify paper types. Ink levels are displayed on-screen. It printed our business letter in composite black, as it came with a colour cartridge only, and the output suffered from multi-coloured feathering at draft and standard resolutions,



even on inkjet paper. Feathering was particularly bad at standard resolution on photocopy paper. This problem was eliminated when switching to Best quality and using inkjet paper, but on all occasions it was unable to print a greyscale signature at the foot of the letter without shading the area with cyan spots. On inkjet paper, our business graphics were handled well. Graduated fades were only slightly stepped, and solid blocks of colour were well reproduced. At Best quality and on photo paper the A4 photograph was fairly good: banded, but impressive considering the price. In terms of speed, the Z11 performed on a par with Canon's BJC-1000, but it was well beaten by HP's 610C and the Epson

440 when printing text at Best quality. The 440 completed the high-quality business graphics in around a third of the Z11's time.

**BUDGET**

### PCW DETAILS

★★★★

**Price** £117.50 (£100 ex VAT)

**Contact** Lexmark 01628 481500  
[www.lexmark.co.uk](http://www.lexmark.co.uk)

**Good Points** Ink level monitor in driver

**Bad Points** Difficulty printing greyscale bitmap

**Conclusion** 1200 x 1200dpi sounds good, but the Z11 didn't live up to our expectations

## Canon BJC-6000

**Installation of the BJC-6000** involved navigating a confusing series of CD subdirectories, but the fact that each of the printer's four base colours (CMYK) has its own individually replaceable inkwell is a welcome feature. Advanced driver options let you choose print quality, CMYK levels, colour intensity and four levels of

brightness, and you can apply a range of stamps (watermarks) to your output. The 6000 uses Canon's new drop modulation



technology to vary not only the colour but also the size of each dot laid down on the page. Canon claims that this produces deeper colours, more subtle shadows and less grainy images, and to an extent, it paid off. We were impressed by the quality of the photo, but the individual drops of ink were nonetheless evident. On Canon's inkjet paper the CorelDraw graphics reproduced well at Best quality. Colours were vibrant, and graduated fades were fairly smooth with only minimal stepping. Best, Standard and even Draft quality text on photocopy paper was excellent — dark and not at all feathered. While the BJC-6000 produced Standard quality text pages at about the same speed as the Epson

900, it was almost 10 times slower at Best quality. It was also around three times slower than the HP DeskJet 895Cxi at high-quality business graphics and photo printing.

**SMALL BUSINESS**

### PCW DETAILS

★★★★★

**Price** £233.83 (£199 ex VAT)

**Contact** Canon 0121 666 6262  
[www.canon.co.uk](http://www.canon.co.uk)

**Good Points** Good business graphics. Excellent text on photocopy paper. Individually replaceable inkwells

**Bad Points** Slow

**Conclusion** A competent printer, let down by its ponderous approach

## Epson Stylus Color 900

**The Stylus Color 900 is** Epson's high-end business offering. For networked users, the 900N includes a 100Base Tx Ethernet interface. There are drivers for iMac and G3 as well as Windows, but nothing for DOS users, unfortunately. As well as the usual paper size and type settings, the driver lets you add watermarks along the lines of 'confidential' and 'draft',

reduce and enlarge on a 10 per cent – 400 per cent scale, and use PhotoEnhance3 to alter pictures or give them a sepia tone.



While Lexmark claims to have the world's highest-resolution printer, Epson claims the 900 to have the world's smallest drop size at just 3 picolitres, and its 1440x720 top resolution is enhanced by Variable-Sized Droplet Technology which allows the printer to use any one of six drop sizes to improve output. Our photo, although slightly banded, benefited from this, with very fine print and almost no graininess. Clouds that should have come out white appeared a little pink, but skin tones were excellent, colours vivid and fades exceptionally smooth. Black text on photocopy paper in both Standard and Draft mode was a little feathered, but upping the quality to Best and using

inkjet paper solved this. The 900 was fairly fast, too: printing text at this resolution, it was beaten only by HP's DeskJets 895Cxi and 880C, and it was the fastest of the lot for photos and business graphics.

**SMALL BUSINESS**

### PCW DETAILS

★★★★★

**Price** £351.33 (£299 ex VAT)

**Contact** Epson 0800 220546  
[www.epson.co.uk](http://www.epson.co.uk)

**Good Points** Fast business graphics and photos

**Bad Points** Slight banding on photo.

**Conclusion** An impressive performance

## HP DeskJet 895CXi



**Installation of the 895CXi** is a dream. The CD auto-runs and installation is complete with just a single click of the mouse. The driver has selection buttons for output quality and drop-down menus for paper size and type. Head alignment and cleaning is easily



accessed through the printer services tab or the desktop toolbox. The 895CXi incorporates HP's PhotoREt technology for improved

picture handling, and this paid off when it came to printing our photo. On HP's photo paper and at Best quality, banding was very difficult to spot, and we had to look closely to see any at all. Skin tones were excellent, and the colours of our images overall were hard to fault. HP printers excel when it comes to printing black text on photocopy paper. At standard quality we could see no feathering, and even text as small as 4pt was clearly legible. We also noted that while the 895CXi failed to draw a white hairline through a block of solid black ink when set to Best quality and using HP's own inkjet paper, it succeeded when we switched to photocopy paper. It also excelled when it came to handling Best quality

text output, producing five pages in just 2min 37sec. Although beaten by the Epson 900, it came a close runner-up in printing the A4 photo at Best quality.

SMALL BUSINESS

### PCW DETAILS

★★★★★

**Price** £229 (£194.89 ex VAT)

**Contact** Hewlett-Packard  
0990 474747 [www.hp.com](http://www.hp.com)

**Good Points** Fast. Good business graphics. Excellent text on photocopy paper

**Bad Points** None to speak of

**Conclusion** A first-rate business printer

## Xerox Docuprint C15

**The C15's installation procedure** is rather fiddly — the user has to navigate a series of directories that had even us confused the first time around. The driver is quite basic, consisting of only one page and an 'about' tab. There are the usual drop-down quality and media selection menus, but no cartridge utilities. Like the Lexmark Z11, the C15 boasts an impressive 1200x1200dpi. Even so, we were very disappointed with the quality of the photo it produced.



On photo paper at the highest resolution it was grainy and a little banded, and blurred in some places. Where there were sharp changes of colour, a visible ridge appeared. Standard quality text on photocopy paper was fairly good, with no feathering. Characters were crisp and dark, and text as small as 4pt was easily legible. Business graphics were also handled well. Graduated fades were smooth, and solid colour blocks had accurate tones. Our black hairline came out red, though, showing that this printer had opted for composite black rather than using its black cartridge. We were fairly impressed when it came to speed. The C15 beat everything in its category apart from HP's 895CXi, dropping five pages of high-quality

black text in 3min 20sec. It did less well, though, when it came to business graphics and the photo, managing to beat only the Canon BJC-6000 on both counts.

SMALL BUSINESS

### PCW DETAILS

★★★★

**Price** £257.33 (£219 ex VAT)

**Contact** Xerox 0800 787787  
[www.xerox.com](http://www.xerox.com)

**Good Points** Crisp text on photocopy paper

**Bad Points** Poor photo printing

**Conclusion** Xerox has a good reputation that this printer does not enhance

## Canon BJC-7100

**The BJC-7100 is the first** seven colour printer, sporting CMY, light CMY and black inks. The driver is comprehensive and easy to use. Scaling is possible on a range starting at 10 per cent and topping off at 400 per cent, and the features tab includes options for applying watermarks to the finished page. The 7100 incorporates Canon's P-POP (Plain Paper Optimised Printing) technology, so we were keen to find out how it would



perform on photocopy paper: we can report that it did very well in our tests. Standard quality black text was clean, sharp, dense and not at all feathered. In draft mode it experienced some alignment problems, but 4pt text remained clearly legible. Business graphics reproduced particularly well on photocopy paper, and although colours were brighter on inkjet paper, we didn't really feel that it was worth the extra expense with such good photocopy paper results. However, in every instance the 7100 was by far the slowest printer in this category, taking over half an hour to print just five high-quality pages of text. Even reducing the quality setting to Standard only shaved off a paltry 10min from the job

completion time. While the printer did well to output the Standard quality CorelDraw business graphics in a fraction under 2min, we had to wait over 9min when upping the quality to Best.

PHOTO

### PCW DETAILS

★★★★

**Price** £292.58 (£249 ex VAT)

**Contact** Canon 0121 666 6262  
[www.canon.co.uk](http://www.canon.co.uk)

**Good Points** Good business graphics, especially on photocopy paper

**Bad Points** Let down by its speed

**Conclusion** We'd be tempted if it was a bit quicker



## Epson Stylus Photo 750



The 750 is very easy to set up, requiring only a single reboot and a bit of patience while it goes through a head-cleaning process. The colour cartridge is a five-colour unit (CMY, half cyan, half magenta.) The driver uses drop-down menus to select paper types, and your selection will determine the quality options open to you. It also



includes options for photo enhancement, image scaling and 180 degree rotation. We were not particularly impressed with the quality of Standard black text on photocopy paper, as feathering was clearly evident. At Best quality and on photo paper, the results of our photo printing test were excellent. Skin tones were realistic, there was no evidence of banding or graininess, and transitions from one shade to another were smooth. In short, we were unable to find a fault. We have criticised Epson printers in the past for being slow, but not this time. Five pages of Best quality text arrived in a tenth of the time taken by Canon's ponderous 7100, and the only printer in this category to beat it in

the photo printing race is HP's DeskJet 880C. It also streaks ahead in the business graphics test, dropping the completed highest-quality page in just 1min 24sec.

PHOTO

### PCW DETAILS

★★★★★

**Price** £239 (£203.40 ex VAT)

**Contact** Epson 0800 220546

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

**Good Points** Excellent photo reproduction

**Bad Points** Poor black text on photocopy paper

**Conclusion** Number one for photo printing

## HP DeskJet 880C

Like all Hewlett-Packard printers, the DeskJet 880C is exceptionally easy to install. The driver has selection buttons for quality settings, and drop-down menus for paper size and type. A second tab includes options for two-sided printing and image orientation, while the Printer Services tab lets you clean and align your head without getting your fingers grubby. All of the HP printers tested here smoothed



the edges of some jagged, non-scalable characters on our business letter, giving the page a more professional image. Draft quality text on photocopy paper, which was dark and showed no evidence of feathering, was almost good enough to use in a business situation. Standard quality business graphics on photocopy paper were also excellent, with some of the smoothest fades we have seen in graduated stripes, and a clean, white hairline running through the block of black. We were surprised that our business graphics actually looked better on photocopy paper than on HP's inkjet paper. On photo paper and at Best quality, our photo looked great. Colours were bright and vivid, the only

problem being that skin tones came out rather dark.

The 880C bundle includes instant delivery software that will schedule the direct printing of internet material.

PHOTO

### PCW DETAILS

★★★★★

**Price** £199 (£169.36 ex VAT)

**Contact** Hewlett-Packard  
0990 474747 [www.hp.com](http://www.hp.com)

**Good Points** Smoothing of non-scalable characters. Good draft text on photocopy paper

**Bad Points** None to speak of

**Conclusion** A well-built, sturdy and versatile photo printer

## Lexmark Z51



The Z51 is the new feather in Lexmark's cap. At 1200x1200dpi it's the world's highest-resolution printer, and the company is promoting it in both the office and photo markets. Although installation was easy to follow, it did require two reboots. But we found the Z51 particularly easy to use, and Lexmark had incorporated its usual ink monitor into the driver so that we could see at a glance how much we had left. Even at Best quality and on Lexmark's



own inkjet paper, the cyan block in our business graphics test was a definite grey/blue. It had no problem drawing a white hairline through the solid block of black, and graduated fades were very smooth with hardly any stepping. The Z51's high resolution certainly paid off when it came to printing our photo. On Lexmark photo paper and at the highest quality setting, it demonstrated almost continuous tone with no grain and bright, vivid colours. Skin tones were realistic, there was no banding, and dark tones did not bleed into lighter ones. Plain text on photocopy paper was not in the least bit feathered, and at Standard quality even 4pt text was clearly legible. In terms of speed the Z51 was no slouch,

easily beating the Canon BJC-7100 at high-quality text printing, but losing out to Epson's 750 when it came to high-quality photos and business graphics.

PHOTO

### PCW DETAILS

★★★★★

**Price** £211.50 (£180 ex VAT)

**Contact** Lexmark 01628 481500  
[www.lexmark.co.uk](http://www.lexmark.co.uk)

**Good Points** Fairly fast. Good photo printing. Almost no ink fade in sunny windows

**Bad Points** Slight mis-matching of business graphics colours

**Conclusion** A quality product worthy of consideration

## PHOTO SAMPLES

### BUDGET

Canon BJC-1000



Epson Stylus Color 440



HP DeskJet 610C



Lexmark Z11



### SMALL BUSINESS

Canon BJC-6000



Epson Stylus Color 900



HP DeskJet 895CXi



Xerox Docuprint C15



### PHOTO

Canon BJC-7100



Epson Stylus Photo 750



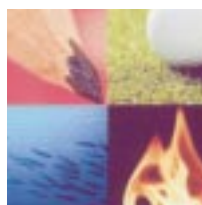
HP DeskJet 880C



Lexmark Z51

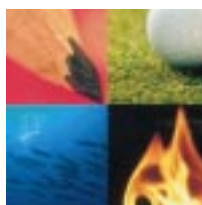


### BUDGET

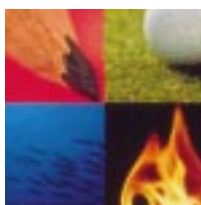


Canon BJC-1000

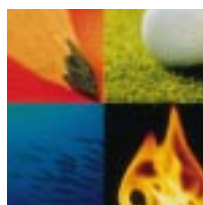
### SMALL BUSINESS



Epson Stylus Color 440

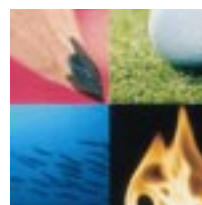


Canon BJC-6000

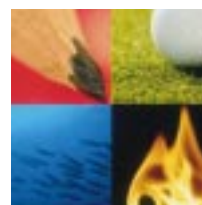


Epson Stylus Color 900

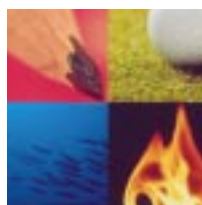
### PHOTO



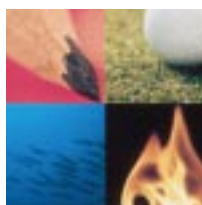
Canon BJC-7100



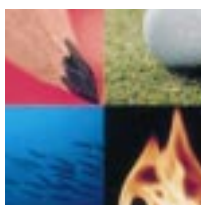
Epson Stylus Photo 750



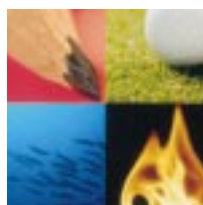
HP DeskJet 610C



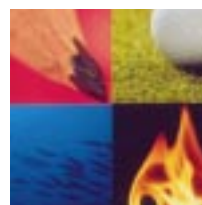
Lexmark Z11



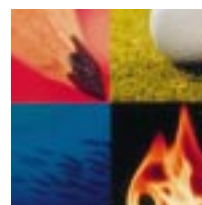
HP DeskJet 895CXi



Xerox Docuprint C15



HP DeskJet 880C



Lexmark Z51



## CORELDRAW SAMPLES

### BUDGET



Canon BJC-1000

### SMALL BUSINESS



Canon BJC-6000

### PHOTO



Canon BJC-7100



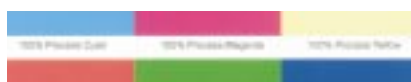
Epson Stylus Color 440



Epson Stylus Color 900



Epson Stylus Photo 750



HP DeskJet 610 C



HP DeskJet 895CXi



HP DeskJet 880C



Lexmark Z11



Xerox Docuprint C15



Lexmark Z51

## TEXT SAMPLES

\* plain paper

\* inkjet paper

### BUDGET

Canon BJC-1000

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

Epson Stylus Color 440

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

HP DeskJet 610C

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

Lexmark Z11

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

### SMALL BUSINESS

Canon BJC-6000

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

Epson Stylus Color 900

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

HP DeskJet 895CXi

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

Xerox Docuprint C15

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

### PHOTO

Canon BJC-7100

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

Epson Stylus Photo 750

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

HP DeskJet 880C

To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*

Lexmark Z51

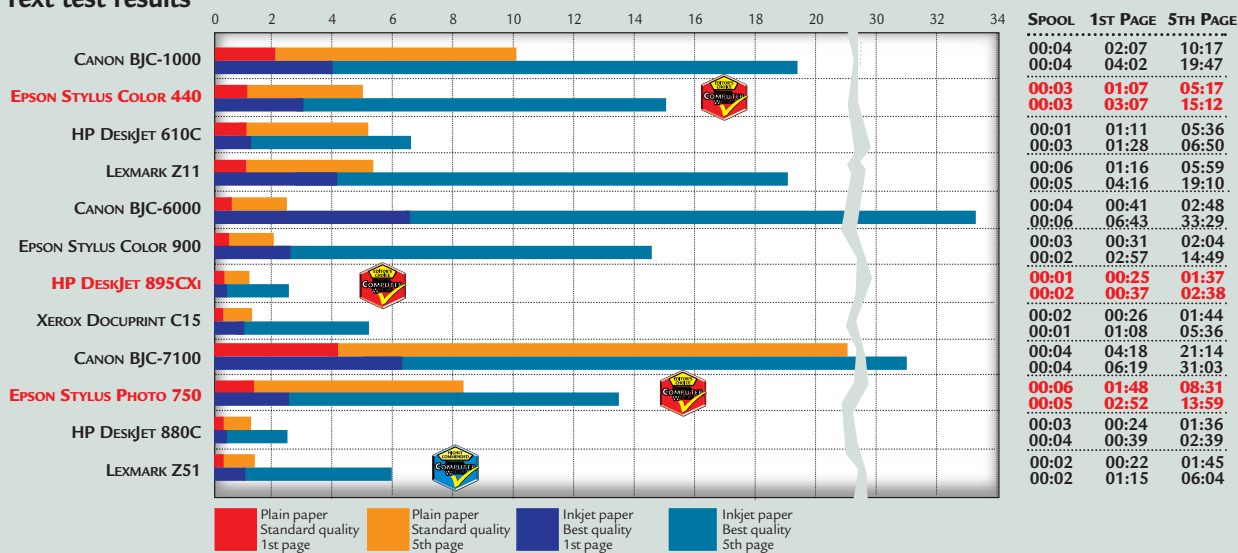
To do this part of the printer test, send this document to the printer five \*  
To do this part of the printer test, send this document to the printer five \*



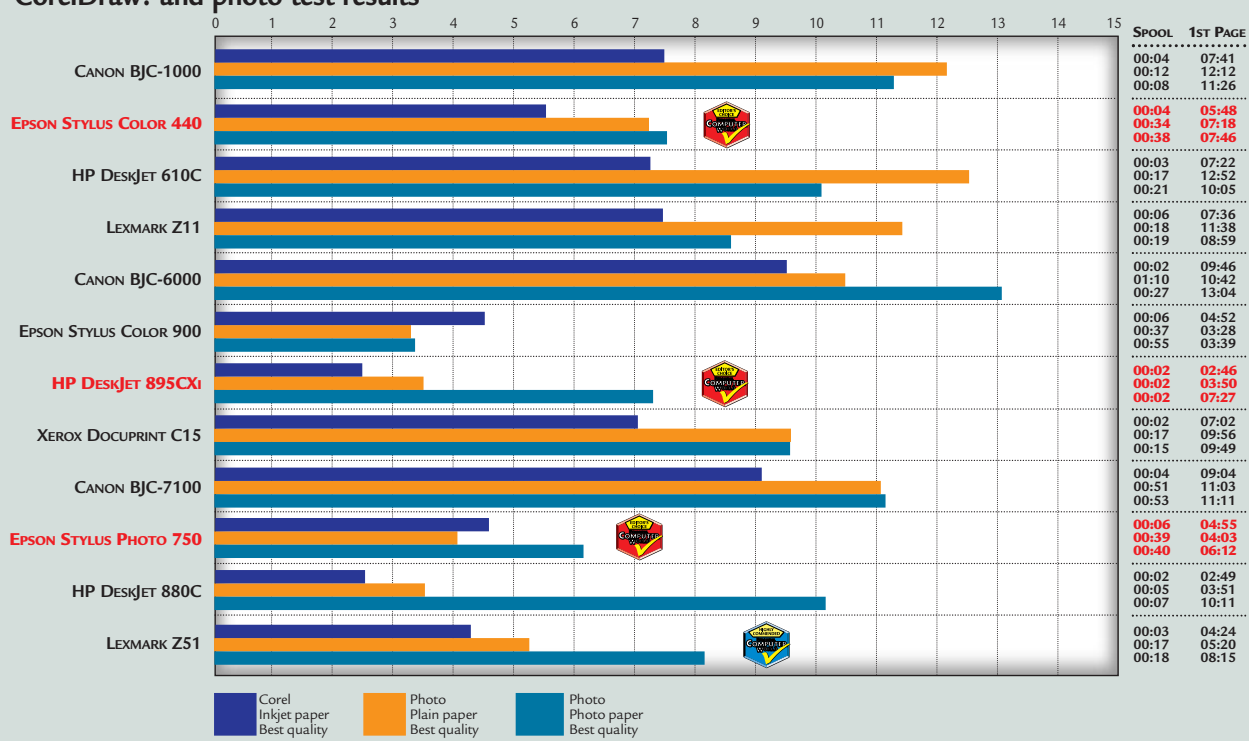
# PCW Labs Report



## Text test results



## CorelDraw! and photo test results



## How we did the tests



**We subjected the printers to five rigorous tests.** We first printed five copies of a business letter at Draft, Standard and High quality on inkjet and photocopy paper. The spool time, the time for the first page to drop, and the time for the job to complete, were all recorded. Next, we printed

business graphics at both Standard quality and Best on regular photocopy paper and the proprietary inkjet paper of the printer manufacturer. Again, spool and job completion times were recorded. Finally, we printed an A4 photo at Best quality on photocopy and photo paper. Spool and completion times were noted.

## Table of features

### BUDGET PRINTERS



MANUFACTURER	CANON	EPSON	HEWLETT-PACKARD	LEXMARK
MODEL	BJC-1000	STYLUS COLOR 440	DESKJET 610C	Z11
Price ex VAT	£89.00	£84.26	£67.23	£100.00
Price inc VAT	£104.58	£99.01	£79.00	£117.50
Telephone	0121 666 6262	0800 220546	0990 47 47 47	01628 481500
Website	<a href="http://www.canon.co.uk">www.canon.co.uk</a>	<a href="http://www.epson.co.uk">www.epson.co.uk</a>	<a href="http://www.hp.com">www.hp.com</a>	<a href="http://www.lexmark.co.uk">www.lexmark.co.uk</a>
Maximum resolution (dpi)	720 x 360	720 x 720	600 x 600	1200 x 1200
Cartridges held	1	2	2	1
Cost of mono cartridge ex VAT	£19.99	£13.48	£22.90	£19.53
Cost of colour cartridge ex VAT	£24.99	£14.54	£25.30	£23.57
Input paper tray	50 pages	100 pages	100 pages	100 pages

### OFFICE PRINTERS



MANUFACTURER	CANON	EPSON	HEWLETT-PACKARD	XEROX
MODEL	BJC-6000	STYLUS COLOR 900	DESKJET 895CXi	DOCUPRINT C15
Price ex VAT	£199.00	£299.00	£194.89	£219.00
Price inc VAT	£233.83	£351.33	£229	£257.33
Telephone	0121 666 6262	0800 220546	0990 47 47 47	0800 787 787
Website	<a href="http://www.canon.co.uk">www.canon.co.uk</a>	<a href="http://www.epson.co.uk">www.epson.co.uk</a>	<a href="http://www.hp.com">www.hp.com</a>	<a href="http://www.xerox.com">www.xerox.com</a>
Maximum resolution (dpi)	1440 x 720	1440 x 720	600 x 600	1200 x 1200
Cartridges held	2	2	2	2
Cost of mono cartridge ex VAT	£8.99 ink only	£18.61	£22.90	£20.00
Cost of colour cartridge ex VAT	£6.99 each inkwell	£22.33	£25.30	£28.95
Input paper tray	130 pages	100 pages	100 pages	150 pages

### PHOTO PRINTERS



MANUFACTURER	CANON	EPSON	HEWLETT PACKARD	LEXMARK
MODEL	BJC-7100	STYLUS PHOTO 750	DESKJET 880C	Z51
Price ex VAT	£249.00	£203.40	£169.36	£180.00
Price inc VAT	£292.58	£239.00	£199	£211.50
Telephone	0121 666 6262	0800 220546	0990 47 47 47	01628 481500
Web site	<a href="http://www.canon.co.uk">www.canon.co.uk</a>	<a href="http://www.epson.co.uk">www.epson.co.uk</a>	<a href="http://www.hp.com">www.hp.com</a>	<a href="http://www.lexmark.co.uk">www.lexmark.co.uk</a>
Maximum resolution (dpi)	1200 x 600	1440 x 720	600 x 600	1200 x 1200
Cartridges held	2	2	2	2
Cost of mono cartridge ex VAT	£29.99	£13.48	£22.90	£19.53
Cost of colour cartridge ex VAT	£31.99 cart & ink £19.99 just ink	£10.24	£25.30	£24.69
Input paper tray	130 pages	100 pages	100 pages	100 pages

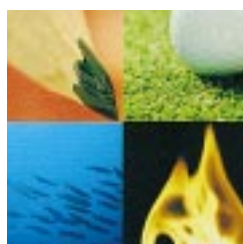
# Reaction to sunlight

**I**nk reacts to sunlight, fading after time. This is something the inkjet manufacturers are aware of, and try to make their proprietary inks, used in every one of their printers, resistant to fading. To test how light-fast the ink in each of our test printers was, we printed our standard test photo twice on each

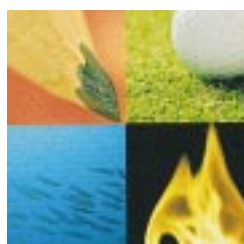
manufacturer's own photo paper. One copy was filed away in a drawer for a month, while the other was stuck to a west-facing window to see what effect the light would have on the once-vivid colours. As you can see from the results, the effect was far more striking on the output of some printers than on that of

other models tested here. It's worth bearing these results in mind if you intend to use your printer for blowing up your holiday snaps, and especially if you're thinking of framing them and popping them up on a wall, unless you're happy for them to degrade over a fairly short period of time.

## SAMPLES EXPOSED TO SUNLIGHT



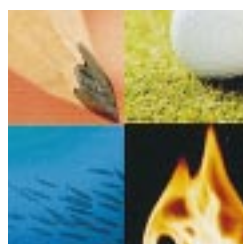
Canon BJC-7100



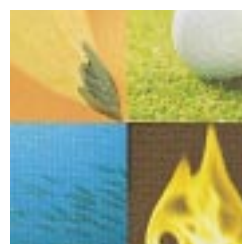
Epson Stylus Color 440



HP DeskJet 895CXi

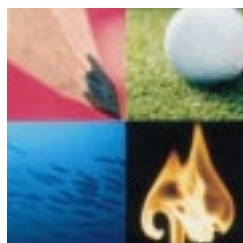


Lexmark Z51



Xerox Docuprint C15

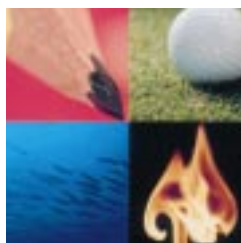
## SAMPLES KEPT IN A FILE



Canon BJC-7100



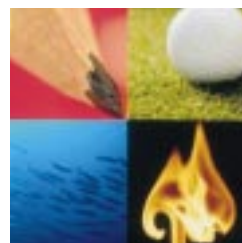
Epson Stylus Color 440



HP DeskJet 895CXi



Lexmark Z51



Xerox Docuprint C15

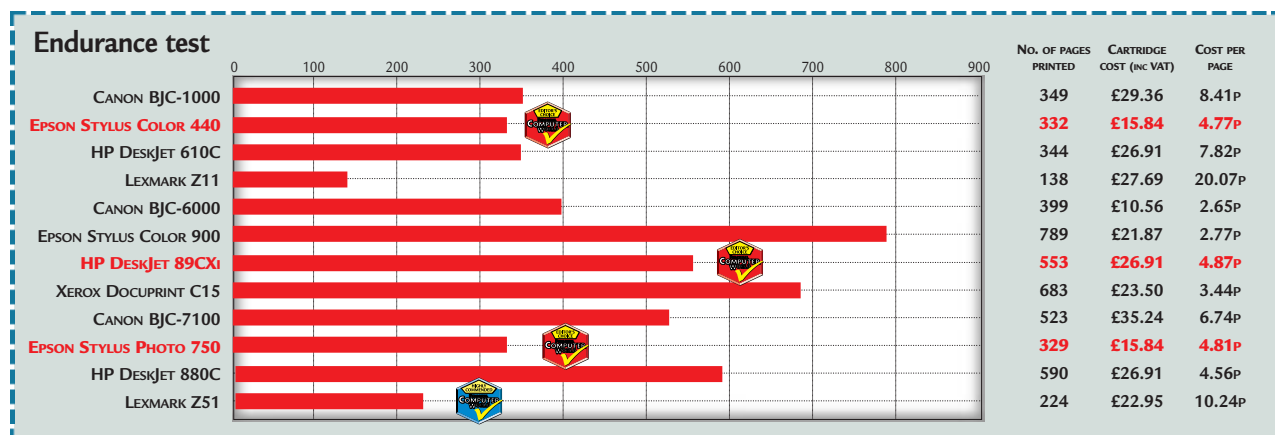
# Running costs

**T**o get an idea of the real running costs of the printers, we installed a new cartridge in each printer and ran it dry by printing full text pages. Each page was numbered so that we could keep track of the point at which the ink supply was exhausted. The results of the test revealed that although some

of the printers on test were very cheap, the true running costs might offset the initial purchase price. The graph below shows the number of pages printed and the cost per page.

Taking a typical office scenario printing 2,000 pages a year (around eight pages per day) and keeping the printer

for three years, the best combination of initial price and running costs was the Epson 440, with the worst case being the Lexmark Z11. Increasing the load on the printer to 5000 pages a year and the Canon BJC-6000 sneaked ahead of the Epson 440, with the Lexmark Z11 still coming in last.





# Editor's Choice

**H**ewlett-Packard has been claiming for some years now that dot pitch is an obsolete measurement of quality. The company touts alternative technology such as PhotoREt, whereby colours are layered to produce a wider variety of shades. It argues that this allows its printers to achieve what the eye perceives as continuous tone without breaking the 600dpi barrier.

HP also champions SmartFocus, which improves the look of low-resolution images such as those downloaded from the internet.

The three highest-resolution printers in this group test doubled HP's 600dpi, achieving a stunning 1200 x 1200dpi, but none of them received an Editor's Choice award, proving that to a degree Hewlett-Packard is right — resolution is not the ultimate measure of what makes a good printer.

➔ **That said, Lexmark's Z51 impressed us greatly.** Aiming a printer at both the photo and office markets is a brave move, and the quality of its output was certainly good enough for all but the most demanding

printers are subjected in our labs takes into account even the most minute differences between one model and another. It beat every other contender in our fade tests, and after a month in a sunny window, its output most closely resembled the original article, so we

▼ **THE EPSON STYLUS COLOR 440 IS A BUDGET PRINTER THAT EXCELS IN EASE OF USE AND PERFORMANCE**

didn't feel we could let it walk away empty handed. We therefore award it a special **Highly Commended** award.

➔ **We have decided this month to give three Editor's**

**Choice awards**, one for each of the three categories: budget, small business and photo. The first of our Editor's Choice awards goes to the **Epson Stylus Color 440**,

appearing in the budget category. It's top resolution of 720 x 720dpi would have rivalled some of the best printers on the market just 12 months ago. It's very easy to use, which perhaps explains why it's such a popular bundle item for PC manufacturers. It was

pretty zippy in our text-printing test, and we were impressed with its photocopy-paper performance, which will really cut down on running costs. It may not have had the highest resolution, but that in no way impeded its performance.

➔ **Hewlett-Packard** takes home our second Editor's Choice award for the **DeskJet 895CXi**, which performed well in the business

printers category. In true HP style, its installation routine was absolute simplicity, and the on-desktop printer toolbox gave instant access to the most commonly used maintenance functions without us having to get physical with the unit itself. Although not appearing in our photo printer category, the quality of the CXi's photographic reproduction was hard to fault, and at Draft quality its textual output was not only very quick to appear, but also good enough to use as final business documents.

Although the stacked input and output trays mean that the DeskJet 895CXi is about as far away as you can get from a straight paper path, it does keep things neat, like every other DeskJet in this range, this model has excellent paper-handling capabilities.

➔ **Our third and final Editor's Choice award** goes to a contender in the photo printer market, the **Epson Stylus Photo 750**. Although it demonstrated some feathering on both photocopy and inkjet paper when printing black text, by far the most important consideration in this category was how it handled our A4 photo: in this respect, the Photo 750 excelled. Skin tones were a very close match for

the original image, and neither banding nor graininess could be found anywhere on the page. On areas where dark colours shared a common border with lighter ones there was no bleeding, so all edges remained crisp and clean. At just over £200 ex VAT it was also excellent value for money. □



► **THE HEWLETT-PACKARD DESKJET 895CXi MAKES ITS MARK IN BUSINESS PRINTING**

of users. Had we been end-users, we would have been more than happy with the Z51, and the only reason it was pipped to the post in our test is that the close scrutiny to which all



Illustration by Paul Shorrock





# The really Useful Group

PC utilities have something for everyone, from problem-solving packages to **handy little helpers** every computer should have.

**U**tility software is designed to do one of three types of job. It can prevent problems before they happen and correct problems after they have happened; it can add features to existing software (such as enhancements to tools that come with Windows); or it can do something which makes computing life easier (such as take the stress out of Internet searching or read unusual file formats).

Utility software has become a huge market, offering everything from useful little tools that take up just a few kilobytes of disk space, through to huge disk-gobbling packages which attempt to do everything except make the tea. The majority soon find a home on somebody's computer, but there are a few that should find a home on everybody's computer.

## Ratings

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

**Here we look at 20 of the best** utilities around. Included among them are programs that make hard-disk partitioning fun instead of a nightmare, that allow you to run multiple operating systems at the same time, that can find valuable free hard-disk space, compress bulky files, protect data from prying eyes, bring files back from the dead following a hard-disk crash, and much, much more.

## Contents

- 194** Acrobat Reader, Backup Exec Desktop 98, ClipMate 5
- 195** Copernic, DisplayMate For Windows, Drive Image 3.0
- 197** FreeSpace, Lost and Found, Net.Medic
- 199** Norton System Works, Partition Magic, Post-it Software Notes
- 202** PowerDesk, Quick View Plus, RealPlayer G2
- 203** System Commander Deluxe, WebFerret, WinZip
- 204** WS\_FTP Pro, ZipMagic, Other useful utilities

• Utilities reviewed by Paul Begg, Roger Gann and Nik Rawlinson



## Acrobat Reader

There's no reason why you shouldn't have Acrobat Reader among your utilities. It's useful, easy-to-use and can be downloaded free on the Internet! Acrobat is a software package used by people to create documents in a format known as PDF (Portable Document Format), which gives them the advantage of appearing exactly as they were created, regardless of the medium or the platform. So PDF files printed from a Mac look exactly the same as when downloaded to a PC from the net and viewed on-screen. Acrobat, currently in version 4, can be bought as a separate package for £149 ex VAT if



you need to create PDF files. Originally, Acrobat Reader was a free utility Acrobat users could distribute along with their PDF documents. Over the years, however, more and more people have started using Acrobat to

create documents for publication on the Internet. If you download these, you need the Reader to view them, so the Reader has become an essential utility. You can view files as a page, a page with an index (as illustrated) or a page with thumbnails. You can zoom in or out of the page and it will always be seen exactly as its creator intended.

### PCW DETAILS

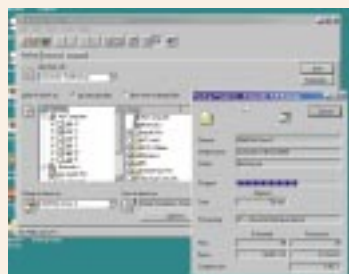


Price Free

Contact Adobe 0181 606 4001  
[www.adobe.com](http://www.adobe.com)

## Backup Exec Desktop 98

Today's PCs come with multi-gigabyte hard disks, and with so much data in use, the need for good back-ups has never been greater. Windows 98 comes with a 'lite' version of Backup Exec, but for serious backup jobs you'll want the



bells and whistles version, Backup Exec Desktop 98. The Backup Exec supports a range of backup media, including SCSI and IDE removable media devices, parallel-port tape devices, floppy disks, hard drives, network drives, CD-R, CD-RW and DVD-RAM, and can automatically detect all of these. The user-friendly interface resembles Explorer: it also features a number of wizards to simplify the backup process. A drive tree allows the easy selection of individual files, folders or complete drives. You can also choose the type of backup to perform: full, incremental or differential. The catalogue/find feature

makes it easy to locate an individual file for an immediate restore. Full back-ups or restores are just a matter of pointing to and clicking on major choices – the source and destination drives. It can also create an Emergency Disk, letting you boot and restore back-ups without reinstalling Windows 98 first, and can perform scheduled back-ups.

### PCW DETAILS

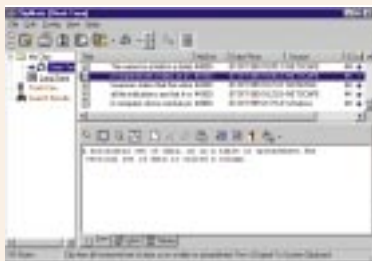


Price £52.88 (£45 ex VAT)

Contact Veritas Software 0870 243 1080 [www.veritas.com](http://www.veritas.com)

## ClipMate 5

ClipMate is an enhancement for Windows Clipboard, and once installed, you'll wonder how you ever managed without it – we know that's a hackneyed phrase, but it's true. Clipboard is frustrating in that unless you're running Office 2000, you can only copy one item to it at a time, which is annoying if you're copying a series of extracts from a document and you can't save to the clipboard and hold stuff there until you're ready to use it. That's where ClipMate steps in and makes itself indispensable. As you may have guessed, you can copy multiple items to ClipMate – and that includes graphics and text. ClipMate



also doubles as a screen capture utility, being able to save and export captured images as bitmaps or JPEGs. You can also store images in collections, which turns ClipMate into a mini-database for clippings. And you can edit the clippings from within ClipMate too because this little utility boasts an

array of editing features you'd only find in a standalone text editor. The latest version also includes the new ClipMate Explorer, which looks like the Windows Explorer, and lets you view in List mode or Thumbnail mode, and you can select, preview, edit and manage clips, as well as retrieve, append, print, reformat, and edit data.

### PCW DETAILS

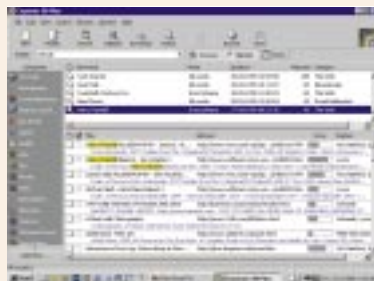


Price \$20 (£12.50) if ordered online, \$25 (£15.62) by post and if you require a disk

Contact Thornsoft 001 716 352 4223 [www.thornsoft.com](http://www.thornsoft.com)

## Copernic

Finding what you want on the Internet has become increasingly frustrating over the years, and a number of utilities have been introduced to speed up the process. One of the best is Copernic, and the amazing thing about it is that a version can be downloaded from the net that costs you absolutely nothing. Copernic simultaneously consults up to 32 of the major search engines for responses to your search criteria. By consulting more than one search engine, Copernic manages to find even the most obscure responses. Then Copernic lists them in order of priority and keeps the list so you can consult it



later – no more searching for that fabulous website you forgot to bookmark! On top of which, you can update the list whenever you feel like it. You can search the web, newsgroups and email. The basic version of

Copernic does this all for free, but a nominal fee can get you a souped-up version. This lets you narrow your searches to 21 categories, such as Books, Kids, Health, Music and Movies, but increases the number of search engines consulted to 125 or more.

### PCW DETAILS



**Price** Free to download or increased functionality registered version for \$29.95 (£18.72)

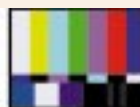
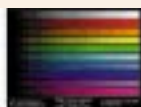
**Contact** Copernic Technologies (Canada) [www.copernic.com](http://www.copernic.com)

## DisplayMate For Windows

It's curious, but while we all spend ages making sure our computer runs smoothly, configure Windows to

operate just the way we like it, and tune our programs to achieve optimum efficiency, the thing we neglect is the display, which we stare at for hours at a time. Is your video display running at its best? With DisplayMate for Windows, you can find out.

DisplayMate is a utility for setting up, tuning, testing and evaluating any computer monitor or video display for optimum image and picture quality. It's easy to use, and no experience of video



whatsoever is needed. It works by presenting over 110 specially designed and highly sensitive test patterns which address every image problem you could think of. Each test pattern is accompanied by a detailed Information Screen explaining what you should look for, and there are detailed step-by-step instructions of what to do if the image can be improved.

DisplayMate may address every display problem this side of Alpha Centauri,

but it only addresses one type of computer problem, and the price seems exorbitant when compared to a product like

Norton System Works, which addresses a broad range of problems. That said, if the optimum display is important to you, DisplayMate is the answer you'll have been looking for.

### PCW DETAILS



**Price** £81.08 (£69 ex VAT)

**Contact** Meko 01276 22677 [www.displaymate.com](http://www.displaymate.com)

## Drive Image 3.0

Drive Image 3.0 takes an image of your hard disk or partitions and stores it on another local drive, partition, network, or removable drive. It takes a complete snapshot of your operating system, applications and configurations. This allows you to restore your whole system to the way it was or, alternatively, to upgrade your hard disk if you can't face reinstalling everything. But its main function is workstation cloning, when you're rolling out a network: it can 'multi-cast' one image copy across the network to multiple workstations. It can copy FAT, FAT32, NTFS, Linux, Unix, NetWare and HPFS partitions. Drive Image is basically a DOS utility

fronted by a GUI and will support 8Gb hard drives, and image files up to 2Gb.

You can run the process from the menus or use the step-by-step Wizards. Options include the ability to compress image files, and the ability to span multiple drives or disk cartridges.

The Drive Image File Editor lets you select specific files from your drive image if you don't want to restore the whole thing. You can also cut and paste



between partitions. The Pro version comes bundled with a copy of that useful hard-disk utility, Partition Magic. This is essential, as Drive Image doesn't allow you to resize partitions.

Although invaluable for network administrators, the needs of single users are better met by DriveCopy.

### PCW DETAILS



**Price** 10-user licence £146.53 (£124.70 ex VAT)

**Contact** POW! Distribution 01202 716726 [www.powerquest.com](http://www.powerquest.com)

## FreeSpace

Who doesn't need more disk space? A hard disk is rather like a loft or a cellar: no matter how big it is, it seems to get filled. It might be filled with junk, but it's the sort of junk you might need one day and which takes a hardened spirit to deposit in a black plastic bag. Buying a new and bigger hard disk simply isn't always feasible, so a budget, hardball compression utility like FreeSpace can be a boon.

Unlike a basic file-compression utility such as a ZIP utility, which is essentially designed to create a ZIP archive, FreeSpace first shrinks the files to their smallest possible size, then uses the



TightCluster feature to squeeze them even tighter still. The space you gain is little less than remarkable – 150Mb of TIF graphics files can be compressed to a mere 31Mb. That's 119Mb of hard-disk space released for other uses. You

can even tell FreeSpace how much space you need and it will search your hard disk for the space. The best thing about FreeSpace is that the compressed files open and close and otherwise behave as if they were uncompressed files.

FreeSpace comes on a single floppy disk and is a snip to install and use, with Wizards holding your hand step-by-step through the compressing process.

### PCW DETAILS



**Price** £29.99 (£25.52 ex VAT)

**Contact** Mijenix 01297 552222

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

## Lost and Found



**Lost and Found** is a bit expensive, especially when you remember that it's a piece of software you'll hopefully never have to use. On the other hand, it's a bit like health insurance in that if there's an emergency you'll be glad

you've got it. And health insurance isn't a bad analogy, because **Lost and Found** restores your all-important data following a disk-head crash, corruption by a rogue application or virus infection, and any other data-loss nightmare on computer street.

If *War and Peace* is a book you've never read but wanted to, **Lost and Found** will give you the chance. This software is very thorough. It begins by scanning your hard disk – which is when you'll want *War and Peace* to hand – finds the files, and colour-codes them according to their chances of recovery. You

choose what you want to bring back from the dead, and hey presto! You'll need to have another drive and a large pile of floppies to back up to, however. **Lost and Found** comes on a single floppy and is booted from DOS. It is a heart-stopping disaster recovery utility and may you never have to use it.

### PCW DETAILS



**Price** £49.35 (£42 ex VAT)

**Contact** Software Warehouse  
08000 355 355

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

## Net.Medic

We all want faster Internet connectivity, but it's often hard to identify where the bottlenecks lie. **Net.Medic** is a browser companion that monitors, diagnoses and corrects Internet or intranet performance problems and lets you identify the source of any network bottleneck. **Net.Medic** is happy with both Navigator and Internet Explorer browsers. A 30-day trial version is available from [www.ins.com](http://www.ins.com). **Net.Medic**'s data is displayed in a control panel consisting of several animated meters. The default display consists of a scrolling ticker and three real-time display panes. The ticker



displays performance stats related to the site you're currently connected to, including site name, URL, page size, number of visits, and estimated network and site delays. The modem-status panel shows transfer rate and data compression, while the ISP pane has a graph that indicates any delays over

time and estimated congestion. If a component's performance drops, its graphic turns yellow; more serious problems turn it red. Double-click on a problem item and a health log pops up. Then ask **Net.Medic** for a diagnosis. If the problem lies with you, an auto-cure option is available; if with the ISP or website, you can fire off a technical log email to notify the powers-that-be.

**Net.Medic** displays performance stats related to the site you're currently connected to, including site name, URL, page size, number of visits, and estimated network and site delays. The modem-status panel shows transfer rate and data compression, while the ISP pane has a graph that indicates any delays over

### PCW DETAILS



**Price** £41.13 (£35 ex VAT)

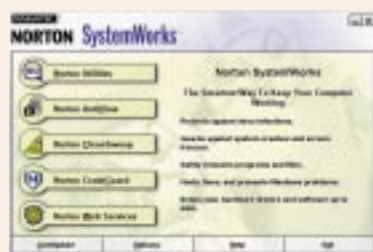
**Contact** INS 01628 503000

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



## Norton System Works

If you want an all-round utilities package, you have a number of excellent choices. First up, McAfee Office is a collection of nine programs. Previously sold separately, there is no integration, inevitable duplication, and 154Mb of gobbled-up hard-disk space. Secondly, the excellent Fix-It Utilities finds and clears viruses, runs the usual hard-disk diagnostics, has crash protection, an uninstaller, a registry checker and Year 2000 diagnostics. It includes the indispensable PowerDesk Utilities 98, occupies 40Mb hard-disk space, and costs £39 – the best buy for home users. But old favourite Norton System Works



remains the crème de la crème of the utility world. It's almost double the price of Fix-It, but combines Norton's Utilities 4.0, Antivirus 5.0, Cleansweep 4.5, Crashguard 4.0, and a six-month subscription to Norton Web Services. And it all fits in 122Mb. Norton Utilities groups 20 tools under

four categories: Find and Fix Problems (Norton WinDoctor, Norton CrashGuard, Norton Disk Doctor); Improve Performance (Speed Disk, Optimisation Wizard); Preventative Maintenance (Norton System Doctor, Rescue Disk, Registry Tracker); and Troubleshoot (Norton Registry Editor, Norton Web Services).

### PCW DETAILS



**Price** £86.95 (£74 ex VAT)

**Contact** Symantec 01628 592 222 [www.symantec.co.uk](http://www.symantec.co.uk)

## Partition Magic

**Partition Magic**, which takes the effort out of partitioning a large hard disk, is an established product which has reached version 4.0. Formerly a DOS program, it has finally entered the Windows world. With large hard disks,



partitioning is essential, having the additional advantage of being able to reclaim hard-disk space lost to inefficient FAT (File Allocation Table) partitions if you're running Windows 95 or 3.X. Frankly, doing anything which affects areas such as the FAT and other esoteric areas of the computer is scary. But Partition Magic does its best to ease the exercise. Bright, jolly and comfortable, with large, friendly icons and an overall feeling of fun, its Wizards guide you step-by-step through the partitioning process. You can preview the effects of partitioning before making changes, and create,

move and resize partitions.

Partition Magic includes support for FAT, FAT32, NTFS, HPFS and Linux ext2, and it lets you switch between FAT and FAT32, and move programs between partitions. This mix of power and features makes it a winner. And you get BootMagic too, which lets you use multi-operating systems.

### PCW DETAILS



**Price** £49.98 (£42.54 ex VAT)

**Contact** Pow! 01202 716 726 [www.powerquest.com](http://www.powerquest.com)

## Post-it Software Notes

It seems that no office is free of those yellow Post-it notes. They get stuck everywhere! And you can stick them on your computer in all senses of the word – stick the paper version on your monitor or the software version on your hard disk.

The electronic Post-it note works in the same way as the paper version – just click, type your note, and stick it on your desktop – but has additional benefits which can make it almost indispensable. To begin with, you can set alarms to go off and remind you of appointments, meetings, or just things you have to do. You can organise and store your notes on customised



Memoboards, which makes this useful for keeping information such as price lists or internal phone numbers to hand for quick consultation. You can also automatically insert the date/time on notes, which is useful for leaving

messages, and if you and a colleague are both using Post-it Notes and are connected via a LAN, you can pop up a note, photo, or figures on your co-worker's computer.

Post-it Software Notes sounds fun and frivolous, but it actually has so many serious uses that you'll find yourself turning to it far more frequently than you'd ever imagined.

### PCW DETAILS



**Price** £23.50 (£20 ex VAT)

**Contact** Inmac 0990 440033 [www.mmm.com/psnotes](http://www.mmm.com/psnotes)

## PowerDesk

**PowerDesk** is a replacement for Windows Explorer and it really is the utility that we'd most hate to be without. The heart is a File Manager which, like Explorer, has two viewer panes. The one on the left shows the directories and the one on the right lists the files – and it does all the things Windows Explorer will do such as copy, move and delete. But where it differs from Windows Explorer is that it has an integrated viewer pane, which uses the built-in QuickView utility that comes with Windows. With support for 80 different file types, this means that you can quickly and easily view text and



graphics files without having to launch the attendant application. There are lots of additional tools such as a powerful file finder, a file synchroniser, size manager and a registry editor. With these tools you can

find 'lost' files, ensure that your files are the same on your desktop and laptop machines, and find out which files are occupying the most hard-disk space. There's also a useful built-in archive manager which supports .ZIP, .ARJ and .LHA formats, and a graphics converter with which you can convert graphics between 24 formats.

### PCW DETAILS

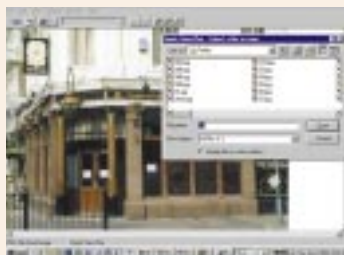
★★★★★

**Price** £19.96 (£16.99 ex VAT)

**Contact** Mijenix 01297 552222

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

## Quick View Plus



A reduced version of the Quick View file viewer comes free with Windows. You can access it from the Windows Explorer and it lets you view files without launching the associated application. In fact, you can view files

without even having the associated application, which makes it useful indeed if you receive files created using programs you don't possess. Quick View Plus is a worthwhile enhancement to Quick View and extends its capability to view files to about 200 file types, including Windows, DOS, Mac and Internet file types.

The Quick View Plus File Viewer not only lets you view files in their native formats (or as text or hexadecimal), it adds basic file management, the ability to print a file, rotate, zoom and show images full-screen, and even convert an

image to Windows wallpaper. Quick View also integrates seamlessly with PowerDesk and with Adobe's Acrobat Reader.

However, most people won't need Quick View Plus. Quick View itself does pretty much all that the average user will need, and copes with the most common formats.

### PCW DETAILS

★★★★★

**Price** £34.99 (£28.78 ex VAT)

**Contact** Inso 01344 867 222

[www.inso.co](http://www.inso.co)

## RealPlayer G2

If you want to enjoy video and audio streaming over the Internet, you'll need RealPlayer G2. Like NetMeeting, RealPlayer G2 copes with a variety of Internet streaming media types, but you'll need both as neither supports all streaming formats. RealPlayer G2 is a free download: RealPlayer Plus G2, which costs \$29.99, adds an equaliser and customisation features such as video controls. G2 has a number of improvements over version 5.0, principally in the area of content management and playback control. It also offers improved performance through a new music codec technology, new video-

smoothing capabilities, and the introduction of RealText (for live streaming text) and RealPix (for streaming still images) media types. It updates itself automatically, using push technology. Sound quality remains impressive but still a long way short of hi-fi: it's roughly on a par with AM radio but in stereo, and that's with an ISDN line. The amazing ability to display low-res videos in sync takes some of the edge



off our carping, though. Ultimately, given its less than compelling (though laudable) audio performance over a dial-up connection, RealPlayer G2 is for those with the luxury of a fast, permanent Internet connection. When we all have ADSL or cable modems

RealPlayer will be a 'must-have' utility.

### PCW DETAILS

★★★★★

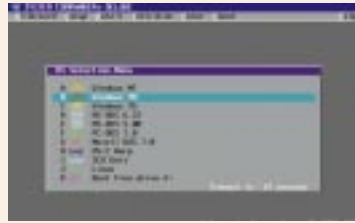
**Price** Free, or \$29.95 (£18.72) for the Plus version

**Contact** RealNetworks 01932

581000 [www.uk.real.com](http://www.uk.real.com)

## System Commander Deluxe

Most people have only one operating system installed on their PC, but there are some folk who need more. You can use good old FDISK to switch active partitions and thus choose which OS to boot with, but if you want lots of operating systems installed, you'll need something like System Commander Deluxe. The latest version, 4.0, includes an OS Wizard, which simplifies the potentially fraught installation process. This finds and prepares space on your hard drive for an additional operating system. It also lets you create, format, resize and delete disk partitions, including additional goodies such as



temporary partition hiding and FAT32 conversions for use under Windows 9x. Version 4.0 supports pretty much any OS, including Windows 95/98, NT, OS/2 Warp, CTOS, NetWare, NextStep, Pick, QNX and various Unix platforms. You can install up to 100 operating systems on a single machine. We

cheerfully installed five versions of DOS, some in their own private partitions. There are a couple of gotchas: you can't use it on compressed drives, and operating systems that write to the Master Boot Record (eg Windows 98 and OS/2 Warp 4.0) have to be treated specially. It's not particularly easy to use, but once set up, it works very well.

### PCW DETAILS

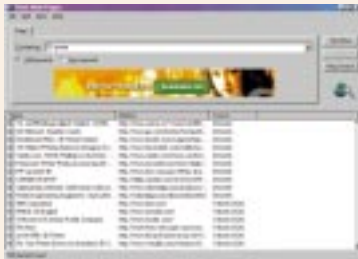


**Price** £49.99 (£42.55 ex VAT)

**Contact** MediaGold 0171 372 9762 [www.v-com.com](http://www.v-com.com)

## WebFerret

WebFerret, like Copernic, is an Internet search tool. You enter the keywords you want to search for, then WebFerret goes to work, sending the search information to no fewer than 27 search engines. It then retrieves the results, and deletes, duplicates or rates them according to which it thinks best fit your criteria. Selecting a search result causes a brief description of the page to



open in a window, and a double-click will open the page in your browser. The Freeware version is powerful and demonstrates the power of the Pro edition, but the Pro package does have an array of additional features. For example, only the Pro version lets you view Abstracts. WebFerret Pro employs many more search engines, as one might expect, and only this version eliminates duplicates. It also has Boolean searches, search files that can be saved, and results are ranked by

relevance. WebFerret Pro can be downloaded for \$26.95. Whether or not you prefer Copernic or WebFerret is really a matter of taste, so it's useful that you can download a trial version of both from the Internet – and the download cost of both will soon be repaid with faster, more efficient and more productive searching.

### PCW DETAILS



**Price** Free

**Contact** FerretSoft  
[www.ferretsoft.com](http://www.ferretsoft.com)

## WinZip

If you send files over the Internet, especially graphics files, then it's essential that you compress them. This will dramatically reduce the time it takes to send and receive the file. The industry-standard file compression utility is WinZip. WinZip tightly integrates with Windows Explorer, allowing you to zip and unzip files without leaving Explorer. WinZip will automatically install almost any software downloaded from the Internet, providing the Zip files contain a Setup or Install executable. WinZip also automatically cleans up all the temporary files involved in such an installation.



Newcomers will like the WinZip Wizard which holds your hand through unzipping and installing Zipped software. Old hands can turn off the Wizard to access the more advanced zipping features available by using the WinZip Classic interface. Very useful is the Favorite Zip Folders feature which lets you organise Zip files

in one convenient list regardless of where they are stored on your hard drive. A Search facility will find any Zip files lost on your hard disk. Another excellent feature is WinZip Self-Extractor Personal Edition, now included with WinZip, which lets you create self-extracting Zip files. WinZip has the benefit of being shareware.

### PCW DETAILS



**Price** £23.49 (£19.99 ex VAT)

**Contact** Software Warehouse  
0800 035 5355 [www.winzip.com](http://www.winzip.com)



## WS\_FTP Pro

Many web authoring packages have FTP capabilities built in, but a lot of users still have need for a standalone FTP utility. This is often because they use the authoring tool for downloading from the Internet, and find that the built-in FTP functions of Netscape Navigator and Internet Explorer are too basic for their needs. Split into two independently navigable windows, WS\_FTP Pro simultaneously displays both the local and remote directories. Transferring a file or



selection of files from one location to the other is simply a matter of highlighting as appropriate and then clicking either the forward (transmit) or back

(retrieve) button.

Setting the file-type radio button selection to Auto means that WS\_FTP will detect whether to use ASCII or binary transfer mode itself. WS\_FTP Pro can also be set to log all transactions and then drop a file of all

the relevant details in each destination directory. Another powerful feature of WS\_FTP Pro is that it can keep track of the sites you visit, and the user names and passwords you use to access them. Your saved destinations are stored on a drop-down menu so that all you need to do is click 'Connect'.

### PCW DETAILS



**Price** Download for \$37.50 (£24.10)

**Contact** Ipswitch 001 781 676 5700 (US) [www.ipswitch.co.uk](http://www.ipswitch.co.uk)

## ZipMagic

WinZip has been around so long that it's hard to imagine computing without it, but recently it has been challenged by ZipMagic – a file-compression utility so easy to use that it has won an army of staunch supporters. The beauty of ZipMagic is that you don't have to



unzip files to use them, as with conventional file compression. ZipMagic treats Zip archives as ordinary folders. It automatically compresses and uncompresses files as and when you need them, without you having to launch a separate application to unzip them before you can view the contents. You can browse Zip archives with all the speed and ease as you would an ordinary file. You can use it to make and view self-extracting archives, and convert Zip archives into them. The program includes tools to compress, extract, repair, convert, test, and edit the contents of Zip archives,

while a browser plug-in enables you to view Zip files on-line. ZipMagic has an excellent Explorer-like interface which makes zipping, unzipping and browsing Zip files easy. It also integrates seamlessly with Explorer and meshes with PowerDesk. It supports more file compression formats than any other product.

### PCW DETAILS



**Price** £34.99 (£29.78 ex VAT)

**Contact** Mijenix 01297 552222 [www.mijenix.com](http://www.mijenix.com)

## Other useful utilities

While the 20 utilities featured in this group test are useful for any desktop, there are other smaller utilities that will make your computing life more pleasant. With the explosion of MP3, no PC should be without an MP3 player. The PCW office favourite is Sonique <[www.sonique.com](http://www.sonique.com)>, but try MusicMatch 4.05 <[www.musicmatch.com](http://www.musicmatch.com)> or Real Jukebox from Real Networks <[www.real.com](http://www.real.com)>. But to play MP3s you first have to get hold of them. MusicMatch can be used for encoding MP3s from CDs, while there are numerous MP3 sites from which to download tracks (see the MP3 feature on p122 for more details).

We have reviewed RealPlayer, but to be able to play all kinds of streaming data, you should also get hold of Apple QuickTime 4 <[www.apple.com/quicktime](http://www.apple.com/quicktime)> and Microsoft's Netmeeting <[www.microsoft.com](http://www.microsoft.com)>. Speaking of Internet tools, no browser is complete without a raft of plug-ins. First of these is Shockwave from Macromedia <[www.shockwave.com](http://www.shockwave.com)>. The latest version comes with a remote control device to control the shockwave animations. There is even a



ShockMachine you can buy to watch shockwave movies and animations, and even to play shockwave games (all downloadable from [www.shockwave.com](http://www.shockwave.com)). And

you shouldn't forget Macromedia Flash <[www.macromedia.com/software/flash](http://www.macromedia.com/software/flash)>. Finally, there are the diagnostic and system tools included with Windows 98. These include much more than ScanDisk and defrag tools, now having useful utilities such as a Maintenance Wizard and System Information.