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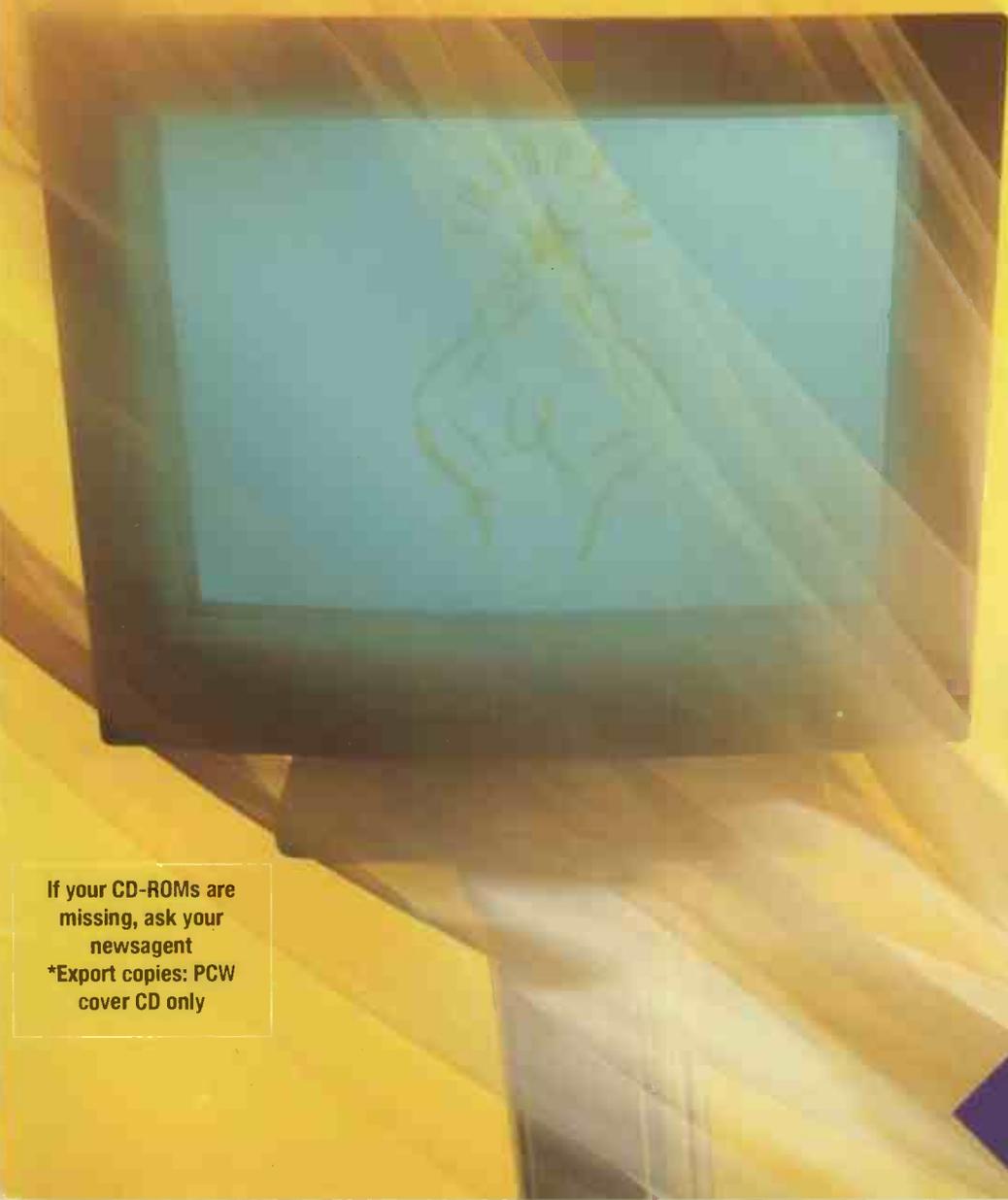
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Top 90 products



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- **Network Computers**
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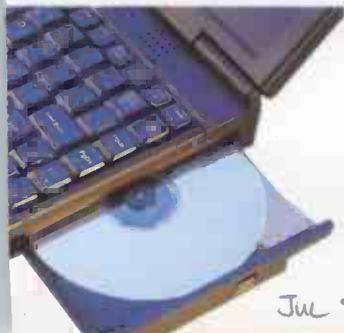
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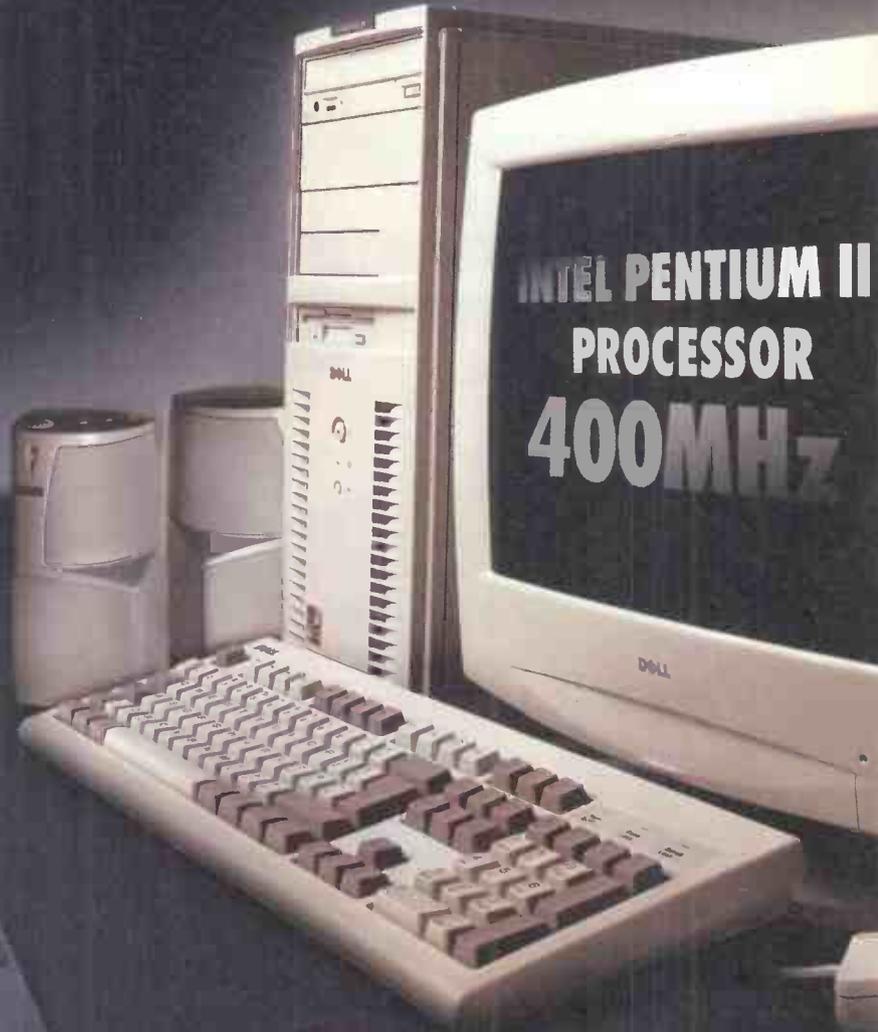
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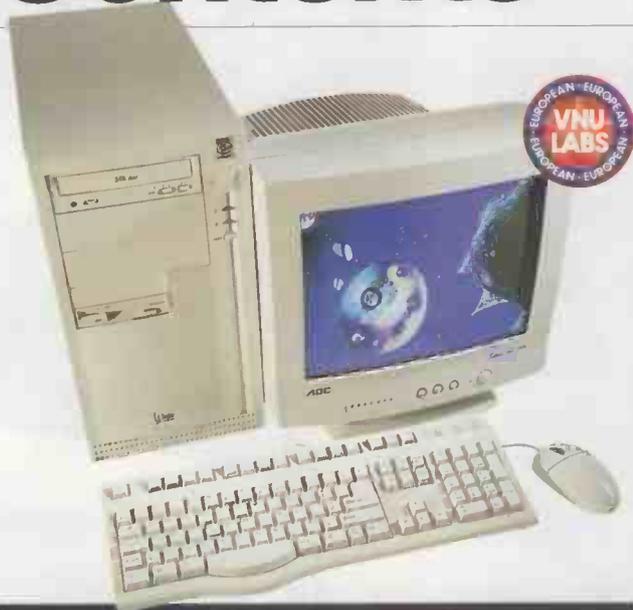
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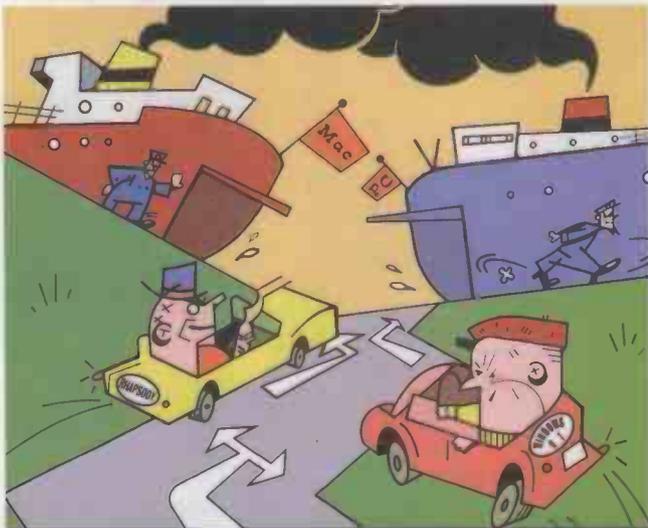
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Contents



£999 PIIs line up p140



To Be, or not to BeOS p128



PCW Awards 1998 p176



The life of Brian p134

Cover Feature: Awards

176 PCW Awards 1998

The votes are in and counted and we can now reveal the 90 best products and suppliers of the year. We look at everything from service to PCs to peripherals. *Don't buy a thing until you have seen this.*

Group Tests

140 PC Group test

Budget PCs with the wow! factor — PIIIs for just £999. Paul Trueman tests ten. They are all packed with powerful components and raring to go.

- | | |
|-----------------------------|-------------------------------|
| 143 Avontech PII 266 | 150 Dotlink Magnum II-333SE |
| 143 Brother Professor 971 | 157 Mesh Elite Pro PII350 BXA |
| 145 Choice Systems Ultra | 157 Mustard MC 753MT |
| 145 Dan Dantum II/W5 | 159 Roldec Predator |
| 150 Dell Dimension XPS D300 | 159 Viglen Contender II |

206 Sound cards and sound software

For gamers or budding Brian Enos, we are top of the charts for sound advice. Steven Helstrip wraps his listening gear around a range of sound products.

- | | |
|----------------------------------|---------------------------|
| 209 Aztech PCI-128 Wave | 210 Orchid NuSound 3D |
| 209 Creative Labs AWE-64 Gold | 210 Terratec EW64 S |
| 209 Diamond Monster Sound PCI | 212 Terratec EW64 XL |
| 209 Event Electronics Gina | 212 Turtle Beach Pinnacle |
| 210 Gadget Labs Wave/4 | 212 VideoLogic SonicStorm |
| 210 Guillemot Home Studio Pro 64 | 212 Yamaha SW60 XG |

Features

116 Network Computers

NCs have long played David to client-server's Goliath, and they are still slugging it out. Alan Clark tests six NCs, while Terence Green looks at server operating systems and the new batch of Java applications.

128 BeOS **PREVIEW**

Once hailed as the saviour of the Mac, the long-awaited BeOS now runs on both PC and Mac. Cliff Joseph put the preview through its paces.

134 Interview: Brian Halla

Brian Halla masterminded National Semiconductor's buyout of Cyrix. Now he tells Geof Wheelwright of National's plans to corner the low-cost PC market.

344 Reliability Survey

We want to know how you feel about your system, peripherals, performance and the service you're getting, so now's your chance to have a say.



First Impression Reviews

- 76 Compaq Presario 4860
Top-of-the-range desktop PC
- 78 HP Pavilion 3250
- 79 IBM ThinkPad 600
A notebook for road warriors
- 80 Mag Innovision DJ 800
- 80 BT Prologue K56EV Plus
- 82 Toshiba Libretto 100CT
Windows 95 on a handheld PC
- 85 Viewsonic GS771
Compact 17in monitor
- 85 Jazz Outlaw 3D Bonnie and Clyde
A PCI and AGP graphics card
- 87 Sharp HC-4500 and CE-AG04
Palmtop with snap-on camera
- 90 JG Electronics Art Shot
- 90 Storm Technology TotalScan
- 92 Kodak DC200
- 92 Canon CanoScan 300S
- 93 Sharp MC-G1
Phone and organiser in one
- 93 Black Widow 4830 ProPP
- 94 Metacreations Painter
- 99 MS Visual J++ 6.0
New version of the development tool
- 100 ZY Web
Homepage authoring
- 103 AutoDesk AutoSketch 5
- 105 Micrografx Picture Publisher 5
- 107 Intuit Quicken 98 Deluxe
- 108 AA Multimedia A to B
Route-finding on a budget
- 108 Davilex Davi-Music 98
- 110 Micrografx Simply 3D 3
Whizzy graphics for the web
- 110 EasyHelp/Web 3

Kids and CDs

- 327 My Cosmic Family,
Little Mermaid Print Studio
- 328 Eyewitness World Atlas and
History of the World,
GSP Britannica Encyclopedia,
Dance eJay

Long Term Tests

- 112 Turnpike 3.05, Pointcast 2.0,
HP LaserJet 5L, Visioneer
PaperPort Strobe, Canon
BJC-600

Regulars

- 10 Subscriptions
- 13 Editorial
- 13 Next Month
- 14 Cover Disc Notes
- 24 Newsprint and Analysis
- 36 Internet News
- 65 Letters
- 72 Gadgets
- 318 Reader Offers
- 333 Direct Buyers' World
- 338 Buyer's Guide
- 641 Product Locator
- 648 Ad Index
- 651 ChipChat



Leisure Lines

- 321 Screenplay
- 325 Brainteasers
- 325 Prize Crossword
- 326 Retro
- 330 Books
- 320 WIN! A CIDCO iPhone. Five copies of GCSE Maths. Five copies of Russian Language

Columns

- 55 Sounding Off
Michael Hewitt marvels at the dawn of the digital actor.
- 57 Straight Talking
Barry Fox suspects that IT execs find it hard to explain how products work. Take FlashPath...
- 59 Business Matters
What counts, experience or qualifications? Brian Clegg ruminates on IT recruitment.
- 61 From The Desktop
Spaced out: Tim Nott's post-Windows 95 partitioning has run out of steam.

Futures

- 222 The new stars of artificial intelligence are Cog and Cyc, so get cyc-o-logical with Toby Howard.
- 223 Adam Evans makes a LEP of faith, exposing new display technology.

Hands On Advice

- 225 Introduction
- 229 Workshop: Asymetrix 3D/FX **EXTRA**
Panicos Georghiadis looks at software, free on the PCW CD.
- 232 Workshop: Sound/MIDI **EXTRA**
Steven Helstrip makes music.
- 236 Workshop: Client-Server Databases
Part IV from Mark Whitehorn.
- 243 Internet
Nigel Whitfield puts you on the right path with some net nous.
- 252 Windows 95
The day the music died. Tim Nott restores music to his PC.
- 255 Windows 3.1
Panicos and Gabriel give PCs a Windows 95 makeover.
- 259 Windows NT
Andrew Ward's perils of space.
- 264 Handhelds **NEW**
Small is beautiful. A new column on PDAs, with Mark Whitehorn.
- 272 Unix
Chris Bidmead looks at Gnutar, backing up PCs with one tape.
- 275 OS/2
Terence Green turns Mr Fix-It.
- 277 Word Processing
Tim Nott fights double capitals.
- 280 Spreadsheets
Two's company: Stephen Wells can double-scroll.
- 286 Databases
Mark Whitehorn does self-defence of database security.
- 290 Hardware
Roger Gann looks at hardware horror. It can strike at any time.
- 293 Sound
Steven Helstrip in VST effect.
- 296 Graphics & DTP
Improve your images on the web, with Ken McMahon.
- 300 3D Graphics
Benjamin Woolley shows you how to get ahead of the game.
- 303 Visual Programming
Cool for cats? Tim Anderson looks at Swing for Java.
- 310 Networks
Bob Walder looks at the trials of testing this side of the pond.

Growth happens.



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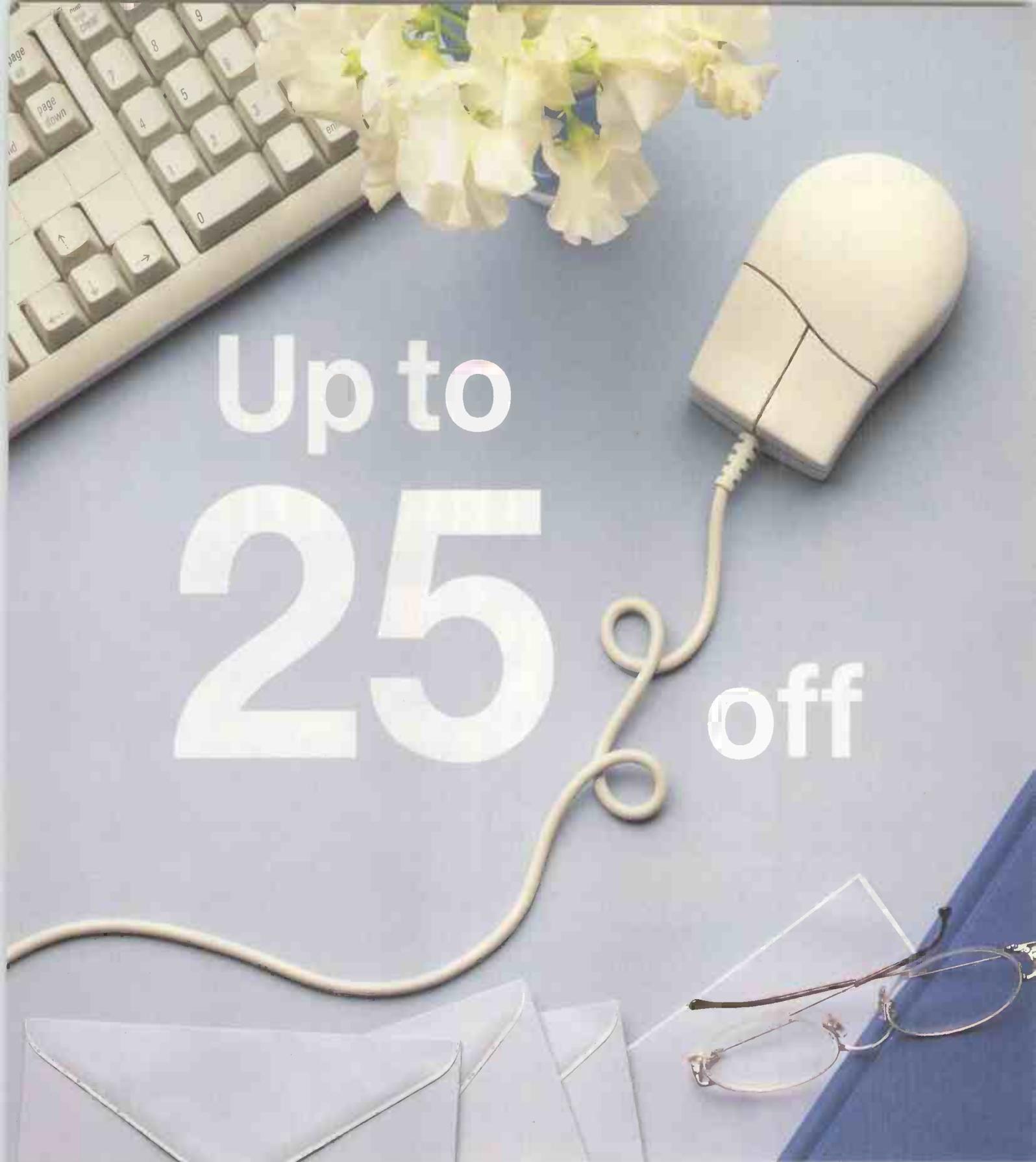
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LINX and MANAP Member, Backbone Provider

Editorial

With a PC on almost every office desk and in a fair few homes too, it's easy to forget the business computer solution of only a few short years ago. Back then, most businesses and academic institutions featured huge,



powerful servers and a large network of dumb terminals hungrily feeding off them.

I particularly remember my time at university, when the IT enthusiasts would wait until obscure times of the day when the traffic would be low and you could harness a significant percentage of the server's raw power. Surprisingly, this was usually in the mid-morning when most programmers were fast asleep following lengthy coding sessions the night before.

But then Microsoft and Intel came along and did a very good job of persuading us all to go for powerful standalone PCs on every desk. While this is an ideal solution for the home or small business, many larger establishments have suddenly stopped and asked themselves whether this is actually what they needed after all. The high cost of ownership and poor administrative control over desktop PCs have become big issues for big business, and ironically, many are considering a return to days gone by.

Of course, a dumb terminal doesn't have the marketing clout to survive in today's image-conscious world, so instead we have names like "Network Computer", "Windows Based Terminal" and of course "NetPC". And then there are the eSuites. Oh yes: none of your bloatware that we currently thrive on, but compact applications which often only install the bare portions you're after and no more.

Exciting? Yes. Confusing? Of course! That's why we thought it was about time to look at the subject of Network Computers in detail [page 116]. In this month's NC feature you'll also find a review of the latest version of NetWare and a preview of Windows NT 5.0, which is looking considerably more exciting than the increasingly delayed Windows 98.

If you're fed up with Microsoft and fancy something completely different for your Intel-based PC, how about the Be Operating System (BeOS), ideal for multimedia producers and reviewed in this issue [page 128]. Then again, if it's a PC you want, we have gathered together ten likely candidates [page 140], each costing £999 (ex VAT). Audio enthusiasts should check out our sound-card group test [page 206] and the Hands On Workshop [page 232] for setting up your own home studio.

Finally, it cannot have escaped your attention that this is our annual PCW Awards issue. Unlike many other magazines, we take your opinions seriously. Earlier this year we asked for nominations for your favourite and preferred hardware, software and services. As usual, the response was phenomenal, and the results are here in this issue [page 176]. You can be certain that the IT industry will be taking a very close look.

Gordon Laing, Managing Editor

Next Month

Celeron vs AMD and Cyrix

The great processor title-fight. We pitch Celeron against chips from AMD and Cyrix to discover which is the heavyweight champion and which is the quivering wimp.



Storage

If your hard disk is full to overflowing, or you just want a second copy of all those vital files, a removable cartridge drive is the answer. We test the best and tell you how to choose the right one.

PIMs and contact managers

You will need a contact manager to better organise your working life. We have eight contenders to cover your every need.

Plus...

We tell you what communications you need when setting up a small business, and give you the full story on Windows 98.

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* Next month's contents subject to change.

July cover disc

July's CD has six featured titles for you to try, including three games and two excellent 3D packages. Plus a Software Library stuffed with over 30 utilities and applications, all presented with product info and preview information. Grab that CD to check out the latest and greatest!

Important notice

The publisher, VNU, has checked the *Personal Computer World* CD for known viruses at all stages of production, but cannot accept liability for damage caused either to your data or your computer system which may occur while using either the disk or any software contained on it. If you do not agree with these conditions, you should not use the disk. It is good practice to run a virus checker on any new software before

Getting software on to the CD

Personal Computer World is keen to promote quality software and would like to hear from you if you are interested in having your product included on a future cover disk. For cover-mount enquiries, please telephone Afshan Nasim on 0171 316 9761 or email afshan@vnu.co.uk

running it on your computer, and to make regular backup copies of all your important data.

Unless otherwise stated, all software contained on the CD is for demonstration only. This means it may be restricted in some way: for example, it may be time limited or have certain functions disabled.

How to use the CD-ROM

Quit existing applications. If you have 16Mb or more of memory you don't have to do this, but will still get better performance if not many other apps are running. Put the disk into your CD drive:
Windows 95 If you've got Windows 95, the *PCW* interactive loader will appear on your screen. If your CD doesn't autoloading, go to Start/Run and type in <CD Drive>:\pcw.exe
Windows 3.1 From Program Manager choose File/Run, then type in <CD Drive>:\pcw.exe and press enter.

System requirements

You will need a PC with Windows 3.1 or later. Please check individual products for specific system requirements. For best results, run the CD on a Pentium PC with at least 16Mb of memory.

CD-ROM problems

The technical helpline is open weekdays from 10:30am to 12:30pm and 1.30pm to 4:30pm, on 01274 736990. If you experience problems with the CD-ROM, such as a message like "Cannot read from drive D:", please return the disk with a covering note detailing your name and address and clearly marked "PCW CD JULY 98", to:
 TIB plc
 TIB House
 11 Edward Street
 Bradford
 BD4 7BH
 A replacement disk will be sent to you by post.

Software Library

● Essential Utilities

- Adobe Acrobat Reader 3 (Win 3.1/95)** The free Adobe Acrobat Reader lets you view, navigate and print PDF files across all major computing platforms. (Fully functioning reader.)
- GIF Construction Set 1.0Q (Win 3.1/95)** The quickest and most professional way to create transparent, interlaced and animated gif files for web pages. (30-day shareware.)
- DirectX 5.2 (Win 95)** Latest set of essential video and audio drivers that are required to run some of today's processor-hungry games and applications. (Fully functioning drivers.)
- *NEW EzDesk for Windows (Win95)** A utility that manages the desktop icons' layout. EzDesk can restore a desktop icons' layout to a previously saved arrangement. (Limited function shareware.)
- Graphics Workshop 1.1Y (Win 3.1/95)** Graphics Workshop is a superlative image management package that allows you to view, convert and catalogue your images in a wide variety of formats. (30-day shareware.)

Microsoft Internet Explorer 4.0 (Win 3.1/95)
 Surf the internet with the latest versions of

Microsoft's Internet Explorer for Windows 3.1 and 95. (Fully functioning unregistered version.)

How to use the PCW CD

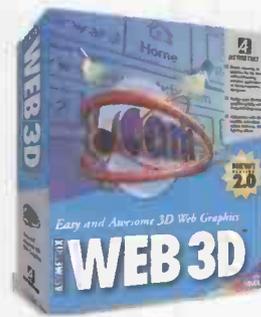
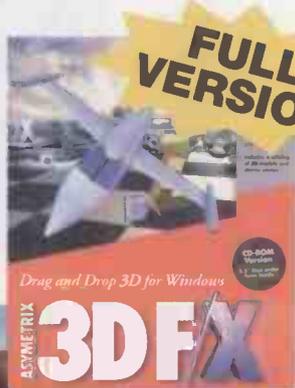
- **Internet Explorer 4.0 Installation does not work from internet link.** After clicking the internet link, the option to install Internet Explorer 4.0 from the CD (if you do not have a browser already installed) will not work. To install IE4 you will have to run the installation manually:
Windows 95 Close down the CD program. Go to START on the menubar and type: <CD drive letter>:\SOFTWARE\LIBRARY\INTERNET\IE495\IE4SETUP.EXE
 Press OK, and the IE4 installation will start. Restart your machine and run the CD again. This time the CD program will detect that you have the browser installed and open the web pages.
Windows 3.1 Close down the CD program. From PROGRAM MANAGER select FILE\RUN. In the command line box type: <CD drive letter>:\SOFTWARE\LIBRARY\INTERNET\IE431\SETUP.EXE. Press OK and the IE4 installation will start. Restart and run the CD again. This time the CD program will detect that you have the browser installed and open the web pages.
- **Error message: "Program has performed an illegal operation"** after clicking QUIT on PCW CD main screen. This is a program error that occurs as the program closes down and has no effect on the CD program or your system.

CD-ROM Helpline 01274 736990

Asymetrix 3D F/X

Creating 3D graphics has always been a bit daunting. Even after getting your head round the nuances of 3D design and animation, there are still the hours of frustration waiting for your ambitious creation to render. But with this FULL VERSION of Asymetrix 3D F/X, it's possible to create a 3D scene the first time you use the program. By dragging and dropping a 3D model from the catalog and adding a surface effect, lighting and shadows, you

have a 3D scene immediately. The huge drag-and-drop libraries include hundreds of 3D models, customisable animation paths and different surfaces. By placing one of the customisable animation paths onto any object, you can watch it spin, rotate, and move in and out of the scene. It is even possible to wrap graphics (.BMP) and video (.AVI) files around the surfaces of models, and, by adding an audio (.WAV) file to your animation, you can really make it dance and sing.



Personal Computer World Upgrade Offer
Upgrade to Asymetrix WEB 3D 2.0 for just £99.95 inc VAT &

delivery (RRP is £128.07). 3D F/X, WEB 3D 2.0 lets you quickly and easily create 3D banners, bullets and 3D animated gifs and graphics for your web pages.

The program includes all the features of 3D F/X, plus an "easy learning" tutorial centre; lathe, spiral, tube, and curved text object 3D lathe tools; fire, wires, tiles, bend, taper, twist and melt special effects, and much more.



YOU WILL NEED THIS SERIAL NUMBER TO INSTALL THIS PROGRAM: ASYMP010V07

This will enable the installation only. You should ignore the request to register the software at the end of the installation process: the software will still work. It is recommended that you do a COMPLETE install and copy all files to your hard disk (requires 61Mb).

PCW Details

Operating system 80486/66 processor: Pentium recommended. At least 8Mb RAM. Windows 3.1/Windows 95 (Upgrade offer: Windows 95/NT)

Limitations Full working version.

Sales contact 01923 208433

Technical support Not supported

Music Teacher

Music Teacher is designed to improve your musical ability by using both tests and games. The "Tests", for example, get you to tap out the rhythm of a song while the program automatically plays the correct notes for you, and tells you if you're playing ahead of, or after, the beat. Alternatively, you guess the notes you see on-screen and let the program tell you if you're playing too high or too low. It assesses every note you play during a song for left and right hands, to give you a percentage mark at the end. The "Game" screen consists of 12 one-bar tests and has four teachers to examine your playing. Mr Easy might give you full marks for your efforts, but the MIDI GURU will expect you

to play every note "spot-on" before you'll get any mark at all! Music Teacher also has a Backing mode to play the backing track of a song while you jam the melody on top. A "loop" feature allows you to practise difficult sections over and over until you get them right, even slowing the tempo while you practise those awkward bits.



Recital mode can be used as a simple MIDI file player where all tracks will be played for you. If you like, you can flick through each track to see what's being played by any individual instrument.

Music Teacher is an intuitive teaching package which should improve your pitch and rhythm recognition in no time at all.

Ideally, you will need a MIDI controller or input device (normally a keyboard but possibly a MIDI guitar or MIDI wind controller) to use Music Teacher. Even without an input device, you can still enter music into Music Teacher by using the on-screen keyboard.

You will need a MIDI output device in order to hear the music. If you have a sound card, this will be included in its built-in sounds/wave table.

PCW Details

Operating system Windows 3.1/Windows 95

Limitations Function limited demo

Sales contact 01525 372621

Technical support 01525 372621 between 9:30am & 5:30pm

CD-ROM Helpline 01274 736990

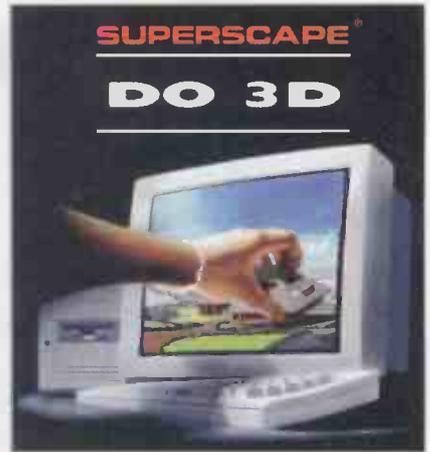
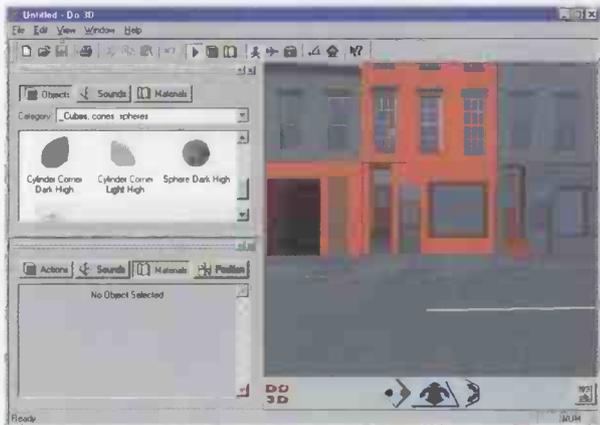
DO 3D

With DO 3D you can go anywhere and make anything you can imagine: build a dark, moody street or a sinister dungeon, a beautiful garden with an ornamental lake, visualise your new office space before you order anything, or just convert your existing web site to 3D. The only limitations are the ones you impose yourself. The simplicity of use really make this both an entertaining and versatile desktop tool. Using drag-and-drop mouse control with the vast archive of virtual objects, in-built behaviours

and sounds, and thousands of available textures, the user can instantly begin to build up a 3D world as simple or as complex as they want.

A 3D application is a useful and logical addition to other desktop creativity software, so DO 3D, which is developed from Superscape's top professional application, Webmaster, is a good place to start. Among some of its features is the opportunity to "sketch" in 3D, and create worlds that are fully interactive and filled with integrated images and sounds. DO3D outputs 3D worlds in the standard formats of SVR and VRML2.0.

DO 3D is perfect for a multitude of applications: planning room layouts and colour schemes, garden designs and building alterations, and of course to turn your personal or corporate web sites into 3D. As DO 3D was developed by the leading virtual reality software company Superscape, it has the flexibility and versatility you would not expect to find in



home software. Alternatives are often highly-priced professional design tools, but this application gives the same quality of execution without the need for in-depth knowledge.

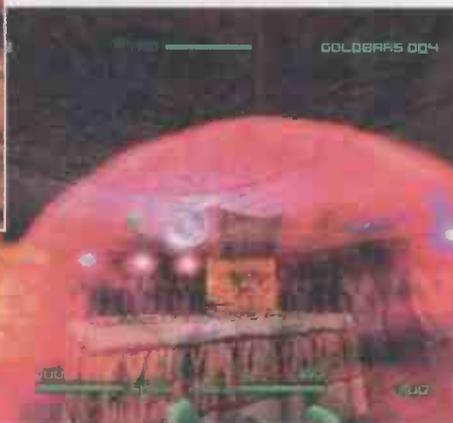
PCW Details

Operating system Windows 95
Limitations Function-limited demo
Sales contact 0500 600191
Technical support 01603 626860 between 9:00am and 5:00pm

Forsaken

Enter the world of Forsaken, a fast and furious journey through a merciless void of space where scientists playing with matter itself have completely devastated Earth and the solar system. The game is a free-for-all where

don't want. You will be exploring underwater perils, penetrating deep into subterranean complexes and battling furiously. Astride roaring anti-gravity pioncycles with deadly arsenals, you will battle to the death against each other and the dead world's ruthless robotic sentinels. For the one who emerges victorious, the lost glories of a dead civilization await. For the rest, only agonising death. Weaponry ranges from futuristic submarines to robotic nuclear missiles. For the



every bounty hunter, mercenary, space pirate and free-booting scum in the galaxy takes up the unwritten right to raid the system and take anything the Theocracy, a horde of bloodthirsty cut-throats,



best performance, a Pentium 133MHz or higher with D3D-compatible 3D accelerator card, or Pentium 166MHz without acceleration, both with 32Mb RAM, is recommended. You will need 50Mb of hard-disk space and DirectX 5 installed.

PCW Details

Operating system Windows 95
Limitations Shareware
Sales contact 0171 344 5000
Technical support 0171 344 5000

CD-ROM Helpline 01274 736990

Software Library

***NEW Microangelo (Win 95)** Browse, manage, create, and edit Windows 95 icons from 8x8 to 64x64 pixels in size and up to 256 colours. Explorer-like Browser specialises in locating icons on your system. (30 day trial.)

MIRC 5.31 (Win 3.1/95) Provides a user-friendly interface for use with the Internet Relay Chat network. The IRC network is a virtual meeting place where people from all over the world can meet and talk. (30-day shareware.)

***NEW Net Toob (Win 3.1/95)** Enables playback of online streamed or offline downloaded MPEG-1, Video for Windows (AVI), QuickTime for Windows (MOV), QuickTime VR "object" files, Autodesk Animations

(FLC/FLI), WAV audio and MIDI audio. Works with multiple browsers.

Paint Shop Pro 3.11 (Win 3.1) Fully-featured painting and image-manipulation program. Features include powerful painting tools, photo retouching, image-enhancement functions, batch file format conversion, and support for over 30 different file formats. (30-day shareware.)

***NEW Paint Shop Pro 5.0 (Win 95)** The latest version of this popular graphics editor, with powerful features: complete layer support, Picture Tube brushes, CMYK separations and pressure-sensitive tablet support. Includes enhancements to flexible painting and retouching brushes, and adjustable cropping and selection tools.

SpellWrite for Windows 1.6/2.1 (Win 3.1/95) A unique utility that can spell-check any Windows program instantly (email, accounts, database etc.) from a designated hotkey. It has an 85,000-word dictionary in UK format. (30-day shareware.)

WinZip SR 6.3 SR-1 (Win 3.1/95) Industry-standard compression/decompression utility for Windows 3.1 & 95, with automatic built-in disk spanning support for multi-disk Zip files. (21-day evaluation version.)

● New This Month

Anoid (DOS) Anoid is a colourful and addictive clone of Breakout, the bat, ball and bricks classic. (Ten-level demo.)

Calmira (Win 3.1 only) Calmira upgrades your Windows 3.1 user interface, bringing features that Windows 95 users have long been enjoying. (Freeware with source code.)



Clipboard Charlie Handy multi-layered text clipboard utility. (Shareware function-limited demo.)

Cubase Score VST (Win 95) Steinberg's Virtual Studio Technology

creates a music-production powerhouse with up to 32 tracks of CD-quality digital audio and up to 128 real-time equalisers. Two professional effect racks, each with 4 totally independent effect slots, and much more. (Save-disabled version.)

Desktop Wallpaper (Win 95) Desktop Wallpaper allows you full control over your background wallpaper in Windows 95. (30-day trial.)

Directory Magic (Win 95) A powerful directory/file manager to help you organise your files & directories with ease. (30-day test-drive.)

Dr Schueler's Medical Adviser (Win 3.1/95) Interactive medical diagnosis plus information on drugs, injuries, diseases, poisons, health & diet. This month's offer for PCW readers allows you to take advantage of a special upgrade from Health Perfect for Dr. Schueler's Medical Adviser (UK) v2.0 for only £29 (RRP £49). Offer ends 31st July 1998. (Full working version.)

England Football Manager (DOS) Manage a football team in the lowly English divisions and take them to the top of the league, in this football management sim. (Function-limited demo.)

Italian Football Manager (DOS) Take charge of a football team in the tough Italian leagues and manage them to the top, in this football management sim. (Function-limited demo.)

JPEGView (Win 95) Windows 95 viewer for JPEG picture files. It is designed for quickly viewing pictures without a lot of filename selecting and clicking of buttons. (Freeware.)

Language Labs Russian (Win 3.1/95) Fully presented in the target language, Language Labs evolved from the successful Rosetta Stone

language courses. (Limited demo.)

Macro Scheduler (Win 95/NT) A powerful scheduling and macro scripting tool. Scripts can be built to control any program or command which accepts keyboard and mouse input. A real lifesaver. (30-day evaluation.)

Process 98 (Win 95) Mapping flexibility of flowcharting software with a powerful simulation engine. Model any business process, from claims processing to financial transactions to the most challenging manufacturing design. (14-day time-limited demo.)

Project Scheduler 7 (Win 95/NT) Desktop business task scheduling. Project Scheduler 7 offers unique solutions to real-world scheduling challenges. (14-day time-limited demo.)

Report Maker (Win 95/NT) Report Maker allows teachers to create pupil reports and Record of Achievements (ROA). The reports are generated from a customisable "database" of statements. (Freeware.)

Talk Now (Win 3.1/95) EuroTalk language-learning discs help you understand and speak a new language. By hearing and practising authentic everyday speech, your natural ability for language will develop. This demo features Chinese, Polish, Portuguese, Irish, Russian and Italian. (Limited demo.)

Tiles (Win 3.1/95) A tile stacking game similar to the arcade classic, Klax. (10 level demo.)

TypeReader Workstation (Win 95) Several modules provide full optical character recognition (OCR) and entry-level document management facilities. (Save-disabled demo.)

UK Workforce (Win 95) Personnel management system with full report-writing facility. (30-day trial version.)

OS/2 Warp 3.0 Fix Pak #35

OS/2 Warp Fix Pak #35 for Warp 3.0 can be found in the /handson/os2/warp3 sub-directory. This is the latest fix pack for Warp 3, released on 20th April 1998.

Please read the README.1ST file for important pre-installation information. We have included a utility, FASTKICK.ZIP, created by Dmitry Nigiforoff, which allows the Fix Pack to be installed from a hard disk. More information can be found in the regular Hands On OS/2 column [page 275].

DOSCALL fixes for Warp 3 and Warp 4 are included. The Warp 3 version is with Fix Pak #35 and the Warp 4 version in the FP6FIX.ZIP file in the /handson/os2/warp4 sub-directory. This only affects you if you use the DESKMAN/2 program, but should probably be applied for consistency anyway if you have applied the Fix Paks.

CD-ROM Helpline 01274 736990

Battlezone

The original Battlezone of the eighties was the first 3D computer game ever.

Activision presents the next revolutionary Battlezone: an immersive first-person, action-strategy game where you command your troops from the battlefield. Battlezone is based around an alternative and "unpublicised" story behind the Space Race. American and Soviet scientists have discovered an off-world bio-metal that can be used to manufacture amazing



vehicles and weapons. But they each need to be the first to find additional bio-

metal deposits in deeper space. As only one superpower can survive in the Battlezone, the real Space Race has begun.

An interesting array of hardware is at your disposal, notably 20 anti-gravity war machines equipped with weapons of destruction including mortars, mines, and a devastating Thumper Device which sets off massive earthquakes over the morphable terrain. Other features include 3D warfare, strategic control, first-person combat action and actual images from NASA space expeditions. Multiplayer gaming is possible via LAN, modem or internet. This game requires DirectX 5 (included with the installation) or later. You will need plenty of disk space too: 160Mb of uncompressed hard-drive space for game files and 50Mb for the Windows swap file. If you have



a 3D graphics card, the game uses Microsoft's Direct 3D to support 3D hardware acceleration.

PCW Details

Operating system Windows 95

Limitations Function-limited demo. (The level has been especially created for the demo.)

Sales contact 01895 456700

Technical support 0990 143525 between 9:30am and 5:30pm

Streets of SimCity

This demo of Streets of SimCity offers only two menu options — New Game and Player's Choice. Starting a New Game, you are dropped into an example city from SimCity 2000 populated with easy-level Hunter and Cop cars who pursue you relentlessly. Player's Choice starts you out in the same example city but without the enemy cars annoying you, as you take a leisurely Sunday drive through the streets.

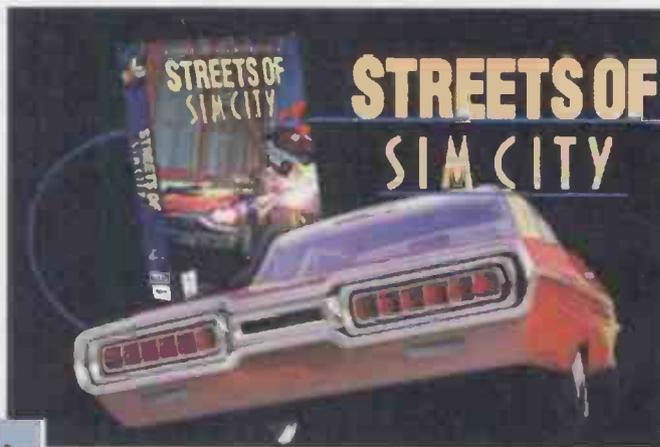
Your hardware includes one machine gun and one missile launcher, and additional ammunition is picked up randomly along the road.

The fun in this game is that you can speed through one of 50 built-in SimCity 2000 cities, or import your own. You can create an unlimited number of urban raceways with the STREETS course editor and battle through your new city with oil slicks, missile launchers, machine guns and mine droppers. There are 25 add-ons including radar detectors, high-performance tyres, armour and



hoppers. There are different driving storylines and missions, ranging from car combat to urban drag races. You can choose a vehicle from a range of five including muscle cars, sports cars and trucks.

You will need 25.4Mb of hard-disk space. The game



supports 3DFX and DirectX-compatible joysticks, and internet, modem and LAN play with relevant connections.

PCW Details

Operating system Windows 95

Limitations Function-limited demo

Sales contact 01753 546465

Technical support 01753 546465 9am-5pm weekdays.

CD-ROM Helpline 01274 736990

ClaraNET

ClaraNET offers full internet access, including email, the web and newsgroups. All the programs you need are included as part of the Atlantis software.

Packages include free 24-hour technical support, 100 percent local call access in the UK, no connection or start-up fee and free technical help. ClaraNET supports both K56 Flex and US Robotics X2 technologies, and you get 25Mb of web space free with your account.

The Atlantis software includes a licensed copy of Atlantis Mail and News. Try ClaraNET FREE for a month, and if you decide to continue you will be billed at the end of your trial month.

Please read the Terms and Conditions online.



PCW Details

Operating system Windows 95 and 3.1
 Limitations One month free
 Contact (Account Enqs.) 0171 903 3000
 Technical Support 0845 060 1000

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everything from the latest News & Sports to Travel & Entertainment.

Make net access easy: go directly to web pages from your AOL menu bar. AOL offers 33.6k access speeds nationwide and has Internet Explorer 3.0 integrated as its main browser. 350,000 UK subscribers can't be wrong!

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■ Free technical support!

■ 10Mb of web space!

■ 100 percent local call access!

Run the software from the main screen or from the Software Library ISP section.

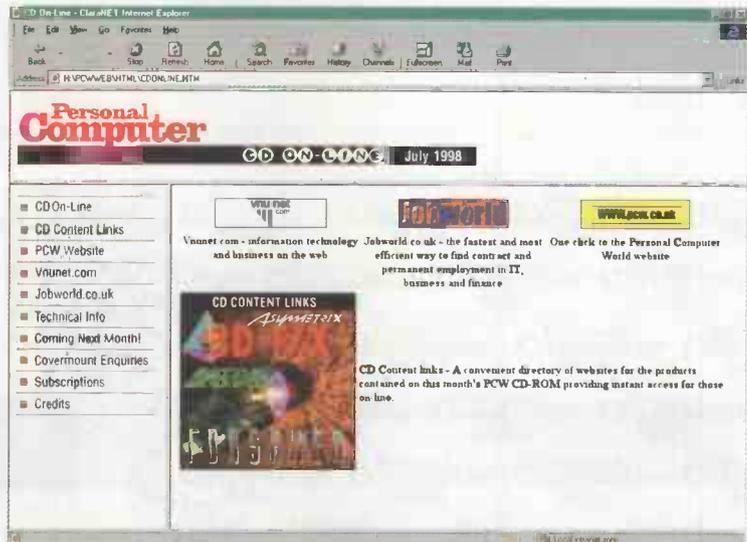


PCW Details

Operating system Windows 95 and 3.1
 Limitations One month free membership. 50 free online hours.
 Contact 0800 376 5432

CD On Line

Clicking on the web link banner at the top of the main screen gives you the chance to run your browser and access PCW CD OnLine. CD OnLine is a new section of the CD giving you up-to-date access to sites and information relating to the content on this month's CD. Besides direct links to the PCW web site, vnunet.com and Jobworld.co.uk, you will find a directory linking you to the web sites of the companies which have software included on this month's CD, a continually updated Technical Info page, and a preview of next month's CD. There's also contact information and online subscription.



Jobworld.co.uk is a free service which gives you access to thousands of new IT, business and finance vacancies every day. All you have to do is browse the site by job sector or search on a specific set of job skills or requirements.

The Jobworld Email Alert service offers extra freedom by sending only details that match the job-seeker's preferences, letting the recipient control what information is sent and when.

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Vnunet.com offers speed of delivery, accuracy and breadth of coverage from five market-leading weekly newspapers — Computing, Accountancy Age, PC Dealer, Network News and PC Week, generating up to 50 stories every working day. With correspondents in Europe, the US and Asia contributing daily to the VNU Newswire, a round-the-clock news service is available at vnunet.com.

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Which is the best computer value-for-money or one with

With Dan

Dan Technology has enjoyed enormous success in polls conducted this year by the nation's leading computer magazines. In recent months, we've won top honours from the readers of PC Direct, PC Magazine, PCW, What PC? & PC Pro.

Our products, the Dan PCs featuring Intel Pentium® processors, after-sales service, overall reliability – all have always received more than enough votes to place Dan in the first rank of PC vendors. But this year we've done even better. Two of the leading magazines

asked readers probably the most important question of all: would they buy from the same vendor again? We are proud and delighted to reproduce the answers here.

The August 1997 Service and Reliability Survey in PC Magazine revealed that Dan users were more likely to stick with

their current PC vendor than owners of any other brand. Incidentally, this is the third year in a row that Dan has headed

WOULD YOU BUY FROM THE SAME VENDOR AGAIN?

DAN WAS VOTED No1 IN THIS CATEGORY BY READERS OF PC PRO IN THE 1997 ANNUAL SURVEY

"Just about every single one of Dan's customers is happy with the service they received."

PC Pro Quality and Service Awards October 1997



dan Ultimate 2

with Pentium®II Processor

- Intel Pentium® II Processor with 512KB Cache Memory
- 64MB SDRAM (2x32MB Modules)
- Fast 6.4GB Hard Disk Drive
- Iomega 100MB Zip Drive + cartridge
- ATi Xpert@Work 4MB AGP Video Card
- 17" Iiyama L/R N/I Monitor (9017T) (Viewable size 16.2" - 405mm)
- 32MAX Speed EIDE CD-ROM
- SoundBlaster AWE 64 OEM
- Hi Fi Power Speakers (150W PMPO)
- 56KBPS VoiceFax/Modem (UK only)
- Microsoft IntelliMouse™, Microphone
- Windows 95 UK Keyboard
- Midi Tower Case D with PSU
- Software: Windows 95, MS Works 95, Serif Page Plus, Intuit Quicken 6se & Encarta'98 US

300MHz	£ 1443	£ 1696	Incl. VAT
333MHz	£ 1526	£ 1794	Incl. VAT
350MHz	£ 1609	£ 1891	Incl. VAT

dantum 2 /MS

with Pentium®II Processor

- Intel Pentium® II Processor with 512KB Cache Memory
- 32MB SDRAM
- Fast 3.2GB UDMA Hard Disk Drive
- ATi 4MB 3D Charger AGP Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.32" - 333mm)
- 32MAX Speed EIDE CD-ROM
- Sound Blaster 16 Soundcard
- Hi Fi Power Speakers (150W PMPO)
- 56KBPS VoiceFax/Modem (UK only)
- Microsoft IntelliMouse™, Microphone
- Windows 95 UK Keyboard
- Desktop Case with PSU
- Software: Windows 95, MS Works 95, Serif Page Plus, Intuit Quicken 6se & Encarta'98 US

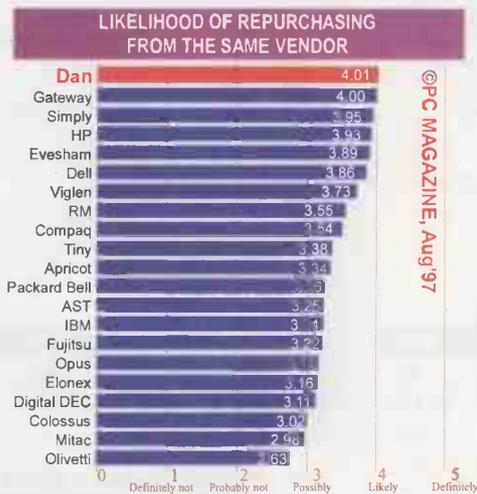
266MHz	£ 867	£ 1019	Incl. VAT
300MHz	£ 950	£ 1117	Incl. VAT
333MHz	£ 1033	£ 1214	Incl. VAT

All systems also include: Fast EIDE PCI HDD Controller, 1 Parallel, 2 Fast Serial and 2 USB Ports, 1.44MB Floppy Disk Drive, MMX™ Brand Software – 5 titles (except dantum 2 WS) and FREE of charge access to the Internet for 28 days (or max 24 hrs) through PIPEX DIAL.

go direct to dan

vendor? One which gives the happiest customers?

you get both.



PC Magazine's brand loyalty league table. PC Pro's 1997 PC Awards (October issue) confirmed the trend.

The performance difference between two makes of PC is often measured in fractions of a second. These polls clearly show that service, support and overall reliability are now just as important to users as speed, if not more so.

Ask yourself, are you really satisfied with your PC supplier when it comes to these matters? If not, give us a call and we'll show you why our users keep voting us Number One. If the answer is yes, you're probably a Dan owner already.



All Dan PCs are year 2000 compliant

1997 Annual Awards
from Computer Magazine Reader Surveys and Editorial Teams

Service & Reliability Award
PC Magazine, 1997 Survey

Best Service Award
PC Pro, 1997 Survey

Best On-Site Maintenance
PCW 1997 Survey

Best Customer Service Award
PC Plus 1997 Survey

Best Server Award
PC Direct Hits 1997 Survey

Best Budget PC
What PC? 1997 Annual Awards

Best Professional PC
What PC? 1997 Annual Awards

In addition, Dan has also received numerous monthly editorial Awards.

dantum 2 WS

Dual Pentium®II Processor option

- 64MB SDRAM (2x32MB Modules)
- Choice of Hard Disk Drive
- Choice of single or dual Intel Pentium® II Processor with 512KB Cache Memory
- Iomega 100MB ZIP Drive + 1 cartridge
- Matrox 8MB Productiva AGP Video Card
- 19" ADi MicroScan 6P Monitor (Viewable size 18" - 450mm)
- 56KBPS VoiceFAX/Modem (UK only)
- 32MAX Speed EIDE CD-ROM
- Dual Port SCSI Controller (Ultra & Wide)
- Midi Tower D Case with PSU
- Microsoft IntelliMouse™
- Windows 95 UK Keyboard
- Software: Windows NT Workstation MS Works 95

with single processor	333MHz	350MHz	400MHz
8.0GB UDMA EIDE	£ 1858	£ 1944	£ 2108
4.1GB WIDE SCSI	£ 1879	£ 1965	£ 2129
9.0GB WIDE SCSI	£ 2113	£ 2199	£ 2363

with dual processor **PLEASE CALL FOR DUAL PROCESSOR SYSTEM PRICES**

Above prices exclude VAT@17.5%.

dantum 2 Duo Server

Dual Pentium®II Processor option

- 64MB SDRAM (2x32MB Modules)
- Choice of Wide SCSI HDD
- Choice of single or dual Intel Pentium® II Processor with 512KB Cache Memory
- 2MB EDO RAM 64-bit Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.32" - 333mm)
- 32MAX Speed SCSI CD-ROM
- Intel Express Pro UTP Network Card
- Dual Port SCSI Controller (Ultra & Wide)
- Full Size Tower Case with PSU
- Microsoft IntelliMouse™
- Windows 95 UK Keyboard
- Software: Windows NT Workstation (5 user licence)

with single processor	266MHz	333MHz	400MHz
4.1GB WIDE SCSI	£ 1826	£ 1999	£ 2249
9.0GB WIDE SCSI	£ 2060	£ 2233	£ 2483

with dual processor **PLEASE CALL FOR DUAL PROCESSOR SYSTEM PRICES**

Above prices exclude VAT@17.5%.

WE ARE CONSTANTLY REVISING OUR PRICES AND SYSTEMS.

CALL NOW FOR LATEST OFFERS.

All systems have Lifetime Guarantee (first year full back-to-base parts and labour, then lifetime free labour - excludes certain monitors and printers - and Lifetime Telephone Support Hotline only). Optional next-working-day (subject to customer location and time of call) response ON-SITE maintenance (£42 for the first year). **14 DAY MONEY BACK GUARANTEE IF NOT SATISFIED (excludes printers & software).** Dan Technology systems prices and specifications are subject to change without notice. All sales are subject to Dan Technology terms and conditions, a copy of which may be obtained on request. Dan Technology is a trademark of Dan Technology Ltd which is a subsidiary of Dan Technology Holdings plc. Intel Inside logo & Pentium are registered trademarks and MMX is a trademark of the Intel Corporation. All trademarks acknowledged.

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dan

technology

**Business
PCs, Workstations
and File Servers**

“ Dan has a deserved reputation for producing well specified, solidly built machines. ”

Personal Computer World (PCW), March '97

In Dan Technology's ten years of supplying built-to-order computers direct to UK end users, we have earned universal acclaim for our "quality first" approach. Our products enjoy an unrivalled reputation for solid reliability, class-leading performance and great value for money.

Our customer service has won accolades too, with readers' awards this year from no fewer than four of the country's leading magazines — PCW, PC Magazine, What PC? and PC Pro. And when two of them asked their readers if they'd buy again from the same vendor, both found that Dan has the nation's most satisfied customers.

So if you care about quality as well as price, look at Dan's range. We think you'll like what you see.



All Dan PCs are year 2000 compliant

dantum

Pentium® Processor Based System

- 16MB EDO RAM
- Choice of Hard Disk Drive
- Intel Pentium® Processor with MMX™ Technology
- 512KB Pipeline Burst Cache Memory
- 2MB EDO RAM/64-bit Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.32"-333mm)
- 32MAX Speed EIDE CD-ROM
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- Desktop Case with PSU
- 1 Parallel & 2 Fast Serial Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows 95
- MS Works Suite

Pentium® Processor	233MHz
2.1GB	£ 635
3.2GB	£ 647
4.0GB	£ 661
5.0GB	£ 683
6.4GB	£ 691
4.10GB	£ 982
9.0GB	£1208

8.0GB HDD upgrade from 6.4GB £ 88

dantum 2

Pentium® II Processor Based System

- 32MB SDRAM RAM
- Choice of Hard Disk Drive
- Intel Pentium® II Processor with 512KB Cache Memory
- 2MB EDO RAM/64-bit Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.32"-333mm)
- 32MAX Speed EIDE CD-ROM
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- Desktop Case with PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows 95
- MS Works Suite

Pentium® II Processor	266MHz	300MHz	333MHz
2.1GB	£ 725	£ 812	£ 898
3.2GB	£ 737	£ 824	£ 910
4.0GB	£ 751	£ 838	£ 924
5.0GB	£ 773	£ 860	£ 946
6.4GB	£ 781	£ 868	£ 954
SCSI 4.1GB	£1072	£1159	£1245
SCSI 9.0GB	£1298	£1385	£1471

ATI TV & Teletext Card £ 43
SoundBlaster 16 & Speakers £ 34

dantum 2 WS

Dual Pentium® II Processor Option

- 64MB SDRAM (2x32MB Modules)
- Choice of Hard Disk Drive
- Intel Pentium® II Processor (single or dual) with 512KB Cache Memory
- Iomega 100MB ZIP Drive + 1 cart.
- 8MB Matrox Productiva AGP Video Card
- 19" ADI MicroScan 6P Monitor (Viewable size 18"-450mm)
- 56KBPS VoiceFax/Modem (UK only)
- 32MAX Speed EIDE CD-ROM
- Dual Port SCSI Controller (Ultra & Wide)
- 1.44MB Floppy Disk Drive
- Midi Tower Case D with PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- MS IntelliMouse™, Win95 UK Keyboard
- Windows NT Workstation
- MS Works Suite

Single Processor	333MHz	350MHz	400MHz
8.0GB <small>UDMA EIDE</small>	£1858	£1944	£2180
4.1GB <small>WIDE SCSI</small>	£1879	£1965	£2129
9.0GB <small>WIDE SCSI</small>	£2113	£2199	£2363

As above with 2 CPUs Installed as standard

Dual Processor	333MHz	350MHz	400MHz
8.0GB <small>UDMA EIDE</small>	£2191	£2363	£2763
4.1GB <small>WIDE SCSI</small>	£2212	£2384	£2712
9.0GB <small>WIDE SCSI</small>	£2446	£2618	£2946

Delivery cost to mainland UK for one system is £19.

Call for low cost upgrade to Office 97 & Office 97 Pro

Network Workstations



All Dan PCs can be used as workstations by adding a network card. The most popular card is the 16-bit Ethernet Novell NE2000 compatible. However, the Intel Express Pro PCi card can give higher performance.

Example of Workstations:

Entry level Station
dantum/233MHz/W
dantum/233MHz £ 635
16-bit Ethernet card £ 17
Workstation price £ 652

Best Seller Station
dantum 2/266MHz/W
dantum 2/266MHz £ 725
Intel Express Pro card £ 44
Workstation price £ 769

Power User Station
dantum 2 WS/W
dantum 2 WS/333MHz £ 1858
Intel Express Pro card £ 44
Workstation price £ 1902



Dan Desktop Case with 15" Monitor

5 Years Winner

Annual P.C Magazine Service & Reliability Reader Survey

"When it comes to customer satisfaction, Dan is still top of the desktop PC vendors. For the fifth year in a row it has won the Overall Satisfaction category. The first year Dan won, cynics said that the company was small so customer service was easy, and that as it grew standards would fall. But five years on, Dan is still growing and still at the top... Dan can truly be said to be the best organisation at delivering excellence in customer satisfaction."

PC Magazine, August 1997, Service & Reliability 1997 Reader Survey

go direct to dan

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ISO 9002/EN29002 (BS 5750 Pt2)

“ One company has become synonymous with servers and that is dan, which has a wide range of options to suit many different network needs. ”

Winner & Runner-up of Network Servers Category, Readers Survey - Direct Hits 1994, 95, 96 & 97, PC Direct, June '96

Dan Servers for Novell and other Networks

When so much depends on one machine, it makes sense to go for the best in reliability and quality, as well as price and performance. In short, you have to choose the right supplier.

We understand that your business will depend on your network; no one is more reliable than Dan with its numerous magazine and reader awards, including being the winner and runner-up in the Server category of PC Direct's Reader survey for the last 4 years.

Complete Network Services

- Cable & data outlet installations
- Network Configuration backed by 30 day ON-SITE and HOTLINE support by qualified engineers
- Network Administration training courses available



Call for more information

dantum 2 Server

Pentium® II Processor Based System

- 64MB SDRAM (2x32MB)
- Choice of Ultra DMA HDD from table
- Intel Pentium®II Processor with 512KB Cache Memory
- 2MB EDO RAM 64-bit Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.32"-333mm)
- 32MAX Speed EIDE CD-ROM
- Intel Express Pro UTP Network Card
- Fast EIDE PCI HDD or Adaptec AHA-2940 PCI SCSI Controller
- 1.44MB Floppy Disk Drive
- Full Size Tower Case D with PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows 95 or NT (at extra cost)
- MS Works Suite

Pentium®II Processor	266MHz	300MHz	333MHz
4.0GB	£ 871	£ 958	£1044
6.4GB	£ 901	£ 988	£1074
4.1GB SCSI	£1192	£1279	£1365
9.0GB SCSI	£1418	£1505	£1591

dantum 2 Duo Server

DUAL Pentium® II Processor Option

- 64MB SDRAM (2x32MB)
- Choice of Wide SCSI HDD
- Choice of single or dual Intel Pentium®II Processor with 512KB Cache Memory
- 2MB EDO RAM 64-bit Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.32"-333mm)
- 32MAX Speed SCSI CD-ROM
- Intel Express Pro UTP Network Card
- Dual Port SCSI Controller (Ultra & Wide)
- 1.44MB Floppy Disk Drive
- Full Size Tower Case with PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows NT Server (5 user licence)

Single Processor	266MHz	333MHz	400MHz
4.1GB WIDE SCSI	£1826	£1999	£2249
9.0GB WIDE SCSI	£2060	£2233	£2483
As above with 2 CPUs installed as standard			
Dual Processor	266MHz	333MHz	400MHz
4.1GB WIDE SCSI	£1986	£2332	£2832
9.0GB WIDE SCSI	£2220	£2566	£3066

dantum 2 RAID Server

DUAL Pentium® II Processor Option

- 64MB SDRAM (2x32MB)
- 18GB SCSI HDD (3x9GB HDDs in RAID 5 configuration with HotSwap capability)
- Choice of single or dual Intel Pentium®II Processor with 512KB Cache Memory
- 2MB EDO RAM 64-bit Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.32"-333mm)
- 32MAX Speed SCSI CD-ROM
- Intel Express Pro UTP Network Card
- Dual Port SCSI Controller (Ultra & Wide)
- 1.44MB Floppy Disk Drive
- File Server Case with PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows NT Server (5 user licence)

Single Processor	266MHz	333MHz	400MHz
9.0GB WIDE SCSI	£4147	£4320	£4570
As above with 2 CPUs installed as standard			
Dual Processor	266MHz	333MHz	400MHz
9.0GB WIDE SCSI	£4307	£4653	£5153

For Novell Netware File Servers: you must upgrade the EIDE CD-ROM to SCSI add £ 18 (plus £ 110 for SCSI controller if needed - Adaptec AHA 2920)

Call for Windows NT WS Upgrade from Windows 95

Network upgrades for dantum systems

Miscellaneous	Network Cards	Uninterruptible Power Supplies - UPS
14" Colour Monitor from 14" Mono £ 31	16-Bit Network Card Ethernet £ 17	1000VA UPS Line Interactive (Fiskars) £ 388
15" Colour Monitor from 14" SVGA £ 33	(NE2000 comp. - Thin Ethernet/Twisted Pair)	800VA UPS OnLine (Fiskars) £ 574
Network Hubs	16-Bit Network Card Ethernet (3COM509) £ 56	Tape Streamers for Servers
8 Port 10 base-T Mini Ethernet Hub £ 30	32-bit PCI Ethernet Card (3COM900) £ 57	(Controller, Tapes & Backup Software not included)
16 Port 10 base-T Mini Ethernet Hub £ 103	32-bit PCI 100Mbps base-T Ethernet Card (3COM905) £ 47	2GB (4GB compressed) DAT Streamer £ 457
Intel stackable 10/100 base 12 Port Hub £ 821	32-bit PCI Intel Express Pro 100UTP Card £ 44	4GB (8GB compressed) DAT Streamer £ 551
Intel stackable 10/100 base 24 Port Hub £ 1279	Intel Express Pro 100UTP Server Card £ 356	12GB (24GB compressed) DAT Streamer £ 783

4 Years Winner & Runner-up

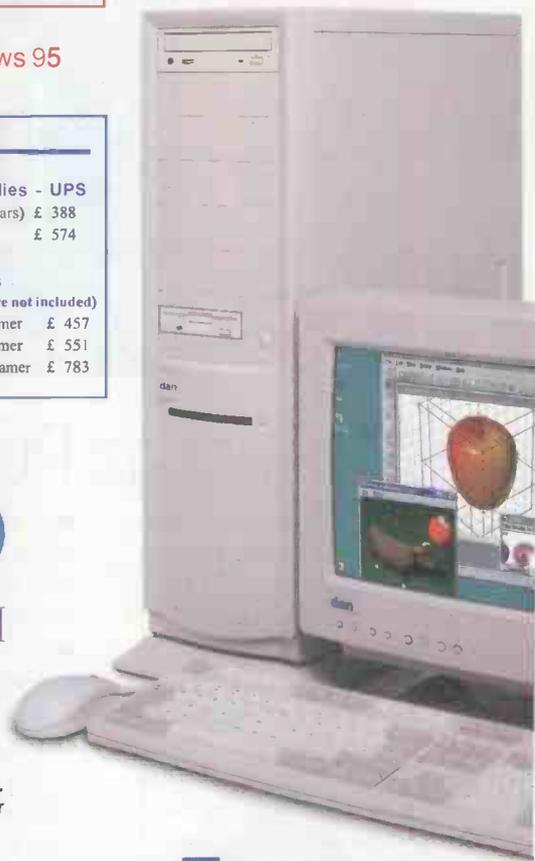
Network Servers Category, Readers Survey - Direct Hits 1994, 95, 96 & 97

"The number of servers available through the direct channel rose... as more companies installed networks and users found it just as easy to buy servers as workstations off the page. Yet while the competition did increase, long-time off-the-page server champion Dan Technology continued its dominance of this particular market, taking not only one of the runners-up slots, but also retaining its victor's laurels with the Dantum Pro Server, direct prices for which start at under £1,500. [Dan has won the Network Server category every year since 1993.]"

PC Direct, June 1997, Direct Hits Readers Awards 1997



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Internet: www.dan.co.uk e-mail: sales@dan.co.uk
Further dan technology adverts can be found on pages 333 to 337



VAT @ 17.5% E.&O.E. (not shown)

dan technology

Newsprint

New Winchip piles pressure on Intel

Pictured below is a new IDT Win chip which tightens the screw on Intel's criticised low-end Celeron, already under pressure from AMD and Cyrix chips.

PCs using the first Winchip C6 are already on sale. Evesham has models starting at £459 (ex VAT). The chips are optimised for standard Windows use for the home and small office.

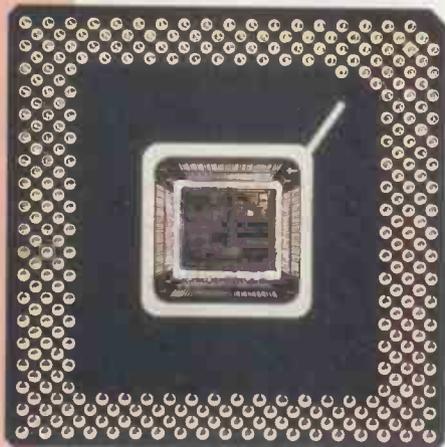
The new Winchip 2, available as samples now and expected to be in PCs by July, will have twice the MMX performance and better floating-point processing, bringing it to within ten percent of the equivalent Intel chip.

It uses the old System 7 socket but with the latest 100MHz bus. First 0.35 micron versions will clock 200MHz, 225MHz or 240MHz. Later this year, 0.25 micron versions will clock up to 333MHz.

IDT plans a 3D-enhanced C6 aimed at games players later this year.

IDT is less well known than other cloners, but it's big. With three chip fabs and a deal with IBM for the manufacture of more chips, it will ship up to three million processors this year.

Evesham 0800 496 0800; IDT 01372 363399



Imminent NT 5.0 steals the Win98 launch show

Microsoft was due as we went to press to ship the first copies of Windows 98 to PC makers, still unsure whether the full launch of the new OS could go ahead on 25th June.

Justice Department (DoJ) and Microsoft officials were said to be seeking a compromise over whether Windows 98 is covered by an order that Microsoft must de-

couple its Explorer browser from Windows 95. Windows 98, in effect, is a browser. It maps the internet and your local disks through the same Explorer interface.

But Microsoft is not out of trouble even if it wins that point. Thirteen states were threatening action, and the DoJ was said to be broadening its remit to cover license issues and Microsoft's spat with Sun over the future of Java. The Windows 95 launch three years ago was preceded by a similar legal cliffhanger, but the resemblance ends there.

Windows 98 features have been creeping into Windows 95 patches and vendor releases. Many businesses are focusing more on Windows NT, which has a major revamp coming in version 5.0 and is Microsoft's platform for the future. Microsoft's Paul Maritz, platforms group VP, said in

London that a full-featured beta of NT 5.0 will be shipped about June. He said the rush for '98 upgrades was expected to be less in percentage terms than with '95. But numbers will be bigger because more people now have PCs.

Asked if Microsoft could decouple browser functions from Windows 98 if required by the courts, Maritz said: "We could be ordered to do anything, but the results would be bizarre."

Martin Gollongly, senior analyst at Datamonitor, thinks '98 offers little to attract the average home or office '95 user to upgrade. "About 400,000 starters in Britain will buy PCs with Windows 98."

Windows 98 costs £161.50 (inc VAT) or £85 as an upgrade from '95 or 3.x.

**Clive Akass
and Susan Pederson**

Mystery as PC infra-red ports go out of sight

■ The great infra-red mystery has deepened with the latest round of PC launches. Regular Newsprint readers will be familiar with the puzzle.

Consider the facts:

- Most new notebooks and palmtops have I-R for fast (up to 4Mbit/sec) cordless data links.
- Nearly every TV sold has I-R remote control bundled.
- Most motherboards sold have two pins for I-R support. Windows 95 has I-R drivers.

● I-R transceiver chips cost up to \$5. The cost of implementing them in PCs would hardly be twice that.

● A standalone I-R port until recently cost almost as much as a cheap I-R controlled TV. Even now, you pay up to £80.

The mystery is, why are PCs not sold with I-R ports? Which begs another question: what are all those notebook and palmtop users supposed to be pointing their I-R ports at?

Compaq has actually dropped I-R support at the motherboard level on its new range. James Griffiths, senior commercial desktop product manager, said this was because of a lack of demand from corporates. "Margins on a PC are now so small, there is enormous pressure to shave every last penny off costs," he said.

Businesses that use I-R are likely to use network ports, so the focus on corporates ignores

the needs of the individual user. Similarly pointless for the average user is the dedicated printer I-R port, as the same thing on a PC can both swap data with a notebook and print it out.

Clive Akass

Death of the floppy?

One new desktop that does sport infra-red is Apple's sensational new iMac. It may set the pace for the PC industry in another respect, too, by doing away with the floppy drive. Full story, page 27

News edited by Clive Akass; news@pcw.co.uk • Internet News edited by Susan Pederson; susan_pederson@vnu.co.uk

CD phone directory users risk prosecution, warns data registrar

Users of a new cut-price UK phone directory CD which lets you trace addresses of ex-directory users, could face prosecution, the Data Protection Registrar has warned.

The £20 I-CD even includes people who are not on the telephone. PCW used it to find the addresses of film stars, MPs and journalists. A £169 (ex VAT) Pro version allows reverse searches from a number or street. These are banned on BT listings.

The I-CD index is eccentric, but the speed and interface are a huge improvement on the old UK Info CD (*Newsprint*, Dec 1996). The data for that CD came from scanning printed directories; the new CD uses legal data sets employed by marketing and credit agencies. Sources include electoral rolls.

Sales director Alastair Crawford says all sources are legal and he dismisses privacy issues. "This kind of information has always been available if you knew where to go and could pay for it. All we have done is made it available to everyone. Similar listings are freely available in the US and on the continent." He says people have the option to get

themselves removed from the listings.

"There is a form on the disk for that purpose. But most people who contact us are pleased that they have been able to find long-lost friends and relatives."

DPR compliance officer Lorraine Godkin cast doubt on the accuracy of the listings but said her office could do nothing. She said people would not expect their address to be traceable from a phone number given out in a pub or classified ad.

She pointed out that the DPR had been against a law obliging electoral-roll data to be made available for sale.

And she warned: "The registrar would seriously consider any complaint against a third party that used this software inappropriately."

I-CD 01703 450450



Cliff offers £15m for your ideas

Web pioneer Cliff Stanford found himself with a spare £33m after selling Demon Internet last month, and promptly put up £15m to fund ideas or companies needing cash. Products will be "collaboratively marketed" under his new Redbus brand.

"I want solid proposals, with business plans. I don't want to hear about that idea you had in the bath last week," he said. "They need not be technological ideas. I don't want to go back to being a techie."

Stanford confessed to being sad on leaving Demon. "It's been a lot of fun," he said.

Redbus 0181 759 0005, www.redbus.demon.co.uk



Euro becomes font of more millennial woes

■ The new Euro has given PC users another running problem to go with the Millennium Bug and dialling changes, not to mention sunspot peaks and the Dow Jones blowout (see p31). Most PCs don't support the Euro



symbol, and Windows 3.1 PCs will never do so, if their owners rely on Microsoft.

Windows 98 and NT 5.0 will support the symbol, and Microsoft will provide patches for Windows 95 and NT 4.0 — but only in Times New Roman, Courier New and Arial fonts. Windows 3.1 users have to wait for a third-party solution.

Mark Taylor, director of consulting at Microsoft, says: "It's vitally important that the symbol be supported. The Euro might be



"He says it's endemic among IT workers worried about how they will earn a living when they run out of millennial crises"

slow to get going but maybe even in a year, it will touch the majority of people's lives in

the UK." He says the situation is like the Y2K problem, without the technical issues.

Joe Graham, special projects manager for Fontworks, said: "All of the major font manufacturers are beginning to address this, but it's still in its infancy."

EuroType is selling a scalable TrueType Euro symbol, called Glyph, for use with other fonts. The single letter costs £49 (ex VAT). General manager Roger Beechey defends the price. "A lot of large financial companies can't wait until the font manufacturers do an update. A font bureau would charge you at least £80, so we're getting a lot of interest."

But Microsoft's Taylor said: "It should either be free or very cheap."

EuroType 01442 824130, www.eurotype.com
Microsoft 0345 002000, www.microsoft.com/msoffice/office/euro/euro1.asp

Short stories

New Kyocera EcoSys

■ Kyocera has added to its cartridge-free range of EcoSys printers with the £520 (ex VAT) 8ppm FS-800 laser, designed for small work-groups and powered by a 50MHz PowerPC processor.

Kyocera 0118 931 1500, www.kyocera.co.uk



USB speakers

■ Labtec's LCS-1041 speaker system uses the USB digital interface to create pure sound — and it doesn't need a sound card. It is due to ship this autumn for £60.

Labtec 01252 629900, www.labtec.com

Virtual Access ships 'foolproof' routers

■ Virtual Access has launched a range of routers which it claims require no technical knowledge to install. The LinXSpeed Pro routers have a built-in web server, call up a service provider via a leased or ISDN connection, and configure themselves automatically.

Two analogue ports allow voice, phone and fax connections. Philip Smith, director of product marketing, said: "Each router effectively has its own engineer inside."

Virtual Access 01344 637000, www.virtualaccess.com



■ ViewSonic claims its Super Clear technology gives its 17in GA771 monitor sharp focus and bright, vivid colours. With an 87Hz refresh rate and resolution of 1024 x 786, it has an estimated street price of £345.

ViewSonic 0800 833648, www.viewsonic.com

Compaq goes for PC power with ease of responsibility

Processor power is no longer a prime focus for PC buyers, particularly in big companies, according to top-selling vendor, Compaq.

Corporates are concerned with the ease and cost of maintenance, and with the issue of how long a PC will last before it needs to be upgraded.

"The take-up of Pentium II

processors has been greater than we expected. But partly this is because people feel they have to buy high to be sure that the PC will be adequate for two or three years," said James Griffiths, senior product manager of commercial desktops.

He was launching the new Compaq range, which comes in two tiers.

The EP range replaces

the entry-level DeskPro 2000 and middling 4000 ranges, using processors from the

266MHz Celeron right up to a 400MHz PII. The EN range adds management features, such as the ability to lock and unlock system boxes centrally.

The machines all boast ease-of-upkeep features, notably in making parts easily accessible. Disk drives can be turned to transform the box from a tower to a desktop configuration.

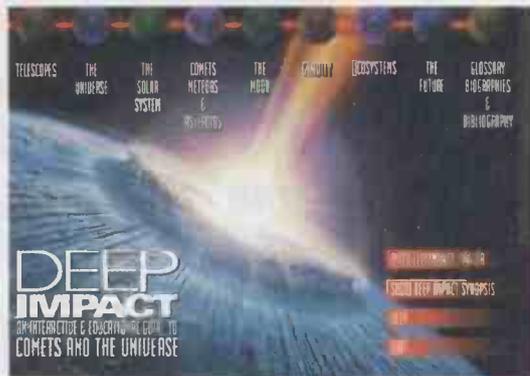
Griffiths said there were no plans to use Cyrix or AMD clones, rather than the cacheless Celeron, unless demand for them increases. "Celeron has about the performance of a 233MHz MMX, and using it gives us the advantage of having the same architecture across the range."

(The Intel chips all use Slot 1 boards, whereas the clones use Socket 7.)

Clive Akass

Compaq 0845 2704222, compaq.co.uk

● See Tim Bajarin, *News Analysis*, page 50



Deep Impact in class

The people behind the comet disaster movie *Deep Impact* are supplying GCSE science classrooms with a CD-ROM guide to comets and the universe. The guide, introduced by Patrick Moore, includes video interviews, animation and a virtual moonwalk. It also investigates the likelihood of the Earth being struck by a killer comet.

HP backs Windows terminals

■ Hewlett-Packard has launched a raft of new PCs and notebooks and announced their intention to be the largest vendor of PCs worldwide by the year 2000.

The mobiles range from recently announced handhelds through to new desktop replacement notebooks.

The new PCs are spread over four brands, covering everything from home computers, through low-end business PCs with Celeron, right through to Unix workstations.

Hewlett-Packard (HP) has also added NetPCs and WBTs (Windows Based Terminals) to the range, to cover every possible requirement of its corporate clients.

Nor is HP ruling out the possibility of producing NCs in the future, depending on how Java is developed. This is in contrast to Compaq (*see story above*), whose crown HP wants to steal, which reckons NetPCs still offer the lowest cost of ownership on a properly-managed network.

HP also introduced enhancements to its network management TopTools suite and some nifty security devices, notably a smart card which fits into the PC Card and then into a notebook.

If you lack a password, or try to use the notebook without the smart card, the system is disabled.

Adele Dyer

● Terminal affair — *Comdex news*, page 47

New models show some of the old Apple flair...

Apple was back in the limelight last month with the launch of its most novel design since the original Mac.

The iMac (pictured, bottom left) uses the latest PowerPC G3 chip and is priced in the US at \$1,299 — a little over £800 and cheap enough to compete with low-end Windows PCs. UK prices and availability have yet to be announced. The G3 has a claimed performance twice that of a

Pentium at the same clock rate.

Apple additionally announced a G3-based Powerbook notebook (left), also competitively priced for its class at a basic £1,645.

But it was the iMac that got the most attention. It comes

with a 15in 1024 x 768 monitor, a 33.6K

modem, 10/100 Ethernet, twin USB ports and, in contrast to the latest PCs (see page 24), a 4Mbit/sec infra-red port.

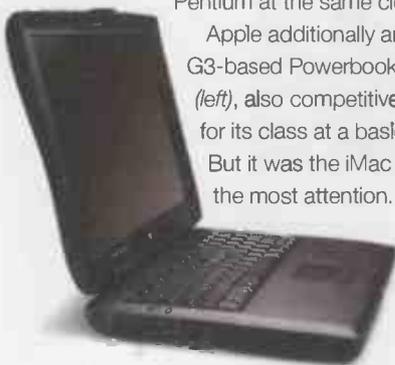
It also boasts 32Mb RAM, 2Mb SGRAM, a 4Gb hard drive and a 24X CD-ROM. Both the keyboard and mouse use the USB, again using technology PC vendors have been slow to adopt. What it does not have is a floppy drive (see below).

The new Powerbook has an elegant black case, screen options up to 14.1in TFT, easy-access drive and battery bays, Ethernet, Cardbus and clock rates up to 292MHz.

It is luggable rather than portable, recognising that many notebooks are now sold as desktop replacements.

All the new Apples can run Windows apps using optional emulation software. Apple claims 292MHz G3 runs Windows as fast as a 233MMX Pentium. **Clive Akass**

Apple 0181 569 1199, www.apple.com



Let the good times roll again

■ I got a flash of *déjà vu* when Steve Jobs pulled the sheet off the iMac: it was like the unveiling of the first Mac.

Jobs walked out in a black suit, just like he did then, though he was not wearing the red bow tie he sported in 1984. And this time around he did not look like a kid. He is an industry veteran, even if he still retains his youthful enthusiasm.

TIM BAJARIN at the big Apple launch

With typical flair, Jobs showed off the next generation of mainstream Macs and I am convinced he has a winner.

The iMac may not win him new users, but it might help stem the drift of current ones to cheaper Wintel PCs.

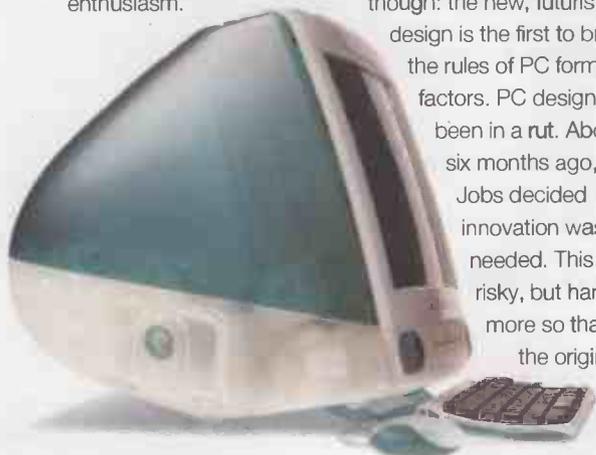
Something more important is going on, though: the new, futuristic design is the first to break the rules of PC form factors. PC design has been in a rut. About six months ago, Jobs decided innovation was needed. This is risky, but hardly more so than the original

Mac design, which led the world by introducing the 3.5in floppy. The iMac has no floppy, on the grounds that software is now distributed on CD-ROM.

Floppies are useful for backup and sneaker nets but they are not very efficient. More than one top PC vendor is thinking of dropping them, and the iMac may encourage them. It may also lead to some radically-designed PCs. Rock City Computers has already created a black, cube-like PC, aimed at under-35s who want to be different.

At the very least, Jobs is showing the PC world that it's OK to "Think different".

If only he could use this forward thinking to make Apple once again a serious player in mainstream computing.



Short stories

Quantum claims Shock breakthrough

■ Quantum claims a new Shock Protection System on its latest 3.5in Fireball EL hard drive range provides increased robustness and reliability.

Available in capacities between 2.5Gb and 10.2Gb, the drives have a 512Kb buffer and boast a 9.5 millisecond average seek time. Prices range from £146 to £321 (ex VAT).

Quantum www.quantum.com



■ Will we soon see an Oscar for best software package? It seems you can't make a blockbuster these days without a raft of 3D digital effects. Shepperton-based Magic Camera used 3D Studio MAX R2 from Kinetix to create the opening sequence of the film *Lost in Space*.

Kinetix 01483 303322, www.ktx.com



■ Mitsubishi has ramped up the speed of its M16C micro-controllers and announced two 100-pin additions to its 16-bit range. The M16C/62 and M16C/61A will be used in GSM phones. Mitsubishi 0990 134275

Touch screen

■ Interactive's £199 (ex VAT) Magic Touch Screen Pro simply plugs into your mouse port and hangs over your monitor.

Interactive Ideas 0181 805 1000

Data catcher

■ ComputerBoards' PCI-DAS 1200 data acquisition board incorporates 16 single-ended or eight differential analogue inputs as well as two analogue outputs, each offering 12-bit resolution and 24 bits of digital I/O.

Adept Scientific 01462 480055

p29 >

The Nokia 447Za. The power to save energy.



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With its superb picture quality, the Nokia 447Za is the ideal multimedia display for use at both home and in the office.

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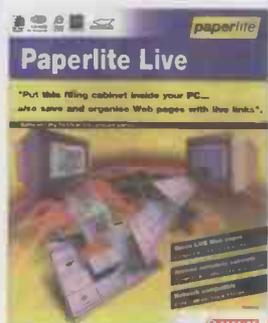
For further information and details of your local stockist call now on 01793 512809 or fax 01793 512815

NOKIA
CONNECTING PEOPLE

Paper tigers aim to turn your hard disk into a filing cabinet

Esselte and Xerox are both trying to resurrect the idea of the paperless office with two products that promise to make light work of managing scanned-in documents.

Xerox ScanSoft's latest Pagis Pro 2.0 bundles three products: TextBridge Pro 98 professional OCR, for translating scanned documents to text, MGI's Photosulte for photo editing, and Pagis Copier for making colour photocopies. This is in addition to document management software. The new version costs £99 (inc



VAT) and uses the Windows Explorer filing system.

While Xerox focuses on scanning capabilities, Esselte gears its Paperlite Live more for document management.

It uses a filing cabinet metaphor to store a variety of documents. It will cope

with files from applications like Word or Excel, as well as scanned-in files or even email and faxes.

You can save filing cabinets on a CD-ROM or Zip cartridge for distribution.

Paperlite Live comes with a C200 flatbed scanner and optional document feeder, and a D100 electronic notepad and pen for £89.

Susan Pederson

ScanSoft 0118 981 4230,
www.pagis.com. Esselte 01954
789037, www.esselte.com



Short stories

Microsoft buys Lotus eater

Microsoft has bought a company specialising in software that helps Lotus Notes users migrate to Microsoft Exchange.

Products from The Mesa Group enable Exchange and Notes to coexist, with integrated messaging and functions. Its flagship Application Assessment and Planning provides an audit of Notes databases and applications and recommends whether, and if so how, each should be moved to Exchange. The products will be free to Exchange 5.5 users from next month. *VNU Newswire*

LCD prices fall - a little

CTX is hoping to drive down TFT display prices with the launch of its LCD Panoview 745. The 14.5in flatscreen is analogue, which means it can be used from a standard VGA port with no special cards or drivers. The Panoview costs £999 (inc VAT)... still four times the price of a standard monitor.

CTX 01923 810810,
www.ctxeurope.com



Power 98

Yet-to-be-launched Windows 98 already has an add-on. PowerDesk 98 (£29.95), from Mijenix, has improved file-management, file viewers and zip/unzip facilities.

Atlantic Coast 01297 552222;
evaluation copy www.atlantic.coast.com/cgi-bin/sellonline/r4002.htm



Sun's latest 360MHz 64-bit Ultra-SPARC-II processor is being used in its new Ultra 60 workstations. It sustains 1920Mbps bandwidth to main memory, a claimed three times the speed of many competitors.

Sun 01252 399570, www.sun.com

USB camera

Pace is selling a USB PC video-camera. £199 (inc VAT).
Pace 0990 561001

AMD predicts home-networking boom with rise of two-PC family

Smart appliances and the rise of the two-PC family are leading to a new class of product for home networking. Latest to get on the bandwagon is AMD. Its networking-chip business is bigger than its higher-profile processor cloning.

The company has licensed Tut's HomeRun technology which uses existing home-phone cabling for Ethernet links between PCs. An added advantage is that users can extend networks using familiar telephone flex rather than messing with trickier 10Base2/T connections.

The system allows voice calls, net traffic and high-bandwidth xDSL internet signals to use the line simultaneously, by using three separate frequency bands.

Dave Brand, director of European marketing for AMD's communication and components group, reckons there are 4.55 million two-PC homes in Western Europe now and that there will be 16.7 million by 2002. Inteco, the market analysts, reckon corresponding UK figures are 900,000 now, rising to 2.7 million by 2002.

AMD will marry its own Ethernet silicon to the Tut modulation system on a special Network Interface Card (NIC). "The system will have to be cheap (less than

\$100) to encourage people to buy it," said Brand.

One snag of the system is that it will work initially only at 1Mbit/sec. But Brand says AMD will quickly push this up to standard Ethernet's basic 10Mbit/sec. First products will be available later in 1998.

They will face opposition from standard network vendors selling NICs starting at £17.

AMD 01276 803100,
www.amd.com



UPS and power downs

You can protect your PCs from power problems with the Line UPS uninterruptible power system range from Advance-Galatrek. The devices cope with sags, brownouts, surges, spikes, electrical noise and blackouts, all starting from £135 (ex VAT).

Advance-Galatrek 0800 269394, www.ael.u-net.com



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Shiver my sporrán! Scots buy up uncensored newsgroups

Demon Internet's hands-off policy on sexy content on its servers will continue despite its £66m buyout by Scottish Telecom, the flagship phone provider of traditionally prudish Scotland.

Demon, which pioneered internet provision in the UK with a £10-a-month flat-rate charge, is the only provider to carry uncensored newsgroups. According to the new owner, many of its



subscribers were concerned that this policy would be changed. "We have no plans to do so," said Scottish Telecom's Alex Barr.

Roy Bliss, MD of Demon, said: "It is folly to remove a whole subject area, because it's not eradicating the problem at source.

"Scottish Telecom is aware of our stance on the

issue. We provide a full news feed. But we abhor and remove any illegal content, and would discuss it in full with the authorities or the Internet Watch Foundation."

A BT spokesperson said: "We don't carry any newsgroup that is illegal or offensive. We have a dedicated team that monitors the newsgroups, and if there's a whole subject area that is offensive, we will shut it down." **Susan Pederson**

Y2K bugged? Just wait till the sun storms strike...



■ As if the Y2K were not enough to worry about...
● Scientists warn that sunspots, which are tornados on the Sun's surface, will reach a 10-year peak in 2000. They throw off radiation which could severely hit communications satellites.
● And there are fears that the Dow Jones Industrial Average will creep too high. Analysts Gartner Group warn that if the US blue-chip index tops 10,000 (it's currently at about 9,200), many software

packages will be unable to cope. Most software used by financial organisations to track Dow Jones can only handle four-digit figures.
● The Y2K Bug has already hit hospitals. Some operations scheduled for after 1st January 2000 have been cancelled by confused computers.

At least one procedure was cancelled after a computer disregarded supplies with a 2000 expiry date. Nearly one in three NHS

facilities have spent nothing on the problem.

Ciriz says it can help solve the problem with portfolio assessment, impact analysis and renovation tools.

Ciriz 01491 843 700,
www.ciriz.com

● Most small and medium companies in Britain know of the Y2K bug and are beginning to take action, says a survey by Action 2000. Thirteen percent have taken no action, and more than eight in ten of those say they do not intend to do so.

Action 2000, 0845 601 2000, www.open.gov.uk/bug2000.html

● Fewer than one in three UK corporate PCs are Y2K-compliant, says PC management company fPrint. But it says that the problem isn't as bad as it sounds, as many PCs are due to be upgraded.

Susan Pederson

Phone watchdog Ofel has warned of a new millennium problem which will affect PC users.

Dial-up scripts and other software using phone numbers will need changing to cope with a new numbering system which comes into effect three months into the new century, on 22 April, 2000.

UK numbers will fall into nine families

More dial changes

beginning with the figures 01 to 09. The first three designate area codes, 04 to 06, are reserved for future use; 07 is for mobile, paging and find-me-anywhere numbers; 08 will be for special services such as schools internet, and 09 will be for premium rates. London numbers, for

instance, will be prefixed 020 followed by eight digits.

Peter Clark, of the National Code and Number Change steering group, said changes are needed because of "an unprecedented increase in telecoms use." Details at www.numberchange.org.

Short stories



■ Speed up your data gathering with the Panasonic S10 mobile data terminal. The 486-powered pen-based device has a card slot, serial and infra-red ports, 4Mb flash ROM and 2Mb RAM which can be expanded, and a RRP of £799 (ex VAT).

Panasonic 0500 404041,
www.panasonic.co.uk

64Mbyte RAM chip

■ Samsung claims to be the first to get 256Mbit (64Mbyte) DRAM chips into the factories. It has sent major IT vendors samples and will begin mass production next year. *VNU Newswire*



■ Lexmark's £179 5000 Jetprinter offers 1200 x 600dpi resolution and a wide head, printing up to two lines at once. You can upgrade from 4-colour to 6-colour printing.

Lexmark 01628 481500,
www.lexmark.co.uk



■ You can create a personalised CD filing system with the £15 Print & File CD Envelope Kit from Neato.

Neato 0990 561571



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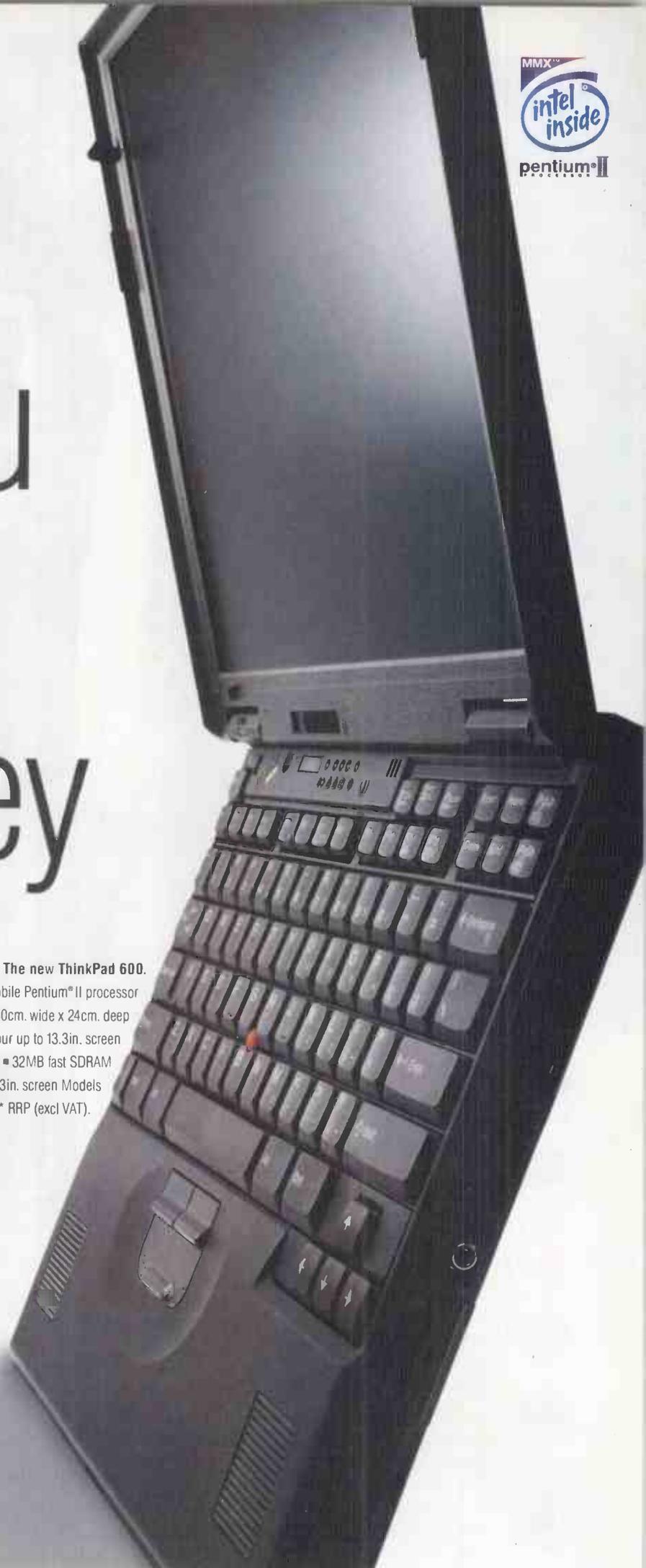
*Price quoted is RRP excl VAT correct at time of going to print. PC 300PL price does not include monitor. ¹MHz denotes internal clock speed of the microprocessor only; other factors may also affect application performance. ²GB = Gigabyte (one thousand million bytes) when referring to hard drive capacity; accessible capacity may be less. ³MB one million bytes when referring to hard drive capacity; accessible capacity may be less. ⁴2.23kg is travelling weight. With CD-ROM drive, battery and hard drive, weight



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1785XE, MacFormat, Jan 97



1785S, PC Guide, Sept 96



1785XA, PC Magazine, Dec 96



1765D, The Mac, Jan 97



1569MS, PC World, July 96



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Internet: www.ctxeurop.demon.co.uk

Monitor Specifications*	1569SE	1792UA	1792SE	1769MS	20855XE
Dot Pitch (mm)	0.28	0.25	0.26	0.28	0.28
CRT Type	Flat Square	Trinitron® CRT	Flat Square	Flat Square	Flat Square
Horiz. Scan (KHz)	30-70	30-92	30-92	30-70	30-85
Low Emission	TC095	TC0	TC095	MPF	TC095
BNC	No	Yes	No	No	Yes



The Monitor Specialists

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Telework backlash

A serious backlash against teleworking is forecast by a leading analyst.

Gartner Group research director John Girard said companies worldwide have failed to realise that teleworking will increase IT budgets and organisational problems. It will become more common but needs to be implemented with care, he told a conference.

"Organisations must... modify their business processes and IT budgets to compensate for new work paradigms," he said.

Home working swells IT budgets by up to 157 percent in phone bills, equipment and technical support, Gartner estimates.

But there are big rewards to be gained in improved productivity, non-IT savings, environmental

benefits and "having the right employees in the right place". Gartner believes that by 2003, some 137 million employees will be working offsite worldwide.

Caroline Gabriel



Mouse scores!

The Sportsmouse from Logic 3 will guarantee that no-one takes you seriously at work again. But if you've already given up your dreams of corporate domination, the two-button rodent costs £20 (with mat) from most computer shops. Spectravideo 0181 902 2211

NetChannel's \$1m acquisition by NTL, the UK's third biggest cable company, may not have caught everybody's eye. I have been following it with interest, as the company is further down the enhanced TV road than many of the big players.

NetChannel was set up initially by Cambridge entrepreneur Hermann Hauser as the marketing arm of Net Products, to launch network computers based on Oracle reference designs drawn up by Acorn. It became the UK subsidiary of US firm NetChannel in November '96.

The sale enables NetChannel to expand with NTL to deliver an affordable, innovative service. A two-month pilot at 100 homes in London and Brighton showed that whatever people wanted, it had to be made really simple.

"The challenge we have is that there is high awareness of the internet but, for a lot of people, the word 'internet' can trigger a fear of technology. It is a significant positional challenge," said managing director Peter Boreland, who has built up a team of 25.

By October's national launch of the £299 NetChannel set-top box (delivering the net

NetChannel's new cable link to a TV revolution

Caroline Swift continues her reports from Silicon Fen



to homes without the need for a PC), the company had 30-plus content channels, national distribution through Dixons and some 300 outlets.

This year, NetChannel set out with partners to explore new channels such as digital TV and cable.

"NTL's real value is that they pass into two million households and have a powerful sales force," said Boreland. "They can sell NetChannel and can demonstrate the service."

NetChannel was the first company to offer European TV viewers net, email and interactive services via a standard TV. The concept is new to most viewers, but NetChannel believes Microsoft's WebTV, for which a UK trial has been announced, will raise awareness.

NetChannel is much more than a browser. It provides six content channels featuring shopping, entertainment, lifestyle, sport, learning, information, classifieds and news. Pilots showed the service has particular appeal to women, said Boreland. "If they have kids, they can see the benefit. It can be used in the living room and now there is a lot more in terms of content, there is much more interest."

"The big challenge is communication. People have to be educated on the social value and real benefit."

Boreland believes NetChannel's nine-months operating experience gives it a head start over companies such as Cable and Wireless which will have to go through the same

learning process. NTL Internet Group managing director Blake Barker sees TV delivery of internet programming as a potentially huge market: "The forecast for the next five years is that 2.5 million households will be accessing the web through TV."

"Essentially it is a new form of TV," said Boreland. "Internet and TV are going to be brought together, creating better TV and better value in an interactive viewing experience. We can deliver, today, a personalised localised service. It is a new social medium."

● I must mention Silicon Fen's big success story: the 25 times over-subscribed flotation of ARM Holdings, a.k.a. Advanced Risc Machines, which values it at £380m.

Sony Semiconductors has licensed the ARM740T-cached core for its new digital devices. More on that next month.

Short stories

New Paint Shop Pro

■ The latest version 5.0 of Paint Shop Pro has been launched by Jasc Software. New features include support for multiple layers and over 40 graphic file formats, new touching and imaging tools, and multiple-level undos.

It costs £69.95 (£29.95 upgrades) and a demo can be downloaded from www.digitalworkshop.co.uk.

Digital Workshop 01295 258335

32-bit PKZIP

■ The 32-bit DOS version of PKZIP is now available from Atlantic Coast. Compatible with Windows NT and 95, PKZIP 2.2 supports long filenames, batch operations, and spanned ZIP and EXE files. PKZIP is available for £19.95 (inc VAT).

Atlantic Coast 01297 552222, www.soft-shop.com

Internet shorts



VIRGIN NET

The reel thing

Find out what's showing at the local rep with a new service from Virgin Net. At www.virgin.net film buffs can consult listings of more than 700 cinemas and art centres across the country. They can also get the latest news and reviews, enter competitions and chat with other moviegoers.

Glued to the box

A survey commissioned by Barclays PC Banking found that more than a third of people who use a computer at work or at home spend more time in front of their PC than their television.

Net access deal

Domain name registrar NetBenefit is offering I-Dial, a net access service for small and medium firms. It includes a high-speed connection via 56K modem or ISDN as well as unlimited email addresses, web space and 24-hour technical support for £180 (ex VAT) pa. www.netbenefit.co.uk

Showtime for BT's high-speed lines

The final obstacle to British Telecom's (BT) provision of high-speed services to homes has been removed following the lifting of a ban on it providing entertainment services. The ban was imposed to encourage cable companies to set up shop as a rival to BT. But BT had long argued that it needed revenue from entertainment providers to recoup the billions of investment required by high-speed services.

Margaret Beckett, President of the Board of Trade, announced that public telecom operators, along with all others, should have the option to compete in providing broadcast entertainment and services after 1st January, 2001. She said the ban had become "increasingly damaging for all operators, including cable". She hoped the move would restore confidence in all market players and encourage competition to drive down prices for consumers.

But Aileen Boughen, spokesperson for BT, said BT did not plan to make programs in the general sense but wanted the opportunity to offer channels to other providers. She said, "Obviously there are lots of applications for these networks and we want the widest possible access to them."

Ms Boughen would not say whether the change would speed up the introduction of high-speed technologies like ADSL, currently going through yet another BT pilot.

"I don't want to comment specifically on what we will do and when," she said. "What we most welcome about this announcement is that it does give us certainty. It allows us to be more sure about time scales for rolling these things out."

Cable and Wireless stated it had been expecting the deal. "Our plans are completely unchanged," said a spokesperson. "Everything will go on exactly as planned."



Another side of the tracks

The National Railway Museum is featuring its photographic exhibition, *Worth a Thousand Words*, at www.nmsi.ac.uk/nrm. This 1953 photo shows two rat catchers at St Pancras Goods Yard with their dogs Jill, Sally and Tiny. Visitors to the museum will also get the chance to have their own images displayed on the internet.

Question time, blurred

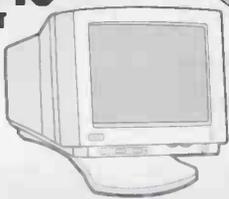
The Labour and Conservative Party leaders' attempts to boost their anorak street cred have been greeted with bemusement. Tony Blair gave a live internet interview, while AOL users were simultaneously treated to "A Day in the Life of William Hague". Lib Dem leader Paddy Ashdown was unimpressed, pointing out that he has been answering questions by email for ten years now. The first question asked of Blair was whether he could score a couple of World Cup tickets, while the highlight of William Hague's day online appeared to be an award luncheon celebrating top tie-wearers. Democracy in action, indeed.



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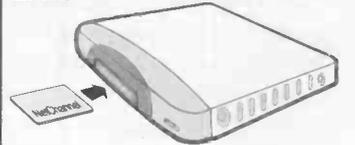


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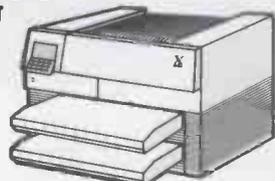


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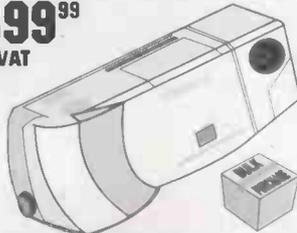


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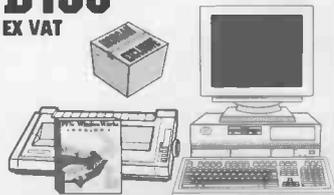


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Barclays Bank criticised over its online service charges

An e-commerce analyst has chastised Barclays Bank for charging for online services which actually save the bank money.

Jonathan Steele of the Bathwick Group says the charges are hurting both the banks and its customers. He pointed to American Banking Association (ABA) figures that put a branch transaction at approximately 12 cents, while an online transaction only costs a penny. "Security is not a huge concern for consumers any more," he said. "But there has to be a compelling case for online banking before they will adopt it. You can't charge for it."

A spokesperson for Barclays said the ABA figures are misleading. "The straight transaction cost doesn't tell the whole story," she said. "They haven't taken development or research into account." She defended the charges, saying that, while a customer might go into a branch only once a month, they are much more active online.

She said the increased volume of transactions and the cost of providing technical support were the chief reasons for the charges, but still thinks that customers are getting a good deal.

"The incentive is convenience. Our research shows that they think £15 per year is good value and they're very happy with the service they're getting," she said.

Barclays has signed up 42,500 customers to its PC Banking Service and is attracting a further 5,000 customers a month. Charges are not enormous: an initial £30 plus £15 a year after the first year, and an extra £30 if you want to use Microsoft's Money 98 software.

Microsoft has announced partnerships with three other major UK institutions for customers to use Money 98 to manage their bank accounts over the net. They are Nationwide Building Society and the Royal Bank of Scotland. NatWest Bank will go live online with Money 98 later this year.



Worldwide wallet

Barclays electronic money scheme is ready for business from all corners of the globe. BarclayCoin <www.barclaycoin.co.uk> has been extended to include cards from other issuers.

It enables users to download an "electronic wallet" which is then linked to their bank account. The wallet can be used for online purchases, including micropayments.

Susan Pederson

Firms get leg-up onto net

Businesses that need help getting online should check out WebStart from the Montal Group.

Montal offers a consultancy, design and web hosting service for companies operating on a limited budget.

After the initial briefing to help define the business's web site objectives and content, Montal will design the site and register the domain name.

Montal sets up a test web site and, once that is approved, will provide a dialup account, unlimited email and internet access for £1,525 per annum.

Businesses can choose the option to manage the site themselves.

Montal 01306 888000, www.montal.co.uk

Call to clarify net trading

The European Union (EU) is urging World Trade Organisation (WTO) members to discuss an agreement against imposing border tariffs and to establish some basic e-commerce principles. Brussels says that WTO rules on e-commerce should be clarified, and perhaps revised, by December this year.

The US tabled a proposal last February that seeks to outlaw border tariffs on internet transactions.

Flower power

Teleflorist is extending its online presence following the success of its Mother's Day campaign, which saw ten percent of its orders placed via the internet. The flower delivery service <www.teleflorist.co.uk>, which will be advertising on Ukplus <www.ukplus.co.uk>, plans to target men "who feel embarrassed trying to find the right words in a florist's shop".

Susan Pederson



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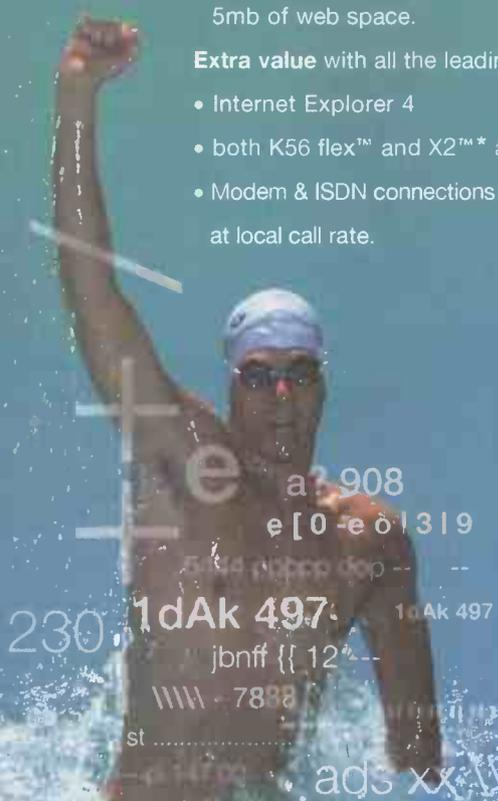
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Transfer interrupted

Interrupted downloads must be costing us all millions. Clive Akass rises from his sickbed to find out why the web can't cope with this most basic problem.

First, a health warning: *if, like me, you have been ignoring advice about how to sit at a computer — don't.* I have spent much of the past month nursing a cricked back, caused by too many hours crouched over a hot keyboard, and it has not been pleasant. I've now got ErgoSentry reminding me to get up and stretch at sensible intervals, and suggesting exercises. I am now trying to remember to sit properly.

My days away from the office gave me a chance to play with software and peripherals I don't usually have the time for. The first thing I did was to upgrade my Sportster

Flash modem from US Robotics' pre-emptive X2 56K technology to the new V.90 standard. There seemed an immediate improvement in performance, though whether because of a better standard or a clearer line to Pipex, I do not know.

It still took me all evening to download a 10.3Mb demo of the MiniTab

statistical package <www.minitab.com>. My first try hung with 98 percent downloaded and I had to start all over again. My second try hung after 60 percent and I was third time lucky. It happened that a reader emailed PCW, shortly before my back gave out, to ask if there was any way around this kind of aggravation.

This is my take on the issue, and I'd be happy to hear from anyone who can fill in the gaps: File Transfer Protocol (FTP), the original internet protocol, can resume downloads from a break point, thanks to a recent extension. The most recent version 1.1 of HTTP, the driving protocol of your web browser, cannot — or, not so far as I can make out from the specifications. About 90 percent of downloads are performed under http, although according to Alaric Woodhouse of FTP specialist Terrapin, FTP is quicker and more resilient. (I should

explain here that your browser can perform an ftp data transfer under http and has probably done so, even if you were not aware of it, but the transfer may be slowed by the double layer of protocols. To get the full benefit you need a dedicated ftp client.)

Relatively few sites offer an ftp option, and a significant proportion of these do not support the Resume feature, including all those running Microsoft's Internet Information Server (IIS). This is astonishing, when you think about it. You could hardly get a more basic net activity than a file transfer, nor a more basic problem than an interrupted transmission, yet mostly the net cannot cope with it.

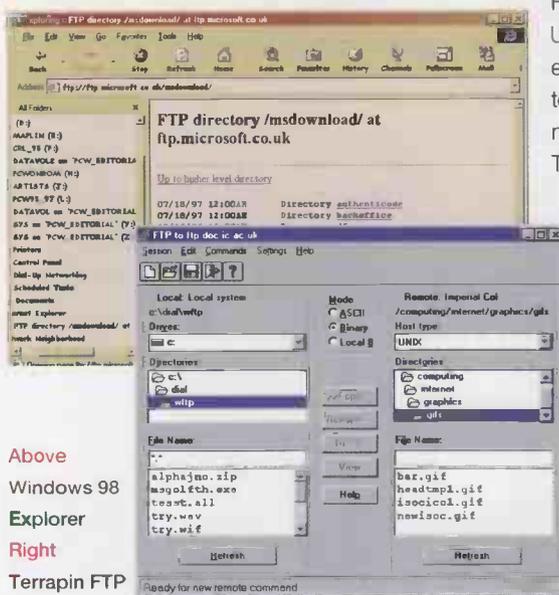
Steve Harris, who presides over the technology behind our VNU site, reckons the reason that net designers were so careless about transmission breaks was that they developed the protocols on fixed-line systems where the problem is less important. "The non-net protocols were just the same. I think only Z-modem allowed you to resume."

Something similar may have happened when IIS was developed. A Resume facility would not be a priority for Microsoft's prime corporate clients because transmission breaks are a negligible overhead on fixed-cost intranets or leased lines. But the rest of us collectively must be paying millions in phone charges for interrupted downloads.

Microsoft's UK net server product manager, Peter Bird, was disarmingly frank about IIS 4.0's failure to support ftp Resume. "To be honest, I can't give you a good reason, except to say that the overwhelming majority of files are downloaded using http. The Resume is not a mandatory feature of ftp, but it will be supported in IIS 5.0. I can't say at this stage when that will be available."

Doubtless one reason for ftp's unpopularity is the fact that older clients tended to throw up lengthy Unix file listings that were hardly comprehensible to PC users. The latest versions are far friendlier, offering Windows-style directory trees. In fact, the Windows 98 Explorer is itself an ftp client, allowing you to drag and drop files from an ftp server as if they were on your own hard disk. It is very basic, with no Resume feature, but it could make ftp more popular. It may also get people interested in the likes of Terrapin FTP, the latest version 2.11 of which is said to allow you to break off a long transfer yourself, and resume it a week later.

So next time you want to download a long file, try using an ftp client instead of your browser. As Microsoft's Bird said: "The more people who use or ask for these facilities, the more they will get implemented." ■



Above
Windows 98
Explorer
Right
Terrapin FTP

ErgoSentry
www.magnitude.com

USR upgrade
www.3Com.com

Evaluation copy of
Terrapin FTP
www.terrapin.com

Chips down on spam

The Direct Marketing Association (DMA) has attacked a UK consumer watchdog's stance on junk email. This follows in the wake of a report that the problem is costing British and Irish businesses £5bn per annum in wasted time.

The independent report, commissioned by Novell, found that 75 percent of those surveyed spend nearly 15 minutes dealing with up to five spam emails each day.

Calling bulk email "an absolute scourge of the internet industry," Alan Stevens, editor of Which? Online, commented that it had to be tackled at the source. "ISPs have to terminate spammers' accounts," he said. "You've got to make life as difficult as possible for these people."

But Martin Bartle, spokesperson for the DMA, disagreed with the comment, saying, "I find that incredibly naive. If you kick me off an ISP, I can be set up on another one in an hour." He believes consumers will have to take action as well.

"There are people who register on a site with their personal details and then they are shocked and surprised about what they receive," he said. "You have to be sophisticated about it." Bartle called for reputable direct mailers to "reclaim the high ground", saying the problem could be solved by self-regulation and email filters.

Stevens thinks the DMA's proposed email preference service is not sufficient to deal with unscrupulous mailers, either. "These kind of people will just ignore it," he said. "I use filtering as much as possible, but the most effective way is to stop it at source."

He believes you shouldn't discount the psychological cost of junk email, either. "You can throw a fax in the bin but you're almost forced to read email, and some of the content is very offensive."

Susan Pederson

Internet shorts



Heard the good pews?

A satirical Christian magazine has been relaunched online to counteract "the dull conservatism of most Christian periodicals". Ship of Fools features Gadgets for God and the Mystery Worshipper, who anonymously vets churches according to the length of the sermon, the friendliness of the parishioners and the comfort of the pews.

<http://ship-of-fools.com>

BT catalogue online

BT's latest ISDN products can be found at www.isdn.bt.com. Featuring its catalogue of ISDN products and services, this is where users can get independent advice. ISDN 2e can now be ordered directly from your PC, or you can check out details and promotions of selected third-party products.

Here is the Euronews

The latest European news, sport and weather is on ITN's European web site, available in English, French, German, Italian or Spanish.

Euronews will also feature magazine programming on the arts, politics and the economy, and a guide to the key online sites in Europe.

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Get the latest football news and views delivered direct to your desktop for free by registering at www.football365.co.uk. Not only this, but you can wind up your mates by sending them a Toon-e-gram: an animated email postcard featuring your choice of a useless goalkeeper, an on-pitch argument or a juggling player, complete with a congratulatory (or abusive) personal message.

UK Top Ten web sites

Any carpenter will tell you that architects should spend a year as a builder's apprentice before they draw a single line. Some web designers could do with a similar reality check. The Pure Design site asks you to resize your browser and change your font, monitor and colour settings. Why not leave them to it and check out Virtual Carnaby Street instead? Just be sure to tip your hat as you pass The White Horse, a favourite haunt of the notoriously down-to-earth PCW staff.

1. Arts Alliance
2. BBC Bites Size Revision
3. Brighton & Hove Virtual Festival
4. CCTV
5. Press Association News Centre
6. Pure Design
7. Quixell
8. Threshers Wine Shop
9. Virgin Trains
10. Virtual Carnaby Street

www.artsalliance.co.uk
http://db.bbc.co.uk/education-bitesize/pkg_main.p_home
www.virtualfestival.org.uk
www.spy.org.uk
www.pure.com
www.puredesign.co.uk
www.quixell.co.uk
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• Windows 95 (free upgrade to Windows 98) 1.44Mb 3 1/2" floppy disk drive, 105 key Windows 95 keyboard, mouse & pad are shipped as standard with all MESH computers

Processor	Excl.VAT	Inc.VAT	Finance*
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- 8Mb Matrox Productiva AGP Graphics card
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- 32x Speed CD ROM Drive
- SoundBlaster Vibra 16
- Stereo Amplified Speakers
- Latest 56Kbps Voice Fax Modem with Pipex Internet Access*
- Free Software: *Lotus SmartSuite 97, Serif PagePlus 5, IBM Simply Speaking with Microphone Headset & Windows 95 (free upgrade to Windows 98)*



Processor	Excl.VAT	Inc.VAT	Finance*
Intel Pentium II® 266	£999	£1173.83	£38/m

Upgrades

Memory	Price
32Mb SDRAM to 64Mb SDRAM	£49+VAT
Hard Disk Drives	Price
2.1Gb Ultra DMA to 4.3Gb Ultra DMA	£30+VAT
4.3Gb Ultra DMA to 6.4Gb Ultra DMA	£40+VAT
6.4Gb Ultra DMA to 8.4Gb Ultra DMA	£75+VAT
Monitors	Price
15" Taxan to 17" Taxan Zentan 760 TCO95	£165+VAT
15" Taxan to 17" ADI 5GT .25mm	£215+VAT
17" Taxan Zentan to 17" ADI 5GT .25mm	£50+VAT
Soundcards	Price
Soundblaster 16 to Creative Labs AWE64	£39+VAT

Storage	Price
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-  April '98
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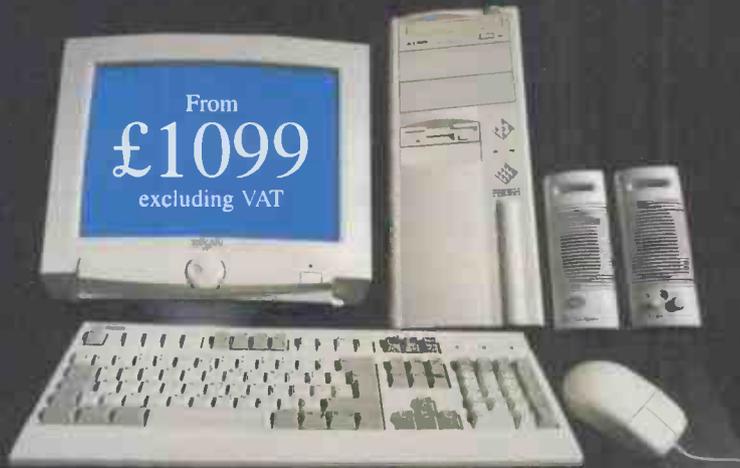
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Processor	Excl.VAT	Inc.VAT	Finance*
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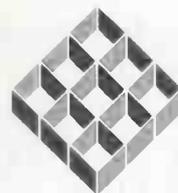


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Intel Pentium II® 333	£1399	£1643.83	£54/m
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Processor	Excl.VAT	Inc.VAT	Finance*
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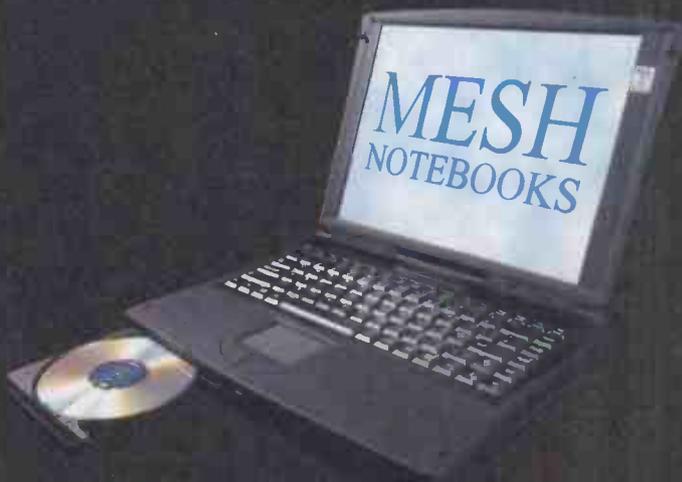
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PC Magazine - June '98

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Terminal business

Following their high profile at Comdex, Dominic Deckmyn believes Microsoft's endorsement of Windows-Based Terminals is both a promise and a threat.

Comdex Spring was thin on new products, but prominent among those that were there were Windows-Based Terminals (WBT), the Microsoft-friendly alternative to the classic Network Computer (NC). Whereas the NC downloads its applications and data from a server, the WBT runs a Windows application on a server from a local screen.

Wyse, NCD, Boundless and Tektronix all demonstrated similar-looking devices at between \$600 and \$900. All were using the multi-user version of NT codenamed Hydra, which is expected to ship as Windows Terminal Server in June. It is based on MultiWin technology that Microsoft purchased from Citrix last year for \$75m plus up to \$100m in royalties.

WTS uses either Microsoft's own RDP protocol or Citrix' tried and tested ICA, which requires the purchase of an add-on called Metaframe but can turn non-Intel devices such as Macs, Unix boxes, and Java-based NCs into Windows terminals.

RDP will only run on top of systems with 16-bit Windows, Windows 95, NT or CE. Most vendors at Comdex Spring agreed that in its current incarnation, RDP is slower and more limited in functionality than ICA.

All WBT vendors demonstrated devices running Windows CE connecting to Hydra using RDP, ICA or both. Tektronix is already shipping devices that run a proprietary operating system and ICA, but which can be upgraded to Windows CE with RDP. Prices start at \$745 without a monitor.

Boundless demonstrated Viewpoint 400, running RDP on Windows CE, and the Viewpoint 300 running ICA on Windows CE. Cruise Technologies presented a pen-controlled portable wireless WBT, codenamed Wilke, which will be built by Wyse.

Analysts predict that WTS will lead to a surge in Windows terminal sales; some say they will outsell Java-based NCs within a couple of years. Zona Research estimates that thin clients based on Citrix

ICA, the direct precursors of the WBT, last year outsold Java NCs by almost three to one.

Metaframe is Citrix' most important launch since its Winframe product, which first allowed multiple non-Windows systems to access Windows applications remotely. Having had the market to itself, Citrix now faces competition from Microsoft, which means it must persuade users to buy Metaframe in addition to Microsoft's Windows Terminal Server. However, Microsoft's endorsement of the technology will undoubtedly expand Citrix' market. And Citrix appears to be on a roll, with major vendors selling devices using its software. Last month, it announced record revenues of \$49.3m (up 129 percent from last year) and net income excluding one-time charges of \$16m (up from \$7.5m).

Because of licensing issues, the current Winframe is still based on Windows NT 3.51 and its outdated interface. Metaframe will provide the long-awaited upgrade to Windows NT 4.0, and to the Windows 95 user interface.

But there's a catch. Metaframe runs on top of Microsoft's Windows Terminal Server: the result of protracted negotiations between Microsoft and Citrix last year as they reworked their long-standing licensing deal.

Citrix appears undaunted by the competition. Senior product manager James Marsala claims WTS is to Metaframe what the Windows Notepad is to a proper word processor such as Word. "If you're thinking about enterprise applications, you need ICA," he said.

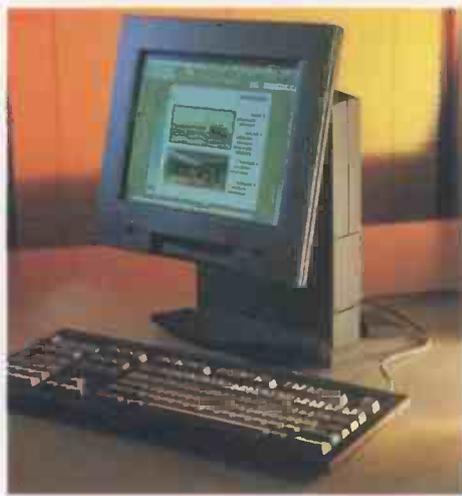
The new version of ICA will allow sound, which RDP does not currently support. And, when running on a Windows PC, local Windows applications and remote applications will look and work in exactly the same way, and remote applications will be able to use local printers.

On the server side, Metaframe offers load balancing (the ability to spread the user-load evenly over a cluster of servers), powerful management tools and the ability to "publish" an application to a group of users at one time. Finally, ICA also works over the net. All these features might swing enterprise customers towards Citrix.

Last month, IDC predicted that the WBT market will balloon from worldwide unit shipments of 302,000 in 1998 to five million by 2002, out of a total thin client market of 6.8 million. That's a much bigger pie. Even with a modest piece of it, Citrix could flourish.

● See also our *Network Computers* feature, p116 ■

The Wyse Winterm 2600SE is a Windows-Based Terminal — one of many such devices on show at Comdex



Coming very soon... the PC that can see what you mean

■ Microsoft chairman Bill Gates used his Comdex keynote speech to sketch the future of Windows and the applications it runs.

Almost all documents will eventually be formatted using web-standard HTML and its more versatile sibling, XML, he said. This convergence of net and native PC formats is reflected in Windows 98, which uses the same web interface for browsing local files, the web itself, and Help files.

Cryptic error messages will become a thing of the past, Gates pledged. Errors will be passed to diagnostic and help systems to identify the problem and advise on how to solve it, and the difference between file and directory

From Dominic Deckmyn in Chicago

names and net addresses will disappear. Gates said this technology will ship first in an NT-based Windows 98 successor, due some time after NT 5.0's launch.

Gates outlined key components of Windows development:

- Further unification of the user interface.
- Within three years PCs will get "vision", recognising and responding to human gestures "seen" by a video camera.
- Speech recognition and natural language processing, allowing you to communicate with PCs much as you do with humans.
- Handwriting recognition.

• Automatic learning. The PC will learn from the tasks you perform and become better with experience.

Gates gave only a brief



demo of Win98, connecting a scanner to highlight the new operating system's support for the USB. This caused the PC to crash. "That must be why we're not shipping Windows 98 yet," he quipped.

Smart badges 'can oust passwords'

Smart badges that tell your PC all about your comings and goings can do away with the need for password-protection, the designer claims.

A transceiver plugged into the PC's serial port senses when you are at your desk, wearing your badge. The keyboard seizes and the screen goes blank when you move away. The PC resumes normal operation when you return.

Developer RF Ideas claims the badge is safer than password protection and can save on support costs, as users have one less password to forget. And, unlike smart cards or fingerprint recognition, the badge works without user interaction. (You can still access your PC using a password if you forget the badge.)

AIR ID 1.0 costs \$295 in the US. But it will not ship to Europe until later this year, after localisation is complete.

www.rfideas.com

Firm waxes enthusiastic over hi-tech signet ring

■ A Texas company, Dallas Semiconductor, has brought back the signet ring as a way of user identification. The ring carries a "Crypto iButton", with nearly a million transistors implementing the Java Virtual Machine. It packs an 8-bit processor, 6Kb of SRAM, and 32Kb of ROM storing a unique 64-bit registration number that can be read by any application communicating with the iButton. A tamper trigger zeroes this number if anyone tries to open the ring. The designer claims that users can sign electronic documents and generate certificates to access restricted web sites without ever revealing their private keys.

www.iButton.com.



Comdex shorts

USB net link for notebook users

■ Notebook users will be able to use a USB port to connect to an office network, thanks to a controller developed by Kawasaki LSI. The KCUSB16 is designed to be fitted into a cable-end module, and should offer cheaper and faster connections than PCMCIA equivalents, the company says.

"This chip is the first of its kind that enables the cable itself to become the ethernet adapter," said Frank Corbett, vice president of sales.

The KCUSB16 will be available in quantity later this year. A cable adaptor using it is being developed by Peracom <www.peracom.com>.

More details at www.klsi.com

Windows 98 add-on

■ Windows 98 has yet to ship, but Play Inc, based in California, has already launched an add-on for it. Gizmos 98, priced at \$49.95, is a collection of utilities including a flashy set of calculators and clocks.

It also offers a presentation tool orientated towards the home user. Business utilities include file encryption and a permanent file remover.

Play.com



■ A pair of sliding wrist pads that move with you as you type can help prevent repetitive strain injury (RSI),

says Ingenious Solutions.

The WristGliders sell in the US for \$16.95 for a pack of two. Full details are at

www.wristgliders.com.

Mouse-pad organiser

■ A mouse-pad organiser from Questech includes an 80-second memo recorder, a clock, a flashing reminder light and a calculator. The Memo-Mouse, powered by battery and solar cell, will cost about \$40.

www.questech-international.com

Aura floorer

■ Inneractive showed a bio-feedback imaging system called Aura Video Station which, it claims, helps educate people about their "energetic wellbeing".

www.inneractive.com



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New card sticks a hard wall between you and the hacker

An add-on card that provides a hardware wall between your PC and the outside world has been packaged for Windows users.

Calluna Technology demonstrated the Hardwall card some months ago. Now Vircon, a division of the company, is selling it with a complete set of Windows 3.1, 95 and NT drivers for £185 (ex VAT), complete with Norton Anti-Virus and PartitionMagic Lite software.

The latter allows you to set up partitions on your disk with different security ratings. One might be

completely hidden, another might be read-only. The root directory is what Vircon calls Write Many Recoverable: it always returns to the same state when you boot up.

This means you can recover your PC if the system files and other root information are corrupted by a virus or other mishap.

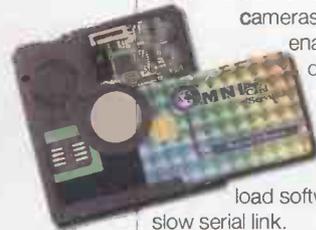
It is also, says Vircon director Peter Barlow, good for trying out new software which may disrupt a working configuration.



An internet user might use Hardwall to block off access to all but the root and a special net directory.

Barlow claims the Hardwall is unhackable because all processing is done on the card itself.

Vircon 01592 631245,
www.vircon.co.uk



Security shorts

Floppy drive smart card reader

■ A device that allows a standard floppy drive to read a smart card is to be launched by SmartDisk Corporation, a new joint venture between Fischer International and Toshiba.

The card slots into what looks like a standard floppy, which carries all the mechanics and logic (see picture, below) to read the information. SmartDisk believes the device will initially be popular for home-banking schemes, but it could also be used for network security and other smart-card applications.

SmartDisk plans a similar device to read memory cards of the sort that are used in digital cameras. This will enable users to dump their pictures to any convenient PC with no need to load software or use a slow serial link.

Fischer International 01923 859119

Reflex action over 'hype'

■ Reflex has declared war on what it calls "misleading hype" from some virus-scanner vendors who give users a false sense of security. It claims its all-new 32-bit Disknet Data Security Suite offers protection from both external and internal threats, guarding against disgruntled employees as well as hackers and viruses.

The NT version lets you automatically encrypt a hard disk of up to 4Gb. But Reflex still advises customers to add at least one third-party virus scanner for maximum protection.

The software checks each program on a disk to see if it has

been authorised. If not, it will bar you from opening or installing it until an Administrator module has scanned it for nasty bugs.

The Administrator uses Sherlock, a fast 32-bit virus scanner, and Interceptor, a macro-virus scanner.

If authorised for use, a disk is stamped with a unique signature which allows it to be used throughout the organisation.

Disknet starts at around £100 per seat for a five-user licence.

Reflex 0171 372 6666,
www.reflex-magnetics.co.uk

Right: Reflex marketing director Philip Benge takes a match to rivals



■ Old-fashioned security measures can be as good as any. The Lokblok Futura, one of a range

of locking devices from Safemark, encloses your system box in a traditional safe which can be bolted to your desk or floor.

Safemark 01904 677999

Government goes for voluntary snoop key

■ The Government has backed down from proposals that would allow encrypted messages to be covertly tapped. It still wants the ability to decode messages via a mechanism known as key recovery, which provides access to keys.

The John Major government wanted key recovery to be mandatory; Labour favours voluntary recovery. Some organisations fear the scheme gives too-easy access to confidential data.

The new policy gives legal status to digital signatures which allow you to provide your identity when buying goods online.

VNU Newswire

First Access macro virus 'is benign'

Sophos claims to have found the first macro virus to affect Microsoft Access database files. The Access-Jerk1N virus (a.k.a. AM9/Accessive) is benign, like the original Concept macro

virus which infected Word. It is unlikely to spread anything like as fast as Concept because database files are not exchanged so commonly as documents.

Sophos 01235 559933

Hot property

Startup screens are the real estate of the net and Bill Gates might soon have it all. Not fair! PC vendors should be allowed to stake a claim, says Tim Bajarin.

Location, location, location. That is the mantra of those in the real estate business who know how prices depend on which piece of land a property sits on. Bill Gates understands this very well and seems determined to own the real estate on every PC screen; real estate that is becoming prized as the portal to the internet.

This has yet to be taken on board by the US Justice Department which, as I write, seems likely to stop the introduction of Windows 98 and make Microsoft do some

fine-tuning before it gets to market.

The Feds' focus on the integration of Internet Explorer into Windows 98 overlooks the real anti-competitive threat and is a waste of time and money. Instead, they should be focusing on making Microsoft change its

agreements with PC vendors which effectively give the company ownership of the start-up screens on all Intel-based PCs sold, with exclusive rights to put links to its own web-commerce content and to channel partners like Disney and ABC.

The PC is like a store where the manager cannot choose the merchandise nor where profits will come from. Instead, Microsoft dictates what can or cannot be sold, and then takes the profits.

Many vendors, threatened by falling PC prices and razor-thin margins, have asked me to suggest ways to get new or recurring profits beyond the PC sale itself. But the options are limited because all PC vendors have to agree to Microsoft's terms if they want to get Windows for their PCs.

If PC vendors could charge a commerce- or content-supplier rent on screen space on the PCs they sell, they would then have a new way to get profit for their PC business. An even better model would be for the PC vendor to give space to the commerce or content

vendors, and then take a monthly service fee and a percentage of resulting sales.

Most PC vendors are too afraid to broach this subject with Microsoft directly. But if, as I predict, the Feds make this issue a key component of their new suit against Microsoft, I think PC vendors may secretly be rooting for them.

The plight of the PC vendors is serious. Market analyst IDC states that 50 percent of all PCs sold come from the top five PC makers. And even these five can make profits only on volume sales. Just look at Compaq's last quarter — it made only \$1m on sales of over \$1bn. I am convinced the PC vendors will realise they have to make Microsoft change its ways in order for them to be profitable. This will either come through some voluntary agreement, or via a Justice Department suit that would be hard for Microsoft to defend.

It has a reasonable case on the subject of innovation in an OS, but it does not have a good one for owning all PC screens. This will be the next battlefield for Microsoft, and one where the company will be fighting its vendor partner rather than competitors like Sun and Netscape.

● Most market researchers predicted in the New Year that the PC industry would grow at about 16 percent this year; about one percent higher than in 1997. Later figures estimated 12 percent, and the latest figures suggest that growth so far is about 14.1 percent.

The biggest surprise of the recent surveys was the fact that Dell has become the number two US vendor and IBM has slipped to fifth place. As expected, Compaq is still number one with 49 percent growth so far this year, giving it a 17.1 percent market share in the US. Hewlett-Packard (HP) is now in third place, followed by Gateway and then IBM.

Worldwide, Compaq is first and IBM second but with a mere 3.3 percent increase in global shipments. Part of IBM's problems can be traced to its late entry in the sub-\$1,000 PC market in late 1997, months after Compaq and HP. Packard-Bell was the only top PC maker to perform worse than IBM, with shipments down 9.8 percent in the first quarter.

Demand for PCs is still strong, though. Dataquest and IDC both predict increased shipments in the next quarter. And we should end up with a strong Christmas quarter as prices for PCs continue to go lower. ■



Compaq's latest DeskPro... but tiny margins are leaving little space for the smaller players in the market

Fangs for the memory as Eidos leads us to Deathtrap Dungeon

State of Play

Games news from Etelka Clark

Deathtrap Dungeon is the new game from Eidos Interactive. Based on the bestselling Fighting Fantasy books by Ian Livingstone, the game includes devious puzzles and the most intricate dungeon designs ever seen in a game.

The story is set in Fang, the city of lost souls where the evil Melkor, a red dragon, has enslaved people. Players have to conquer rotting zombies, vicious skeleton warriors, ghosts and devils lurking in the Dungeon.

Deathtrap Dungeon will be available for the PC and the PlayStation.

Yet another mission pack, this time from Blue Byte software, is the add-on for the award-winning Incubation — and it's free. The Hidden Worlds includes ten additional missions and will be sent to Incubation owners who have returned their registration cards. It will also be packaged with copies of Incubation in stores nationwide.

Still with Blue Byte, rumour has it that The Settlers 3 is due to be released in October.

Activision has announced plans to extend the Heavy Gear Universe with the creation of its first 3D hardware-only game, Heavy Gear 2. Due for release this winter,



Heavy Gear 2 thrusts players into next-generation giant robot combat. It features lightning-fast action and ultra-realistic complex battlefields that include more vehicles and structures, indoor fighting and realistic weather effects.

For more information, visit

www.activision.com.

● Games featured in Screenplay this month (see page 321) include Micro Machines V3, Forsaken, Legacy Of Time and a preview of Final Fantasy. There is also a comparison of the latest golf games.

Games shorts



■ Microsoft's Internet Gaming Zone is offering free matchmaking for Quake II. This allows users of the retail game to jump onto the Zone to meet and compete against other Quake II players.

The Zone will soon be matchmaking for all 1998 Red Storm Entertainment titles, including the new Tom Clancy's Rainbow Six and Dominant Species, both due for release later this year.

www.zone.com

Guide online

■ Game Guide, the trade guide to Nintendo, PlayStation and PC CD-ROM software, is now online. It contains release schedules, reviews, profiles and a guide to shops across Britain.

www.game-guide.co.uk

Top 10 Games

		Last month
1	Ultimate Soccer Manager '98	Cendant -
2	Tomb Raider "Unfinished Business"	Eidos -
3	Star Wars Supremacy	Virgin -
4	Starship Titanic	Ablac -
5	Lula: The Sexy Empire	Take 2 8
6	Speccy Classix '98	Prism -
7	Virtual Springfield	E.A. -
8	Grand Theft Auto: Special Edition	BMG Interactive -
9	Forsaken: Demo	Acclaim -
10	Starcraft	Cendant -

Top 10 Windows software

		Last month
1	Office Pro & Bookshelf U/G	Microsoft 5
2	Win95 U/G & IE 4	Microsoft 1
3	Nuts & Bolts (3.1+95)	Xatlantic 2
4	Office 97 STD C/VUP UG CD	Microsoft -
5	Norton Anti-Virus V4 Deluxe	Symantec 6
6	Frontpage 98 FP CD	Microsoft 10
7	Personal Navigator 95 v2.2	Softwair -
8	Partition Magic v3	Powerquest 8
9	MS Publisher 98 FP CD	Microsoft 14
10	Encarta Deluxe 98 CD	Microsoft 7

Top 10 DOS software

		Last month
1	DOS 2 Win95 U/G with Internet	Microsoft 1
2	PC Anywhere v5 Host	Symantec -
3	System Commander v3.0	POW 6
4	Novell Personal NetWare	Novell -
5	Corel WP 5.1 U/G	Corel -
6	Mail PC Remote 3.2	Microsoft 4
7	Turbo Pascal v7.0	Borland 3
8	Turbo Pascal v7 DOS Educ.	Borland 19
9	MSDOS v6.22 U/G	Microsoft 5
10	Corel WP 6.2 U/G	Corel -

Top 10 CD-ROMs

		Last month
1	Virtual Springfield	Fox Interactive 1
2	Simpsons Cartoon Studio	Fox Interactive 2
3	3D PC Pup Pet	Neechez 6
4	Dance eJay	FastTrack -
5	Music File 98	File Productions 10
6	Encyclopedia Britannica	Acclaim 7
7	Dr Solomon's Home Guard Antivirus	Dr Solomon's -
8	You Don't Know Jack	BMG Interactive -
9	Mavis Beacon Teaches Typing	Mindscape -
10	Redshift 3	Dorling Kindersley -

Top 10 peripherals

		Last month
1	Umax Astra 610p	Umax 1
2	Umax Astra 1210p	Umax 6
3	ScanJet 5100C	Hewlett-Packard 3
4	Sportster Message + Ex	USR 5
5	Sportster Flash Ext	USR 2
6	Intellimouse v3.0 95	Microsoft 9
7	Sidewinder Gamepad	Microsoft 8
8	Umax Astra 610s	Umax 4
9	Sidewinder Precision Pro	Microsoft 10
10	AWE-64 Value ISA	Creative 15

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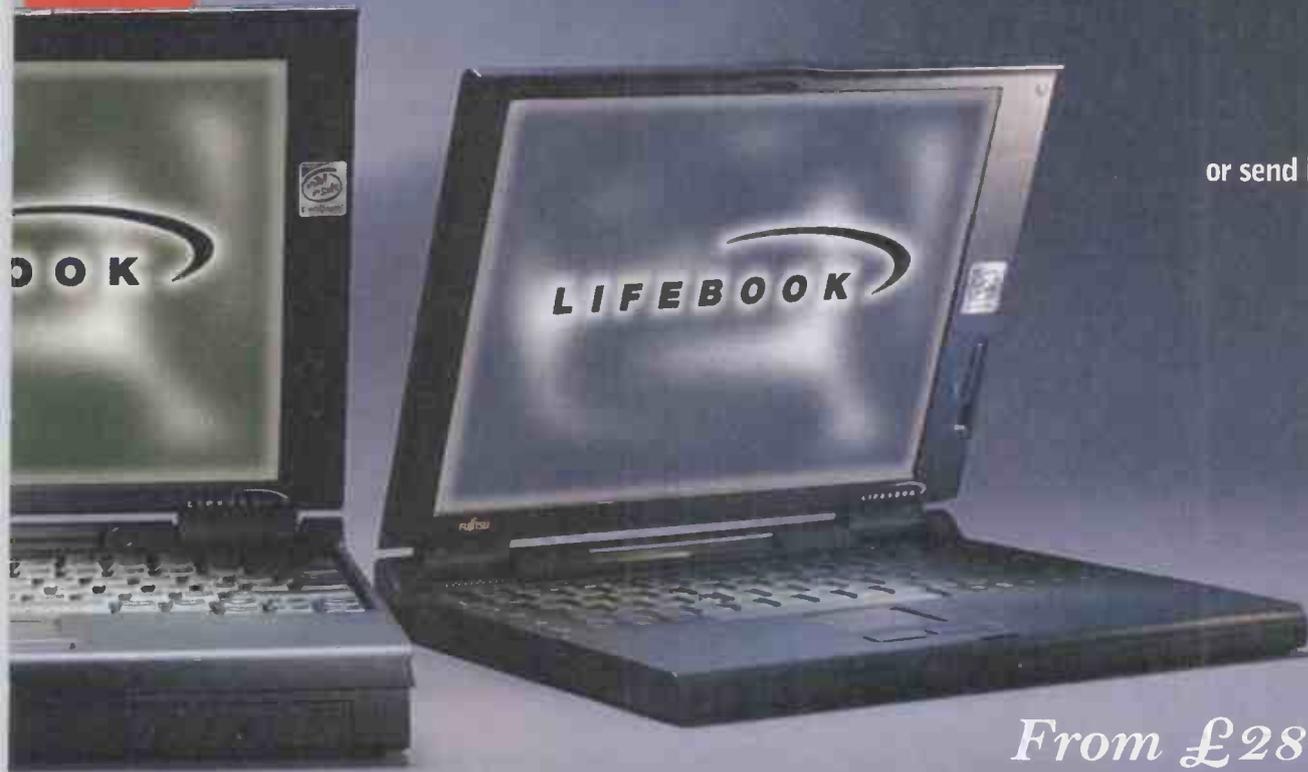
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I remember once talking to Charlton Heston about the likelihood of computer-generated actors taking over from the flesh and blood variety. He reacted to the question much as my former boss, the MD of an old-style typesetting firm did, back in the eighties, when I asked him if he felt his business was likely to be under threat from this new-fangled DTP. No, he said, technology is fine as far as it goes but you need the human touch. The last time I passed the premises of that particular company, the human touch had manifested itself in the fact that the place had become a kebab house.

Could this be a harbinger of things to come in the film industry? Might we see Sunset Boulevard lined with competing fast-food outlets owned by redundant movie stars? Heston's Ten Commandments Burger Bar alongside Peck's Big Country Burrito House, perhaps?

Those of you who've sat through that arse-numbingly tedious film, *Titanic*, are probably aware by now that when you watch casting extras being mulched against propellers and squashed by falling smoke-stacks, what you're actually seeing are digitally-created characters. They fooled me at the time, though. I thought they were highly-paid stunt men. No doubt if I were to sit through the film again, I'd look for tell-tale signs like pixellation. The point is, though, on first viewing it was totally convincing. So how long before the foreground characters start being convincingly computer-generated, too?

To an extent, it's already happening. In days of yore, when the star of a film disobligingly dropped dead midway through a production, you had just two options: reshoot the whole thing with another actor, or carry on with a double and hope no-one noticed. The former was expensive, the latter a potential strain on credulity. For example, Bruce Lee's "double", who took over during the course of filming *The Game of Death*, finally proved to the world that all Chinamen do not in fact look alike.

Today, however, you have another option: carry on filming, using a digital copy of the actor. This is what they did (their stars' final credits having rolled prematurely) to finish John Candy's and Brandon Lee's last films. The actors were digitally extracted from scenes that had already been shot and then re-inserted into the remaining scenes to give believable continuity, reaction shots, and so on. And where actors aren't quite dead, yet, but you want to see them in something resembling their prime, computers can help there, too. In the coming months, we're going to be treated to a slimline Marlon Brando and a rejuvenated, 30-year-old Sean Connery, their images having been scanned and processed to take off the years and the flab.

So how far is it from what is, essentially, post-processing to the point where the actors can stay in bed while their digital doubles do all the work? Certain Hollywood hucksters don't think it's going to be long at all. One agency has already been set up specifically to

handle dead film stars in the expectation that they'll soon be digitally resurrected and able to resume their money-spinning careers. But what about going one stage further and creating an actor from scratch?

I had a chat the other day with a man who ought to know what he's talking about because he worked on the Disney film *Toy Story* where all the characters were created by computer. He reckons that given the current state of play as regards processing power, storage and so on, and the way it's continually advancing, we're ten years away, maybe less, from the debut of the world's first convincing all-digital actor. They've more or less sorted problems like creating movement and a realistic gait; all that remains is to work out skin tone and facial expression, and to create some sort of virtual Betty Ford clinic for when the digi-actor overdoes it on digital booze or cocaine.

Many, of course, would argue that merely creating the appearance of a character is the easy bit, as did the interviewee in a recent BBC2 *Horizon* programme on the subject of movie special effects. Without the talent of a genuine actor behind it, he said, your computer-generated figure is just going to move woodenly through the film like some sort of emotionless automaton. I think he's missing a point. What about cartoon characters like Bambi and Dumbo? They have personality. So much so,



Michael Hewitt

Sounding Off

Never mind method acting or those delicate little nuances of delivery picked up at RADA. The future of film is decidedly digital, as Michael Hewitt explains.

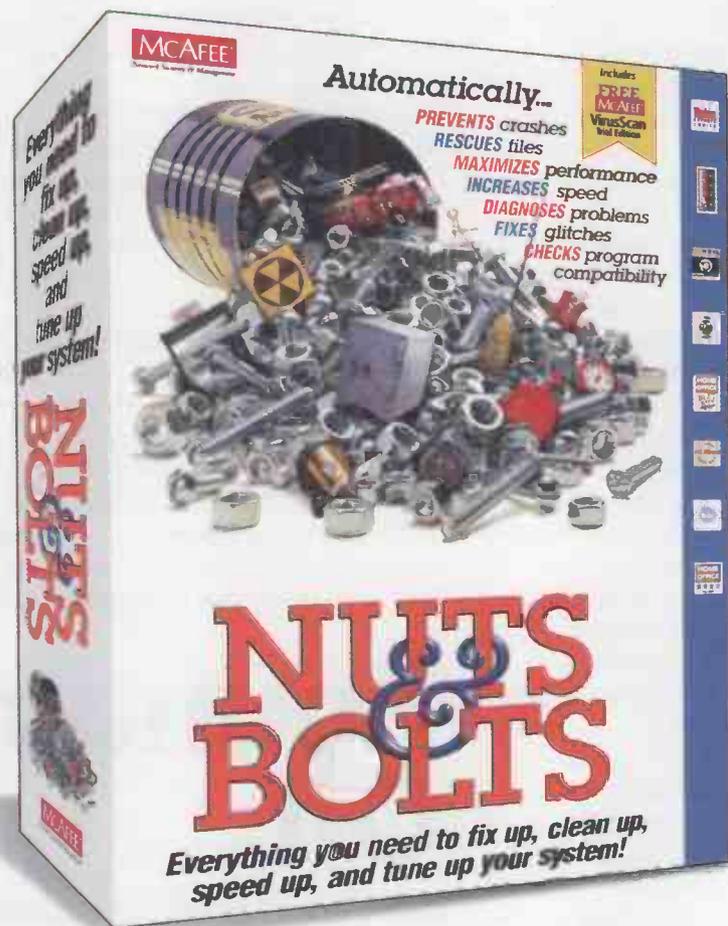
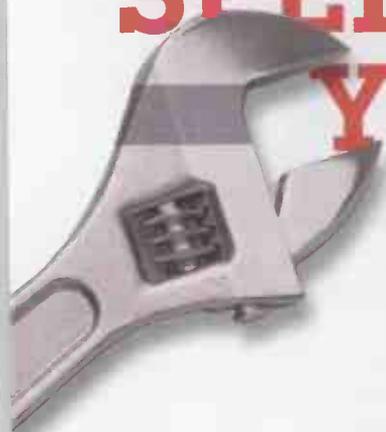
that children can identify with them and feel for them. I believe that Jessica Rabbit, from *Who Framed Roger Rabbit*, even became a sex symbol for adolescents. True, their personality derives from having a skilled animator create them. But what else is a computer technician who creates a digital actor except a *highly-skilled animator*?

The future of TV and cinema acting is probably digital. If I were graduating from RADA now, I might be inclined to pick up a few supplementary skills, like basic chip frying and burger preparation, just to be on the safe side.

■ Mike.hewitt@mjh1.demon.co.uk

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It happened with hi-fi, then with video and now PCs. Only a handful of people inside the companies that sell high-tech systems have a clue as to how they work, and are far too busy to waste time explaining to the trade, press and public. Highly-paid executives do not want to be exposed as ignorant, so prefer to work with marketing staff who know even less than themselves.

The company employs glossy PR people who either regurgitate engineering literature without understanding it, or write "puff" which is so superficial that it is only of use to trade magazines which will print anything just to fill the space between the ads. Press releases end with a name to contact "for further information". Any journalist who tries to follow through soon discovers that this glib phrase means even less than "Have a nice day" in America.

The knee-jerk response to any question more complicated than the price, is to offer the product for testing. Say "No, I haven't got time" and you're damned as "...couldn't even be bothered to try it". Say yes, and struggle to make it work, and the answers are predictable: either "You're the first to experience any problems" or "It's only a Beta". So, it's always a joy to find a company with a product that works and knows *how* it works.

Fuji recently announced FlashPath, a device which lets a PC read the memory card from a digital camera without the need to install a card reader. The card slides into a device that looks like a floppy disc and then slots into a standard floppy drive.

Fuji UK offered "further information", so I asked the obvious question. How does it do the very clever trick of reading data from a stationary chip through a rotating disc drive? All I got by way of explanation was some daft talk about "software drivers".

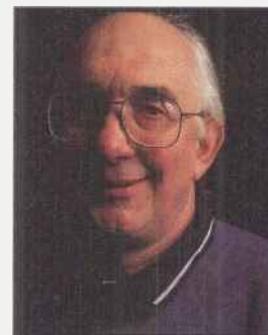
Fortunately I found another company, Pipestrel of Guildford, which sells a similar system for reading data from smart cards. PhoneFile Pro lets anyone with a digital cellphone use a PC to store phone numbers and back up the data onto a PC. PhoneFile works like a dream, straight out of the box, reassuring me that it is possible to write Windows software that performs without error messages. And the people at Pipestrel were able to explain how Fuji's system works, as well as their own.

The concept of a smart disc was developed and patented in the early nineties by Raymund Eisele of Idstein, Germany. He sold the rights to Fischer International of Naples, Florida. Fischer's first product, Smarty, is now on sale in the US at around \$60. Smarty reads smart cards which incorporate a microprocessor and a few kilobytes of memory. Pipestrel bundles Smarty with its PhoneFile software for around £100. FlashPath looks the same but reads flash memory cards.

Each device works on the same principle. A dummy floppy disc has electrical contacts which mate with contacts on the card and connect it to a Motorola microprocessor powered by a lithium battery. The

microprocessor is pre-programmed to interrogate the card and read whatever data is stored in its memory. This data is converted into the standard format used for recording and reading floppy discs. The formatted data is fed to an induction coil which radiates a magnetic field from the dummy disc. Software forces the recording heads of the floppy drive to move into a steady position, as if reading track 0 on a disc. Although the disc drive spins, there is nothing for it to turn. The drive heads pick up the radiated signal from the coil as if it were coming from a disc, so the PC reads the data in the card. To store information in the card, the PC sends data to the disc drive head, as if it were writing to a spinning disc. The coil in the dummy disc picks up the magnetic signal, and the microprocessor reformats the data and writes it to the card.

In a confusion of names and joint ventures which make my eyes glaze over, Fischer has now formed a joint venture with Toshiba (Japan). The new company, called SmartDisk, will use FlashPath readers to communicate with the new SmartMedia flash memory cards made by Toshiba and Samsung for use in digital cameras. With a FlashPath dummy floppy, a photographer can shoot pictures into a memory card, then dump them into a PC simply by treating the card as a floppy disc. The pictures can be edited on the PC and returned to the card.



Barry Fox

Straight Talking

Barry Fox reckons that many highly paid IT executives cannot actually explain how a product works. He put his theory to the test with a new product, FlashPath.

Digital cellphones are controlled by a smart-card SIM, or subscriber identity module, which can also store up to 200 names and numbers. Entering and editing the numbers by using the phone's alphanumeric keypad is so laborious that not many people bother to store more than a few. With PhoneFile and Smarty, you do it with a PC keyboard and screen.

I have no idea whether FlashPath works as well as Smarty and PhoneFile. Although Fuji had publicised the gizmos, they had not actually got any.

■ Barry Fox 100131.201@compuserve.com
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I recently received an email from a PCW reader, Adam Webb, which makes some interesting points. "I'm 37," he wrote, "and left school long before computers became commonplace. My first experience with PCs came when, as a fiction writer, I bought a lowly 286 to replace my dedicated word processor.

"I soon realised how different it was, and feeling incredibly stupid, determined to learn as much as I could. Nobody was more surprised than I to discover that I had a natural aptitude for computers and software in general. That was ten years ago, and today I have a small business creating web sites, digital artwork, training people in computer basics using plain English, and other assorted tasks.

"Some weeks it goes well, other weeks it doesn't. So, why should this be of interest to you?

"The point I want to make is that there must by now be quite a large number of people who are entirely self taught in matters PC. People who, like me, have never been in the position where a corporation would pay for training but who nevertheless have acquired expert knowledge and literally years of hands-on experience with all manner of day-to-day problems — experience which I'm finding is generally ignored by medium to large companies. Because people like me rarely have the piece of paper that says they can do what they can do, we are not given a fair crack of the whip.

"I have a 266Mb digital portfolio, available on CD, which can prove my abilities, but this is often not enough to even make it past the first post, even when someone can be bothered to take a look. It is an attitude problem which I feel is ghetto-ising some of the most creative, genuinely experienced people in this country. People who had the gumption to teach themselves and the motivation to keep on going. It seems wrong to me that this situation exists in an industry which is moving so fast, that most qualifications are out of date by the time they are gained!"

This is not a trivial problem and it's one that more and more of us face. The job for life has become a fantasy. Most people are having to take more responsibility for their own careers and for what they do. This can be very satisfying (as Adam has discovered when it goes right) but there are real problems because businesses generally haven't caught up with new and exciting ways of working. At the risk of undermining Microsoft Certified Professionals or whatever (I always worry about someone who is proud that they are certified), there are no qualifications that should provide a certain passport into employment.

A degree is useful, because it shows that someone can apply themselves independently, but the subject is irrelevant. For example, computer science degrees often operate in a world that is quite detached from business computing. A doctorate or an MBA is

particularly suspicious. To succeed with a doctorate you must be able to spend years working on fine detail; but business desires a broad-brush approach and quick work. As for an MBA, it generally means the recipient has a lot to *unlearn*.

At a lower level, specific programming qualifications like the Microsoft tests seem to be more aimed at remembering the syntax of a programming language than being able to produce good, solid code to generate an easy-to-use application. This is pointless. Modern development environments give programmers all the prompts they need and there's no longer any need to learn parameter calling orders.

So, if I were taking on someone like Adam, I would want an answer to: "What can you show me that you've done? How good is the user interface design? Let's see it in action. How long did it take to put together and how was it developed to meet the customer's requirements?" It's easy to be lazy, and the trouble is, this takes more effort than ticking a box for the appropriate qualification. Having good contacts is essential if you want to sell yourself this way. If you can get to the right people, they're only interested in what you've done; they don't care what training you've had.

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Brian Clegg

Business Matters

Business is missing out on a huge pool of IT talent just because it is simpler and safer to hire 'qualifications' rather than experience, suggests Brian Clegg.

something unique about yourself. In Adam's case he's got a winner, the ability to communicate in writing (so much business writing is impenetrable). The combination of being a writer and an experienced web-site designer should have people knocking down his door.

If you'd like to find out more about Adam's work, see his web site at members.aol.com/graphicsUK. I've got more information on ways of selling yourself to business on my own site at www.cul.co.uk/chameleon.

If you've had experiences of being in this position, drop me an email. I would be interested to read them.

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I celebrated the first anniversary of Windows 95 by buying a new 1.7Gb hard disk. I had previously been dual-booting Windows 3.11 and 95, running applications and reviewing software all on a 500Mb drive, with no compression. Hard to believe, isn't it? But a 500Mb drive was a mid-range standard when Windows 95 first appeared.

Being the kind of smartarse who Knows About Such Things, I divided the new disk into multiple partitions. The first 500Mb partition was destined to host Windows, MS Office and a few other permanent denizens like Paint Shop Pro. The second 500Mb partition was for data, and the third for visiting review software and various other applications. This left a small partition which was more than adequate to contain Windows 3.1 and various legacy 16-bit apps.

The smartness of the arse wasn't in the classification (it would have been much simpler to do this with folders) but in the fact that all the partitions were below 512Mb. This meant that the FAT file system assigned disk space in 8Kb "clusters" rather than the 32Kb that would have been the case had I left it all as one partition. Result: more efficient use of disk space, especially with very small files like Shortcuts which, although only consisting of a few hundred bytes, must have an entire cluster assigned to them. Feeling duly smug, I sat back and contemplated the vast tracts of empty disk space.

That was then. But this is now, when I feel like one of those old codgers who say "I can remember when it was all fields round here". It's now getting so crowded that I have to embark on periodical slum clearance programs.

My Windows folder, which I remember saying in 1995 was a "hefty 80Mb", is now, thanks to the advancement of technology and the advent of Windows 98, a staggering 265Mb. Add to this all the stuff that insists on being in Program Files, the profusion of fonts that everything wants to install, the Windows swap file and breathing space for various temporary files, and my C: drive is starting to bulge at the seams.

When things really get bad, the PC seems to grind towards an agonising entropic death. The printer won't print. Applications report "out of memory" errors, even with 64Mb of finest silicon installed. And Windows 98 pops up helpful little messages saying that I'm running out of space on drive C. Gee, thanks, but I'd already twigged that.

So who is the culprit here? And can anything be done? Is this C:-jam the result of errant developers not keeping to the Microsoft true path of installation routines? Frankly, no. The main culprit, at least on my PC, is Microsoft. The final straw was Publisher 98, which wanted to install 80-something megabytes of clipart to drive C. No, you can't have it anywhere else. You can leave it on the CD-ROM, though; just don't expect the wizards to work properly, that's all.

Yes, there are things that can be done to move applications and clear space, but *please, don't write in and tell me about them*. They are mostly tedious and require a degree of expertise or the intervention of third-party software. And all take up time that would otherwise be better spent. The highly-profiled "ease of use" of Windows 95 is fine until it has you backed up against the wall and you need to do something that Redmond's finest hadn't quite envisaged.

I'm sure I can't be the only one in this predicament. There must be thousands of fellow victims of their own foresight who've also watched, helpless, as their C drive is gradually wrested from their control. Happily, there's a solution that comes as part of Windows 98. It is FAT32. This uses even smaller cluster sizes without having to split a disk into several partitions, and does away with the absolute 2Gb partition limit of FAT16. Though the latter might not be an immediate selling point for most users, it's a godsend to those using large files such as video. And I bet by the time Windows 2001 or whatever makes its *début*, 2Gb will be barely enough to install Windows, IE6 and their attendant paraphernalia. But let's get back to the here and now.

Is that FAT32 going to help you out of the C:-jam? Well, there's a Wizard to help you convert existing drives to FAT32, except there are a few catches. One is that if you've already accepted the poison chalice of disk compression, you're stuck with FAT16. There are various



Tim Nott

From the desktop

Two's company, and an overcrowded, ultra-packed hard disk is very much a crowd. Tim Nott spins a cautionary tale about space-saving and partitioning.

other catches, but my personal favourite is that if a partition is under 512Mb, once more you're stuck with it. The Wizard won't convert it, nor will it do anything sensible like change the size of a partition. For that you'll either need third-party software such as Partition Magic, or you'll have to back up all your data, including such things as your personal MS Office Autocorrect dictionary, which apparently is such a delicate piece of data that it can only blossom in C:\Windows): Wipe the disk and start again. Good luck. This is what Microsoft would undoubtedly call a "migration issue".

■ timn@cix.co.uk

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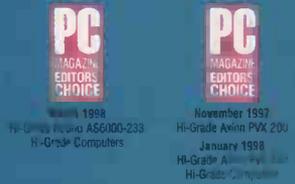
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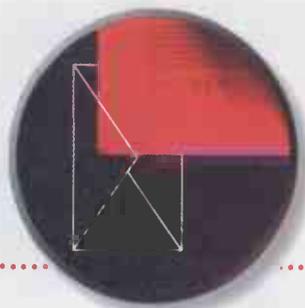
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Tools of the trade

Michael Hewitt (*PCW* June) says: "As a research tool ... and as a source of readily available topical news material [the internet] has become virtually unusable". I suppose it depends how you define "research", but that statement seems pretty dubious to me. Yes, there are many limitations in the information content of the internet which are not well understood by most users, but more pertinently, they do not use it effectively because all too often they think the only way is to search (usually badly) Alta Vista, Infoseek and the like.

For academic use, the best route is more likely through a general subject gateway like BUBL LINK <www.bubl.ac.uk> or a specialist one like SOSIG <sosig.ac.uk> for social sciences or EEVL <eevl.ac.uk> for engineering. For a list, see <www.hw.ac.uk/libWWW/im/pinakes/pinakes.html>. These collections have resources that have been selected by librarians and other information experts against particular criteria for usefulness. And by the way, most reference libraries got rid of "record cards" years ago when they computerised, and their catalogues are now likely to be on the web <www.niss.ac.uk/reference/opacs.html>.

Ian Winship
ian.winship@unn.ac.uk

School of thought

I agree with Chris Norris (*Letters, PCW* May 98). As a

From small Acorns, good programmers grow

I started reading *PCW* in 1978, at the ripe old age of 13. My first computer was the much-underrated Acom Atom which had high-resolution graphics (256 x 192) and a built-in 6502 assembler, and came with a manual, "Atomic Theory and Practice", which was so good it was highlighted in reviews. Before long, I had written a Space Invaders program suitable for the minimal-spec Atom which I sold to BugByte Software. It was only around half a kilobyte long.

I can't help thinking that the reason British programmers have traditionally been highly regarded is that the early micros in this country weren't as powerful as overseas machines like the Apple II. This meant we had to be far more clever to achieve the same results. Of course now, even the most basic machine is ridiculously powerful, the "advantage" has been lost, and the "bloatware" we see around us is the result.

Which is why I think Java is interesting. Suddenly, we need to write tight code again because it is interpreted rather than compiled. And the code has to be compact because it needs to be rapidly downloaded from a network.

Perhaps this will result in another generation of clever programmers, and the cycle can start anew.

Wildgoose@compuserve.com

Amen to that. Despite reviewing the latest applications, many of us at PCW prefer to use older versions day-to-day since they're often smaller, faster, and offer more than enough functionality. We hope your prize of a new monitor will inspire you to write particularly compact code.

16-year-old boy attending school in Staffordshire, we are given a say in how our school is run. Our IT facilities are very good, and the teacher in charge calls on certain students to help him with the day-to-day running of the system and the four computer rooms. He certainly appreciates our help, and understands that in some circumstances, the students do know more than the teachers.

Maybe Mr. Charlesworth

should take note that in yet another school, the students' views are listened to carefully. Does he not believe that children should have a say in their own education, or is he afraid to admit, like some teachers, that their child counterparts are more knowledgeable than themselves in some areas?

Julian Cotterill
COTTERILLS@MY-EMAIL.CO.UK

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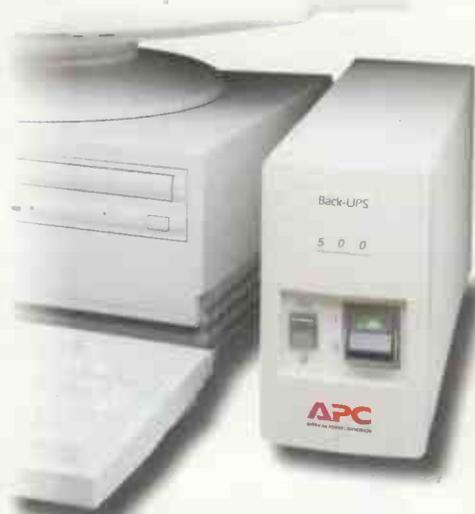
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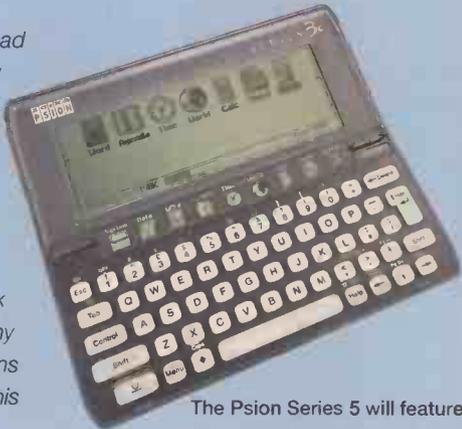
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Handhelds in Hands On

May I suggest a Handhelds column for *PCW's* Hands On section? With the emergence of PDAs, and the battle between the various OSs (EPOC, Palm, Windows CE etc) this would be an excellent addition.

Andy Marston Andy@IBM.NET

You must have read our minds. A new Hands On section devoted to Handhelds/PDAs starts this month on page 264. Please email Mark Whitehorn with any of your suggestions or questions for this column.



The Psion Series 5 will feature in our new Hands On column

World service

Michael Hewitt should have subscribed to IBM Internet, with (almost) worldwide pops for today's Road Warriors. As a constant traveller, I have found that even when living in Greece, as I do for two months each year, Big Blue has the answer with three POPS in that country and even more in the UK.

Greece does have modern digital telephone switches and uses satellite for both internal and external communications. On Santorini, as with other Cyclades islands, the long-distance carriers are "daisy-chained" with incremental 'degradation of the signal-to-noise ratio, forcing modems to switch to lower speeds.

I am emailing this letter from Nha Trang, a city about 400 miles north of Ho Chi Minh/Saigon in Vietnam, where I can enjoy the newly approved internet services: there is even a POP in this provincial town. The best answer to Michael's problems is to subscribe to a free store or forward email service such as Bigfoot or Altavista.Net which survive even the Chinese habit of clearing email servers every night!

What's more, they are free, and there are no government snoops reading or censoring your mail, which is kept on servers in the West.

Internet cafés are to be found in Greece and Vietnam: a ready, economic form of access.

Jon Hewson
2728hcmc@aracnet.net

The DVD debate

Andrew Fish (*Letters, PCW June 98*) explains that DVD is a good idea, but there are a couple of points that weren't quite valid.

I agree that DVD will be a good thing when the standards are sorted out. Mr Fish quite rightly says that there are nearly a thousand good DVD titles in the USA. However, these titles will not play back in the UK if they are encoded regionally.

For DVD to replace VHS recorders, it must be able to record as well as play back discs. This needs a real-time MPEG 2 encoder and DVD-RW drive. Not only do we not have this technology yet, but we'll have to wait at least two years after DVD's release for the price to fall to an affordable level.

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Down memory lane with PCW's 20th Anniversary

Plus points: the return of Jack Attack

Having finally read every page of your 20th Anniversary issue, I was surprised to find no mention of the Commodore Plus 4. This was my first computer, and I must have wasted years of my life playing Jack Attack, possibly the most addictive game ever.

Fortunately, Mike Dailly has written a free emulator of the Plus 4, available from www.scotch.demon.co.uk, allowing me to relive the golden years of my youth.

Keith Wickham
keith.wickham@mail.virgin.net

Carton capers

In May's Anniversary issue you commented that the Sinclair ZX80 was hard to crash.

One of my friends who owned one said it was actually quite easy. He remembers having to put a half-filled carton of milk on it to make it load.

Steve Scott
Steve_Scott11@hotmail.com



Getting the message about BBSs

First, may I congratulate you on your 20th Anniversary and the excellent May special issue. But, writing on the evolution of browsers and the net, Clive Akass gave the impression that Bulletin Board Systems are a thing of the past, and that "communication between them was difficult or impossible, so global email did not exist".

Neither statement is true. BBSs are alive and well, and provide an exciting and low-cost alternative to the internet. The BBS

community, both here and abroad, is thriving and welcoming. All you need to join is a terminal program — even Windows Terminal will do — and a modem.

BBSs are run by enthusiasts, almost exclusively on a non-profit basis. You pay only phone charges, and there is sure to be a board local to you. Once online you will find a wealth of files, online games and access to global — yes, *global* — mail networks, such as Fidonet. This may well be in addition to your FREE internet email account, which many BBSs also offer.

Fidonet, like Usenet, is long established with hundreds of conferences. Selected Usenet conferences are also available from some boards. For any readers interested in finding out why BBSs flourish alongside the mighty internet, here is a selection (you will find many more advertised when you are online):

- Axiom 01242 693785
- Boiled Sweets Music 0171 686 0135
- Metric 01705 871471
- OOH! 0181 669 0101
- The Dog House 01443 400327
- The Ninja 0161 283 1098

Fidonet can be found on the net at www.craybbs.co.uk/foti/.
Tim Cook tim@ooh.dircon.co.uk

Clive Akass replies: The internet provided a robust, fast, extensible, global mailing system on a scale that BBBs could never match. It joined everyone up. Moreover, you cannot ring a BBS in, say, Washington direct for the price of a local call, but you can reach a Washington net site at local rates.

This is not to denigrate the pioneering work of BBSs, nor to suggest that they no longer operate.

VHS tapes currently cost around £1 each and can store up to four hours of acceptable-quality video. A blank DVD-RW disc will cost £30 to £50 and may only contain a couple of hours of good-quality MPEG-2.

Compare it to audio tapes vs CDs. CDs are bought to be played back, but there are tens of millions of people out there with cassette recorders instead of CD-RW drives, despite being of a lower quality, because of the cost of the drive, and I fear the same will occur with DVD-RW drives vs video tape.

David Butler
dbutler65@hotmail.com

Gordon Laing replies: It's funny that the public seem to go for many high-quality playback devices, but will accept

mediocre recording formats. When you also consider the fact that the software companies tend to get upset at the prospect of high-quality domestic recorders, it's no wonder none have taken off en masse. Where does this leave DVD video recorders?

As you say, such a device is dependent on rewritable drives, cheap media and decent real-time MPEG-2 encoders, all some way off. However, with digital broadcasting, we should receive pre-encoded MPEG-2 digital bitstreams into our homes, rendering a real-time encoder redundant.

Perhaps in the not-too-distant future, the only domestic analogue video capture unit will be the camcorder, and the DV format has already taken care of

the digitising side of that. When considering convergence, it's also interesting to note the reactions from two different communities: PC users would jump at 4Gb rewritable media at only £30 a pop, whereas the same price for a couple of hours of domestic video recording suddenly doesn't seem such good value. The consumers will vote with their wallets.

I should point out, however, that "under-the-counter" modifications may be made to certain DVD players to allow them to replay discs from multiple regions. Watch out for early solutions which actually clip legs off chips, leaving the player believing it is Region 0, or all-regions. New Region 1 US software actually looks for a Region 1 hardware flag and

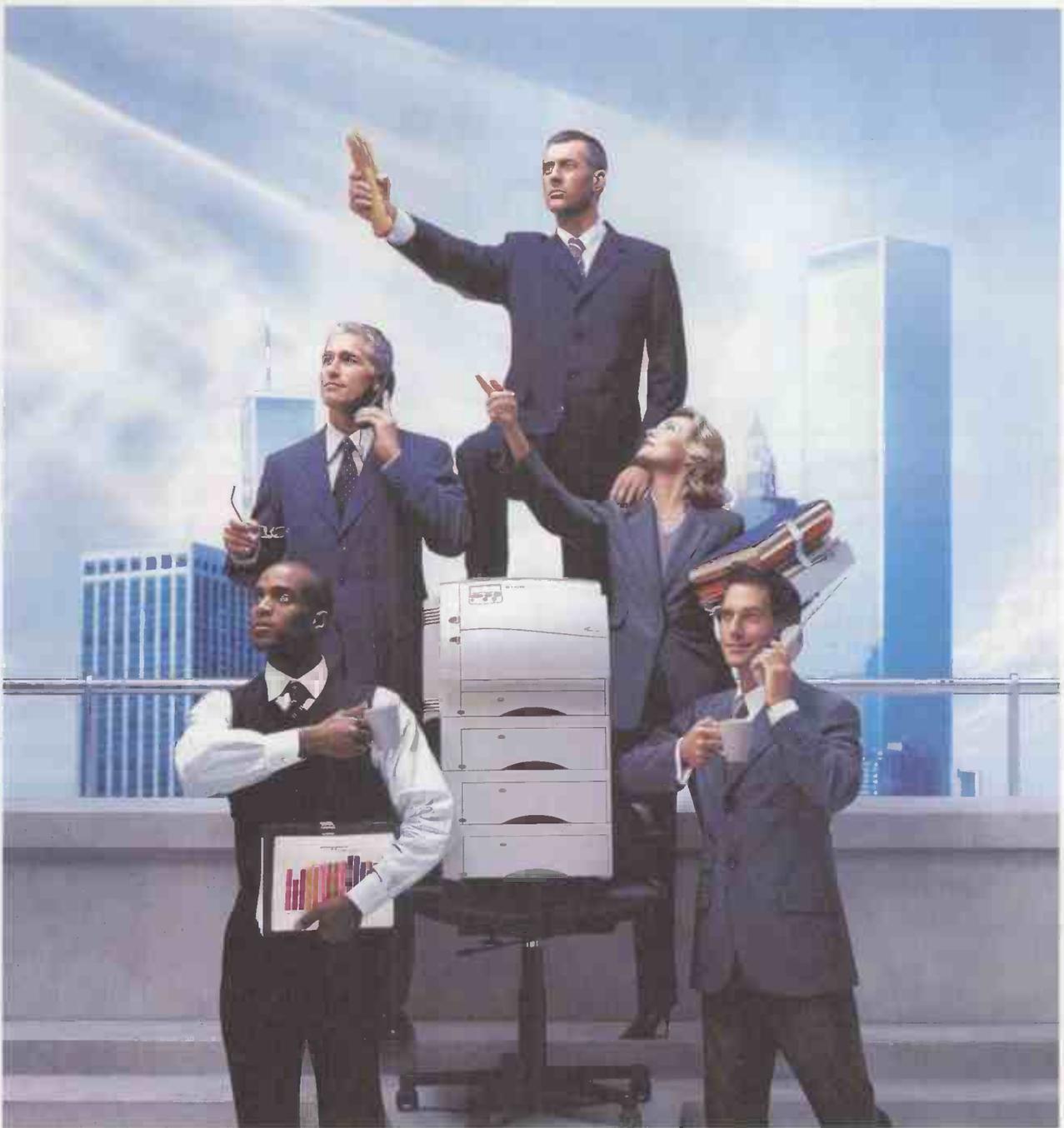
may not work on these early, modified players.

Switching on for scanning

Following your recommendation I rushed out and purchased one of the Umax parallel port scanners from my local Comet. I was surprised to find that connecting the printer through the scanner, as advised, I am only able to print when the scanner is on.

Al Holman
AlHolman@Wskisoft.co.uk

This is true. The device in the middle needs to be powered up for the one on the end to communicate with the PC properly. Like external SCSI devices, it's also advisable to switch on parallel devices before starting the PC.



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LY 1999*



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£1,645.00 £1,932.88 inc VAT

£1,932.88	Total cash price (with 12 months deferred)
£193.88	Deposit
£1,739.00	Balance before Charges
£1,485.73	Add Charges
£3,224.73	Balance Payable
£89.58	36 Monthly Payments of
£3,418.61	Total Amount Payable
29.9%	APR

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- US Robotics Sportster 56K internal voice/fax/modem
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- 10/100 Ethernet on-board
- 14-inch colour monitor
- 1 x ECP/EPP parallel, 2 x 16550A serial, 2 x USB ports
- 105-key Windows 95 UK keyboard, Microsoft IntelliMouse,
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£3,342.88	Total cash price (with 12 months deferred)
£334.88	Deposit
£3,008.00	Balance before Charges
£2,569.91	Add Charges
£5,577.91	Balance Payable
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Gadgets

Compiled by Adam Evans. Photography by David Whyte.

Toast of the town: an haute couture hard disk

First launched in 1993, this gorgeous piece of kit is part of La Cie's range of designer storage drives. The large 5.25in format aluminium casing, designed by internationally renowned designer Philippe Starck, came to be known as the "toaster" by users, owing to its resemblance to large 1950s-style toasters (*Can you see the resemblance? We can't — Ed*). Beneath the sexy surface lies a smouldering powerhouse of raw storage power. The "toaster" ships in 8Gb, 18Gb and 36Gb solutions, with two types of configuration. This kind of capacity and style costs serious money, and if you have to ask the price, you can't afford it.

Price £1,833 (£1,560 ex VAT)

Contact La Cie 0171 872 8000 www.lacie.com



Look Sharp now

Sharp describes the MC-G1 as its "first voice- and message-centric Personal Mobile Communicator" — phew! In simpler language, it's a combined mobile telephone and digital filofax. Instead of a keyboard, it has a touch-sensitive screen which can display names and addresses, appointments and even a telephone keypad. Handwritten memos and drawings can be scribbled onto the screen. Need access to your email when you're on the move? It's no problem with the MC-G1: it can send and receive email over any POP3 account. Connecting the unit to your PC lets you transfer contact and calendar information. Price Around £300 (depending on airtime agreement)

Contact Sharp 0800 262958

www.sharp-uk.co.uk

Driving me crazy

A steering wheel is a must-have item for racing game fanatics. The PC TopDrive Wheel from Logic 3 is based on the award-winning Tri-format TopGear Wheel, already available for the Nintendo 64 and the Sony PlayStation. It is packed with features, including self-centring technology, six fire buttons and an eight-way D pad. You can alter the amount of turn the wheel produces for games with very tight corners and the classy, removable, leatherette cover makes for enhanced grip. The TopDrive Wheel comes complete with a gear stick (on the wrong side for those of us who drive on the correct side of the road) and spring-loaded racing pedals (*pictured, right*).

Price £59.99 (£51.06 ex VAT)

Contact Spectravideo 0181 902 2211 www.logic3.co.uk



Flying high with RSI

The Video Flyer-384 is a lightweight, portable videoconferencing (VC) system from RSI Systems. The stylish unit connects to any television, projector system, PC or Mac. It can be used in conjunction with a computer or on its own to connect to any standards-based VC system. The remote control allows you to access all the capabilities of the system, from document transfer to VCR recording. A number of accessories are available for the Video Flyer, including a variety of cameras, speakers and travel cases for the videoconferencing executive on the move.

Price (To be announced)

Contact RSI Systems +31-20-301-2235 www.rsisystems.com



Slimline smoothie for scanning simply

The CanoScan 300S is the latest sheet-feed scanner from Canon. Measuring just 300 x 70 x 73.5mm and weighing a measly 1.5kg, it will fit in just about anywhere — Canon claims you can even fix it to a wall. It has a variety of functions including quick scanning, automatic document size correction, shading correction, gamma correction and selectable paper paths. It scans at 300 or 600dpi and supports paper weights of between 60 and 250gsm. As far as size goes, it can handle anything from a business card to a full A4 sheet.

See our First Impressions section (starting on page 76) for a full review of the CanoScan 300S.

Price £233.83 (£199 ex VAT)

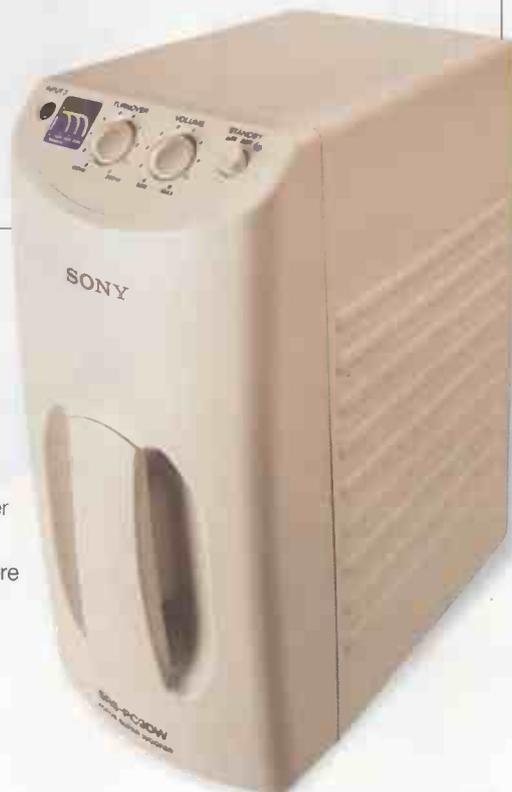
Contact Canon 0121 666 6262 www.canon.co.uk

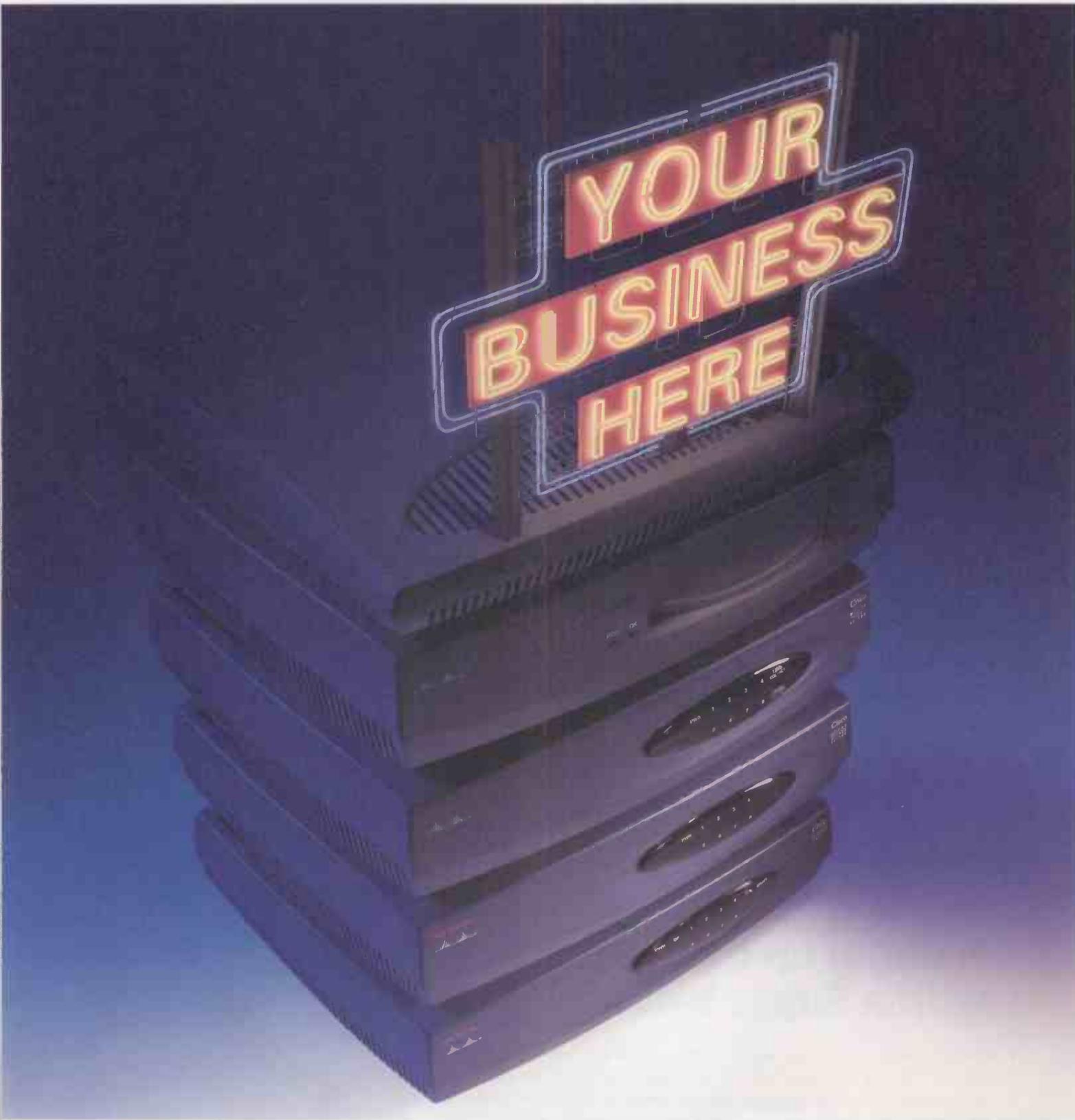
Barking up the right tree with a Super Woofer

Don't like the sound your PC speakers make but can't see why you should buy a new set? Sony may have the answer with the Active Super Woofer. It is a sub-woofer which plugs into your existing speakers, taking over the bass and improving the overall sound quality enormously. Games and music sound a million times better with a sub-woofer in the equation — well, maybe not a million times, but you know what we mean. A built-in power amplifier produces a dynamic 25W output, and there is a Turn Over control to adjust the point where the bass level of the woofer and the connected speakers are balanced.

Price £99.88 (£85 ex VAT)

Contact Sony 0990 424424 www.sony.co.uk





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First Impressions

The power of the ThinkPad is on show (p79), as is the tiny functionality of the Toshiba Libretto (p82). Sharp makes an entrance with a colour palmtop (p87) and Kodak exposes its DC200 on p92. Visual J++ storms in at version 6 (p99) and Painter comes out for an encore p94.

■ Hardware

Compaq Presario 4860

Paint it black: it's just what Compaq has done here, but style does triumph over substance.

Compaq has gone for a design statement with this black Presario 4860 and our guess is you will either love it or hate it. But if you love it, bear in mind that most computer peripherals are encased in dull, beige plastic and replacing the monitor, keyboard or mouse will leave you with a system where the colours do not match.

We weren't that keen on the design and found it strangely reminiscent of Dusty Bin from TV's "3-2-1". A plethora of buttons across the monitor fascia are duplicated on top of the case, and the JLB speakers, although providing excellent sound quality, together with the depth of the monitor, turns this machine into a real desk-hogger.

The heart of this Presario is a Pentium II 333MHz chip with 64Mb SDRAM and 512Kb pipeline burst cache. The 5.25in 8Gb Quantum Bigfoot IDE hard drive which, in our tests, achieved a data transfer rate of 9869Kb/sec, is installed vertically inside the case, and a further internal 5.25in bay allows for a second drive. Externally, expansion is via two free 5.25in bays.

Graphics are taken care of by an ATI Rage Pro card. Its 4Mb on-board RAM ensures that even at high resolutions we were able to display a very broad spectrum of colours. It is also mounted directly onto the motherboard, freeing up an extra expansion slot and doing away with the need for an AGP slot. But this does mean you are stuck with this graphics controller, as there is no way to add a different AGP card in the future.

That's entertainment

The usual CD-ROM drive has been replaced by a DVD drive, making this machine ready for the next generation of software and entertainment titles. We were disappointed that the design of the case, which had a door on the front hiding the drive, necessitated the pressing of an external button which in turn pressed the drive's own button. We found this difficult to operate, and ended up opening the door each time (through which the DVD tray would otherwise slide) to use the drive's button instead.

Opening the case reveals a messy bundle of

wires, but we were impressed by an ingenious shield of metal which, when pulled out horizontally, leaves all the expansion cards on a single daughterboard, making the installation of new cards into the one free PCI, two free ISA and two free shared slots fairly pain-free. This also reveals the three memory slots, only one of which is free, with the 64Mb installed on two DIMMs. A Compaq-badged 56K modem is installed for internet connectivity and on-board ESS sound chips handle the sound.

Put a socket in it

The keyboard was disappointing, feeling unresponsive and fragile, and the mouse was a little too small for the average hand. Video-in and left and right audio-in phono sockets are visible through a smoked plastic window in the front flap of the machine, but using them would mean leaving the door open at all times. All other sockets and plugs, with the exception of the power lead, are colour coded to stop users plugging the wrong component into the wrong

Contents

First Impressions

- 76 Compaq Presario 4860
- 78 HP Pavilion 3250
- 79 IBM ThinkPad 600
- 80 Mag Innovision DJ800
- 80 BT Prologue K56EV Plus
- 82 Toshiba Libretto 100CT
- 85 Viewsonic GS771
- 85 Jazz Outlaw 3D Bonnie & Clyde
- 87 Sharp HC-4500 and CE-AG04
- 90 JG Electronics Art Shot
- 90 Storm Technology TotalScan
- 92 Kodak DC200
- 92 Canon CanoScan 300S
- 93 Sharp MC-G1
- 93 Black Widow 4830 ProPP
- 94 Metacreations Painter

- 99 MS Visual J++ 6.0
- 100 ZY Web
- 103 AutoDesk AutoSketch 5
- 105 Micrografx Picture Publisher 5
- 107 Intuit Quicken 98 Deluxe
- 108 AA Multimedia A to B
- 108 Davilex Davi-Music 98
- 110 Micrografx Simply 3D 3
- 110 Easy Help/Web 3

Long Term Tests

- 112 Turnpike 3.05
- 113 Pointcast 2.0
- 113 HP LaserJet 5L
- 114 Visioneer PaperPort Strobe
- 114 Canon BJC-600

VNU European Labs



VNU Labs tests all kinds of hardware and software, from PCs to modems to databases. All our tests simulate real-world use and

for the most part are based around industry-standard applications such as Word, Excel, PageMaker and Paradox. Our current PC tests for both Windows 95 and NT are the Sysmark tests from BAPCo. In all our performance graphs, larger bars mean better scores.

Ratings

- ★★★★★ Buy while stocks last
- ★★★★☆ Great buy
- ★★★☆☆ Good buy
- ★★☆☆☆ Shop around
- ★☆☆☆☆ Not recommended

place; a practice we wish more manufacturers would follow. We were disappointed, though, to see that there was just one serial port. Although it could be argued that the inclusion of two USB ports reduces the need for a second serial port, USB devices are not yet sufficiently common to fully justify this argument.

Microsoft Works 4.0 and Quicken 6 are pre-installed, and seven other CDs, such as Encarta 98, iPhoto Express and the Ultimate Human Body 2.0, are

included. Compaq includes a comprehensive User Guide which even goes as far as explaining how to install extra memory.

The USB option makes the 17in Presario FX700 monitor a very functional unit. Direct access to CD controls, display properties, multimedia volume functions and a single user-definable function from the front of the unit means that you can use the more intuitive hands-on approach you would expect of a television, rather than the mouse-controlled Windows interface.

Our tests demonstrated an even colour purity, no pincushion or geometric distortion at the default setting, and sharp fine-image detail. There were no visible raster lines and only minimal loss of focus on the edges of the viewable area. There was slight moiré on fine test patterns, evidence of slight streaking, and fairly bad image

expansion and contraction problems when bright blocks were applied to a black background.

It demonstrated no colour mis-registration or convergence errors on either horizontal or vertical test patterns. It comfortably achieved a resolution of 1280 x 1024 and had a maximum non-interlaced 1024 x 768 refresh rate of 85Hz. Controlled from the Windows interface, even "degauss" had a button in Display Properties.

Nik Rawlinson



PCW Details

Price £2,799 (£2,382.13 ex VAT)
 Contact Compaq 0845 270 4000
www.compaq.co.uk

Good Points Colour-coded leads.

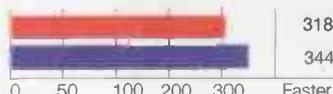
Bad Points Excessively noisy floppy disk drive. Messy interior.

Conclusion A disappointing product from Compaq.

★★★★★

Performance results

BAPCo SYSMARK Windows 95 test scores



Compaq Presario 4860 NEC Direction SP 333L

Hardware

HP Pavilion 3250

Hewlett-Packard has rather let itself down here: a PC that's far too slow and way too expensive.

Hewlett-Packard's new Pavilion 3250 is HP's entry-level domestic model. Straight out of the box, we wanted to like it. It's an exceptionally slimline machine, with one of the smallest cases we've seen for a long time. It's not PC beige either, although we're not sure that battleship grey with a darker trim is much of an improvement if you want it for your living room. The monitor looks nice and cheery if you hang the speakers on each side. However, it's not aesthetics that count.

Entry-level it may be, but cheap it ain't. HP will relieve you of £1,300 if you would like this Pavilion with a 15in monitor — far too much for a P233MMX with 32Mb of RAM. Even given the undoubted premium for that discreet Hewlett-Packard logo, we'd expect a reasonably specified Pentium II machine for this price.

Bad timing

Instead, we found a Pentium MMX chip: not a good sign when it arrived a week after Intel announced both the launch of Celeron and the Pentium's demise. The chip itself isn't too bad when twinned with plenty of RAM, and the 32Mb here ensures that, although this machine isn't a flier, it should be a respectable enough performer. There's a reasonable 3.2Gb hard disk and a 33.6Kb/sec modem.

Again, this is perfectly adequate, but it looks slightly dated given that it's got a Lucent chipset and the company was one of the leading lights in the K56flex partnership. There's no mention of flash upgradability, which is disappointing when the V.90 standard for speedy modems has been agreed and seems only to need rubber-stamping.

Grim graphics

The marriage of speakers and "industry-compatible" (we think they mean SoundBlaster compatible) on-board sound is a fair one, but it won't please a serious gamer or show off multimedia discs to best advantage. Graphics are on-board too, and are more of a concern.

Given the choice, we would not want an ATI VT2 chipset soldered to our motherboard. Respectable in its time, it is now two generations out of date. And although its 2D performance is fine, its 3D Final Reality mark was pretty grim. It is not DirectX-compatible in any meaningful sense, and will be a terrible bottleneck if you want to play state-of-the-art 3D games on this machine.

The Pavilion isn't really suitable as a base for upgrading either. One of the usual trade-offs for such a compact case is a dearth of expansion slots, and there is no exception here. A riser card carries one PCI and two ISA slots, although you can use only two of the three at the same time. There is just enough room to squeeze in a

second hard disk, but there is no spare power connector to run it from.

The software bundle is clearly aimed at the home user, with Encarta World Atlas and a couple of games, although you only get SimCity 2000 after registering. MS Works and Money 97 come too, but we were a bit puzzled by the inclusion of Quicken: two personal finance applications might seem like overkill to some. But even with all this software, the Pavilion is on the expensive side. Consider that you could find a mail-order PII for around a grand, buy Home Essentials (£100) to get most of the software titles and still have enough change for a decent inkjet: still want to pay £1,300 for a machine with a friendly face?

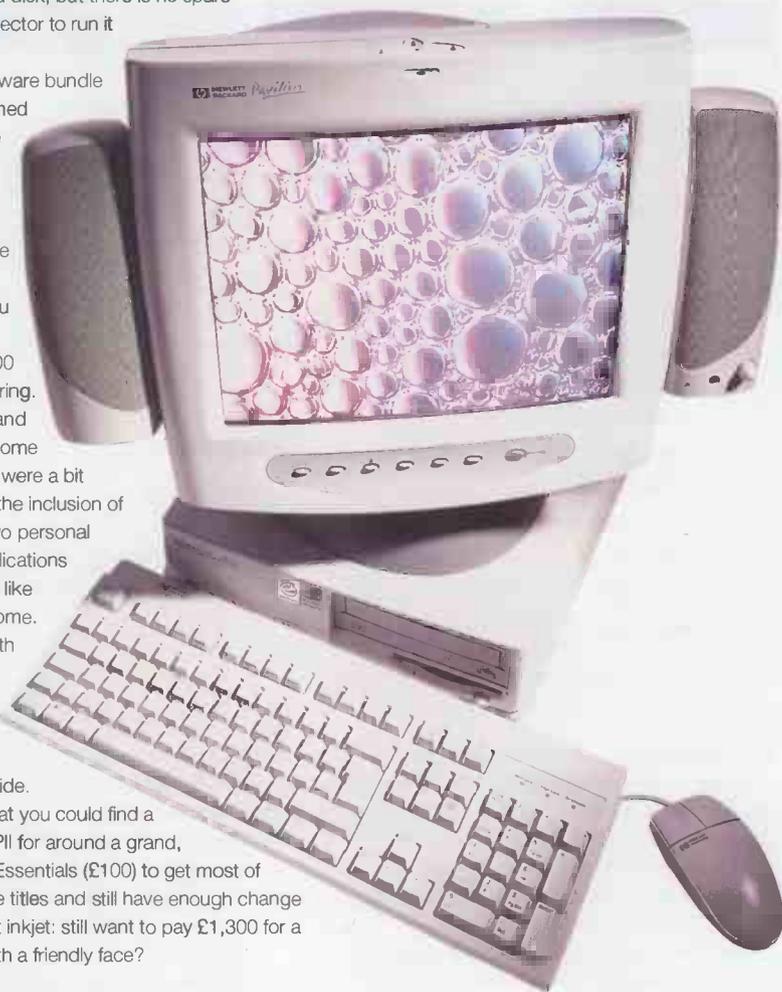
Making a mistake

With this sort of spec, the Pavilion 3250 falls uncomfortably between two stools. It's not right for a home user, with its twinning of obsolete graphics and a soon-to-be-discontinued processor, and it's certainly not right for businesses even if HP had been targeting it at them. Corporate buyers have certainly been ready in the past to pay a premium for a good brand name and the accompanying reassurances of long-term backup and service agreements. However, a basic workstation — and the Pavilion will be quite happy on a diet of Word and Excel — doesn't need a modem, sound card or speakers, nor their associated costs.

Hewlett-Packard seems to be repeating IBM's mistake of fobbing home users off with slow, outdated PCs. The message should be clear enough: games are extremely demanding and many home users play games.

The Pavilion's undoubted build quality and good looks can't redeem its disappointing performance and high price.

John Sabine



PCW Details

Price £1,299 (£1,105.54 ex VAT)

Contact Hewlett Packard 0990 474747
www.hp.com

Good Points It's compact, neat and tidy.

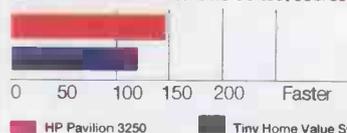
Bad Points It's too slow for home use and virtually impossible to upgrade.

Conclusion HP could do much, much better.

★★★★★

Performance results

BAPCo SYSmark Windows 95 test scores



Hardware

IBM ThinkPad 600

Think hard about this ThinkPad. Pricey it may be, but its superior build quality speaks volumes.

The new ThinkPad 600 series is being promoted on the back of its technology and portability. You get a choice of processors with the slimline ThinkPad 600: either the brand-new Intel Mobile Pentium II processor (up to 266MHz) or a 233MHz Pentium processor with MMX technology. The model we reviewed had a 266MHz Mobile PII, the top of the range. It came with 32Mb SDRAM, which is supplied as standard. Although 128Mb modules are not yet available, IBM assured us that the 600 will support them, ensuring that you'll be able to upgrade to a maximum of 288Mb RAM when they arrive. It also came with a 4Gb hard disk.

Surprisingly, the ThinkPad 600 didn't score as well in our 2D application benchmark (SYSMark) test as the other Mobile PII notebooks in our group test last month. They all came out with scores over 200, but the 600 only scored 196. Its processing power really stood out with only one type of application, the desktop graphics package, which scored over 300. It also only scored 1.46 overall in our 3D benchmark, Final Reality. On the flip side, though, it didn't seem to get very hot, and the fan was in no way obtrusive.

Zooming into video

Although its processing power was not particularly exceptional, the ThinkPad 600 comes into its own with its display. The 13.3in TFT display gives a maximum resolution of 1024 x 768 and supports zoomed video. It also came with 2Mb SDRAM video memory. The display was not only bright, crisp and even, but came with a manual brightness control, a relatively rare but handy feature.

The 600 comes with a CD-ROM drive in its UltraSlim bay on the front. This can be swapped with a floppy drive, but IBM provides a sturdy external floppy drive that can be plugged into the side of the notebook. This setup will be helpful for the type of person who gives presentations from CD-ROMs, but not so helpful for those who like to work with word documents or spreadsheets from a floppy disk.

Several of the ports are covered by rubberised

doors that seem a bit flimsy at first, but will actually go a long way towards preventing the door hinges from snapping off. The 600 comes with two Type 1 PC Card slots (or one Type 2 slot) as well as USB, infra-red and PS/2 ports. It has the SelectaBase 600 port replicator, which can be used as a docking-station port. The

documents, spreadsheets or web sites, although it took us a while to figure out what this was for.

Excellent build quality

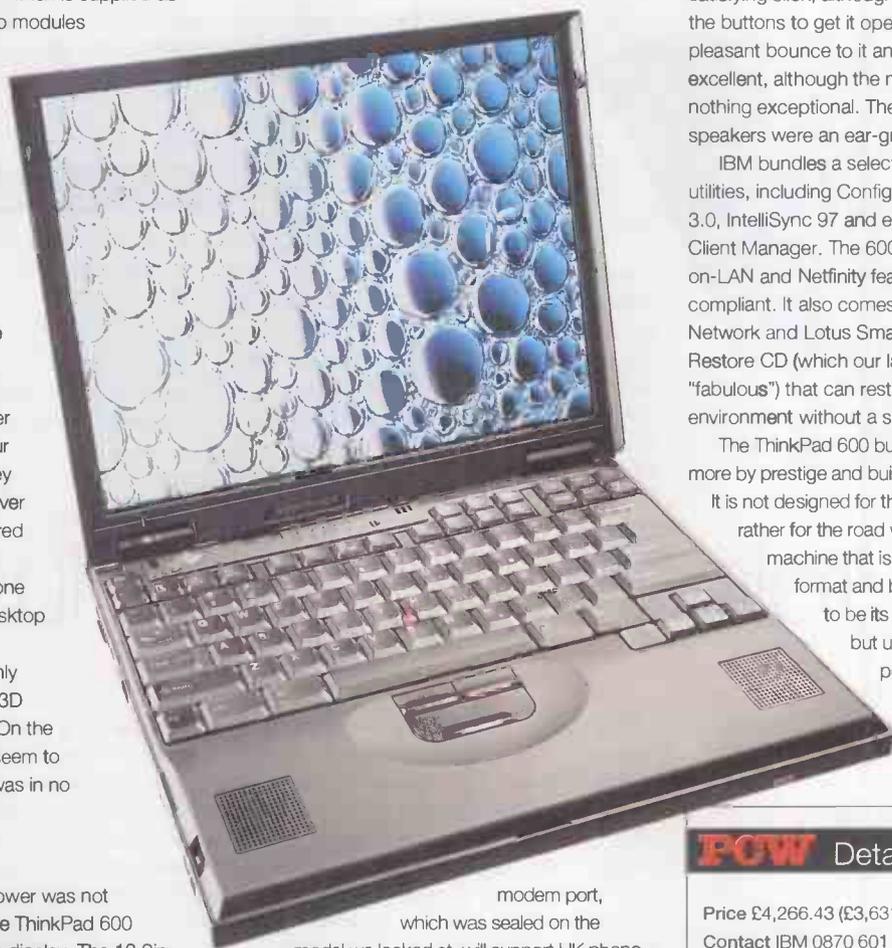
The overall build quality of the ThinkPad 600 is up to IBM's usual excellent standards. It's thin (33mm) and lightweight (2.3kg), making it almost a pleasure to carry around. It closes with a satisfying click, although I tended to fumble with the buttons to get it open. The keyboard had a pleasant bounce to it and the wrist-rest was excellent, although the mouse buttons were nothing exceptional. The tinny top-mounted speakers were an ear-grating disappointment.

IBM bundles a selection of its superior system utilities, including ConfigSafe 95, IBM AntiVirus 3.0, IntelliSync 97 and either Netfinity or LANDesk Client Manager. The 600 features the new Wake-on-LAN and Netfinity features, and is DMI-compliant. It also comes with PointCast Business Network and Lotus SmartSuite 97. You get a Restore CD (which our labs described as "fabulous") that can restore your operating environment without a single headache.

The ThinkPad 600 buyer will be drawn to it more by prestige and build quality than affordability.

It is not designed for the mass-market user, but rather for the road warrior who needs a machine that is light and durable. Its thin format and beautiful display are likely to be its two major selling points, but users requiring maximum portable power may want to do some comparison shopping first.

Susan Pederson



modern port, which was sealed on the model we looked at, will support UK phone jacks. The 600 supports only one lithium ion battery, and only one was supplied. After a full charge, it ran for 3 hours 11 minutes before it gave out.

Right on Track

The nicest feature on the 600 was the enhanced TrackPoint pointing device. This was the nicest mini-joystick I've ever used. Not only does it have a rough texture to keep your finger from sliding off, but it also had a bit of "give" to it, which made it ridiculously easy to control. You can also now simply tap the TrackPoint, rather like a left mouse button, to quickly open applications and documents. And there is a programmable centre button beneath the right and left mouse buttons that you can use to scroll quickly through large

PCW Details

Price £4,266.43 (£3,631 ex VAT)

Contact IBM 0870 601 0136 www.uk.ibm.com

Good Points Bright, crisp TFT screen and thin yet sturdy design.

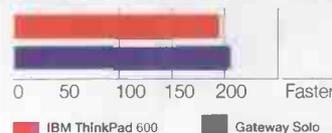
Bad Points Processing power not as high as some other models.

Conclusion A good solution for someone who is willing to pay out for superior build quality.

★★★★★

Performance results

BAPCo SYSmark Windows 95 test scores



■ Hardware

Mag Innovision DJ800

This 19in monitor sports a nice lilac logo and a rather fine array of on-screen controls.

Where once there was a trickle of 19in monitors on the market, there is now a flood. Mag Innovision has boosted the numbers with its latest offering, the DJ800, which has a diagonal viewing area of 18in. Like the majority of 19in monitors, MAG has opted to build around Hitachi's high-contrast flat screen tube (FST). The first thing to grab you about this monitor, apart from its



size, is the lovely turquoise and dark lilac logo.

The plastic moulding around the screen does make it appear larger than it really is, as well as providing a nice touch of styling. We did find the power switch difficult to locate and exceptionally stiff to use. The on-screen display (OSD) is accessed by pressing a large knob at the bottom of the screen. The controls in general are a delight to use. Icons representing each feature are arranged in an oval shape, and you can access each by simply dialling through the selection. Although we would have preferred dedicated controls for the brightness and contrast, this OSD offers speedy access to most functions.

As well as the usual sizing and geometric controls that you would expect to find on any monitor worth its salt, the DJ800 offers manual degauss, rotation (tilt), parallelogram and bow adjustments. We were also pleased to find controls for adjusting colour temperature and the intensity of the colours in each of the RGB channels. You can adjust for moiré, although that wasn't necessary with this particular model. Colours were strong and vibrant, and focus was exceptionally crisp, in all four corners as well as in the middle of the screen.

The monitor connects to a PC via a D-Sub connector only. No BNC connectors are available. While it offers a non-interlaced maximum resolution of 1600 x 1200, this is only at a flickery 60Hz. However, it can manage a non-interlaced resolution of 1280 x 1024 at a steady refresh rate of 75Hz. It has an EPA Energy Star rating, as well as meeting VESA DPMS DDC 1/2B power management requirements. If you are worried about emissions and ergonomics, the DJ800 is also compliant with the TCO 92 standard.

Lynley Oram

PCW Details

Price £468.83 (£399 ex VAT)

Contact MAG Innovision 0118 975 2445
www.maginnovision.com

Good Points Image quality. Price. On-screen display.

Bad Points Stiff power switch. No separate brightness and contrast controls.

Conclusion A good, sturdy monitor.

★★★★★

BT Prologue K56EV Plus



It'll end in tears... and it did, in this case, as we were forced to hand this splendid modem back.

This smart little K56Flex modem added a touch of class to the desk and looked so good, we didn't want to give it up at the end of the test. A row of easy-to-read acronyms on the fascia, illuminated by a series of LEDs, indicated the unit's status and it connected to our ISP at 56Kbps on the first attempt.

Installation was a breeze.

After plugging it into the COM port using the bundled serial cable and, if necessary, the 25-pin to 9-pin adapter that was



Included in the box, Windows 95 recognised the addition of the new hardware and, following the clear Quick Start Guide that served as the only printed documentation, we set it up as a 28.8Kbps modem. Although this seemed a strange choice, the guide ensured us it would impair neither speed nor performance.

The now almost ubiquitous SuperVoice 2.2 software was included in the package, allowing us to carry out a number of fax, voice and data operations including setting up our own "fax on demand" service to allow callers to request documents from our PC. The SuperVoice installation disk also held a comprehensive set of generic modem instruction manuals which, although not tailored directly to this particular modem, gave good background information on the basic operation and workings of modems in general.

While a headphone set with built-in microphone arm allowed us to use the modem as a hands-free telephone, the option to add a microphone and speakers turned it into a full-duplex speakerphone. The advantage of full duplex is that it does not impede natural

conversation in the way that half-duplex does, because it does not mute one side of the conversation each time the other caller is talking. This modem is also optimised for AudioSpan Simultaneous Voice and Data (SVD) operation, allowing data and voice to be transmitted simultaneously. In this way, two SVD-compliant modem owners playing an online game can shout insults to each other, or in a business situation, clients can upload files while talking the recipient through the content.

Nik Rawlinson

PCW Details

Price £119.95 (£102.09 ex VAT)

Contact Direct Source 0118 981 9960
www.btwebworld.com/tmd/

Good Points Small. Attractive. Feature-packed.

Bad Points We had to give it back when we had finished this review.

Conclusion We loved it.

★★★★★

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*Recommended Retail Price exclusive of VAT. All tests conducted by Matrox Graphics Inc. using a Dell Pentium II 300MHz with
64MB of RAM and 512K cache. Matrox Productiva G100 AGP was tested with 8MB of memory using
driver revision 3.82. ATI Xpert@Work AGP was tested with 8MB of memory using driver revision 4.10.01.2278. Diamond Viper V330
and Number Nine 9Fx Reality 334 were tested using 4MB of memory and driver revisions 4.10.01.0022 and 4.10.1102 respectively.
WinBench 98 Business tests conducted at 1280x1024@24bit at 75Hz refresh using small fonts under Windows 95 OSR2.

matrox

Personal Computer World • July 1998 • 81

■ Hardware

Toshiba Libretto 100CT

A full version of Windows 95 and true portability are the key elements of this mini-notebook.

A bewildering array of choices now face any prospective buyer of a portable computer. Do you start at the bottom of the tree with a PalmPilot, do you buy a PDA and if so, do you go for CE2 or a non-Windows platform? Do you do for a thin and light notebook, or one with all the bells and whistles you expect to find on a desktop, but in an 8lb package?

To add to the confusion, there are now an increasing number of very small notebooks, not much bigger than the larger PDAs but which run a full version of Windows 95. The best known of these is the Toshiba Libretto, now in its third and most powerful configuration. The obvious advantage of a full notebook in a small form factor is that you do not have to sacrifice any of the applications you normally run on your desktop for cut-down versions on your PDA, and file swapping is easy while portability is not an issue.

With many applications — especially office applications — needing increasing amounts of processing power and RAM, Toshiba has equipped the Libretto 100CT with a P166MMX processor and 32Mb RAM, expandable to 64Mb; the next Libretto down, the 70CT, has a P120 with 16Mb RAM. The 7.1in TFT display is longer and thinner than conventional screens, running at the unusual resolution of 800 x 480 in 16 million colours. You can drive an external screen at 1024 x 768 in thousands of colours in virtual mode.

The notebook itself is very small, measuring just 8.3in x 5.2in x 1.4in, and reasonably simple, with just a 2Gb hard disk, two Type II PC Card slots, microphone and headphone jacks, and a Fast IrDA port (4Mbits/sec). For more conventional file transfer an external floppy disk drive is supplied, in this version connected via a PC Card rather than through a proprietary port. This connection can be hot-swapped, but it is quite bulky to carry around.

Thumbs up

The pointing device is a strange thing. It is similar to the stick devices found on Toshiba and IBM notebooks, but instead of nestling in the middle of the keyboard, it is up beside of the screen. It is also larger than stick devices, being almost a centimetre across, but uses the same Velcro-like material on it. The buttons are on the lid, so you put your index and second finger on these and use the stick with your thumb. This does take some getting used to, especially as your whole hand is in a totally new position.

The port replicator comes as standard with the 100CT (it was optional on earlier models) and has the usual parallel, serial, VGA and PS/2 ports. If you want network support, you will still have to use a PC Card network card.

The keyboard is extremely squashed. It will

drive touch-typist's berserk, and you will have to resort to the two-fingered approach to make any headway. In feel and size, the keys are very much like those on a PDA; and if you have used a PDA and been happy to take notes on it, then this keyboard won't bother you. If you are trading down from a full-size notebook, you will have more trouble adapting.

Which brings us round to the trade-offs this Libretto requires. It is not a full notebook and so to load software you will either have to use LapLink or get your IS department to load it up over the network. In this respect, it is only moderately easier to use than a PDA.

Not your type

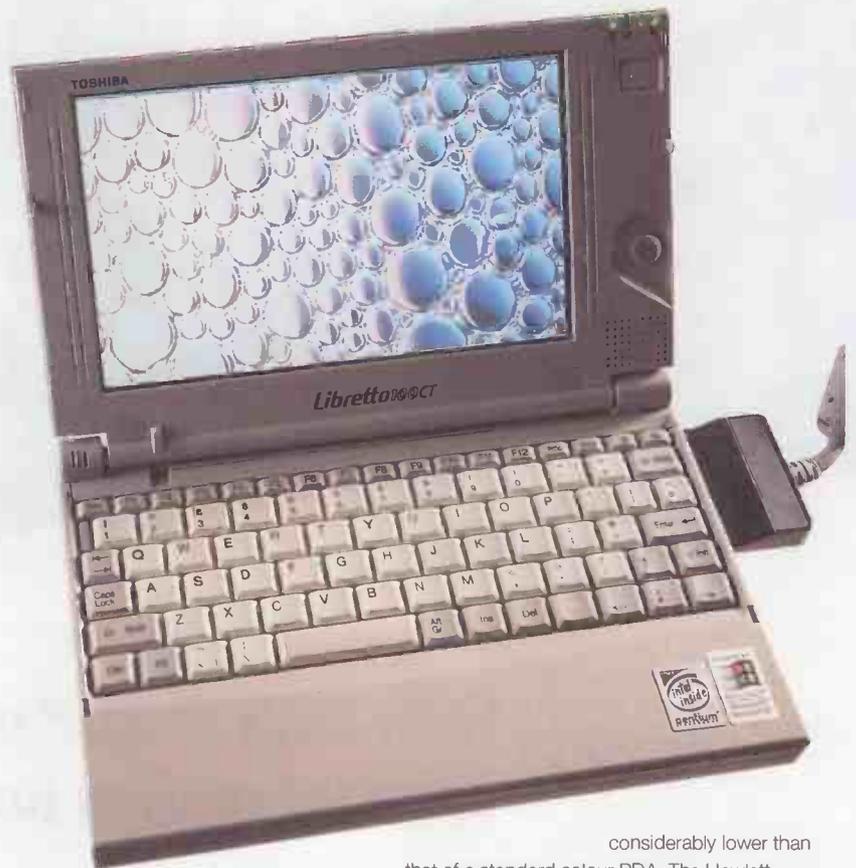
If you need to type on it, it might be more comfortable to use a full notebook. So the question then becomes, why do you need full versions of your Windows 95 apps on a notebook this size? Obviously, if you use non-standard applications written in-house, then this notebook is very useful. But if you are only using Word and Excel and accessing your email, do you really need full versions or can you make do with the cut-down CE versions?

The battery life of the Libretto is also

considerably lower than that of a standard colour PDA. The Hewlett-Packard 620LX has a battery life of around six hours, while the Libretto lasts between 2.5 and 3.5 hours depending on use.

Windows CE2 has muddied the waters considerably for those trying to decide between a PDA or an ultra-portable notebook. At more than twice the price of a colour CE2 notebook such as the HP 620LX, any buyer has to ask themselves serious questions about whether the advantages of being able to run a full version of Windows is worth the extra expense. If it is, then the Libretto fits the bill, being both well specced and well built.

Adele Dyer



PCW Details

Price £1,756.63 (1,495 ex VAT)

Contact Toshiba 01932 828828
www.toshiba.com

Good Points Extremely cute. Full Windows 95.

Bad Points Expensive if you can make do with a PDA.

Conclusion If you need Windows 95 in a small package, then this is an excellent buy. If you can make do with a larger notebook or the more limited functionality of a PDA, then save your pennies.

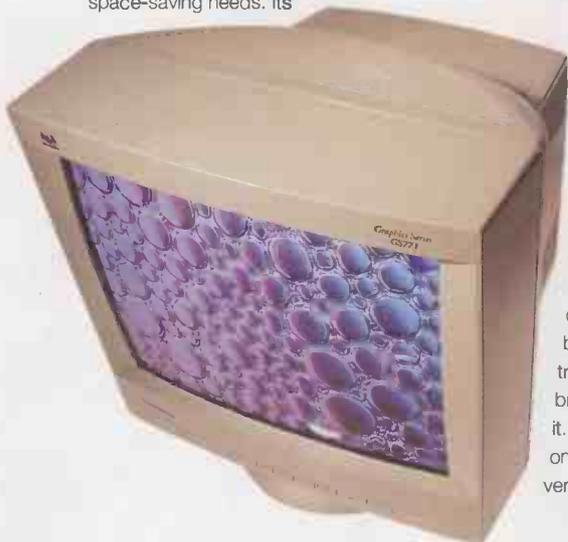
★★★★★

Hardware

Viewsonic GS771

The short-depth design of this 17th monitor will leave room on your desk for more accessories.

While it would be nice to get one of those lovely, slim, flat-panel displays on our desks, most of us have the sort of budget that will buy a hefty cathode ray tube monitor (the CRT is the bit sticking out of the back of your monitor or television). Now Viewsonic has come up with an answer to your space-saving needs. Its



latest 17in monitor, the GS771, has been squeezed into a much smaller area thanks to the use of a short-depth design. This simply means that the monitor's inner, glass CRT tube has been shortened, reducing the footprint of the monitor and thus the amount of desk space that it will take up.

The GS771 has a 16in viewable diagonal and measures just 410 x 416 x 485mm (WxHxD), a footprint which Viewsonic claims is comparable to a 14in monitor. It produced a good image too, which is just as well because it is being promoted for use with graphics applications such as desktop publishing and presentation design. Focus was exceptionally sharp in all but the very top left-hand corner.

Controls are accessed using a combination of four unobtrusive buttons located at the bottom of the screen. There seems to be a trend away from having dedicated controls for brightness and contrast, and the GS771 follows it. As well as sizing and positioning controls, the on-screen display contains adjustments for vertical pincushion, side pincushion, tilt and

manual degauss.

We liked the Viewmatch Color, which allows you to adjust the colour temperature of the monitor as well as individual colour intensity. Getting the monitor to swivel on its pedestal proved to be a bit of a chore, as it was rather stiff and required a bit of force.

The GS771 manages a non-interlaced resolution of 1024 x 768 at a rock steady 87Hz, and is both TCO 95 and EPA Energy Star compliant.

Lynley Oram

PCW Contact

Price £386.58 (£329 ex VAT)

Contact Viewsonic 0800 833648

www.viewsonic.com

Good Points Small size. Reasonably priced.

Bad Points Only the stiff pedestal.

Conclusion Good value for money, but shop around before buying.

★★★★★

Outlaw 3D Bonnie & Clyde

An innovative way to future-proof your machine, with PCI/AGP and a price that's a real steal.

The Outlaw 3D Bonnie & Clyde is the first graphics card with both PCI & AGP connections, using the same Rendition V2200 chipset as the Outlaw 3D card released at the end of February. With the increasing prominence of AGP, Jazz seems to be targeting users who want to replace an older PCI card but see themselves purchasing a new processor with AGP capabilities in the future, when they can simply take out the card, flip it over and fit it into the AGP slot. The Bonnie & Clyde has the usual set of AGP connections on one edge, and

another set of PCI connections on the opposite edge. We tried it as a PCI card first, and ran the 3D Final Reality test: we were impressed by the results, bearing comparison with the ATI Rage Pro card. (The tests were run on a PC with PII 266 processor and 64Mb RAM.) Switching it over simply meant shutting down the PC and reversing the back plate to fit it into the AGP slot. There were slight improvements in overall performance when we used it as an AGP card, and larger improvements in the bus transfer rate, as one would expect (from 2.12 to 2.98 Reality Marks). However, overall, it scored less impressively than the ATI AGP All-in-Wonder card we tested it against.

Jazz claims the advantage of the Bonnie & Clyde is that consumers can buy affordable future-proof peace of mind with this "complete graphics" solution. But the vast majority of users buy complete PC systems when they choose to upgrade, and as such, the option to keep hold of their old graphics cards won't seem too appealing. If you enjoy building your own PC and are keen to take advantage of AGP in the future, then this best-of-both-worlds card is a good investment.

Paul Trueman

PCW Details

Price Outlaw 3D Bonnie & Clyde 4Mb, £128.08 (£109 ex VAT), 8Mb, £175.08 (£149 ex VAT)

Contact Jazz Multimedia 0181 561 4441

www.jazzmm.com

System Requirements Windows 95.

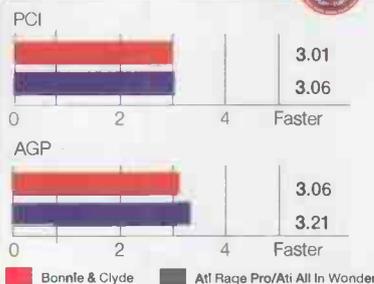
Good Points A cheap way to future-proof your PC.

Bad Points Not a stunning performer.

Conclusion A cheap, innovative alternative for DIYers.

★★★★★

Performance results





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■ Hardware

Sharp HC-4500 and CE-AG04

Sharp's colour palmtop has an optional digital camera. It's a nice idea, but it's not cheap.

The Sharp HC-4500 is the second colour palmtop to arrive in the United Kingdom. From the outside, it looks almost identical to the monochrome Sharp HC-4100A we reviewed last month; a quick glance over the physical specifications confirms this impression.

At 495g, the HC-4500 is only 85g heavier than its monochrome stablemate. And with dimensions of 186 x 96.5 x 29.6mm, it is a mere 3mm deeper and 3.2mm higher. The sleek design is the same, with a good-looking two-tone cover giving the impression of a seriously slim machine.

The case incorporates three buttons on the side for turning the alarm off, opening the machine lid and recording a voice memo via the built-in microphone. The keyboard is exactly the same: surprisingly spacious and remarkably easy to type on.

European union? Not this time

The internal specifications of the two machines are very similar. Both use a MIPS 32-bit processor and incorporate a Type 1 PC Card slot, an infra-red port (compatible with any devices supporting the IrDA standard), a serial port (for connecting to your PC, the cable is supplied) and a speaker.

The US versions of both the HC-4100 and the HC-4500 come with a built-in 33.6kbps software modem, but neither European model is shipping with this feature. Sharp would have to get approval from the telecommunications authorities in each country it is selling to, and because of the time and cost involved, it is not prepared to go through these processes.

Screen and battery — and a curious beast

The HC-4500 makes two main improvements over the HC-4100: 16Mb of memory, compared to 8Mb, and the 6.5in diagonal, 640 x 240 resolution colour screen. The screen is terrific, with a bright backlight that can be turned off at any time, and well-balanced colours. Battery life is claimed to be six hours of continuous use, but as the rechargeable battery pack is not lithium ion, memory effects can diminish the battery life over time, even though you fully discharge the unit.

The optional CE-AG04 digital camera is a curious beast.

Fixed on to a PC Card, it slots into the PC Card slot on a Sharp palmtop and uses its memory to store pictures. As it is based on a standard PC Card, it should work with any CE machine, as they all have PC Card slots. But Sharp will not guarantee compatibility with any other make of palmtop because of physical problems with case designs where the PC Card slot is recessed. This prevents the card being pushed all the way into the slot, making connection impossible.

The camera card has a maximum resolution of 640 x 480 with 16.7 million colours. This kind of quality is fine for small printed images or putting pictures on to electronic documents and web pages, but is not really good enough for large (normal photograph size) prints. There is a 2x optical zoom facility which is managed using a dial on the camera itself, and a further 2x digital zoom using the palmtop. The macro mode can take pictures of objects as close as 6.5cm and the aperture can be set to F2.4 or F8.

Solid state

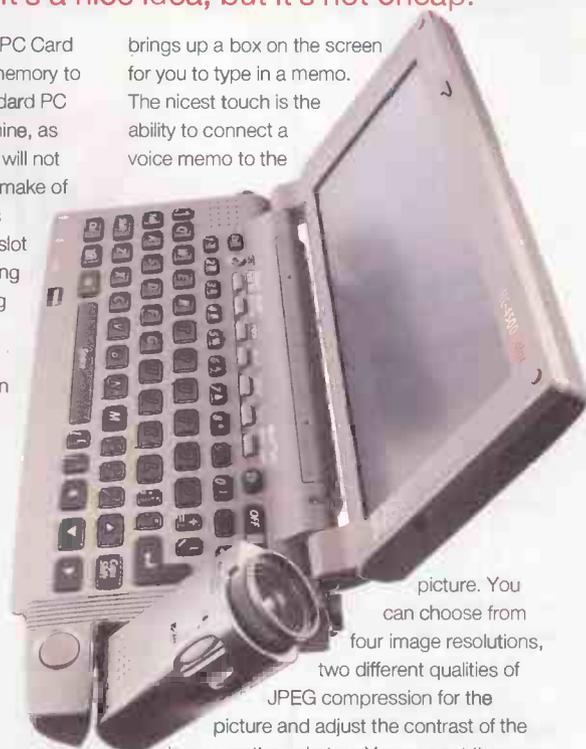
For a digital camera mounted on the end of a card, it is remarkably steady and solid. The actual camera can swivel around 180° up or down, so you can put the palmtop down on a table and point the camera upwards to capture an image. This raises an important point: we found the combination of palmtop and camera to be much harder to keep steady when compared to a normal digital camera. Admittedly, the card camera is a lot lighter than normal digital cameras, but you are forced to take along the palmtop even if you just want to use the camera.

The camera is extremely easy to use. Switch the palmtop off, insert the camera card and turn on.

Double-tapping on the Camera icon opens

the digital camera application and automatically begins showing the camera's field of view on the palmtop's screen. Pressing the button on the camera takes a picture and

brings up a box on the screen for you to type in a memo. The nicest touch is the ability to connect a voice memo to the



picture. You can choose from four image resolutions, two different qualities of JPEG compression for the picture and adjust the contrast of the image on the palmtop. You can set the camera to capture four or sixteen lower-resolution images which, in total, take up the same space as one normal photograph.

At present, you cannot save money by buying the palmtop and the camera at the same time. However, if you want both, it is likely that some dealers will do a bundling deal for the pair.

Adam Evans

PCW Details

Palmtop
 Price £799 (£680 ex VAT)
 Contact Sharp 0800 262958
www.sharp-uk.co.uk

Good Points Great screen. One of the better palmtop keyboards

Bad Points Rechargeable batteries are not lithium ion. The software modem is missing.

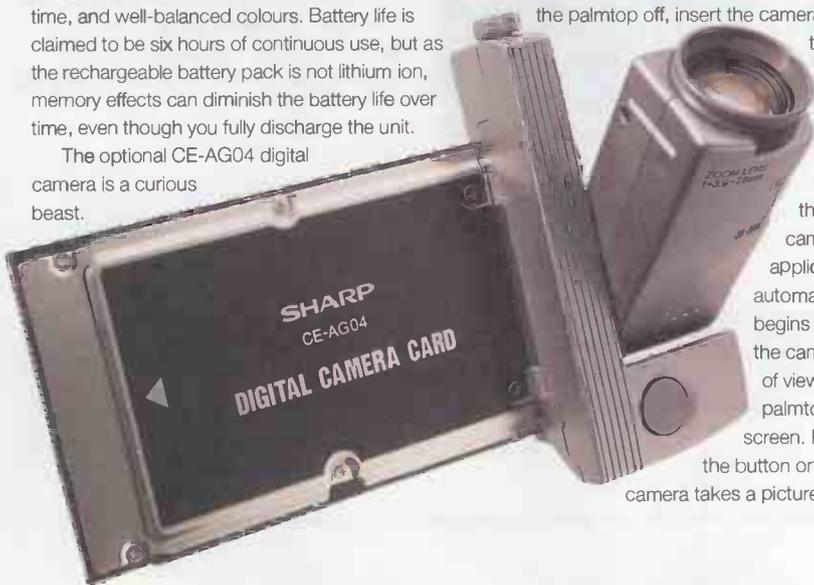
Conclusion A lovely bit of kit, but it's not cheap.
 ★★★★★

Camera
 Price £349.99 (£297.87 ex VAT)
 Contact Sharp 0800 262958
www.sharp-uk.co.uk

Good Points Small and light. You get instant access to photographs on the palmtop.

Bad Points Only guaranteed to work on Sharp palmtops, and you have to use it in conjunction with the palmtop.

Conclusion A lovely idea, but the price is prohibitive.
 ★★★★★



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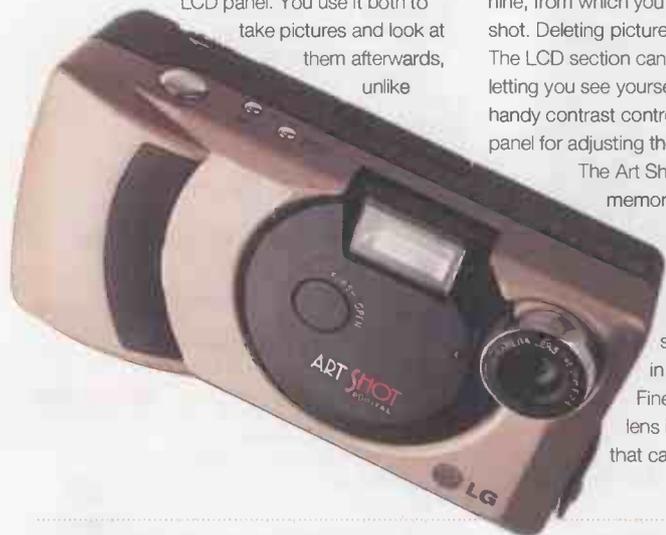


■ Hardware

LG Electronics Art Shot

Snap your friends in style with this impressive digital camera whose flash packs quite a punch.

The Art Shot is LG Electronics' first foray into the world of digital cameras. The company has stuck to a general design that has been tried and trusted by a number of other manufacturers in the last few years, although it has managed to imbue the Art Shot with a certain amount of style. The operation of the camera is based entirely on the power-hungry LCD panel. You use it both to take pictures and look at them afterwards, unlike



many of the more expensive digital cameras which use a normal viewfinder for snapping the shots.

On the positive side, the LG camera does have a number of features to recommend it. There is a pop-up flash and a self-timer, for those group shots that you really have to appear in. The LCD-based menu system is easy to use and allows you to view pictures singly or in groups of nine, from which you can then go to a particular shot. Deleting pictures is also reassuringly simple. The LCD section can be swivelled through 180°, letting you see yourself on the screen. There is a handy contrast control on the bottom of the panel for adjusting the display.

The Art Shot has 4Mb of internal memory and uses JPEG compression. There are two resolutions, Fine (640 x 480) and Normal (320 x 240). 124 pictures can be stored at one time if they are in Normal resolution, while 62 Fine pictures can be held. The lens is a 6mm fixed focus at F2.4 that can focus on objects as near

as 60cms away. We found the flash to be quite strong, and although it is recommended for subjects as close as one metre, this is a little too close in reality.

The Art Shot is supplied with four AA batteries, a soft carrying case and a wrist strap. It can be powered by a 6v mains adapter but this is not included. Connecting the camera to our PC was extremely easy and the software made playing around with the pictures an absolute doddle.

Adam Evans

PCW Details

Price £299 (£254.47 ex VAT)

Contact LG Electronics 01753 500400
www.lg.co.kr

Good Points Stylish and easy to use. Easy connection to PC.

Bad Points No mains adapter. No viewfinder.

Conclusion Definitely a contender in this price bracket.

★★★★★

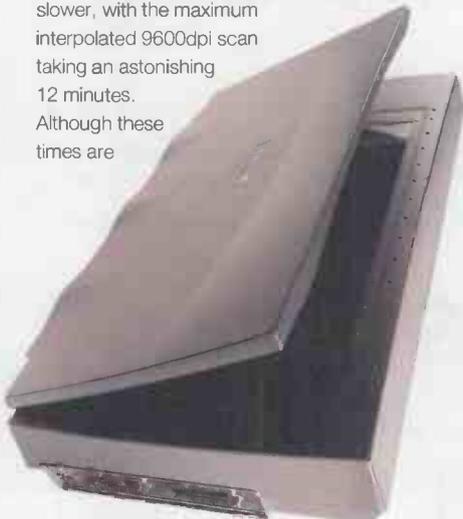
Storm TotalScan

A decent enough scanner, but you'll have to be patient waiting for results — it's very slow.

Storm's TotalScan is aimed at SoHo and home consumers. Installing the initial software is simple, and the drivers are loaded automatically. There is no mention of the TWAIN drivers in the accompanying manual; it is all done for you. The basic package consists of three applications: EasyPhoto, Adobe PhotoDeluxe 2.0 and the Xerox Pagis SE document suite, with an extra CD of four "fun" applications. Using EasyPhoto was straightforward enough, but the other two applications required the BIOS settings for the parallel port to be set to "Bi-directional", of which there was no mention in the user guide.

Both EasyPhoto and PhotoDeluxe had an infuriating default setting that automatically saved colour and greyscale scans as JPEGs and line-art scans as bitmaps. Between them, the three applications offer only three file formats to save to: Xerox's own XIF, JPEG and bitmap. It seemed slightly ludicrous that the software didn't at least give you the option to save in a more expansive file format, and it wasn't even mentioned in the manual. We managed to import the scans directly into Adobe Photoshop 4 and save them as TIFs.

We were disappointed by the scanning times we recorded: an A4 letter line-art scan at 100dpi took 1 minute 5 seconds previewing, and 1 minute 50 seconds for the scan. When we ramped the resolution up to 600dpi, the preview time remained the same, but it then took 6 minutes 50 seconds to scan-in the image. The times recorded for colour scans were even slower, with the maximum interpolated 9600dpi scan taking an astonishing 12 minutes. Although these times are



dependent on the PC used, different scanners had been used with the review PC before and scanned similar documents in under a minute.

The quality of the total scan was more impressive, though. We used a standard Agfa scanning target to measure the scanner's colour recognition, and the scanner recognised an impressive 20 out of 22 possible shades of grey and suffered only eight percent loss of colour recognition.

Paul Trueman

PCW Details

Price £149 (£126.81 ex VAT; street)

Contact Storm 0800 838437

System Requirements Windows 95 or NT 4.0.

Good Points An affordable scanner with loads of applications.

Bad Points Very limited choice of file formats with the bundled software.

Conclusion Decent scan quality, shame about the slow performance.

★★★★★

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Hardware

Kodak DC200



Megapixel magic, balanced exposure and red-eye-free flashing for the digitally uninitiated.

The Kodak DC200 uses megapixel technology, providing three quality settings up to a maximum resolution of 1,152 x 864 in 24-bit colour, which makes your photos more than suitable for output as 5in x 7in prints. With white-balanced exposure and a focus-free lens, this camera is great for the uninitiated. Its fill-in flash incorporates red-eye reduction to save you having to touch-up your results later. The ten-second self-timer is great for group photos.

Images are stored on a removable card, a 4Mb version of which is bundled and holds a maximum of 60 photos at VGA resolution (13 at 1,152 x 864). Additional cards can be bought in capacities up to a maximum of 20Mb (300 images). As well as downloading them onto your PC, a video-out socket will allow you to display them on your TV.

The good looks of this smart little camera are not broken by an intrusive lens cover. We were a little worried, though, by the amount of dust and fingerprints that it inevitably attracted.

The viewfinder is supplemented by a colour display which, after a picture has been taken, shows the image for a couple of seconds only, before switching off. This meant that throughout the whole of our tests we never had to change the batteries once (a major improvement on some of this model's competitors).

Using the bundled Picture Easy Software is a breeze, allowing you to grab pictures from a multitude of sources,

including TWAIN devices, CD-ROMs, PhotoCDs and, of course, the camera. Thumbnails of the camera's pictures are reproduced on-screen as slides which can then be printed, edited or filed in an album so that photos on a similar subject are stored together. The process is slowed slightly by the fact that every time you delete a photo it must reload every thumbnail.

To share your masterpieces with friends, the camera can send them as postcards via CompuServe, Eudora, AOL and a selection of other protocols. A freeware viewer allows recipients to look at them.

Nik Rawlinson



PCW Details

Price £527.58 (£449 ex VAT)

Contact Kodak 0800 281487 www.kodak.com

Good Points Megapixel resolution at a far from mega price.

Bad Points No lens cover.

Conclusion Hard to beat.

★★★★★

Canon CanoScan 300S

Off the wall?... On the wall?... wherever you like. A simple, space-saving document scanner.

This document scanner links to your parallel port with a pass-through connector and is small enough to fit between your screen and keyboard. This is facilitated by the curved paper path option, although the standard straight path is more suitable for use where space is not an issue.

Unique to this model is its ability to be fixed to the wall for factory or workshop use; it is just 70mm deep.

The software,

press of the scanner's single button. Scanning an 8in x 5.5in photo at 300dpi took only 4mins 50secs in "true colour". Reducing the resolution to 75dpi presented us with our completed image in under 30secs. Results were slightly washed out and dull and the images lacked depth. But the quality of the 300dpi scan was excellent.

CanoCraft S, the scanning software that pops up when selecting a TWAIN device from your standard graphics

software, includes options to fax your scanned image using your default Windows fax printer. Ten preset document sizes are supplemented by a custom option where you can define the size of your document.

The software allows for basic picture editing along the lines of posterisation, softening and colour adjustments. The optical resolution of 300 x 600dpi can be increased to 1,200dpi. Standard settings scan at levels appropriate for output on a wide range of Canon inkjet printers.

CanoBureau works in a similar way as the software supplied with a Visioneer PaperPort. Scanned documents are displayed in a virtual workspace, to be dragged and dropped into applications as necessary. Dropping scanned text into a word-based application will first run the document through the bundled OmniPage Limited Edition OCR software. Simply scanning text alone was disappointing. The text setting on CanoCraft turned our crisp, fine, dark characters into slightly bloated and rather greyed facsimiles of their original form.

Nik Rawlinson



CanoWatcher, makes itself resident in your system tray enabling you to scan with just a quick

PCW Details

Price £233.83 (£199 ex VAT)

Contact Canon 0121 666 6262
www.canon.co.uk

Good Points Small, quick and easy to use.

Bad Points Disappointing text scanning.

Conclusion Worth consideration.

★★★★★

Hardware

Sharp MC-G1

Keep in touch with everyone, everywhere, with Sharp's latest personal communicator.



In his latest Dilbert book, Scott Adams writes: "I don't want new ways to communicate with people. I want new ways to stop people who are trying to communicate with me."

Wise words, but no one's listening, and Sharp's latest handheld gizmo makes it even harder to avoid contact with the outside world.

Essentially, the MC-G1 is an integrated GSM mobile phone and electronic organiser. The unit is bigger than most modern mobiles but not much heavier. It also mimics their design with a pull-out aerial,

a speaker and a microphone in the usual places, and two buttons for starting and terminating calls. The similarity ends there though, for rather than a numeric keypad, the MC-G1 has a large LCD panel. Flip open the transparent protective cover, press the power button and you're greeted by an on-screen keypad that can be used to dial a number in the usual way.

The crisp, clear, backlit screen works with fingertips as well as the supplied stylus, but apparently will not respond to the pressure of a warm cheek when the phone is in use.

The MC-G1's other features are accessed by strips of icons that run along the top and bottom of the screen. The Schedule tracks appointments and has day, week, month and year views but oddly, no alarm. The Contact list can group entries into several categories, including one that stores the contents of the SIM card.

There's a scribble pad for quick jottings, but no other means of taking notes. This is actually not a bad thing, as all text is input using an on-screen Qwerty keyboard and it can be tedious to enter too much information with its tiny keys.

What is most interesting about the MC-G1 is

its ability to send and receive email via any POP3 mailbox. Several service providers can be configured and once a message has been composed, tapping the Send button gets it on its way. Receiving email is just as straightforward but there is no way to ignore attachments. Since the MC-G1 can't decode them, downloading them with message bodies is a slow, costly and unnecessary business.

Julian Prokaza

PCW Details

Price Around £300, depending on airtime agreement.

Contact Sharp 0800 262958

www.sharp-uk.co.uk

Good Points Email and SMS features. Compact design.

Bad Points Not as versatile as a separate PDA and GSM phone.

Conclusion If you need email on the move, then the MC-G1 fits the bill admirably. But if size is not important, the Nokia 9000 has more features.

★★★★★

Black Widow 4830



For decent-quality scanning, this neat little flatbed scanner won't flatten your bank balance.

Flatbed scanners used to be bulky, ugly devices that cost a fortune and could only be afforded by graphics professionals. Well, as with every other PC peripheral, that has changed dramatically. The 4830 Pro certainly is neither bulky nor particularly ugly, and at under £50 before the taxman takes his cut, it is exceptionally cheap.

At this price, you'd expect Devcom to have taken a few shortcuts, yet none of them seem to be serious. The 4830 Pro has a smallish scan area just long enough for A4, or wide enough for letter paper and uses

a parallel interface. It is keen on having a fast EPP-enabled parallel port but even using the slower SPP standard we found scanning was quick enough, except for intensive use.

The scanner is TWAIN compliant so it should talk to all major image-editing applications without much difficulty. The driver is easy to install and use, and although it doesn't have sophisticated tools to tweak the scan, we didn't feel the lack of them. You can preview the image and set the area to be scanned, then choose line-art, 10-bit greyscale or 30-bit colour scans and set basic colour filters.

Resolution is adjustable by slider bars (300 x 600dpi optical, up to 4,800dpi interpolated), and it's possible to scan direct to printer, fax or email as well as to file or into an application. Useful maybe, but the heart of a scanner is decent image quality. Here, the 4830 Pro isn't perfect but it certainly equals many more expensive devices. Colour photos look good on-screen

and our test scans showed little evidence of clipping. Colour convergence is fair. Line-art scans are a little blocky, but then it is a cheap scanner. OCR shouldn't be badly affected by this, but it's interesting to note that interpolation made little difference to image quality.

The software bundle alone almost justifies the price. Textbridge, even in the cut-down OEM version here, is a competent OCR package, and Adobe PhotoDeluxe 1.0 provides good enough image editing to get you started.

John Sabine

PCW Details

Price £57.58 (£49 ex VAT)

Contact Devcom International 01324 825999

www.blackwidow.co.uk

Good Points The cheapest flatbed scanner we've seen.

Bad Points Blocky line-art scans.

Conclusion For a decent-quality flatbed, the 4830 Pro is scandalously cheap.

★★★★★



Software

Metacreations Painter

Daub, spatter and splash... Free-range painting-style images and effects for budding artists.

Painter Classic is a light version of Metacreation's Painter 5 Natural Media paint application. It focuses on producing natural-looking results, using tools that mimic real painting media. So central is the idea of "natural media" to Painter, that Metacreations has trademarked the term. Another trademark feature of Metacreations' products is that its interfaces tend to be well designed and Painter Classic is no exception. There are five palettes for access to nearly everything you need.

The tools palette has the usual selection of magnifier, grabber, rotate, crop, brush, paint bucket, and text and selection tools. The brushes palette displays three brushes at the top, with a drawer giving access to 25 further options below. Selecting one of the brushes from the drawer displays it as one of the three "top drawer" options, so you can always have your three favourite brushes to hand. Brushes can also be selected from a pull-down menu and another displays a list of variants which alter the way the brush behaves.

Brushes and palettes

Brush variants include big dry ink, big wet ink, big wet oils and big coarse hair. Watercolour variants include small wet, broad chisel tip, wet diffusion and spatter. This tool variant combination approach makes it possible to easily achieve many different effects. There are additional tool libraries on the CD which, although they wouldn't display properly in the drawer, worked perfectly well. (The display problems might have been due to shortage of hard disk space. As with any image editing software, it pays to have plenty of disk space and RAM available to avoid these sorts of glitches.)

The art materials palette provides access to five different media palettes: colour, paper, gradient, patterns and nozzles. The colour palette takes a novel approach to selecting colour that is easy to understand and use. A ring displays all the available hues and a triangle in the centre displays the available colours within that hue. Saturation increases across the triangle in one direction and lightness in the other. Like all good visual tools, it sounds more complicated than it is. There is also an eye-dropper tool you can use to sample colour.

"Paper" textures react to the Painter Classic's brushes in a similar way to real surfaces. Not all textures are paper: a typical selection includes silk, pavement and eggscape, and there are additional paper libraries on the CD.

Nozzles work with the image hose. These days, many paint packages have image hoses but Painter was one of the first and remains the best. The image hose paints with images, not just one but many, changing them at random or



Left You can use Painter Classic's cloning brush to combine two images

according to some other criteria such as pressure or brush direction. Though you can't change these directly, you can choose from 19 variants and there are more nozzle libraries on the CD. As with the other brushes you can change the size, opacity and graininess of the image hose by using the sliders in the control panel.

Source material

If you want to create artwork from scratch, or use photographic or other illustrative material as a source, Painter Classic is ideal. By cloning and tracing, you can use the natural media tools to create paintings from photographic originals.

Tracing paper mode lets you view the original at 50 percent opacity and, by selecting clone colour on the colours palette, your brush automatically picks up the colour of the underlying original so you can either start with a blank canvas and trace, or modify the existing pixels using some of the effects brushes. It is like using filters, which gives you far more control over how and where, and how much, you apply a particular effect.

No limit to the ambitious

Despite the fact that it is missing some of its heavyweight stablemate's more advanced features (such as multiple floating layers, dynamic plug-in floaters, a mosaic tool, or colour management) Painter Classic is not lacking and will not limit the ambitious.

The simpler, redesigned, interface makes the available tools and features more accessible than they would otherwise be to a novice working with



Below Painter Classic's clone feature provides one of the best ways of creating new artwork by tracing off originals

Painter 5. Additionally, there is a fully-featured Scripting palette and a seamless tiling feature for web designers. If you do outgrow it, you can upgrade to Painter 5 for £149 (ex VAT). This is an excellent offer when you consider that the combined cost of Classic and the upgrade is actually £10 less than the price of Painter 5 alone.

Ken McMahon

PCW Details

Price £104.58 (£89 ex VAT). Upgrade to Painter 5 £175.08 (£149 ex VAT)

Contact Computers Unlimited 0181 358 5857
www.metacreations.com

System Requirements Windows 95 or NT.

Good Points Great natural media paint tools. Easy-to-use interface. Retains the best bits of Painter 5.

Bad Points Shame about the missing mosaic tool. Better selection tools, including a magic wand, would have been good.

Conclusion For beginners who want to create painting-style images and effects, there's no better introduction.

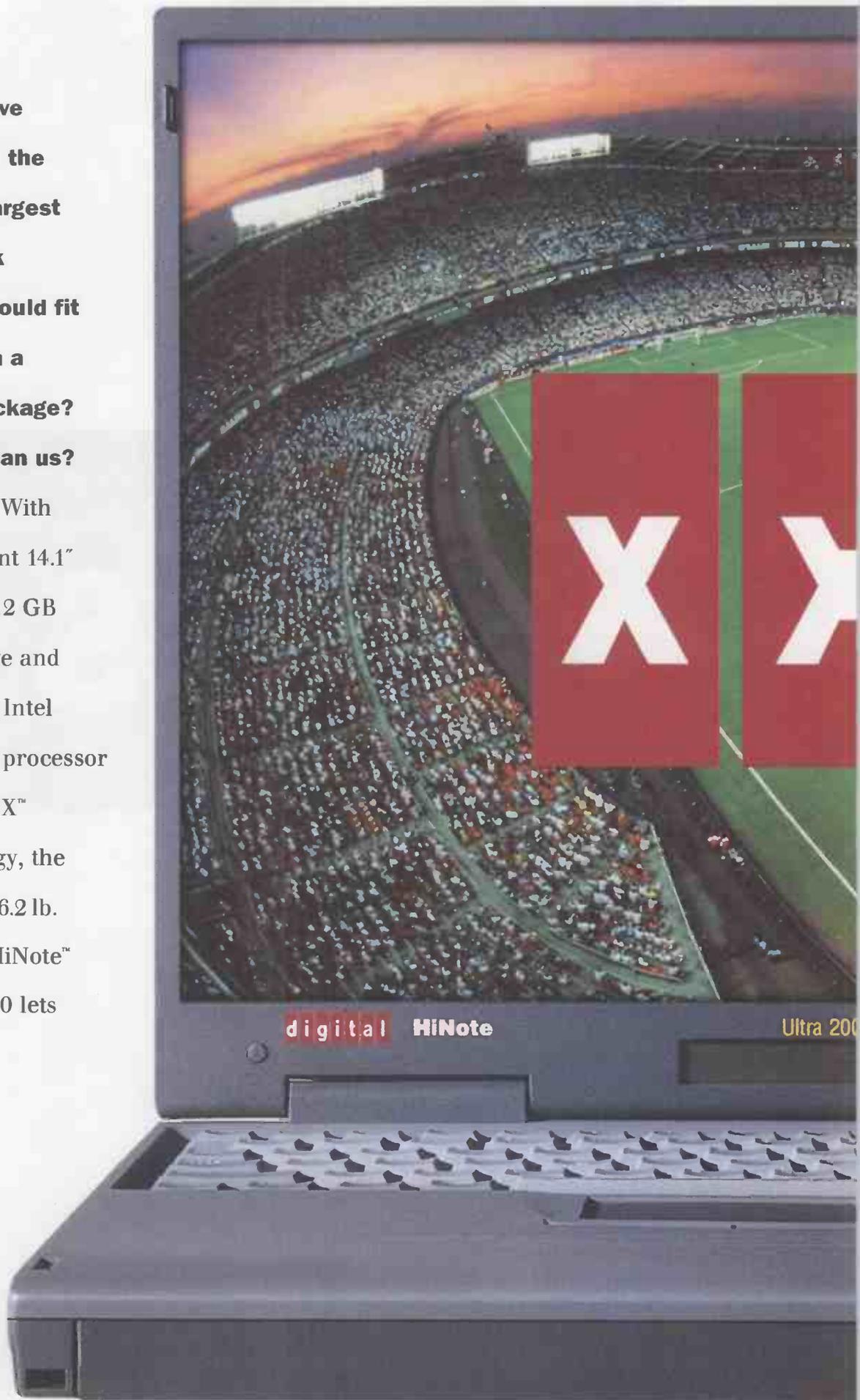
★★★★★

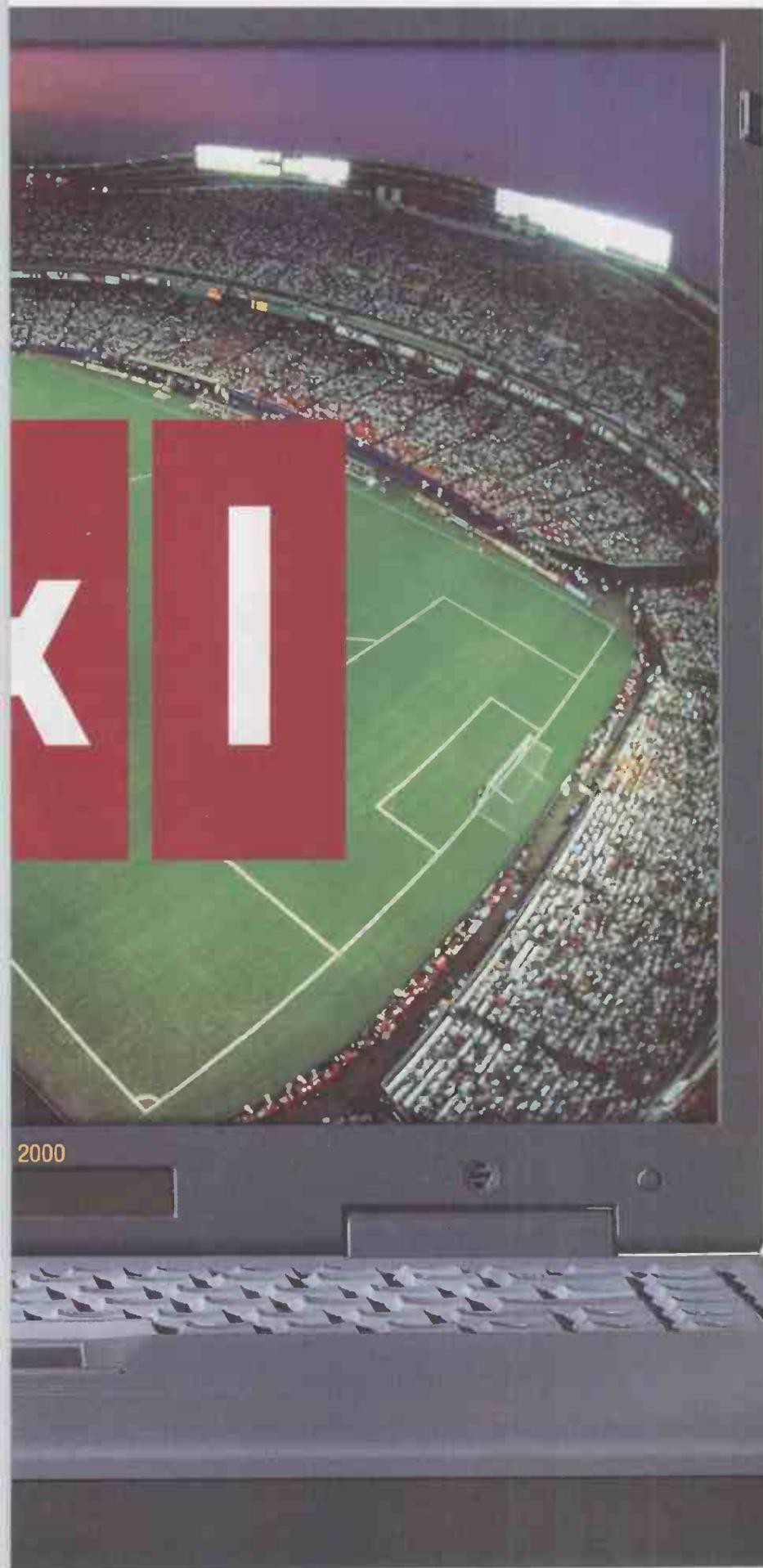


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Software

MS Visual J++ 6.0

BETA

Jokers wild! This is Java development the Microsoft way and it is 100 percent pure Windows.

This is a strange product to assess because it is a Java development tool, and Java is the property of Sun Microsystems. And yet Visual J++ goes exactly against Sun's "write once, run anywhere" vision.

Visual J++ is positioned primarily as a Windows development tool, where it sits alongside Visual C++ and Visual Basic. The technology behind it is J/Direct, a feature of Microsoft's JVM (Java Virtual Machine) which lets you make direct calls to the Windows API, or indeed functions in any DLL (Dynamic Link Library). J/Direct opens up all the features of Windows to Java, the downside being that cross-platform compatibility is lost. Visual J++ 6.0 introduces a new component library based on J/Direct and integrated into a visual development environment similar to Visual Basic. The language may be Java, but the resulting applications are 100 percent Windows.

In the Swing of it

Java is evolving fast. Sun's Java Development Kit (JDK) 1.1 introduced JavaBeans, a native component model for Java which works well with visual design tools such as Symantec's Visual Café or Borland's JBuilder. JDK 1.2, in beta at the time of writing, incorporates Swing, a set of Beans-compliant graphical widgets that give Java an official look-and-feel, along with other features such as drag-and-drop. Every other Java development tool is hastening to add these features, particularly the Swing widgets.

By contrast, Visual J++ 6.0 is a JDK 1.1 tool and its graphical widgets are based on the WFC (Windows Foundation Classes), a new class library built on J/Direct. It is not clear whether Microsoft will ever support versions of the JDK higher than 1.1, or whether Microsoft J++ will follow its own independent path. For those keen to keep up with official Java developments, Visual J++ is not a suitable tool.

That does not mean Visual J++ has nothing to offer. On the contrary, it is the best RAD tool Microsoft has yet devised, improving on Visual Basic. Java is more powerful than Basic and more productive than C++. It is interesting that the chief architect of the WFC is Anders Hejlsberg, known for his role in creating Delphi for his former employer, Borland. The influence shows in features like two-way tools, which let you edit a form visually and see the generated code, without losing the link to visual tools.

WFC is a component-orientated library, and you can create new controls or non-visual components and add them to a repository and to the toolbox. Data binding is supported via ADO (Active Data Objects) and, using the visual environment, it is easy to connect to either an

Access database or any ODBC source.

The programming environment is partly built with WFC. It is called the Microsoft Development Environment, and it hosts both Visual J++ and Visual InterDev. Microsoft says it will eventually become the standard Visual Studio environment for all its tools. It follows the style of previous Visual Studio IDEs, but with new features.

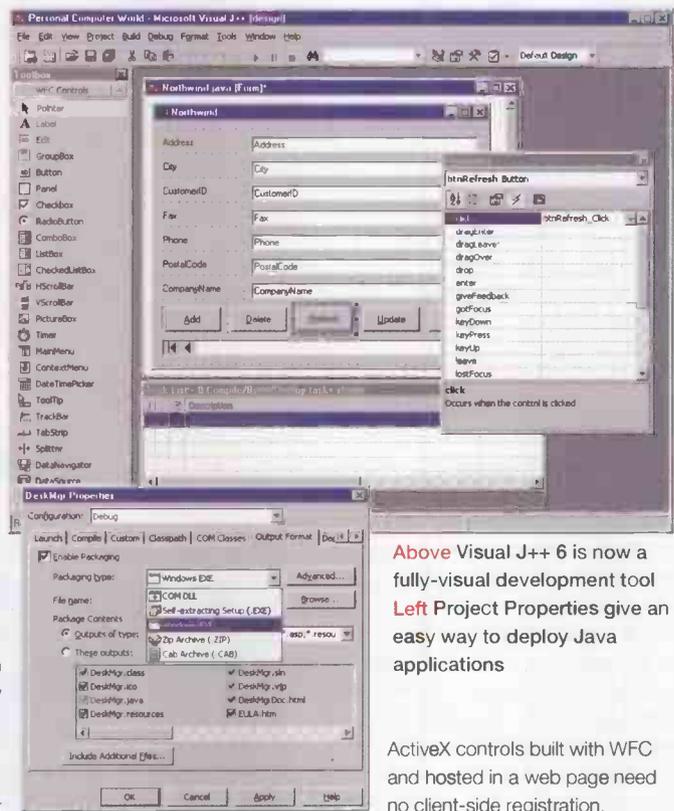
Taken to Task

The Task List is a convenient tool which shows any errors after a build; double-clicking an error brings up the faulty code. You can also add your own tasks. The Project Explorer shows the contents of a project in file or package view and there is a class outline window that displays class members. This links to a complete object browser, with source code easily displayed where available.

Some features are good enough to tempt Java programmers who may not want to use the WFC or ActiveX. You can build cross-platform Java applications in Visual J++, by avoiding the Windows-specific extensions. Code completion brings up a list of class members as you type, with a tooltip showing comments. For debugging you can select from seven debug windows, such as Watch, Threads and Call Stack views.

A neat feature is cross-process debugging, which lets you step into any Java-based server on the network. Deployment is easy. Deployment targets are set in the Project Properties dialog and include an option for a self-extracting setup executable, along with the usual ZIP and CAB formats. Windows executables use the Microsoft JVM so are not compiled to native code, but performance is good.

Visual J++ includes an HTML editor along with its Java tools. A key feature is that Windows and Dynamic HTML share the same property and event model so you can easily create applications with an HTML interface. You can also use WFC on a server to generate HTML. There are advantages to building your application around a Dynamic HTML front-end, one of which is that



Above Visual J++ 6 is now a fully-visual development tool
Left Project Properties give an easy way to deploy Java applications

ActiveX controls built with WFC and hosted in a web page need no client-side registration.

Winning ways

Despite its peculiarities as a Java product, Visual J++ has the makings of a great visual development tool for Windows. It is a step up from Visual Basic, and much easier to work with than C++ and the Microsoft Foundation Classes. It is also an ideal environment for creating distributed applications using COM, the Microsoft component object model. Finally — and say this in hushed tones — it offers Java programmers a way to create applications with fast, fully-featured graphical interfaces, something that until now Java has not been able to achieve.

Tim Anderson

PCW Details

Price To be announced

Contact Microsoft 0345 002000

www.eu.microsoft.com

System Requirements Windows 95 or NT.

Good Points Great IDE. Better than Visual Basic. Easier than C++.

Bad Points Not cross-platform. Not up to date with Java developments.

Conclusion A joker in the pack — Java for Windows development.

★★★★★

Software

ZY Web

The easy way to set up your own pages on the web — and no experience of HTML required.

The growth of the internet has spawned a whole new breed of products that allow you to get set up on the web. Authoring tools have become extremely popular in the past few years because the user doesn't need to write HTML. They can be expensive for the home or small business user, though, who may be loath to shell out for a too-sophisticated application when all they want is a simple web site.

ZyWeb has come up with a range of products designed to solve just this problem. Its web publishing tools are geared towards people who are neither experts nor dedicated enthusiasts, and what's more you don't have to buy special software. All you need is a web browser and a net connection and you're ready to go. Depending on which product you choose, you are provided with a certain amount of web space, email addresses, style templates, graphics and other little extras.

ZyWeb sounded like a winner and we were eager to test it out. We were set up with ZyWeb Home, which gives you 5Mb web space, an unlimited number of pages, 50 template design styles, 20 3D and 20 2D heading styles, 20 buttons, 20 background styles and 50 fonts. You're given unlimited image upload (as long as you don't exceed your space limit), and Photo Lab, which lets you scale, crop and otherwise edit your pictures. You're also given five email addresses, complete with email redirect.

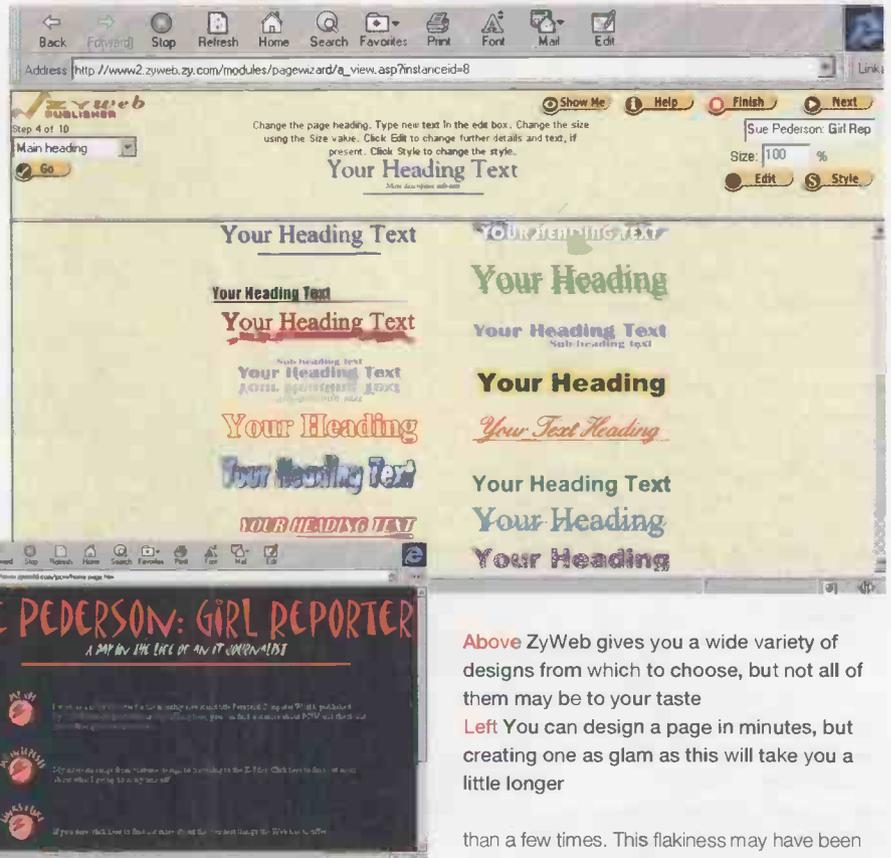
Online extravaganza

If you need a few more options, you can also try out ZyWeb Business, which offers you 10Mb of web space and 100 web template design styles. ZyWeb provides customer feedback forms that you can adapt for a number of purposes, ranging from simple customer comments to requests for further information. The Web Stats Package also keeps you up to date with the number and type of visitors to your site. If you've already registered a domain name, ZyWeb will let you keep it and provide you with an extra ten email addresses.

To start, head off to www.zy.com and register directly on the site. Your credit card is billed for one years' service immediately after you register. You are provided with a user name and password, and can then start designing your online extravaganza.

You're given a wide choice of design templates that you can alter to a certain degree. Unfortunately, we did not think much of most of the designs provided. In the end, we picked the one that made the site look least like we were fronting a doomsday cult and then adapted it.

The rest of the design process is rather like filling in the blanks and is quite straightforward. The page is divided into two panes: one where



Above ZyWeb gives you a wide variety of designs from which to choose, but not all of them may be to your taste
Left You can design a page in minutes, but creating one as glam as this will take you a little longer

you make your changes and decisions, and another which shows you what your page will look like. Just choose your overall design (font, text colour, background, heading and button styles) and fill in your text.

To see how a change will look, click the Show Me button and the page will update itself to reflect the latest changes. And in case you think that the epitome of style is orange writing on a pink background, ZY.com also provides a cautionary design guide on their site. When you've finished, save the page and hit a button to publish it. You're then given that page's URL and can immediately go and visit it.

Looking good

Couldn't be simpler, right? Well, not quite. Although the process of designing the site is very straightforward, the ZY.com site was extremely sluggish and took a very long time to respond. We spent large chunks of time staring into space while waiting to the page to reload. We also had problems logging on to the site a few times and, at one point, when we typed in www.zy.com, we were taken to the Sun Web Servers page (thankfully, the redirection was only temporary).

The site also requires a large amount of free memory to run properly. It froze up our PC more

than a few times. This flakiness may have been due to our PC rather than the site, but fortunately the site always recovered the last version of the page on which we were working, which is one of the benefits of doing all the work online.

In the end, our site looked much better than we thought it would. If you want to try it before you buy it, you should give the free version, ZyWeb Lite a whirl. It gives you a choice of ten template designs, five 3D and five 2D heading styles, six background textures and ten fonts. You can upload four images, and you are given Photo Lab and one email address with re-direct facility.

Susan Pederson

PCW Details

Price ZyWeb Home £48 (£40.86 ex VAT), ZyWeb Business £235 (£200 ex VAT), ZyWeb Lite is free.

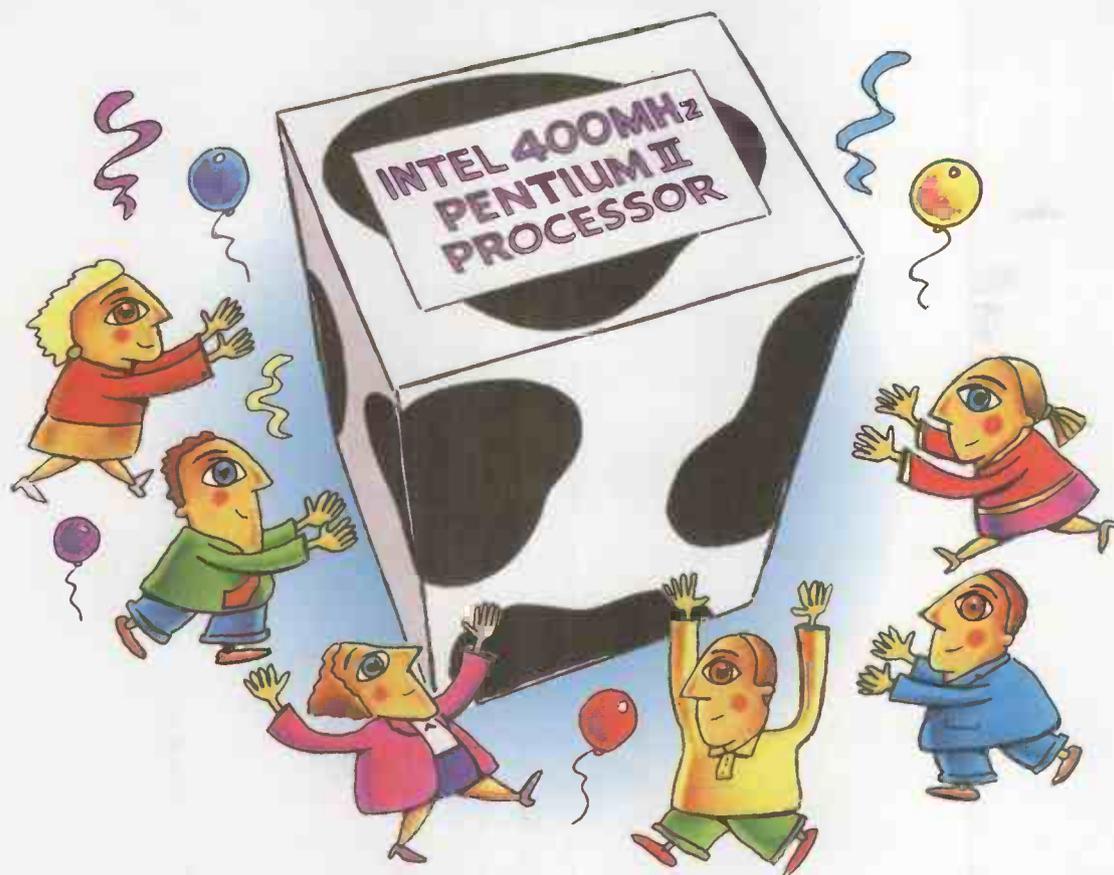
Contact ZY.com 01442 350300 www.zy.com

Good Points Quick to learn. The all-in-one package means no hidden extras.

Bad Points The site can be slow. The design templates may not suit your taste.

Conclusion The styles may not be to everyone's taste, but ZyWeb is more flexible than you think and may well suit someone looking for an all-in-one solution.

★★★★★

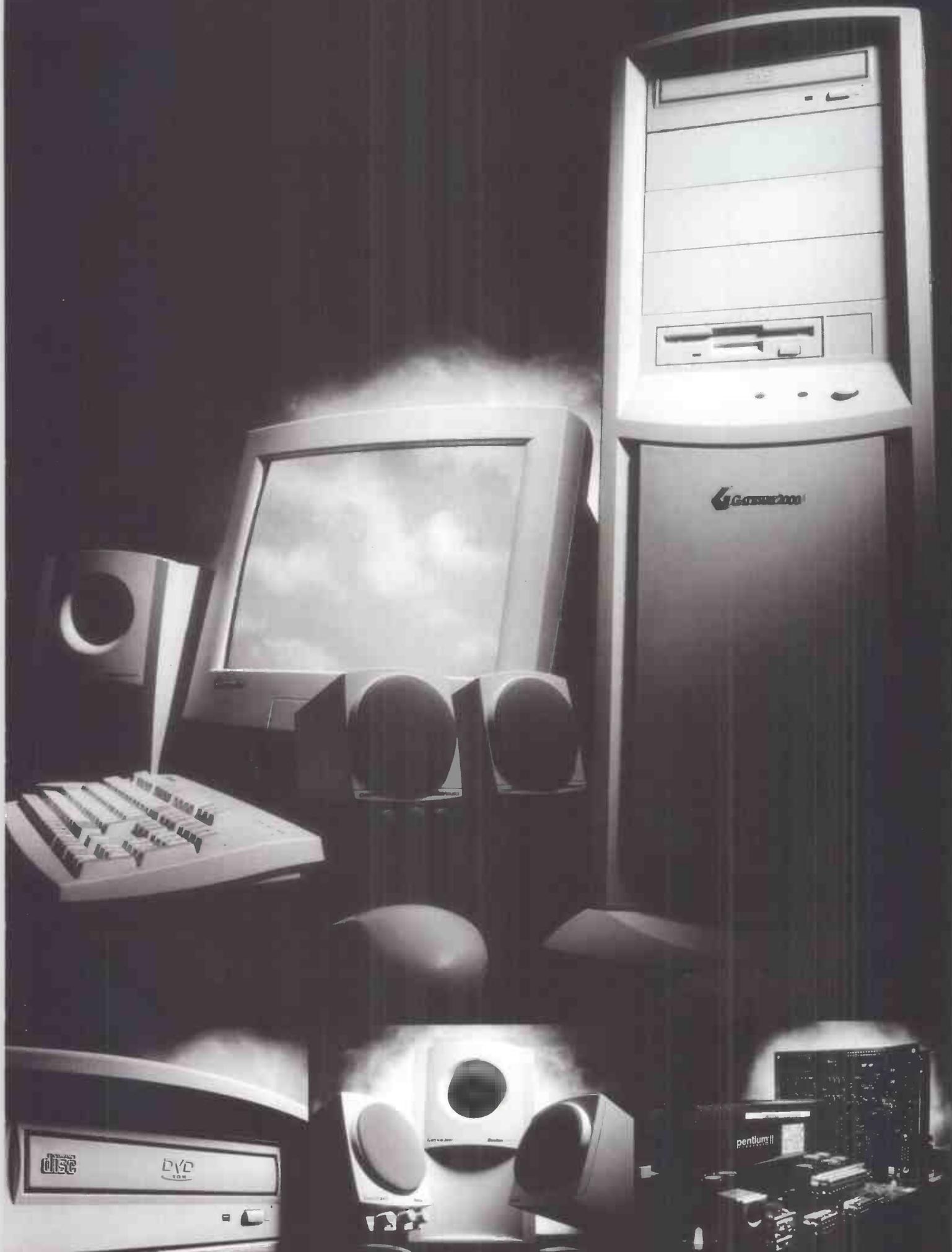


Another fresh delivery from Gateway.

Introducing the Intel 400MHz Pentium® II processor,
the power to expect more from your PC.



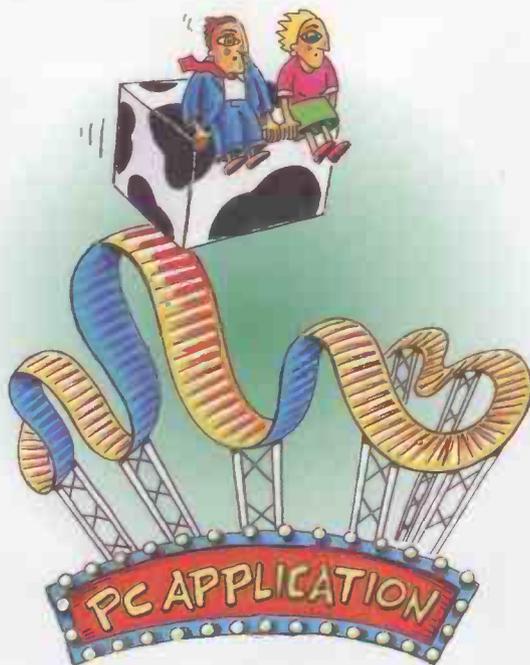
"You've got a friend in the business."™



DVD adds powerful
multimedia capability to any system

Boston Acoustics MediaTheatre 20W
speakers with 30W subwoofer

Intel Pentium II Processor
with Intel 440BX AGPset



You're on a roll.

With the new Intel 400MHz Pentium II Processor in your PC.

Check out our G-series range of multimedia systems including the G6-400XL, featuring the Intel 400MHz Pentium II processor, 100MHz SDRAM memory and the new Intel® 440BX AGPset. This powerful combination increases the speed of data transfer rates giving you so much power you really have to see it to believe it.

Standard features include a DVD-ROM II drive. A 128-bit AGP 3D 4MB graphics accelerator. A massive 8.4GB hard drive. Boston Acoustics® MediaTheater™ 20W speakers with 30W subwoofer. A SuperDisk™ LS120 drive. We're among the first companies to bring you the Intel 440BX AGPset technology, but unlike others, we're offering it as an affordable option, rather than as an expensive luxury, with systems starting from as little as £1199 (ex. VAT and delivery).

And how about the G6-266? Based on the super-fast Intel 266MHz Pentium II processor, it gives you real power and value at the unbeatable price of just £999 (ex. VAT and delivery). This system also comes bundled with a colour printer. No compromise? No sweat. Just call us today for more information.



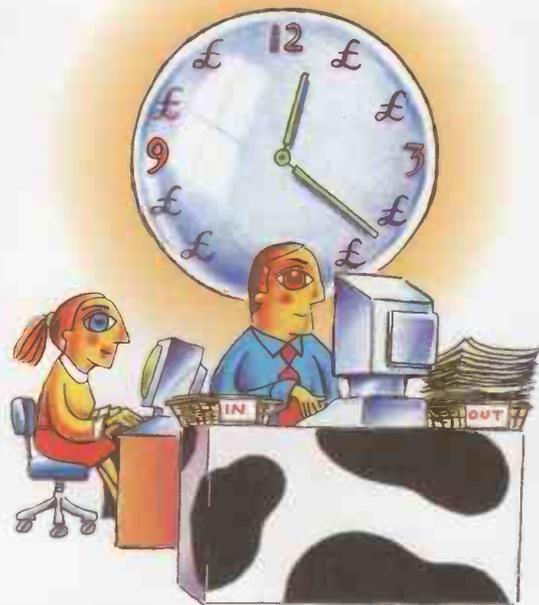
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<http://www.gateway2000.co.uk>



► G6-400XL featuring the Intel 400MHz Pentium® II Processor





Time is money.

Professional systems powered by the Intel 400MHz Pentium II processor work faster than ever before.

With the introduction of the Intel® 440BX AGPset, our GP-series Professional systems bring power into any office environment. Completing our GP range, the GP6-400 is a world class Professional PC. The Intel 440BX AGPset, Intel 400MHz Pentium II processor and Windows® NT® combine to make this system an optimal platform for any business application. When choosing your GP-series PC, customise your own system by selecting from our range of monitors and hard drive sizes to



0 8 0 0 1 7 2 0 0 0

<http://www.gateway2000.co.uk>

build the system you want at a price that suits. You can buy with confidence: we offer a 30-day money-back guarantee (shipping costs not refundable) and our technical support is only a freephone call away for as long as you own your PC. With the GP-series range, including the GP6-400, Gateway offers you the freshest technology, built to our impeccable standards. Call now to get mega-power and performance in your office.



► GP6-266 featuring the Intel 266MHz Pentium® II Processor

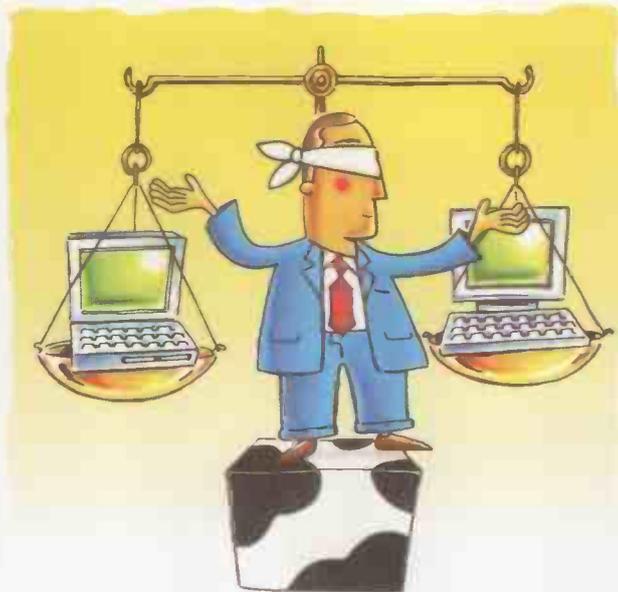




100MB back-up solution per disk for additional storage

Choose the operating system that suits you, Windows 95 or Windows NT

Intel Pentium II Processor with Intel 440BX AGPset



Power has become a great equaliser.

With the Intel Pentium II processor in your laptop the choice is yours.

When portability is important, but so is power, you want the Gateway Solo™ 9100 S6-266XL. Now featuring the Intel Pentium II processor, taking portable performance to an altogether higher level. The massive 14.1" screen and CD-ROM/Floppy combo drive is something that most other vendors simply can't offer. You have the option to upgrade to DVD, bringing quality animation to your presentations, all the more impressive on this big screen. Powerful stuff.

If you're looking for a slimline performance portable PC, the Gateway Solo 5100s are our lightest notebooks yet. Choose from either an Intel mobile Pentium processor with MMX™ technology or an Intel Pentium II processor, add it to the 14.1" XGA display and these systems turn powerful portable computing into an affordable business solution.

Introducing this month our new Gateway Solo 2500, bringing you affordable portable solutions featuring Intel Pentium II processors without compromising on battery life. Call us now to get moving and keep ahead!



0 8 0 0 1 7 2 0 0 0

<http://www.gateway2000.co.uk>



► Gateway Solo 9100 S6-266XL featuring the Intel 266MHz Mobile Pentium® II Processor



Our 9100 series features combination CD-ROM/Floppy Disk Drives



The massive 14.1" XGA Display on our 5100 and 9100 series



Full size keys are a standard feature of our 9100 portables



Getting the right business connections couldn't be easier.

With Gateway's network and business solutions.

Our networking solutions offer you real choice. The NS-7000 Workgroup Server is perfect for small businesses. It's designed to grow as your business grows, so you always have the flexibility you need. Standard features include dual processor support, ECC memory and RAID upgradeability.

For even greater performance from a workgroup server, we're introducing the ALR-7200, featuring the 350MHz Intel Pentium® II processor and the latest Intel® 440BX AGPset for improved performance. The dual

channel Ultra2 SCSI controllers support the latest Ultra2 SCSI hard drives, with a super fast data transfer rate of up to 80MB/s. The server's 100MHz memory is expandable to an incredible 1GB. And for complete peace of mind both the NS-7000 and ALR-7200 feature the InforManager server management software, designed to detect problems in advance and avoid the expensive downtime of your network.

The G-1000 is an ideal slimline business desktop. Configured with an integrated Ethernet adapter it's network-ready right out of the box. Featuring a 2GB hard drive, 32MB memory and a 15" monitor, the G-1000 is a great value business system for just £749 (ex. VAT and delivery). Call us today for the right solution for your business.



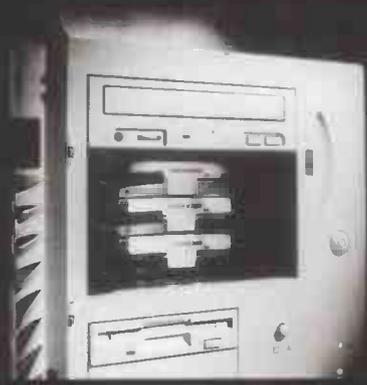
0 8 0 0 1 7 2 0 0 0

<http://www.gateway2000.co.uk>



► NS-7000 Workgroup Server featuring Intel Pentium® II Processors

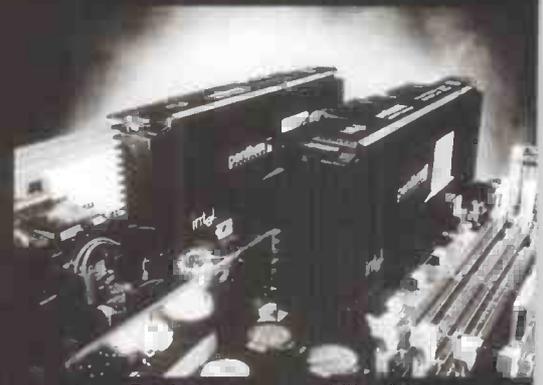




RAID upgradeability allows you to hot swap disks



InforManager software for additional security



Dual processor capability for scaleable performance

Add extra power to your PC from our range of software and peripherals.

DESKTOPS

Upgrading is simple. For example, you can choose a printer from the selection we offer, for startling full colour high-resolution output.



Epson® Stylus 300 Colour Printer
Single Cartridge, Photo-realistic, 720dpi Resolution
£115 (£135.12 inc. VAT)

Epson Stylus 600 Colour Printer
Dual Cartridge, Photo-realistic,
1440dpi Resolution
£164 (£192.70 inc. VAT)

Epson Stylus 800 Colour Printer
Dual Cartridge, 7ppm,
1440dpi Resolution
£220 (£258.50 inc. VAT)

Hewlett Packard 6L Printer
6ppm Laser Printer
600dpi Resolution
£265 (£311.37 inc. VAT)



Monitors

Upgrade from 15" EV500 to 17" EV700
£99 (£116.32 inc. VAT)

Upgrade from 17" EV700 to 19" EV900
£150 (£176.25 inc. VAT)

Boston Acoustics® MicroMedia® Speakers
High Fidelity Sound 5W Speakers with
15W Subwoofer

Upgrade from Altec® Lansing Speakers
£48 (£56.40 inc. VAT)

Boston Acoustics MediaTheater™ Speakers
Virtual Surround Sound 20W Speakers with 30W
Subwoofer

Upgrade from Boston Acoustics MicroMedia
Speakers
£30 (£35.25 inc. VAT)

US Robotics® Sportster Winmodem®
with x2™ Technology (56Kbps*)
£59 (£69.32 inc. VAT)

DVD-ROM

Upgrade from CD-ROM to DVD ROM
(on selected configs only)
£50 (£58.75 inc. VAT)



Logitech™ Digital Joystick
Ideal for Games!
£30 (£35.25 inc. VAT)

Imagemaster™ Internal Zip™ Drive
100MB Removable Storage
£55 (£64.62 inc. VAT)

Imagemaster™ External Zip Drive
100MB Removable Storage
£97 (£113.97 inc. VAT)

3 Pack Zip Media
3 Pack Removable Cartridges
£25 (£29.37 inc. VAT)

Imation SuperDisk™ LS120
120MB Removable Storage
£55 (£64.62 inc. VAT)

3 Pack SuperDisk Media
3 Pack Removable Cartridges
£25 (£29.37 inc. VAT)

Seagate TR4 Tape Back-up Unit
4GB Native, 8GB Compressed
IDE Version **£132 (£155.10 inc. VAT)**
SCSI Version with Adaptec® 2910
Controller **£186 (£218.55 inc. VAT)**

PORTABLES

Jazz up your Gateway Solo! Use a docking station, add an external keyboard and monitor and turn your portable into a desktop when you're at home or in the office.



Mini Docking Station
£130 (£152.75 inc. VAT)

Docking Station
£350 (£411.25 inc. VAT)

33.6Kbps PC Card Fax/Modem
£115 (£135.12 inc. VAT)

3Com® Etherlink XL CardBus PC Card

£90 (£105.75 inc. VAT)

Classic Case

£20 (£23.50 inc. VAT)

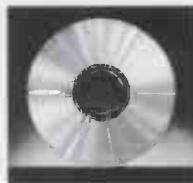
Car Adapter

£29 (£34.07 inc. VAT)

Lithium Ion Battery 60Whr

£85 (£99.87 inc. VAT)

SOFTWARE



Choose customised software packs from the examples here to really bring your system alive, and add to what you can do with your PC. Our systems come standard with Microsoft Home Essentials, GATEWAY™ Essentials for Small Business or MS Office 97 Small Business Edition.

Gateway Essentials for Small Business

MS Word 97, MS Publisher 97, MS Outlook 97

** MS Office 97 Small Business Edition 2

MS Word 97; MS Excel 97; MS Outlook 97,
MS Publisher 98, Financial Manager (UK Version)
and MS AutoRoute Express 98.

MS Home Essentials

MS Word 97; MS Works 4.5 98; MS Encarta World Atlas®; MS Money 98; Puzzle Collection.

**Gateway Young Scholar

MS Plus! For Kids; MS Creative Writer 2.0;
Scholastics™ The Magic School Bus: The Solar
System, The Ocean, The Human Body, In the Age
of Dinosaurs; Goosebumps: Escape from Horrorland
£99 (£116.32 inc. VAT)

**Gateway Source

MS Encarta Encyclopedia 98 (US Version);
MS AutoRoute™ Express Europe 98, Publisher 97,
Greetings Workshop.
£99 (£116.32 inc. VAT)

**Gateway Arcadia

MS Flight Simulator 98; MS Golf; MS Monster
Truck Madness™; MS Cart Precision Racing;
MS Age of Empires.
£99 (£116.32 inc. VAT)

Call for details on other great software options!

Windows NT™ Workstation 4.0

Upgrade from MS Windows 95
£60 (£70.50 inc. VAT)

WORKGROUP SERVER

Call for details on a range of upgrade options including ECC memory, RAID solutions and processor upgrades.

Portable PCs

Gateway Solo™ 2500s

S5-200SE

- 12.1" SVGA TFT Colour Display
- Intel 200MHz Mobile Pentium® Processor with MMX™ Technology
- 256KB Pipeline Burst Cache
- 32MB SDRAM, expandable to 160MB
- 2.1GB 13ms Removable EIDE Hard Drive
- 3.5" 144MB built-in Floppy Disk Drive
- 8X min/20X max 150ms built-in CD-ROM
- Neo Magic 128-Bit 2MB VRAM
- Wavetable Sound with Stereo Speakers
- Lithium Ion 60Whr Battery
- Microsoft® Windows® 95
- Gateway Essentials for Small Business
- Laplink Software

£1399 (£1643.82 inc. VAT)

Business Lease £11.08 weekly*

S6-233LS

- 12.1" SVGA TFT Colour Display
- Intel 233MHz Mobile Pentium II Processor
- 512KB L2 Cache
- 32MB SDRAM, expandable to 160MB
- 3.2GB 13ms Removable EIDE Hard Drive
- 3.5" 144MB built-in Floppy Disk Drive
- 8X min/20X max 150ms built-in CD-ROM
- Neo Magic 128-Bit 2MB VRAM
- Wavetable Sound with Stereo Speakers
- Lithium Ion 60Whr Battery
- Classic Carrying Case
- MS® Windows 95
- Gateway Essentials for Small Business
- Laplink Software

£1699 (£1996.32 inc. VAT)

Business Lease £13.46 weekly*

S6-266SE

- 13.3" XGA TFT Colour Display
- Intel 266MHz Mobile Pentium II Processor
- 512KB L2 Cache
- 48MB SDRAM, expandable to 160MB
- 4GB 13ms Removable EIDE Hard Drive
- 3.5" 144MB built-in Floppy Disk Drive
- 8X min/20X max 150ms built-in CD-ROM
- Neo Magic 128-Bit 2MB VRAM
- Wavetable Sound with Stereo Speakers
- Lithium Ion 60Whr Battery
- Classic Carrying Case
- MS® Windows 95
- Gateway Essentials for Small Business
- Laplink Software

£2099 (£2466.32 inc. VAT)

Business Lease £16.63 weekly*

Gateway Solo 9100

S6-266XL

- 14.1" XGA TFT Colour Display
- Intel 266MHz Mobile Pentium II Processor
- 512KB L2 Cache
- 64MB SDRAM, expandable to 192MB
- 8.1GB 12ms Removable EIDE Hard Drive
- Modular Combo Drive w/ 3.5" Floppy Disk Drive & 8X min/20X max Toshiba CD-ROM
- Trident 4MB SGRAM
- Wavetable Sound with Stereo Speakers
- Lithium Ion 60Whr Battery
- Deluxe Leather Carrying Case
- 33.6Kbps Gateway TelePath® Fax/Modem
- MS Windows 95
- MS Office 97 Small Business Edition™ plus Encarta 97 (US version) and MS Money 97
- Laplink Software

£3199 (£3758.82 inc. VAT)

Business Lease £25.35 weekly*
DVD Floppy Combo Drive Upgrade
£280 (£329.00 inc. VAT)



► Gateway Solo 9100 S6-266XL featuring Intel 266MHz Mobile Pentium II Processor and 14.1" XGA Screen

Gateway Solo 5100s

S5-233LS

- 14.1" XGA TFT Colour Display
- Intel 233MHz Mobile Pentium Processor with MMX Technology
- 512KB Pipeline Burst Cache
- 32MB SDRAM, expandable to 144MB
- 2GB 13ms Removable EIDE Hard Drive
- 3.5" 144MB Modular Floppy Disk Drive
- 8X min/20X max 150ms CD-ROM
- C&T 2MB VRAM
- Wavetable Sound with Stereo Speakers
- Lithium Ion 39Whr Battery
- Classic Carrying Case
- MS Windows 95
- Gateway Essentials for Small Business
- Laplink Software

£1749 (£2055.07 inc. VAT)

Business Lease £13.86 weekly*

S6-266LS

- 14.1" XGA TFT Colour Display
- Intel 266MHz Mobile Pentium II Processor
- 512KB L2 Cache
- 64MB SDRAM, expandable to 144MB
- 4GB 13ms Removable EIDE Hard Drive
- 3.5" 144MB Modular Floppy Disk Drive
- 8X min/20X max 150ms CD-ROM
- C&T 2MB VRAM
- Wavetable Sound with Stereo Speakers
- Lithium Ion 39Whr Battery
- Classic Carrying Case
- MS Windows 95
- MS Office 97 Small Business Edition™ plus Encarta® 97 (US version) and MS Money 97
- Laplink Software

£2399 (£2818.82 inc. VAT)

Business Lease £19.00 weekly*

Network PC

G-1000

- Intel 233MHz Pentium Processor with MMX Technology
- 32MB SDRAM, expandable to 256MB
- 256KB Pipeline Burst Cache
- 2GB 10ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Mitsumi 13X min/32X max 90ms CD-ROM
- Integrated PCI Graphics Accelerator w/ 2MB EDO RAM
- Integrated 16-Bit Business Audio
- Integrated 10/100 Ethernet NIC
- 15" EV500 TCO-92 0.28dp Monitor*
- Slimline Desktop Case
- MS Windows 95 105 Keyboard
- MS Windows 95 MS IntelliMouse™
- McAfee Anti-Virus Software
- Gateway Essentials for Small Business

£749 (£880.07 inc. VAT)

Business Lease £5.93 weekly*

Workgroup Servers

NS-7000

- Intel 266MHz Pentium II Processor
- Dual Processor Support
- 64MB ECC EDO RAM, expandable to 512MB
- 512KB ECC L2 Cache
- Integrated Ultra/Wide PCI SCSI Controller
- 4GB Ultra/Wide SCSI Hard Drive
- 3.5" 144MB Floppy Disk Drive
- 13X min/32X max SCSI CD-ROM
- Integrated PCI Graphics Accelerator w/ 2MB DRAM
- 3COM® PCI 10/100 Ethernet Adapter
- 15" EV500 TCO-92 0.28dp Monitor*
- Tower case w/ 300W Power Supply
- Expansion Slots: 3 32-bit PCI, 2 EISA, 1 PCI/EISA
- 105 Keyboard and MS IntelliMouse
- InforManager Server Management Software with Active CPR
- 30 Day NT Operating System Support

£1399 (£1643.82 inc. VAT)

Business Lease £11.08 weekly*

ALR-7200

- Intel 350MHz Pentium II Processor
- Dual Processor Support
- 64MB 100MHz ECC SDRAM, expandable to 1GB
- 512KB ECC L2 Cache
- Intel® 440BX AGPset
- Dual Channel Integrated PCI Ultra 2 SCSI Controller
- Integrated RAIDport III Connector
- 4GB Ultra/Wide SCSI Hard Drive
- 3.5" 144MB Floppy Disk Drive
- 13X min/32X max CD-ROM
- Integrated PCI Graphics Accelerator w/ 2MB DRAM
- Intel PCI 10/100 Network Adapter
- 15" EV500 TCO-92 0.28dp Monitor*
- Tower case w/ 300W Power Supply
- Expansion Slots: 6 32-bit PCI, 1 PCI/EISA
- 105 Keyboard and MS IntelliMouse
- InforManager Server Management Software with Active CPR
- 30 Day NT Operating System Support

£1999 (£2348.82 inc. VAT)

Business Lease £15.84 weekly*



► NS-7000 Workgroup Server featuring the Intel Pentium II Processor



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<http://www.gateway2000.co.uk>

Gateway 2000 Europe • European Headquarters • Clonsbaugh Industrial Estate • Dublin 17 • Ireland

Telephone: 00-353-1-797-2000 • Fax: 00-353-1-848-2022 • FaxBack: 00-353-1-867-0400 • Gateway Bulletin Board: 00-353-1-867-0433 • Hours of Business: 8am-10pm Weekdays, 9am-6pm Saturdays

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Computing has never been more Powerful with our High-Performance PCs

Professional PCs

GP6-266

- Intel 266MHz Pentium® II Processor
- 64MB SDRAM, expandable to 384MB
- Intel® 440LX AGPset
- 512KB L2 Cache
- 5GB 10ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Mitsumi 13X min/32X max 90ms CD-ROM
- STB MPACT 4MB AGP Graphics Accelerator, w/ Hardware MPEG2
- 17" EV700 TCO-92 0.28dp Monitor*
- ATX Desktop Case
- Microsoft® Windows® 95 105 Keyboard
- MS® Windows 95, MS IntelliMouse™
- McAfee Anti-Virus Software
- Gateway Essentials for Small Business

£999 (£1173.82 inc. VAT)

Business Lease £7.92 weekly*

GP6-333

- Intel 333MHz Pentium II Processor
- 64MB SDRAM, expandable to 384MB
- Intel 440LX AGPset
- 512KB L2 Cache
- 5GB 10ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Mitsumi 13X min/32X max 90ms CD-ROM
- STB MPACT 4MB AGP Graphics Accelerator, w/ Hardware MPEG2
- 17" EV700 TCO-92 0.28dp Monitor*
- ATX Tower Case
- MS Windows 95 105 Keyboard
- MS Windows 95, MS IntelliMouse
- McAfee Anti-Virus Software
- Gateway Essentials for Small Business

£1099 (£1291.32 inc. VAT)

Business Lease £8.71 weekly*

GP6-350SE

- Intel 350MHz Pentium II Processor
- 64MB 100MHz SDRAM, expandable to 768MB
- Intel 440BX AGPset
- 512KB L2 Cache
- 5GB 10ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Mitsumi 13X min/32X max 90ms CD-ROM
- STB NVIDIA Riva 128-Bit AGP 3D Graphics Accelerator, w/ 4MB SGRAM
- Ensoniq® AC'97 Wavetable PCI Sound
- 17" EV700 TCO-92 0.28dp Monitor*
- ATX Tower Case
- MS Windows 95 105 Keyboard
- MS Windows 95, MS IntelliMouse
- McAfee Anti-Virus Software
- Gateway Essentials for Small Business

£1199 (£1408.82 inc. VAT)

Business Lease £9.50 weekly*

GP6-400SE

- Intel 400MHz Pentium II Processor
- 64MB 100MHz SDRAM, expandable to 768MB
- Intel 440BX AGPset
- 512KB L2 Cache
- 84GB 9.5ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Mitsumi 13X min/32X max 90ms CD-ROM
- STB NVIDIA Riva 128-Bit AGP 3D Graphics Accelerator, w/ 4MB SGRAM
- Ensoniq AC'97 Wavetable PCI Sound
- 17" EV700 TCO-92 0.28dp Monitor*
- ATX Tower Case
- MS Windows 95 105 Keyboard
- MS Windows 95, MS IntelliMouse
- McAfee Anti-Virus Software
- Gateway Essentials for Small Business

£1399 (£1643.82 inc. VAT)

Business Lease £11.08 weekly*

Multimedia PCs

G6-266

- Intel 266MHz Pentium II Processor
- 32MB SDRAM, expandable to 384MB
- Intel 440LX AGPset
- 512KB L2 Cache
- 5GB 10ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Mitsumi 13X min/32X max 90ms CD-ROM
- MPACT 4MB AGP Graphics Accelerator, w/ Hardware MPEG2
- Ensoniq Wavetable 32-Bit PCI Sound
- Altec® Lansing GCS100 Speakers
- Epson® Stylus 300 720dpi Colour Printer
- US Robotics Sportster Winmodem with x2 Technology (56Kbps*)
- 15" EV500 TCO-92 0.28dp Monitor*
- ATX Desktop Case
- MS Windows 95 105 Keyboard
- MS Windows 95, MS IntelliMouse
- McAfee Anti-Virus Software
- MS Internet Explorer 4.0, MS Home Essentials

£999 (£1173.82 inc. VAT)

G6-333

- Intel 333MHz Pentium II Processor
- 64MB SDRAM, expandable to 384MB
- Intel 440LX AGPset
- 512KB L2 Cache
- 5GB 10ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Toshiba™ DVD-ROM II Drive
- STB MPACT 4MB AGP Graphics Accelerator, w/ Hardware MPEG2
- Ensoniq Wavetable 32-Bit PCI Sound Card
- Altec Lansing GCS100 Speakers
- US Robotics Sportster Winmodem with x2 Technology (56Kbps*)
- 17" EV700 TCO-92 0.28dp Monitor*
- ATX Tower Case
- MS Windows 95 105 Keyboard
- MS Windows 95, MS IntelliMouse
- McAfee Anti-Virus Software
- MS Internet Explorer 4.0, MS Home Essentials
- Choice of a Gateway Software Bundle: Arcadia, Source or Young Scholar**

£1299 (£1526.32 inc. VAT)

G6-350

- Intel 350MHz Pentium II Processor
- 64MB 100MHz SDRAM, expandable to 768MB
- Intel 440BX AGPset
- 512KB L2 Cache
- 84GB 9.5ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Toshiba DVD-ROM II Drive
- STB MPACT 4MB AGP Graphics Accelerator, w/ Hardware MPEG2
- Ensoniq AC'97 Wavetable PCI Sound
- Altec Lansing GCS100 Speakers
- US Robotics Sportster Winmodem with x2 Technology (56Kbps*)
- 17" EV700 TCO-92 0.28dp Monitor*
- ATX Tower Case
- MS Windows 95 105 Keyboard
- MS Windows 95, MS IntelliMouse
- McAfee Anti-Virus Software
- MS Internet Explorer 4.0, MS Home Essentials
- Choice of a Gateway Software Bundle: Arcadia, Source or Young Scholar**

£1399 (£1643.82 inc. VAT)

G6-400

- Intel 400MHz Pentium II Processor
- 64MB 100MHz SDRAM, expandable to 768MB
- Intel 440BX AGPset
- 512KB L2 Cache
- 84GB 9.5ms Ultra ATA Hard Drive
- 3.5" 144MB Floppy Disk Drive
- Toshiba DVD-ROM II Drive
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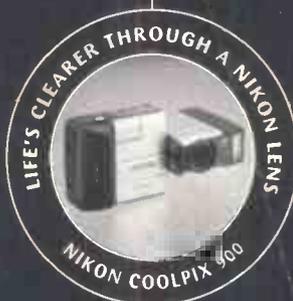
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Or was it the other way round? That's the problem with the Coolpix 900, its 1.3 megapixel images are just too clear and sharp for you to tell, even when printed. In fact until now, compact digital picture quality hasn't been sharp enough to warrant using glass lenses let alone professional Nikkor lenses.

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The main difference between the Coolpix 900 and conventional cameras is when you're using one. There's a large 2 inch LCD display for composition and shot reviews, the high performance 3 x optical/ 2 x digital zoom, the five-mode flash, the high speed shooting of up to two frames per second and then there's the unique metering system for accurate exposures; not to mention all the additional benefits afforded by regular digital cameras.

So as you can see, dandruff is no longer a problem with the Nikon Coolpix 900.

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■ Software

AutoSketch 5

A new version of AutoSketch with a heavy Drafrix flavour that will leave regular users bemused.

The AutoSketch faithful have waited a long time for a new version of this 2D computer aided design (CAD) program. Since there has only been a "point-one" upgrade in the past four years, many might have felt this was the end of the road. Life is full of surprises, though, including this sudden leap from version 2.1 to 5.

One unusual feature of version two was the Tool-Object approach. Instead of selecting an object then applying a tool, you took the tool to the object; there was no selection arrow tool. Although this goes against the established conventions of drawing software, it does have a real-world logic: if you want to erase something, you take the eraser to the line, not vice versa. Version 5 abandons this in favour of the Object-Tool approach seen elsewhere, as part of a "Microsoft Office Compatible" drive.

Snap to it!

Another surprise is the change in object snaps. These let you attach, say, a line to a precise point on another object by snapping magnetically to the end or middle of a line, the centre or quadrant of a circle, and so on. An improvement in version five is that the snap points "light up". In version two, it could be difficult to tell if one was within the catchment area of a snap point. But this version takes the retrograde step of snaps being mutually exclusive, so you can no longer have endpoint and centre snaps active simultaneously.

Furthermore, with a snap mode active you have to use it; you can't place a "free-range" point away from a snap point as you could before. This flexibility was one of the best features of AutoCad 2 and it's a matter of astonishment that Autodesk has seen fit to "improve" it in this way.

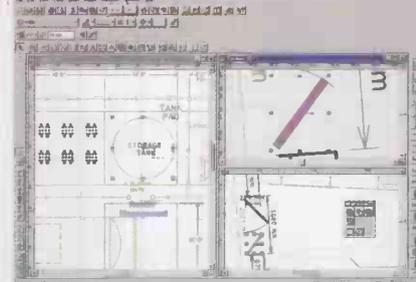
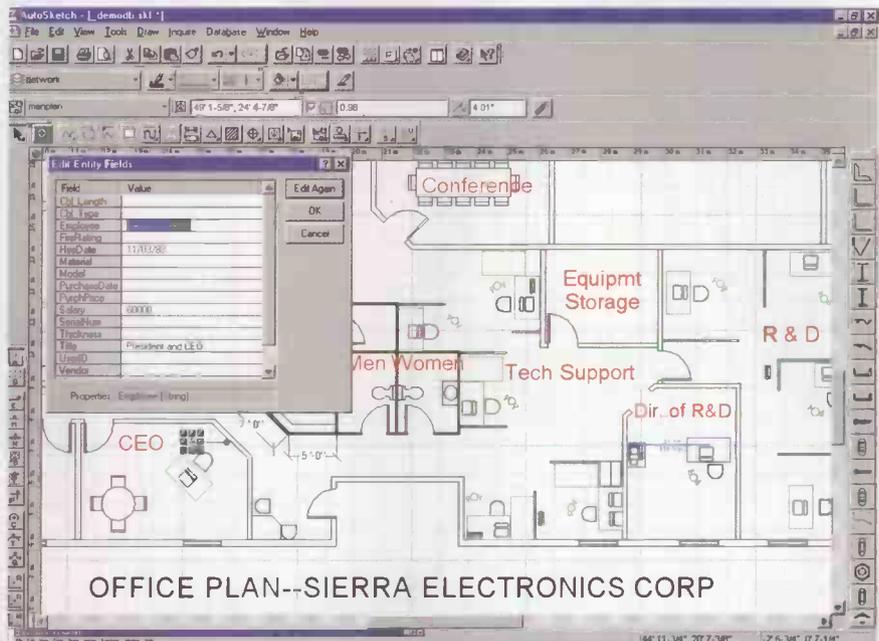
Another casualty is the group command that let you select multiple objects then group them together so they could be moved about as a whole without reselecting each one. However, there are now myriad ways of defining multiple selections using Boolean operators to combine selection by layer, colour or other properties.

Angle on the Edit bar

An Edit bar is another newcomer. If you draw or select a line, for instance, this will show the start and end co-ordinates, length and angle, all of which can be altered from the keyboard. This also lets you edit the centre and radius of circles, but you cannot edit rectangles in this way.

One new feature not directly related to drawing is the facility to attach non-graphic information to an object. You could, say, give an office desk or a kitchen sink a manufacturer and model name, price and other details. All such information in a drawing can then be exported to a database.

This release bills itself as multi-purpose rather



than general purpose and to this end there is a set of wizards for creating architectural and mechanical drawings, as well as flow charts, website maps and other diagrams. These are of mixed quality. The general Precision Drawing wizard offers a good variety of choice, but the Building wizard doesn't offer a choice of units or scale.

There's a good range of symbol libraries for such things as nuts and bolts or doors and windows, but in the review version these were all in Imperial sizes (Autodesk assures me that the proper UK release has metric libraries).

No 1998 software release would be complete without internet capabilities and AutoSketch 5 is no exception. You can attach a URL to any object that will launch the default browser and jump to the site. Links can be made to files on a local disk or network so, for instance, you can click on an object to open an explanatory text file or another drawing.

All in all, there have been widespread and

radical changes, both to the interface and the feature list, but there is a very simple explanation. This is not a new version of AutoSketch as we know it. It is based on the "drawing engine" of Drafrix CAD, which Autodesk recently acquired. Indeed, examining the Windows Registry shows that the installation adds several "Drafrix" entries, including, rather strangely, a "Drafrix Macro" filetype. I say "strangely", because the macro facility is yet another casualty of this upgrade.

Dead end

To be fair, this isn't a bad budget CAD program overall, though it does seem rather sloppily put together in places. As it's Autodesk's bat and Autodesk's ball, presumably the company can call the product what it likes. But were I an existing AutoSketch user who had just paid for an upgrade I'd feel angry, insulted and saddened: the first at being misled as to what I was buying, the second at the presumption that I wouldn't know the difference, and the last at realising that the AutoSketch I'd grown used to was now at a developmental dead-end.

Tim Nott

PCW Details

Price £116.33 (£99 ex VAT). Upgrades £57.58 (£49 ex VAT)
 Contact Autodesk 01483 303322 www.drafrix.com
 System Requirements Windows 95 or NT.
 Good Points Includes some of the best features of Drafrix CAD.
 Bad Points Drops many of the best features of AutoSketch 2.1.
 Conclusion AutoSketch in name only. Upgraders are in for a shock.
 ★★★★★

p105 >

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1995 UE, Mac User
April 1998



1995 UE,
Computer Arts,
April 1998



1569 MS, PC World,
July 1996



1792 UA, PC, Pro,
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Monitors • Notebooks • LCD Displays • Systems

■ Software

Picture Publisher 8

Serious image processing with some great features, at a price that will make you smile.

The image processing market is highly competitive at all levels, from the high ground of Adobe Photoshop and MacroMedia X-Res, through the middle ground of Paint Shop Pro and mgi PhotoSuite, right down to consumer-orientated products such as Kai's Photo Soap or Microsoft's Picture-It. Despite its sub-£100 price tag, Picture Publisher belongs firmly with the high-enders.

All the professional features you might expect have been available for some time, with layered objects that let you mix images from different sources while keeping them independently editable. It supports Adobe-standard Plug-Ins, will produce spot and process separations, and has full CMYK support. There is a good selection of "natural media" painting and retouching tools, anti-aliased brushes and masks, and support for pressure-sensitive tablets. Sophisticated masking tools include an autotrace feature for finding outlines and a "Colour Shield" to mask up to ten different colour ranges in an image.

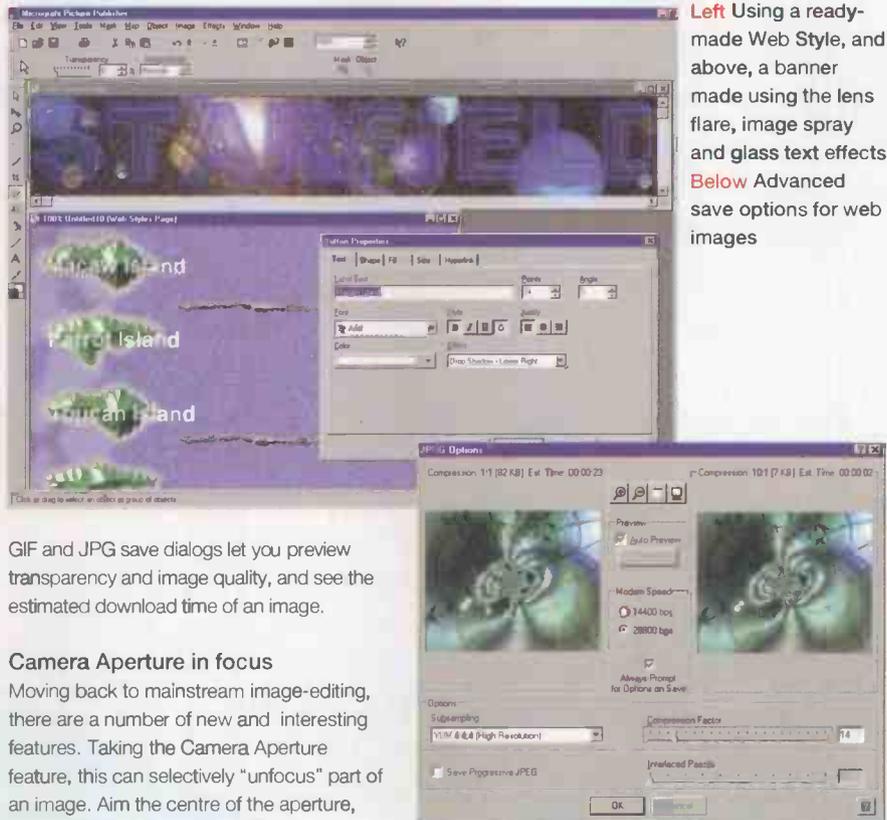
At your Command

Picture Publisher's killer feature, now several versions old but still, as far as I know, unique, is the Command Centre. This keeps a record of every action you perform, as a script. You can save and replay scripts as macros, so for example could carry out the same sequence of actions on a series of photographs.

The real beauty of this, however, is that actions are recorded automatically, so you have an extremely flexible selective undo facility. In a sequence, say, of ten actions, you can remove actions numbers 4, 7 and 8 then rebuild the image just using the remaining actions. Another advantage is since this selective undo is script-based it doesn't hog vast amounts of memory, unlike the traditional undo which keeps multiple copies of the bitmap in memory.

So, having dispensed with the history, let's see what's new. Predictably enough there's web-with-everything. For those who don't want to bother with piecemeal design, there's a range of Web Styles, templates for creating near-instant web pages by clicking on the various buttons, bars and placeholders to add text, effects and links. For more ambitious users there are more tools, including a Bevel Factory for instant button creation. Then there's a Contact Sheet generator for creating thumbnails of images, with URLs automatically attached.

Image map creation lets you assign links to part of an image or object, and there's a whole set of animated GIF tools, including a Wizard for applying pre-set animated effects to text and images. A texture editor means you can create and preview seamless web-page backgrounds, and advanced



Left Using a ready-made Web Style, and above, a banner made using the lens flare, image spray and glass text effects
Below Advanced save options for web images

GIF and JPG save dialogs let you preview transparency and image quality, and see the estimated download time of an image.

Camera Aperture in focus

Moving back to mainstream image-editing, there are a number of new and interesting features. Taking the Camera Aperture feature, this can selectively "unfocus" part of an image. Aim the centre of the aperture, choose the f-stop (higher value means more of the picture is in focus) and the area outside the "depth of focus" area will be blurred. Another feature using the camera model is "lens flare". There are no less than sixteen variables here, all conspiring to give very realistic and arty flare effects, from the number and brightness of rays to the intensity of the anamorphic lighting.

Other effects include a Light Studio which lets you create quasi-3D effects with multiple light sources, and textured "bump" maps. Text is produced as an independent, layered object, so always remains editable — just as in a drawing package — until you save into a non-layered format. Over 400 TrueType fonts are included.

Putty in your hands

For a more fun approach, there's the Warp tool and the Distort filter. The former lets you pull a picture around as if it were made of putty, rather like a more limited version of Kai's Power Goo. The latter is a large range of pre-set options for stretching, twisting or otherwise distorting an image on a grid basis.

On a more serious level there's Kodak colour management for correlating screen, scanner and printer output, and support for the FlashPix multi-resolution file format. Unlike Adobe Photoshop, there are no Pantone or similar colour libraries, but arguably this isn't too much

of a disadvantage for an image-editing rather than a page-layout application.

Despite the powerful features, Picture Publisher isn't a difficult application to use. Each tool has a corresponding Ribbon at the top of the screen which changes to show the appropriate options as you work — brush dimensions, text attributes and so on. There are a whole set of Wizards covering everything from text effects to HTML output, and a respectable set of on-line tutorials. It comes with two more CD-ROMs of sample files and clipart, together with the all-important media manager in which to browse them, either from within the program or as a standalone application.

Tim Nott

PCW Details

Price £93.89 (£79.90 ex VAT) estimated street price
 Contact Micrografix 01483 747526 www.micrografix.com
 System Requirements Windows 95 or NT.
 Good Points Powerful but friendly, with a killer selective undo and advanced web support.
 Bad Points Not all of the effects can be previewed on the image.
 Conclusion Serious image processing at a low price. Excellent value.
 ★★★★★

p107 >

"ADI has grown rapidly since 1979 to become one of the top five monitor manufacturers in the world. When we first introduced ADI monitors to the UK in 1995, it was vital for us to talk direct to a rapidly growing IT market. Personal Computer World was our first choice for launch advertising. Personal Computer World was then as it is today, a market leader with an ever growing circulation, attracting a massive audience of the informed professional readers we wanted to talk to. For us, Personal Computer World delivers the perfect combination where professional users can read about our products in news and reviews, get to know us from our advertisements, and easily buy our products from the leading PC Builders and mail order companies."

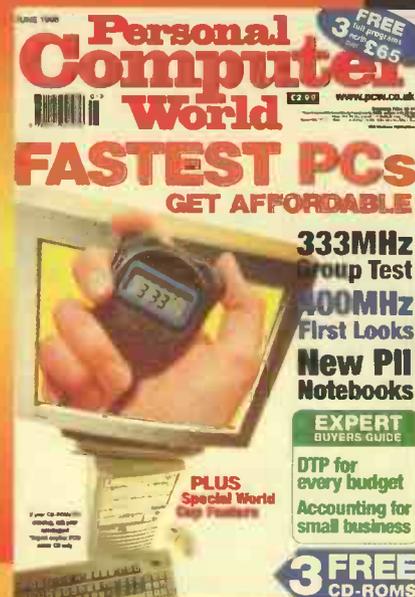
"Having won the best monitor award from Personal Computer World for our 17" MicroScan 5G monitor in 1997, we know the fantastic volume of calls and sales that Personal Computer World readers can generate. That is why Personal Computer World is an important partner, helping to build on our success in the UK today, and tomorrow."



Alan Chai
Managing Director ADI UK



ADI MicroScan
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■ Software

Quicken 98 Deluxe

Money matters: integrated invoicing and expanded online facilities mark out the new Quicken.

Quicken is probably the most heavily advertised of all personal accounting software packages. Over the years it has consistently added to its list of features, though some have been more useful than others. The trend continues here with the latest incarnation, version seven, being sold as Quicken Deluxe 98 for Windows.

You'll notice the first change even when Quicken isn't running. Billminder, the pop-up window that nags you about unpaid bills when you switch on, has been extended to remind you about other financial matters, too, including standing orders, insurance and mortgage reviews, credit card limits and imminent bankruptcy (define an overdraft limit or minimum bank balance, and the program notifies you when the critical figure is exceeded).

Quicken will also show the value of your investments, updating prices from the Internet. In fact, the net is now thoroughly integrated into Quicken, giving you one-click connection to its UK-dedicated home page.

Supplementing your purely financial information, the new Emergency Records Organiser offers a near-comprehensive repository for all the ancillary facts like contacts, reference numbers, document location and so on, with separate data for each family member. In addition, Quicken's Home Inventory is retained in this edition, allowing you to itemise, categorise and value all your possessions, with optional integration into your Quicken accounts. Still no provision for pictures though.

Integrated invoices

Previously an add-on, Quicken's Invoice Manager is now fully integrated and supported by appropriate account categories and reports. Described as being for "the private user who has to write bills from time to time" it's perfectly adequate for the small business with modest invoicing and minimal reporting requirements. Sole traders and some partnerships should find it satisfactory.

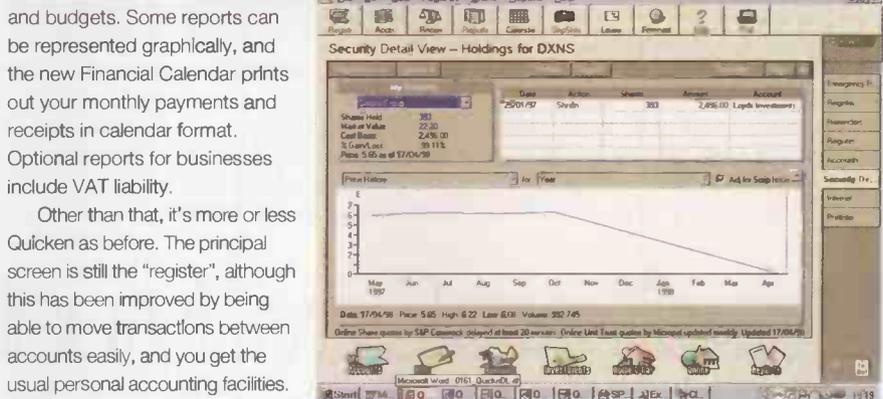
If you are not self-employed, Quicken can automatically set up your wage or salary entries to allocate deductions like tax, NI and pension contributions. There is also provision to match Quicken's categories to a new Tax Assistant function, but this didn't work in the review software. If this is important to you, make sure you get a returnable guarantee from your retailer.

There are enhancements to Quicken's reports, with an "EasyAnswer" guide to customising each one. As well as the new Net Worth report, Quicken covers home and investment matters, producing the figures for total and analysed income and expenditure, cash flow



Left Quicken's main screen, the Register, replicates your bank statement layout and is just as easy to understand. It can show any of your accounts

Below Quicken will track your investment portfolio, showing profit and loss at a glance



and budgets. Some reports can be represented graphically, and the new Financial Calendar prints out your monthly payments and receipts in calendar format. Optional reports for businesses include VAT liability.

Other than that, it's more or less Quicken as before. The principal screen is still the "register", although this has been improved by being able to move transactions between accounts easily, and you get the usual personal accounting facilities. Different kinds of transaction can be allocated to separate account categories (petrol, groceries) for recording and analysis.

Net questions and answers

In addition to its Windows Help files, Quicken 98 for Windows introduces new internet-based support, which is essentially answers to frequently-asked questions. If you don't yet have internet access, you can get the same service from Intuit's Fax on Demand service.

But, to ask your own questions you need telephone support and this is where it gets expensive. All support calls, including those related to installation, cost a pound a minute plus VAT (for our trial of the system we listened to a recorded announcement and a minute's worth of engaged tone on the extension line to which we were being switched, before being cut off). If you're a beginner at either accounting or computing, you might easily rack up 20 minutes' support, taking the package's cost to around £70. If you call from outside the UK, you pay £15 (plus VAT) per "incident".

This edition contains extra help in the form of audio clips, which play the first time you enter a screen. There are also video clips (multimedia

tutors) that illustrate some procedures — and very useful they look, too. It's unfortunate, then, that they only seem to be accessible as a disparate list not linked to the standard pop-up Help or its Index (where you need to know that they're under "video"). The Help, including that online, plus the manual and the multimedia tutorials, all betray the package's US origins, sometimes confusingly as when referring to a non-existent "home and business icon" or to online banking.

Although this product is packed with features, the rough edges noted give this edition the feel of having been rushed onto the market a little early.

James Taylor

PCW Details

Price £49.95 (£42.51 ex VAT)
 Contact Intuit 0800 585058 www.intuit.co.uk
 System Requirements Windows 3.11 or higher.
Good Points Ease of use. Internet integration. Invoicing integration. Report customisation.
Bad Points Incomplete Anglicisation and tax routines. Expensive helpline.
Conclusion Well-featured personal finance accounting, let down by unexpectedly rough edges.
 ★★★★★

Software

AA Multimedia A to B

It may not provide many alternative, scenic routes, but this basic routefinder will get you there.

Route-planner software can be an expensive investment if all you want is to get the route for an occasional family weekend away or for an infrequent business trip. An alternative is A to B Britain 1998 from the Automobile Association. It is simple to use and makes little demand on system resources. It occupies very little hard-disk space and costs only £15, so it could very well be all you need.

As with all route finders, all you have to do is enter your starting place and your destination and A to B Britain generates the carefully selected AA recommended route. You can also add one location to travel via, such as Maidstone to Dover via Canterbury.

Once you have typed in the name of your departure point and destination, A to B presents you with a list of places, with the best match selected. The list, or gazetteer, includes over 15,000 towns, villages, road junctions, places of interest and even a few pubs, so unless your locations are very small, they are likely to be listed. Simply confirm that



Very basic routefinding with fairly clear directions

the correct places have been located and the program calculates your journey. The route is fairly basic but understandable, which is important as you may be able to give the

printout no more than a quick glance as you are driving along.

A to B also provides accurate mileage for journeys, gives a rough estimate of the travel time and lets you cost the journey in several ways: fixed base, cost per distance unit or cost per hour.

Overall, this is a neat and impressively simple product. There are no maps, so a road atlas might prove a useful accessory and only one "via" place could prove limiting on a long journey but it takes the pain out of calculating a route and, for the money, it is a worthwhile investment.

Paul Begg

PCW Details

Price £14.99 (£12.76 ex VAT)

Contact Automobile Association 01865 200800
www.theaa.co.uk

System Requirements Windows 3.1, 95 or NT.

Good Points Easy to use. Easy to understand directions.

Bad Points Perhaps a little limiting with only one "via" or stop-off place.

Conclusion Accepting that this is a very basic routefinder, it does the job simply and quickly. The price is excellent, too.

★★★★★

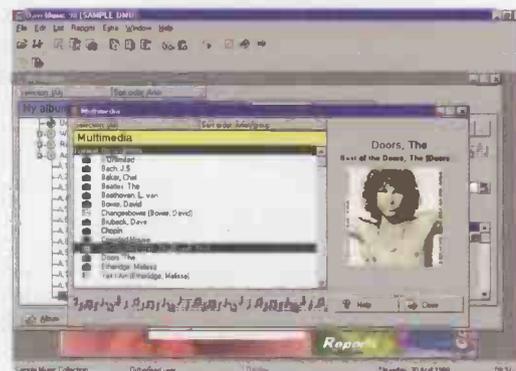
Davilex Davi-Music 98

Lost in music? Then Davi-Music 98 will help you get your CDs sorted in no uncertain terms.

Those who have read Nick Hornby's novel *High Fidelity* will recall that the story was centred around a man who had an unhealthy appetite for basing his life round his record collection.

Some of the trials and tribulations he suffered might have been avoided if he had invested in this piece of software from Davilex, for Davi-Music 98 claims to be as essential a piece of equipment for the record collector as notepad and anorak are for a railway enthusiast.

Davi-Music 98, in its most basic form, is a database tailored for music cataloguing. According to the official blurb, the built-in database contains information on 70,000 CDs. This is principally to save you time when building up your database: if the information on the artist or album is in the Davi-Music database, you won't need to fill in each track and artist details. It is also useful as an encyclopaedia, although when we attempted to create our own database we were disappointed to find several of the well-known artists we chose weren't there — surely Simon and Garfunkel



You can add photographs to your music database

should be among the 70,000?

We were also bemused — and amused — by some of the translations from the original Dutch version of the software: apparently we were the "Ortherised User".

As well as cataloguing your CD or vinyl collection you can record clips of each track in one of three quality modes, with the clearest taking up the most hard-disk space. There are many details you can add in, so if you have the

inclination there is no reason why you cannot create an incredibly detailed database. There is also the option to update details from the Davilex web site, such as new albums and news stories relating to bands.

If you want to take the obsession with your record collection even further, you can try the report option, which allows you to create mini-reports on such matters as who you have lent CDs to and which essential album is next on your shopping list. Of course, at this point, the men in white jackets will come and take you away.

Jim Haryott

PCW Details

Price £34.95 (£29.75 ex VAT)

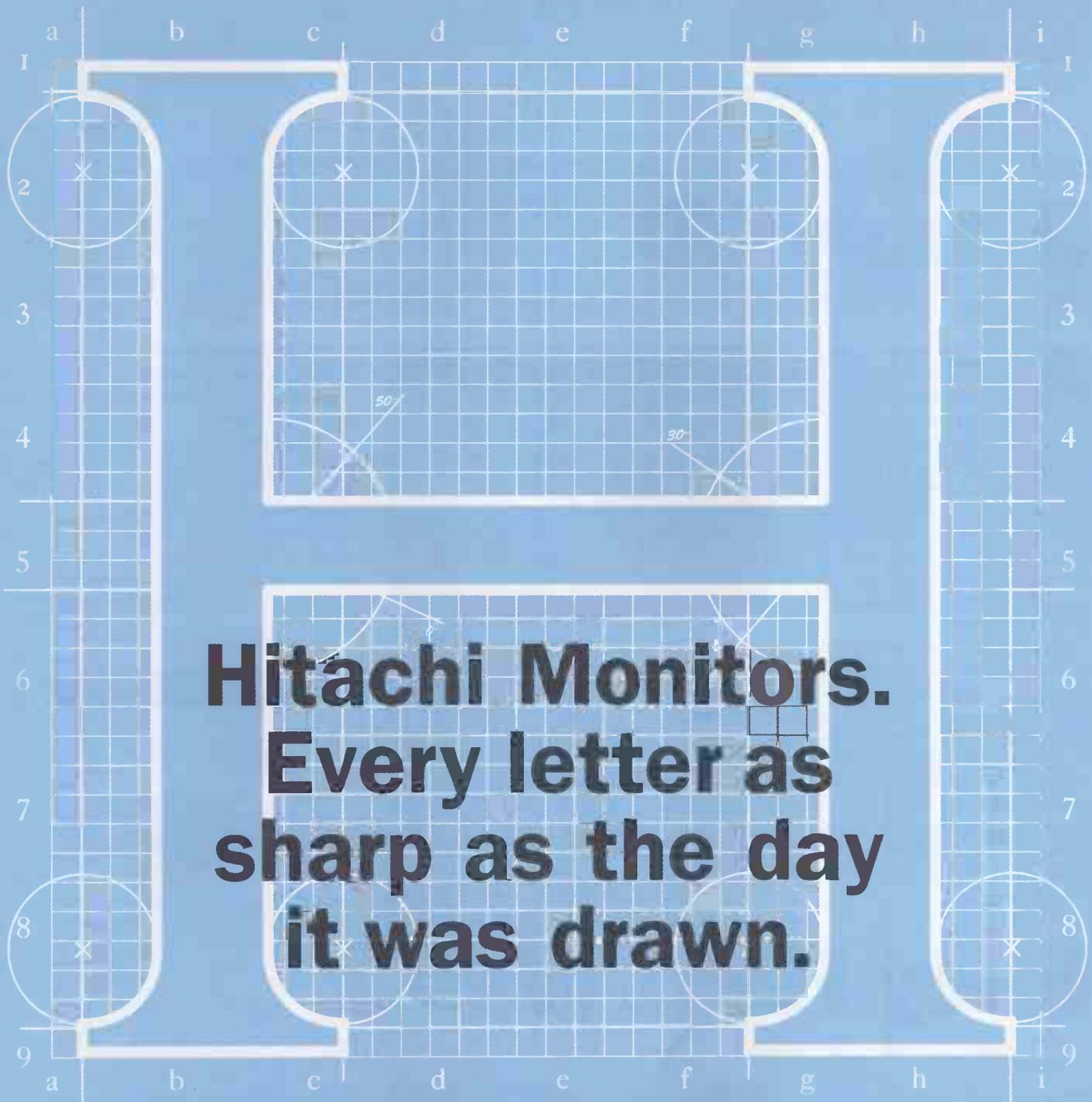
Contact Koch Media 01256 707767 www.davilex.com

Good Points Davi-Music 98 is easy to use and will appeal to the person who is serious about cataloguing his or her record collection.

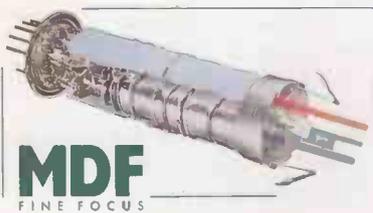
Bad Points There are a few minor glitches, but the main problem is that this software is very time-consuming.

Conclusion Davi-Music 98 is quite a good way to catalogue music, although many of its functions will appeal to hardcore devotees only.

★★★★★



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it was drawn.**



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beam to ensure every dot is struck at the optimum angle. This naturally results in greater focus uniformity and higher definition across the full screen image, even up to the edges and into the corners.

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Software

Simply 3D 3

Whatever your level of drawing skill, here's 3D animation, stills and thrills to perk up your pics.

At a time when graphics packages are vying to outdo each other in the performance stakes by offering more and more features, it is refreshing to come across one that bills itself as "outrageously easy". Version 3 of Simply 3D builds on its past reputation for quickly creating good-looking 3D animation and stills for the internet, documents and presentations. Micrografx says that mainstream users just want to use something straight out of the box, and Simply 3D 3 fits the bill nicely.

There has been a large number of improvements made to Simply 3D, not least of which are the Wizards. Even if you don't have a clue about 3D modelling, the Project Wizard will guide you through the creation process quickly and painlessly. The Output Wizard then helps you to decide what kind of format you want the finished product to be; whether it's an animated GIF file for a web page or a PowerPoint presentation. The 2D to 3D Wizard enables you to convert vector illustrations to real-life models in only a few steps.



Simply 3D's interface is easy to get a handle on

The user interface remains straightforward, presenting the user with a project window that allows you to manipulate and preview objects while choosing from a variety of camera angles. The scene explorer lists each object in the scene and lets you group and rearrange them as you wish. And the catalog offers thumbnail pictures of nearly 2,000 objects and textures that you can use to get started.

Simply 3D 3 also uses a sophisticated scan-line rendering engine which renders images many

times more quickly and accurately, producing smooth and attractive images.

The objects we managed to create with Simply 3D 3 may not win the Turner Prize, but they took very little time and effort, and we were left with the feeling that we were limited more by our creativity than by the package itself. There are undoubtedly other 3D packages out there that would do a more professional job, but if you're in search of an impressive, quick and inexpensive way to jazz up your web page, then you could do a lot worse than try out Simply 3D.

Susan Pederson

PCW Contact

Price £79.90 (£68 ex VAT)

Contact Micrografx 0345 089372 www.micrografx.com

System Requirements Windows 95 or NT.

Good Points A quick and easy way for non-experts to produce 3D models.

Bad Points Could have provided a better selection of images and textures; some are rather cheesy. Results will be better for a naturally creative person.

Conclusion Despite its limitations, Simply 3D 3 will get the job done quickly, easily and cheaply.

★★★★★

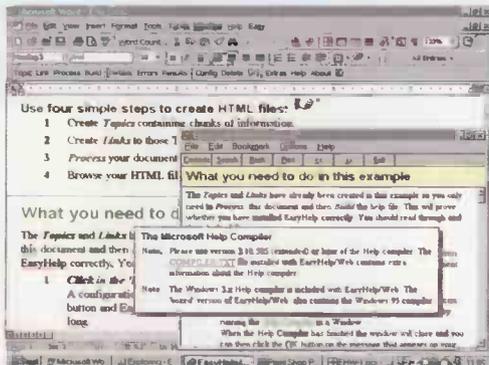
Easy Help/Web 3

HTML without tears: turn Word documents into web pages or Windows Help files, the easy way.

Describing itself as a Hypertext Authoring System for Word 6/7/97, EasyHelp/Web is essentially an add-in template for Microsoft's Word. Using it, you can convert any Word document into either a Windows Help file or web pages, using HTML (HyperText Mark-up Language). You can then use these files on your own system as highly customised information sources, or distribute them to other interested parties — customers, for example. Typical uses would include price lists, catalogues and product specifications, organisation directories, procedure and technical manuals, and inventories.

You cannot use EasyHelp/Web on its own. You need to have one of the supported versions of Word running first. Then, you can either create a new document based on the EasyHelp/Web template, attach the EasyHelp/Web template to an existing document, or load EasyHelp/Web as a global add-in.

Either way, you find yourself with an extra menu bar carrying an additional set of editing tools. These allow you to create Topics and Links; Process (convert) the file to hypertext format; and



There are plenty of examples and tutorials to help you

then to Build the Help file, using the supplied Windows Help compiler (not necessary for web pages).

The key to the procedure is the Topic, which is any piece of text you so define and which can be anything from a single line to a complete chapter in a manual. Position your cursor in the first paragraph and it becomes the topic heading. The topic ends where the next topic begins, or where the document ends.

Each topic is also a link destination, either as a

"jump" or a "popup" in a Help file, or an individual page in a web site. You define the links as you wish, of course. While it could hardly be easier, note that it doesn't support advanced web features like tables and forms, although you can incorporate graphics.

You can actually use Word 97 to produce web pages on its own, but this can be a time-consuming and technical operation. The advantage of EasyHelp/Web is that it automates much of the process for you. What's more, your Word document is preserved, so you can use the same document for printing and for creating hypertext files.

James Taylor

PCW Contact

Price £188 (£160 ex VAT)

Contact Eon Solutions 01625 827037 www.easyhelp.com

System Requirements Windows 3.1, 95 or NT.

Good Points If you can use Word, you can use this.

Bad Points The price may be a little high for some.

Conclusion Simple generation of online hypertext without tears.

★★★★★

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Software

Turnpike 3.05

Turnpike is a fully-featured email and news editor for those who prefer to pay for their net software.

The name "Turnpike" refers to the suite of internet programs that Demon Internet would like all its customers to use (they own the company). The package includes programs to compose email and news messages (Turnpike), to connect to the internet (Connect), WS_FTP Pro and IE, as well as less significant telnet, finger, ping, and traceroute programs.

Turnpike is a fully-featured email and news editor that appears to do everything. The address book automatically stores the name and email address of everyone who emails you. Newsgroups are exhaustively handled: there are six possible ways of "killing" articles; all articles are fully searchable and classifiable; and URLs are automatically highlighted by the software — click on one, and it is added to an HTML file that you can open in your preferred browser when on-line.

Turnpike handles mailing lists too: subscribe and unsubscribe emails are generated for you, and the messages themselves are sorted neatly and put in a "newsstand" as they arrive. Personal emails, if you decide to file them in the "Mailroom" rather than condemn them to the "Wastebasket", can be classified, searched and forwarded. Attachments are dealt with seamlessly though not always competently, and you can even change the colour and type of font your messages are displayed in. Multiple usernames are supported.

Put a Winsock in it!

Connect is the program that actually connects you to the internet. The latest (v3.05) 32-bit incarnation has undergone quite a facelift, and it's the first to use the Microsoft Winsock and TCP/IP stack, which works with the Microsoft stack and Dial-Up Networking. All other versions offer a choice between Turnpike's Winsock and Microsoft's. If you use Turnpike's, then Connect handles your dialling. If you choose Microsoft's, then you have to find something else. Prior to v3.05 I used Turnpike's and it worked fine, but bear in mind that a non-standard choice of winsock is usually accompanied by trouble.

Once you are connected, Connect serves two main purposes. Firstly, it sends and receives all your news and email (POP3, POP2 and SMTP are supported) and passes it to Turnpike so you can read it off-line. Secondly, it is a customisable front-end for the rest of the Turnpike suite. For example, Turnpike comes with IE; if you loathe



Newsgroups are exhaustively handled in Turnpike, and personal emails can be classified and searched

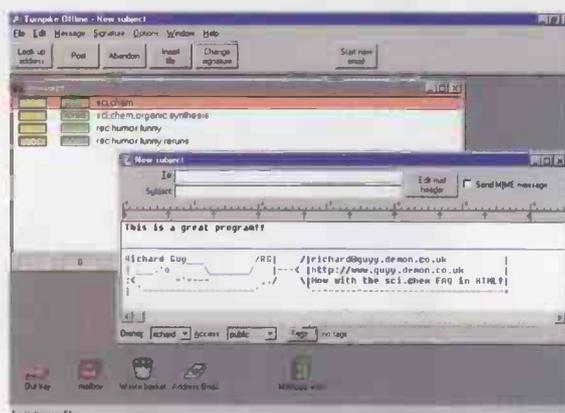
this program, choose not to install it and spend 30 seconds setting yourself up with a button to launch another browser.

Connect 3.05 has a "Calls cost" feature that keeps track of how long you're spending on-line and how much it's costing you. But don't worry, kids. The log can be swiftly deleted once mummy finds out it exists and how to access it (hint: it's the big button with the pennies on it).

Money problems

Money is Turnpike's problem. In this age of internet computing, you don't need to spend any once you've paid for computer, phone-calls and electricity. Windows 95 is shipped with perfectly good email/news programs, a WWW browser and ftp and telnet programs: anything that Turnpike can do, something else can do for free — though probably less well. Even if you don't like what Windows 95 comes with, then alternatives such as Eudora and Netscape can be downloaded or taken off cover CDs.

But Turnpike sells because it's good and cleverly marketed to every Demon subscriber. It's easy to set up and easy to use (easier still if you're



with Demon) and you get to try out an evaluation version. Both programs are stable, and the on-line help isn't too bad. But for the clued-up who don't need a help file to tell them what RTFM stands for, Turnpike is unnecessary expenditure.

Richard Guy

PCW Details

Price Currently in v3.05, £29.37 (inc VAT)

Contact 0181 371 1234

Good Points Does everything. Idiot-proof.

Bad Points Do you need it?

Conclusion If you must buy your internet programs, this is an excellent choice.

★★★★★

We welcome readers' contributions to our Long Term Tests section and pay for those we publish. If you've used a piece of hardware or software for some time, write a 600-word piece (plus two GIF-format screenshots for software reviews) and send it on disk in MS Word or ASCII format to Paul Trueman at the usual PCW address, marking your envelope "Long Term Test". Or email it to paul_trueman@vnu.co.uk

■ Software

2 YEAR
TEST

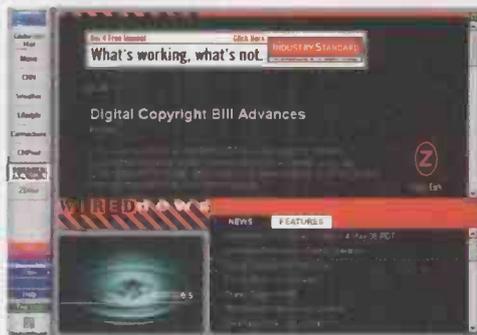
Pointcast 2.0

How PCW's resident Canadian keeps abreast of a wide range of news and views from home.

When I moved to the UK from Canada six years ago, one of the things I missed most was keeping up to date on what was happening at home. Who had won the Stanley Cup? Were people still inexplicably buying Bryan Adams and Celine Dion albums? Sure, I could buy a copy of the *Globe and Mail* at one or two newsagents — if I didn't mind paying £4 for a newspaper that, as often as not, was up to a week old.

So when I ran across Pointcast, a software product that promised to push all the latest news, sports and weather from the frozen north straight to my desktop, I was delighted. I was even more delighted when I found out that the good people from Pointcast would do so for free.

There are several versions of Pointcast you can try. If you have a PC, you can get the Business Network customised for Canadian, Japanese, Asian and US audiences, or if you have a Mac, you can try out the Business or College Networks (US only). Once you've



Getting a geographically-specific view of the news

downloaded your version free from the Pointcast site, you then decide what channels you want to receive. There are a huge number to choose from, but in my case, I've stuck with the *Globe and Mail*, CNN, Weather, Lifestyle, as well as IT channels CMPnet, Wired News and ZDNet.

Since I have a leased-line connection, it never takes too long to update the information. But it pays to pare down your choices to the bare essentials, especially if you're using a dialup

connection. I've heard complaints about Pointcast "taking over" the PC with its screen saver and news ticker. I've turned off these options because they're too distracting, and I don't let it run constantly in the background. This speeds up things considerably.

The variety of the channels has drastically improved, and if and when a UK version arrives, I'd recommend that you give it a try.

Susan Pederson

PCW Details

Price Free

Contact www.pointcast.com

Good Points Get instant updates on the latest news without having to trawl the internet

Bad Points It can take a long time to update, especially with a dialup connection. Screen saver and ticker can be annoying.

Conclusion Best for leased-line users, and those who need a North-American perspective.

★★★★★

■ Hardware

HP LaserJet 5L

This splendid printer has survived some tortuous student treatment and is still going strong.

Ibought the HP LaserJet 5L, together with my Pentium 166, about a year ago for about £500, even though the price dropped drastically only within weeks after my purchase.

At that time, it was probably one of the best printers around, being true 600dpi: most other home printers were only 300dpi. My opinion was confirmed when I saw the results from some 300dpi printers, which even at their highest resolutions did not even compare to the output produced by the HP.

Being a university computer science student, I started using the printer very heavily to print most of my reports, and sometimes also those of my friends, together with a multitude of notes which were either found on the net or given in PostScript format.

Some of these reports reach 150 pages and include graphics, text and graphs, and I must say that the results from the HP are more than satisfactory. Text is very sharp, graphics are extremely clear, and shading is very realistic.

With regard to build quality, the HP is quite

satisfying, even though there were some drawbacks. The not infrequent paper jams when using normal A4 photocopier paper, is one example. This can be easily solved, however, by using special laser paper of a certain thickness.

The vertical design of the printer, even though saving a reasonable amount of desk space, is very much prone to dust accumulation on the inside, mostly through the wide paper tray rather than the paper feeder. This can be annoying, and will probably cause damage to the printer's internals in the long term.

Another amazing feature of this printer is the long toner life. I have been using the HP for a year, continuously printing documents and a whole raft of graphics, and I am still using the original toner supplied by the manufacturer.

Having seen a substantial number of other printers at work, the LaserJet 5L is surely a winner. I'm sure that its successor, the HP 6L, will carry on a great tradition.

Sergio Muscat



The HP LaserJet 5L gives efficient, top-quality print

PCW Details

Price The LaserJet 6L has replaced the 5L, and is priced at £310 (ex VAT)

Contact Hewlett-Packard 0990 474747

www.hp.com/uk/

Good Points Excellent print quality.

Bad Points Can pick up dust easily.

Conclusion Excellent value for money.

★★★★★

Hardware

Visioneer PaperPort Strobe

A nicely-designed and functional scanner that is ideal for the user with modest scanning needs.

The first Paperport was a true original: a platen (i.e. typewriter-style feed) scanner that fitted snugly between your keyboard and system box, bundled with a useful document-management software suite. It was not up to a full office workload, in that you could not push screeds of paper through it, but it was ideal for the home user or individual desktop for quick scans and translating the odd scanned document into editable text. I continued to use one, even though I really needed a heavier-duty model, simply for its convenience. And when the colour-enabled, Twain-compliant PaperPort Strobe came along I jumped at the chance to try it.

The Strobe retains most of the considerable advantages of its predecessor. One irritation was that the original version of the bundled Cardscan software, which makes a fair stab at reading business-card information into a database, allowed you to export in a generic format such as CSV. You now need to buy the

full version of Cardscan to get this facility.

The Strobe is very elegant in design. It plugs into the parallel port via a cumbersome dongle which holds the power connection as well as a printer pass-through port. The feed mechanism is the weakest aspect of the design. You are supposed to flip up a rear paper-feed panel when scanning photographs to allow them to pass through without bending. But the panel has a

tendency to fall off, pictures tend to slip, and it is often difficult to get them to feed in

straight. The bundled software allows you to straighten them

The Paperport Strobe



up again, but this is added work.

The prices of other types of scanners have fallen, and these will be preferable for many tasks. A small flatbed, for instance, will allow more precise scanning of high-definition pictures, and even average-sized offices are likely to need a model with an automatic paper feed. However, I have used the Strobe for several months with no major problems and would recommend it to users with little desk space and modest needs.

Clive Akass

PCW Details

Price £159 (ex VAT), with £30 cashback when you register.

Contact Visioneer 0800 973245
www.visioneer.com

Good Points Convenient, cheap, and easy to use.

Bad Points Picture feed could be better.

Conclusion Robust device for home or small office.

★★★★★

Hardware

Canon BJC-600

Reliable and quiet, and capable of handling a hefty workload, the BJC-600 was a great buy.

I've had my BJC-600 since August 1994 when it cost me the princely sum of £540.

Bubblejets were just coming into vogue and I was pleased as punch with the Canon's 360dpi. The top-mounted controls made the printer very user-friendly, and the

Old reliable: the Canon BJC-600



four separate ink-tanks contributed greatly to economy. The print quality was superb for the time, and has not deteriorated yet, even though I've punished it mercilessly. According to the manual, the maximum media weight is 105gm, but I regularly print on 285gm card with no ill-effects. A friend reckons it would happily take plywood!

This printer is by far the quietest I have heard, which is important to me as my "office" is a converted bedroom where I often work late into the night while my wife sleeps in the next room.

My BJC-600 has caused problems only twice. The first time was when a dealer sold me the wrong refill inks and the print-head clogged. Luckily for me, the visiting Canon engineer showed pity and replaced the head free of charge under the warranty. That's service!

The second time was quite recently, when the machine refused to print and angrily flashed its LEDs at me. The manual told me, "Waste Ink-Tank Full". With the price

and quality of printers available today, I was not about to pay an inflated call-out charge, so I had a go myself. After cleaning and drying the ink-soaked wadding in the space beneath the chassis, reassembling, and entering the correct control code, I was up and running again by the end of the day.

Despite its high original price, my BJC-600 has been worth every penny. Even if I buy a new printer, I'll probably still keep the Canon for as long as it lasts.

Ian Heath

PCW Details

Price The successor to the 600 is the BJC 620, priced at £259 plus VAT (304 inc VAT)

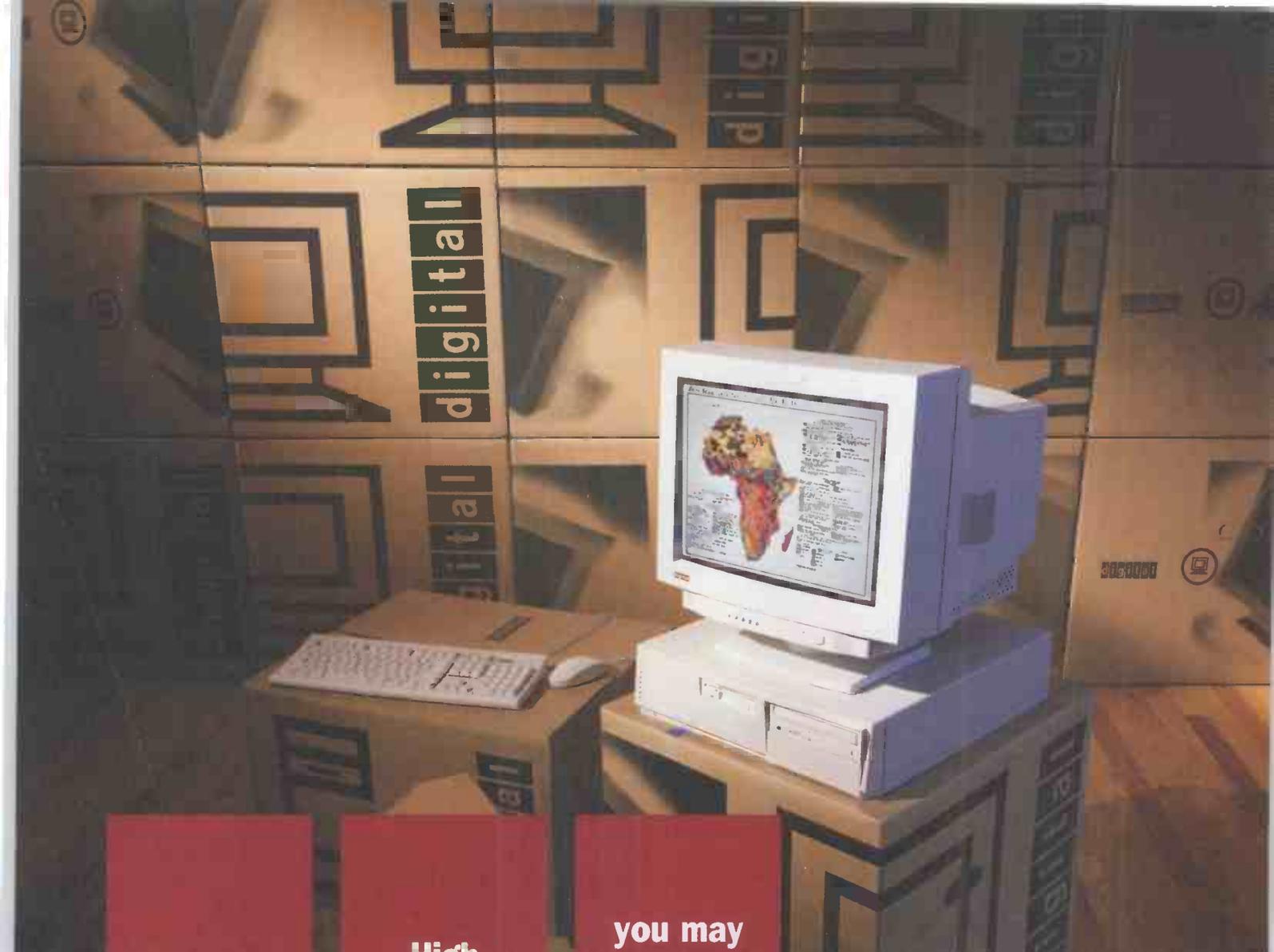
Contact Canon 0121 680 8062

Good Points Reliable, and can take a punishing workload in its stride.

Bad Points Originally quite pricey.

Conclusion A great buy.

★★★★★



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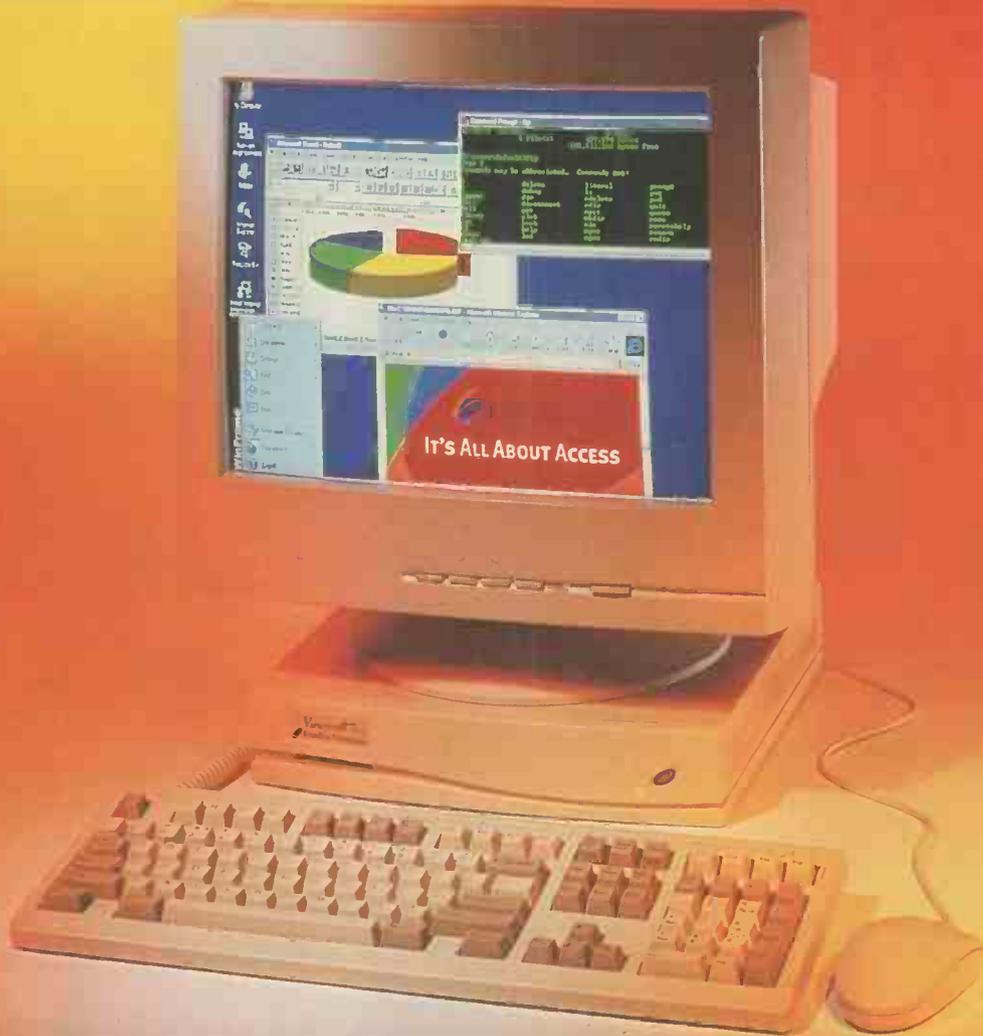
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Network Computers Contents

- 117 What is a network computer?
- 118 Boundless Technologies Viewpoint TC200
- 118 NCD Explora 451
- 118 Neoware Systems Neostation 540
- 118 Tektronix NC217
- 119 Wyse Winterm 2310 SE
- 119 Wyse Winterm 2600 SE
- 119 **Editor's Choice**
- 120 Sun JavaStation & IBM Network Station
- 120 Windows NT 5.0
- 122 MS Windows Terminal Server
- 124 Novell NetWare 5
- 125 Java Office Suites
- 126 **Conclusion**

Ratings

- ★★★★★ Buy while stocks last
- ★★★★★ Great buy
- ★★★★★ Good buy
- ★★★★★ Shop around
- ★★★★★ Not recommended

Get connected

Exactly what are Network Computers, and do we really need them? Alan Clark puts eight to the test while Terence Green takes us through the applications and operating systems.

You have doubtless heard the hype, but chances are you haven't actually seen a Network Computer (NC) in operation. Your organisation probably still uses a network of reasonably powerful PCs connected as clients to a file server, but is this the most cost effective and sensible way to manage your resources?

A PC network costs a lot of money to buy in the first place, with high hardware costs, but it costs a great deal more to maintain, both in terms of staff training and in the time and effort required to keep all that hardware and all those applications running smoothly. The NC offers the chance to cut

costs because it is quite easy to manage the terminals, leaving the systems manager free to look after the server end.

This is the theory. In practice there are a range of opinions on just what a network computer is, how it should run, and, most importantly, *what* it should run. We have reviewed eight network computers and have looked at some of the server OSs they could work with, as well as some of the Java applications they might run. As the client/server option cannot yet be ruled out, we have also reviewed the latest Novell NetWare and previewed Windows NT 5 to give you the full run-down on all the options.

What is a Network Computer?

In the past year, the network computer (NC) market has diversified almost to the point where the name "network computer" means an alternative to the desktop PC. The IT market is now awash with such terms as thin client, fat client, NC, Windows-based Terminal (WBT), NetPC, and now Intel's lean client. The truth is that the NC, in any guise, does lower total cost of ownership and ease the management burden.

The NC concept means different things to different people. To some it spells the end of the brief client/server era. But the NC could be just the thing to help realise the potential of client/server computing by providing a cost-effective platform for a wide range of applications. In this environment, the NC shifts the balance of power away from desktop clients to various server types.

The desktop PC, with its vast storage and the memory requirements needed to run today's bloated operating systems and applications, is now classified as a fat client; conversely, NCs are referred to generically as thin clients. The fat client is becoming too unwieldy and the costs involved in support and maintenance are getting out of hand. The idea of the NC, akin to the dumb terminal, is simple: minimum processor and memory resources, plus a small, local hard disk for temporary storage of applications. These applications, most likely written in Java, are downloaded from the server via a web browser or another interface as and when required, and run locally. All user data is stored back on the server and all applications deleted when the session is finished.

The original idea was to relieve the client of all the storage and processing required by today's desktop operating systems and applications, shifting the emphasis to the application server and the network. This creates a central point of administration and reduces the cost of upkeep on the client stations.

The Java link to the NC was perfect for Sun which created the Java Station as the quintessential NC. Problems surrounding the development of the Java chip, which was to power this new range of thin clients, delayed Sun's initial product release and allowed other vendors to steal some of its thunder.

Dumb terminals

Other vendors have been quick to jump on the NC bandwagon and identify other areas in which to exploit the idea, such as the dumb terminal market. There are millions of IBM 3270 terminals still in use worldwide, which provide users with access to the 70 percent or so of the world's data that is stored on mainframes. The low cost of ownership of dumb terminals means many sites have resisted a wholesale move to PCs, restricting them to just those users who require the extra functionality and processing power required by desktop productivity or other client/server applications.

For these sites, the NC lets them embrace modern

technology at a fraction of the cost. Furthermore they can retain their centralised management practices, avoid the administrative burden of installing software on each desktop and supply users with a single interface to all applications, whatever the platform. As it can connect to various hosts the NC has become, to many businesses, the ultimate universal client platform.

The Windows-based terminal

While many vendors decided to extend the original functionality of the NC by providing it with terminal emulation, mainframe access, Unix integration, and X-Windows support, others decided to concentrate their efforts in niche areas. So, the WBT was born. WBTs have been around since the early nineties (a few years before NC) but only since the introduction of the NC have the full functionality and benefits of WBTs been realised.

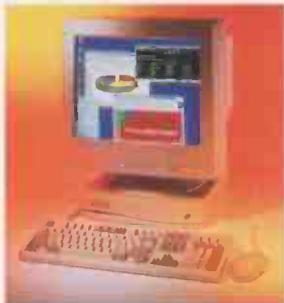
The WBT, like the original NC specification, has minimal processor and memory resources, but no local storage. It connects to a Windows NT server, but the server runs a modified version of the operating system that allows multiple users to connect and run applications on the server itself. Operating systems, such as Citrix Winframe, offer this multi-user Windows NT functionality and Citrix has licensed the code to Tektronix, Insignia and NCD. While the applications are run solely on the server itself, display and mouse information are transmitted over the network to the terminal by means of the Independent Computing Architecture, again developed by Citrix; this is the only interaction between client and server. Microsoft's latest project, codenamed Hydra, is a multi-user version of NT4 that will provide the end user with all the additional functionality of NT4 with the server-centric advantages of the WBT (see p122).

Not to be outdone, Intel and Microsoft jointly produced the NetPC reference specification. A NetPC is a standard desktop PC without a floppy or CD, but using standard processors and memory, running Win95 and connecting to NT servers. The client OS and applications are stored and executed locally but the emphasis moves to a centralised, server-based administration and data storage.

The latest specification is the lean client from Intel. Initial impressions of this new specification suggest an expansion of the WBT to encompass a wider range of server operating systems while retaining the server-based application execution and processing. Intel hopes that its Lean Client System Design Guidelines and Network Server Configuration Guidelines for Lean Clients will enable OEMs to deliver integrated solutions incorporating Intel architecture running on a common platform.

These various specifications have confused matters and it is unclear which will win overall as each fits a specific user requirement. Although it may not replace the conventional desktop, the NC in its various guises will certainly complement today's network environments.

Boundless Technologies Viewpoint TC200



The TC200 is a WBT and provides connectivity to all the multi-user Windows incarnations, including Hydra and the ICA protocol. This protocol doesn't demand a huge amount of processing power but the TC200 is built around a 133MHz 5x86 processor and comes with 4Mb of RAM as standard, upgradeable to 64Mb, with 4Mb of flash RAM and 1Mb of VRAM. All this may sound like overkill for a simple WBT but by adding an optional software module and, if necessary, an internal hard disk, the TC200 can be upgraded for internet/intranet environments or Java applications.

There is a range of ports, including two serial, one parallel, two PS/2, a video and 10BaseT-network connectors. Optional 10Base2 and 100BaseT-network ports and a Token Ring module are available. There is a standard three-pin power connector. Unlike other NCs in this review, it has no separate external power supply and is the only system to provide PC-style expansion (one ISA slot, one PCI slot, with a Type-II PC Card slot).

Management is through the Viewpoint Administrator software. It provides the network administrator with an interface for managing all Viewpoint devices across the network, from the Administrator's workstation or from a remote system.

PCW Details

Price £642.73 (£547 ex VAT)
 Contact Boundless Technologies
 0031 345 565656 www.boundless.com
 Good Points Expansion through ISA and PCI slot.
 Bad Points Limited video support.
 Conclusion Good spec let down by low VRAM.
 ★★★★★

NCD Explora 451



One of the things that is immediately striking about the majority of NCs is their styling; the Explora 451 looks more like an

external modem than a computer. On the rear of the machine there are all the usual connectors: power, serial, parallel, video, and a 10/100 auto-sensing RJ45 network connector. The two PS/2 connectors are on the underside of the unit (bizarre!) but the stand keeps the unit raised high enough off the desk for the cables to sit freely. There is also a single Type-II PC card slot for a wireless network card, while 10Base2 and Token Ring network connectors are optional extras.

The 451 offers an all-round mix of Windows, Unix and legacy connectivity. The hardware is powered by a 66MHz PowerPC chip and comes with 8Mb of RAM as standard, expandable to

128Mb. The S3 graphics chip with 2Mb of video RAM gives a maximum resolution of 1,280 x 1,024 and there is an 8-bit audio chip.

Included with the Explora 451 is version 5 of NCDware, NCD's own embedded OS which provides the local ICA client, Java virtual machine, browser, wireless connectivity and lightpen support. Installation of the device is straightforward: simply install the NCDware software on to the appropriate server and attach the Explora 451 to the network. Windows connectivity is serviced by NCD's WinCenter software, a licence of Citrix Winframe with a few enhancements.

PCW Details

Price £830.73 (£707 ex VAT)
 Contact NCD 01753 736600
www.ncd.co.uk
 Good Points Support for Windows, legacy and Unix environments.
 Bad Points Limited expansion potential.
 Conclusion A good all-round NC.
 ★★★★★

Neoware Systems NeoStation 540



Last year HDS changed its name to Neoware Systems to reflect a shift from hardware vendor to a more software-based company. This is one of the products that reflects that change.

Offering a different style from the other NCs, the NeoStation 540 can be mounted flat or on its side, with a small stand. The front has the on/off switch and headphone and microphone inputs, the latter accompanying the built-in mic. Connectors to the rear include two serial, one parallel, two PS/2, video and a 10BaseT-network connector. There are two Type-II PC Cards or one Type-III slot; a 40Mb Type-III hard disk was provided with our model. Network interfaces for Fast Ethernet and Token Ring are available via PC Card support.

Powered by a 25MHz Intel i960 processor, the NeoStation 540 can be upgraded to 132Mb RAM with an optional 6Mb of flash memory. The video hardware supports resolutions up to 1,600 x 1,200, making the NeoStation 540 ideal for graphical applications. Running Neoware's netOS software, a variety of options is available for accessing Windows apps, mainframes, minicomputers, Unix applications, Java and the internet. Upgrading to netOS for the Enterprise Edition brings you Unix connectivity along with 3270 and VT320 terminal emulation, with a further 32 terminal emulators available for accessing Enterprise systems.

PCW Details

Price £540.50 (£460 ex VAT)
 Contact Neoware Systems
 01344 382164 www.neoware.com
 Good Points Excellent expansion potential.
 Bad Points None worth mentioning.
 Conclusion Excellent all-round NC catering for Windows, legacy and Unix.
 ★★★★★

Tektronix NC217



Tektronix's 200 series is probably the most modular, expandable system in this benchmark. The NC217 has an unassuming design. The front panel has an on/off button and a power LED. The left-hand side has a variety of audio connections for headphones, a microphone and audio in and out. There are the usual array of connectors: two serial, two PS/2, parallel, video, 10BaseT-network and a range of expansion modules with a good selection of empty ports. Options for the NC217 include 10Base5-, 10Base2- and an autosensing 10/100BaseT-network connection, PC Card slots, and an MPEG-1 digital video card, along with a small video camera. This range of options demonstrates the

versatility of these devices. A large surround overshadows all the connections. It covers all the unsightly cables and increases the surface area of the NC217, providing a monitor stand.

Built around a 100MHz NEC4300 processor, the NC217 comes with 8Mb of RAM as standard, expandable to 128Mb. As well as providing connectivity to multi-user Windows applications by way of Tektronix's WinDD, the NC217 offers a range of host connectivity options, terminal emulations, Java support and a local web browser. All this connectivity is provided by Tektronix's NCBridge application. Versions for both NT and Unix are available.

PCW Details

Price £1,169.13 (£995 ex VAT)
 Contact Tektronix 01628 403300
www.tektronix.com
 Good Points High degree of expandability and modularity.
 Bad Points Unassuming design.
 Conclusion An ideal solution for some very demanding environments.
 ★★★★★

Wyse Winterm 2310SE



The Winterm 2310SE is a basic Windows-based terminal. With a background in the terminal market, Wyse has been making WBTs since the early nineties.

The 2310SE provides connectivity to multi-user NT environments such as Citrix Winframe and Microsoft's own Hydra product by way of the Citrix-developed ICA protocol now known as pICAsso. Optional firmware support for Microsoft's TSHARE protocol, now known as the Remote Desktop Protocol (RDP), is available.

Two serial ports, a parallel port, two PS/2 connectors, a video connector, a Type-II PC Card slot and a 10BaseT-network connector make up the usual range of connectors at the rear of the unit. 100BaseT and

Token Ring network modules are also available.

Unlike other NCs in this benchtest, the Winterm 2310SE has minimal memory requirements: 1Mb of code space for downloading the thin client software (upgradable using flash RAM), 1Mb of video RAM providing a maximum resolution of 1,024 x 768, and a further 2Mb for cacheing. This may seem paltry for such a device, but it's more than adequate for multi-user Windows NT environments.

For users who simply require Windows-based terminals without any of the other features offered by NCs, the Winterm 2310SE is an excellent solution.

PCW Details

Price £558.13 (£475 ex VAT)
Contact Wyse 01189 342200
www.wyse.co.uk

Good Points Good for basic Windows connectivity.

Bad Points Offers none of the other features of an NC.

Conclusion Not a true NC, but fine as a WBT.

★★★★★

Wyse Winterm 2600SE



Wyse has taken its thin client technology and introduced it to many diverse environments.

Although still a basic WBT, the 2600SE, with its integrated 12.1in LCD, is the ideal solution for meeting the emission-free requirements of medical and other such environments. With this in mind, Wyse has built into the casing a mounting point that could as easily be attached to a rolling cart as it could to a wall, to provide maximum visibility with a minimum footprint. Add to this an optional touch screen that works equally well with a finger as it does with a stylus, and you have the perfect solution for multimedia booths, information points and similar applications.

Personal Computer World
Highly Commended

Behind the cable shroud at the rear of the unit is the usual array of connectors: two serial, one parallel and two PS/2 ports, one Type-II PC Card slot and a 10BaseT-network port. Of the four other RJ45 connectors, only two are used; one for the optional magnetic strip reader, the other for the touch screen.

A small control panel under the screen, with an on-screen display, lets you adjust the screen contrast, horizontal and vertical positions, stability and brightness. There's an on/off button and an LED indicating power and sleep modes.

As the Winterm 2600SE clearly demonstrates, NCs can be introduced into environments where computers would not otherwise be feasible.

PCW Details

Price £1,997.50 (£1,700 ex VAT)
Contact Wyse 01189 342200
www.wyse.co.uk

Good Points Integrated 12.1in LCD.

Bad Points Expensive for a WBT.

Conclusion Novel approach to the WBT.

★★★★★

Editor's Choice

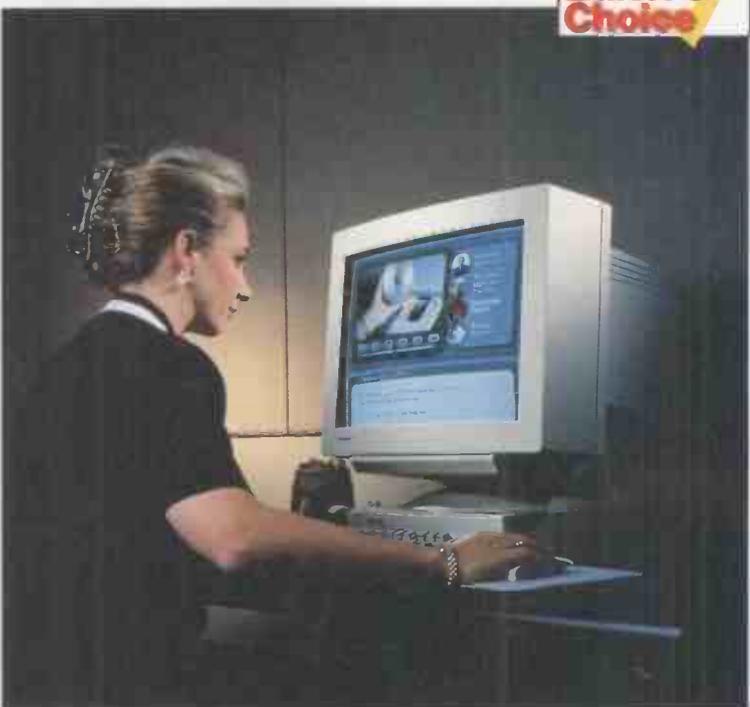
Of the six network computers submitted, we had a mix of standard WBTs and traditional NCs. The designs were all refreshingly varied, with some offering greater expandability than others. Unfortunately, neither IBM, with its NetStation 1000, nor Sun, with its Java Station, were able to submit products for this group test, but we have taken a look at their NCs (p120). We also decided not to look at NetPCs as they are essentially standard PCs minus the removable storage.

When choosing an NC there are a few points to consider, depending on its intended environment and usage. If there's a chance you could be deploying some heavy Java applications, you'll need an NC that can handle large amounts of RAM and preferably one that uses an above-average processor. Likewise, if all you need is a WBT, there's no need to go for a high-end NC with more options than a Swiss Army knife.

All the NCs and WBTs in this group test are compatible with the ICA protocol developed by Citrix, and the Remote Desktop Protocol (RDP), formerly known as T-Share, developed by Microsoft for its multi-user Windows product, Windows Terminal Server. Depending on your needs for legacy connectivity each of the NC vendors offers a range of host connectivity and terminal emulation options. Of the six devices we looked at, three models in particular stood out.

The NeoStation 540, from Neoware Systems, is **Highly Commended** as it is an excellent all-round NC catering for Windows, legacy and Unix environments. The implementation of two Type-II PC Card slots to create a single Type-III slot gives you the ability to make use of PC Card storage devices, further extending flexibility.

Although it's a WBT, the Winterm 2600SE, from Wyse, is a novel and interesting approach to NCs. Its LCD opens up a range of possible applications in some very specialised markets. **Highly Commended.**



Our Editor's Choice is the Tektronix NC217. It offers powerful hardware combined with a wealth of expansion options, to create a singularly flexible device able to cope easily in some very demanding environments.

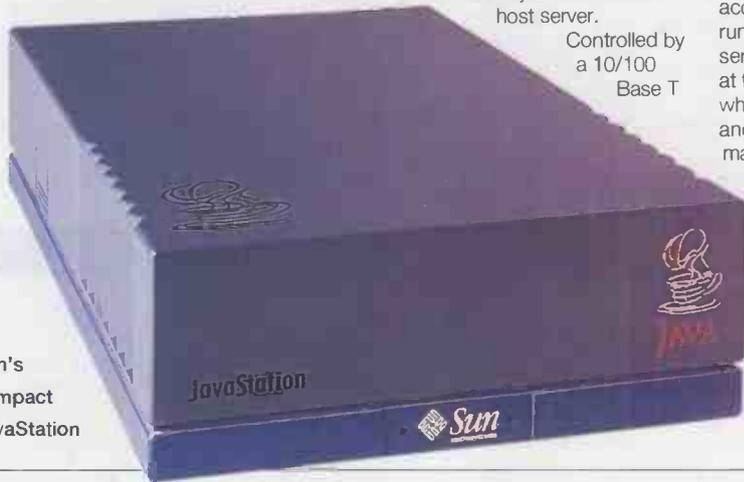
Personal Computer World
Editor's Choice

Sun JavaStation and the IBM Network Station

The two largest players in the market, Sun and IBM, were unable to send us machines for review in time to meet our deadline, so here we have summed up their approaches.

Sun JavaStation

Sun has just launched the second version of its JavaStation. Based on the Microsparc 2 processor and incorporating Hot Java Views as its desktop environment, it also bundles a number of personal productivity applications along the lines of calendar and email clients. The advantage of using a Java-based OS, says Sun, is that it allows the safe incremental installation of software. Users' machines can be updated without the need for lengthy reinstallation routines and, unlike old network terminals, the software remains resident in flash memory and not on the host server.



Sun's compact JavaStation

Ethernet connection, more than 1,000 companies are already selling Java applications suited to this environment. Even so, Sun acknowledges that increased bandwidth, especially in home and WAN environments, and a more impressive selection of Java applications are necessary before this technology takes off in a big way.

IBM Network Station

IBM remains the largest player in the NC market. It has been selling NCs since March 1997 and has already filled a number of large-scale orders for organisations which are replacing either dumb terminals running on mainframe architectures or PCs running Windows applications.

IBM has three series of NC, each called Network Stations. The 100 series is a cross between a dumb terminal which will access legacy mainframe applications, and a WBT for running Windows-based apps on an NT server. The 300 series has more processing power on the client and is aimed at those people who need to run applications on a server, but who also need a browser on the machine to access intranet and Internet sites. Finally, the 1000 series is a more powerful machine which comes with Lotus eSuite (p125) and is designed to run Java-based applications. IBM foresees that most corporations will use eSuite simply as a front-end for plugging in their own Java applications.

IBM sees Java taking an increasing share of the NC market as large corporates re-code legacy mainframe applications into Java, although Windows-based NCs still have an important part to play. IBM sees the rise of NCs as offering organisations greater flexibility and something which will strengthen the role of a server-based architecture, rather than simply take market share away from PCs.

Windows NT 5.0

Although depicted as a rival to the Windows platform, the NC is more accurately one aspect of the industry-wide belief that networked desktop PCs are complicated to use and expensive to run.

Not surprisingly, Microsoft's views on NC appear to differ from those of the proponents of network computers, but it would be a mistake to think there's any difference of opinion over the basic concepts driving networked computing. Everyone agrees there's going to be more emphasis on the server in order to reduce costs and provide a solid platform for distributed (for which read web) applications.

This is clear from the early limited betas of Windows NT

5.0 that have been circulating for some time, and the release of Windows NT 5.0 components in NT 4.0 Service Packs and the Option Pack for Windows NT 4.0. These releases delivered the web-based application development tools upon which Microsoft's Distributed InterNet Architecture (DNA) is based.

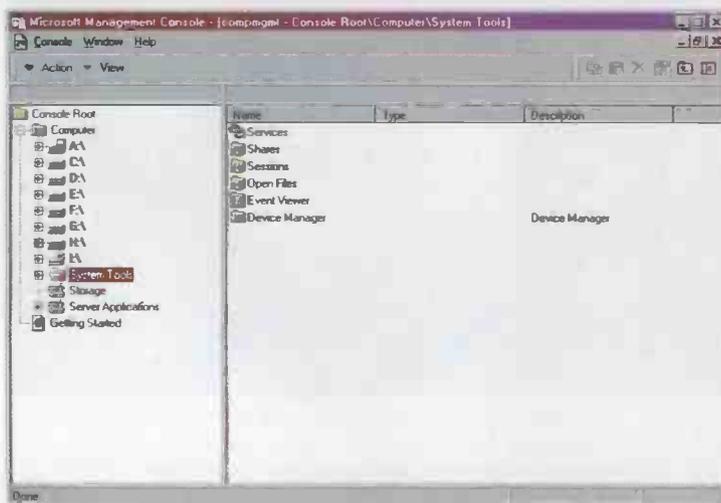
The first feature-rich beta of Windows NT 5.0 this month will be replete with a host of new and enhanced management and administration tools that enable DNA to be deployed cost-effectively on a Windows platform. Initially, Microsoft hopes to remove much of the complexity at the client desktop by automating the desktop configuration. But not everyone will win. Things will be more complicated for the network administrator to begin with, which makes it all the more important that personnel responsible for Windows networks get on the beta programme early even if they don't intend to upgrade in the near-term.

Management of Windows NT 5.0 will be centred on the Management Console and will be web based to enable it to be integrated into enterprise-wide solutions from Hewlett-Packard, IBM and Computer Associates. Windows NT 5.0 will feature automated software delivery and configuration with self-healing properties and full support for roaming users. This will throw a lot more responsibility onto the Windows NT Server and the hardware on which it runs.

In order to derive the maximum benefit from Windows NT 5.0 though, the best client will be Windows NT Workstation, with Windows CE-based terminals coming in second place. Windows 98, while slightly more manageable than Windows 95, remains the most unruly member of the Windows bunch.



The Management Console will be at the heart of Windows NT 5.0



WE'VE GOT WINDOWS COVERED

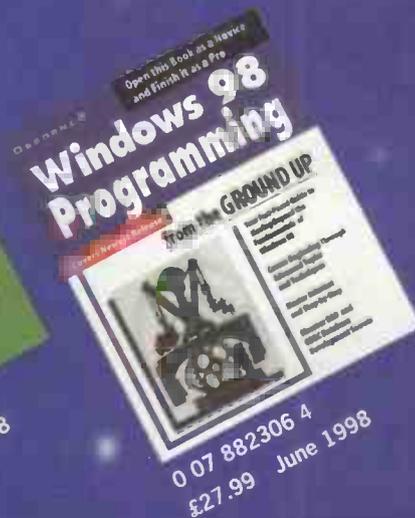
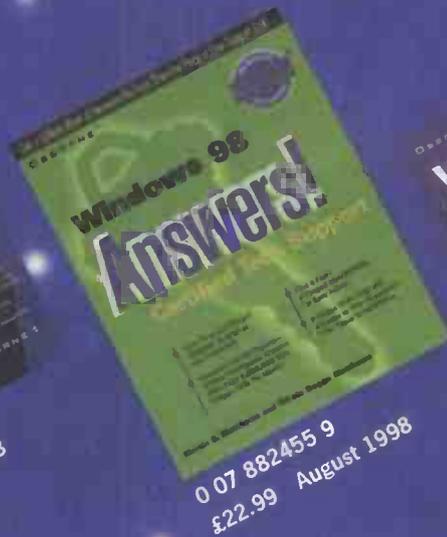
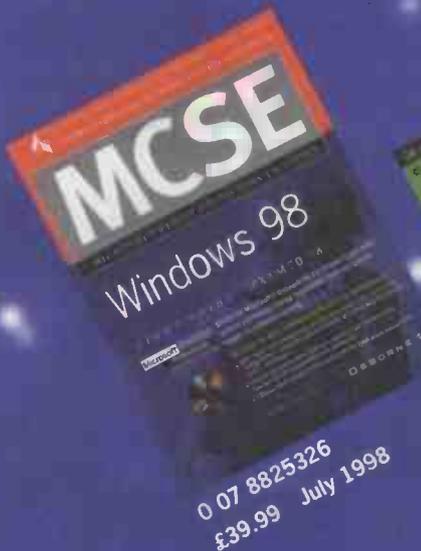
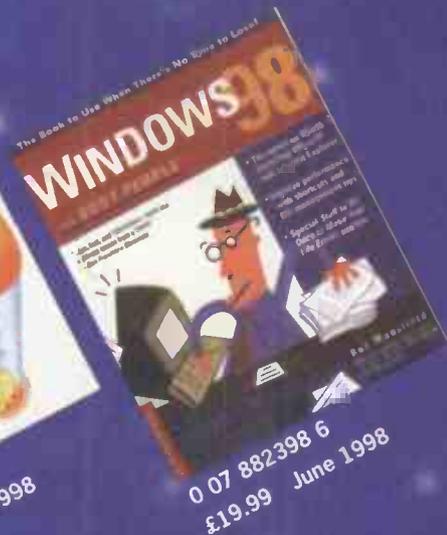
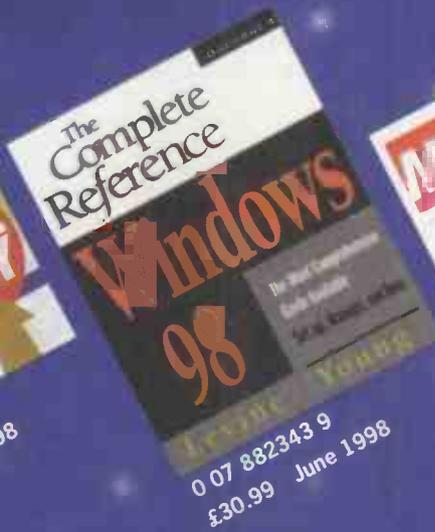
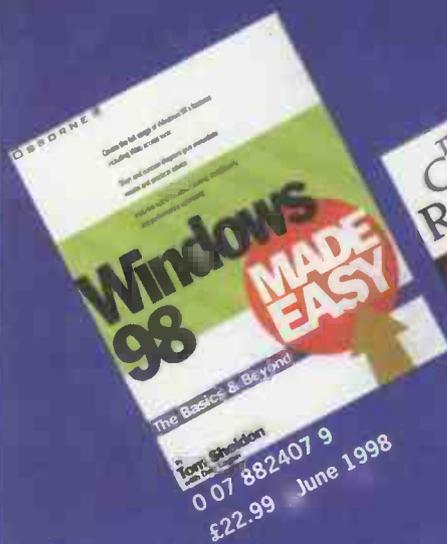


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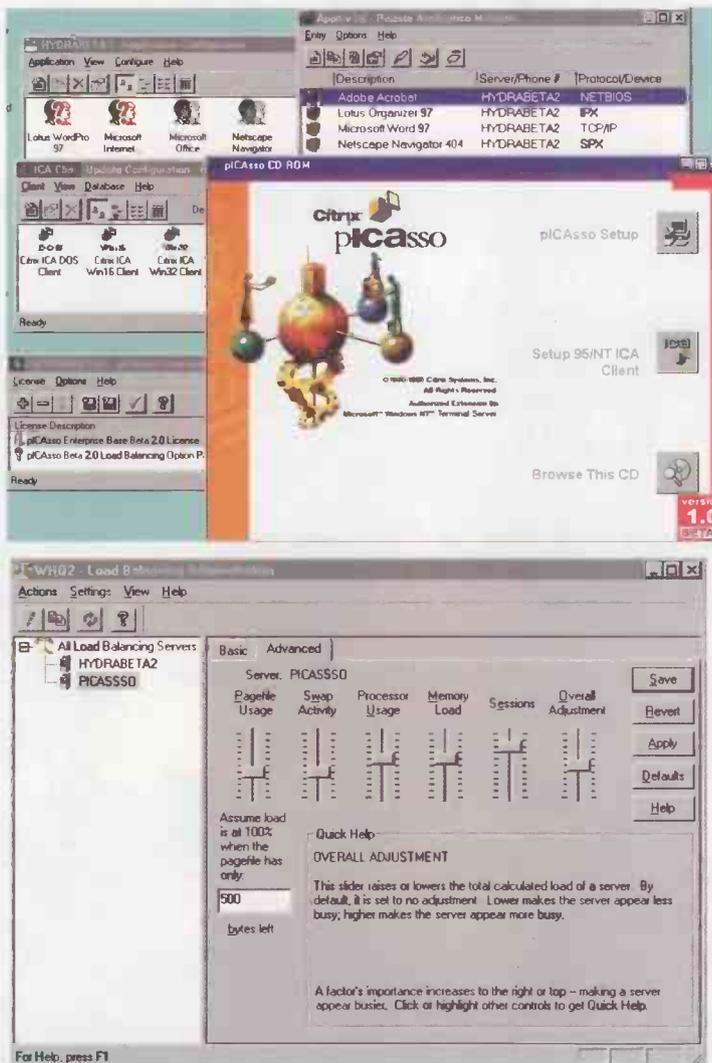


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Microsoft Windows Terminal Server

Network computing for Windows is handled by Microsoft Windows Terminal Server, originally codenamed Hydra, the multi-user version of Windows NT 4.0 for Windows PCs, NetPCs and Windows-based terminals built around Windows CE. Multiple users can log into Windows Terminal Server simultaneously to run



Top To get the best from Windows Terminal Server you need its Citrix MetaFrame Above 32-bit Windows apps load into shared memory, reduce memory drain, and provide better performance and reliability

independent sessions. The applications started by users are executed on the remote server but displayed on the user's own screen. Most applications supported by Windows NT are also supported by Terminal Server. As clients only need to run a small piece of client code, it is possible to serve up Win32 apps to non-Win32 systems and to older hardware that lacks the power to run such applications locally.

Terminal Server is not ideal for processor- and memory-intensive applications and doesn't support multimedia, but it enables applications to be deployed more flexibly. Power users of these applications are kept up to date with new hardware, while older systems can be redeployed as Terminal Server clients for non power users. So Terminal Server provides the Windows world with some of the benefits of network computing by enabling network processing resources to be organised more efficiently.

Terminal Servers have to be well-equipped with a 32-bit architecture and 4Mb RAM per ordinary user or 8Mb RAM per power user, over and above the server's needs. A 120MHz Pentium with 96Mb RAM would suffice for 15 ordinary users, but add power users or more clients and a multiprocessor server becomes advisable. Although Terminal Server runs any application which runs on Windows NT,

32-bit Windows applications which load into shared memory reduce the memory drain and provide better performance and reliability. On its own, Windows Terminal Server supports Windows NT, Windows 95, Windows for Workgroups and a new range of Windows CE-based terminals from Wyse, Boundless, NCD and others. Clients employ the NetMeeting T.Share protocol (now called Remote Desktop Protocol) which requires TCP/IP.

Citrix MetaFrame

Citrix MetaFrame is a supplementary package which extends Windows' reach to virtually any client platform and adds sophisticated management, administration and ease-of-use features. Terminal Server itself is based on MultiWin technology licensed by Microsoft from Citrix WinFrame.

MetaFrame delivers the bits Microsoft didn't license, most especially the Citrix ICA client which is optimised for low bandwidth connections and minimal client processing. ICA supports TCP/IP, NETBIOS, IPX/SPX and SLIP/PPP connections and the Secure ICA protocol enabling Terminal Server to be configured to the C2 security level.

MetaFrame is of major benefit to large enterprise networks with a mixture of client systems, as it enables almost any computer or device to log in and "run" Windows applications on a Windows Terminal Server. This includes Windows 3.1 and DOS, Mac and Unix systems, and even web browsers. There are ActiveX and plug-in clients and a Java client, too. The web browser and Java clients can be tested online by visiting the demonstration area at www.citrix.com.

In addition to enterprise-wide access, MetaFrame simplifies server, applications and client management, adding point-and-click applications configuration for multi-user access via LAN or dial-up with full access control for explicitly-named and anonymous users. MetaFrame also enables web access to Windows applications with ALE (Application Launching and Embedding). Windows applications can be linked to web pages without writing HTML and launched from the client's browser into a separate window, or to run within the browser window.

MetaFrame server management support includes load balancing for multiple servers and the ability to monitor and tune the service dynamically. Server administrators can "take over" a remote client and work with the user to fix problems or demonstrate procedures.

Ease of use

For users, MetaFrame includes drive, port and printer mapping. Under Windows Terminal Server, client system drives and ports take the addresses of the server's drives and ports. On a PC, the client's own addresses must be mapped after the server's; so the server would provide the C: drive, and the client's own C: drive would have to be mapped to D:. The same goes for printers. MetaFrame maps addresses so that clients retain their logical drive, printer, and serial port addresses.

MetaFrame supports "seamless windows" on clients. Windows Terminal Server sessions normally execute within a remote desktop window, but MetaFrame allows the remote applications to run in their own windows and enables cut and paste between these windows, too. Terminal Server is required for MetaFrame and is sold as a server package. The basic package supports up to 15 clients but the clients themselves are free, and the latest client packages can always be found on the Citrix web site. It requires a Windows NT 4.0 server licence, though, and the standard Microsoft client licensing applies to clients attaching to the Server.

Terminal Server provides a new level of flexibility for network administrators delivering Windows applications to Windows-based networks and offers potentially significant management cost reductions. The Citrix MetaFrame add-on package extends Terminal Server to encompass the mixed range of clients found in most large networks, delivers ease of use for clients and administrators, and adds enterprise-class management tools.

The Cruiser



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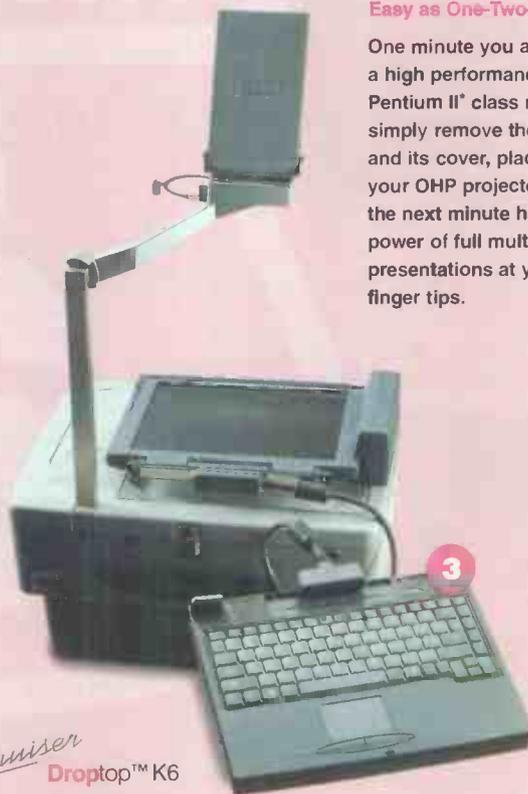
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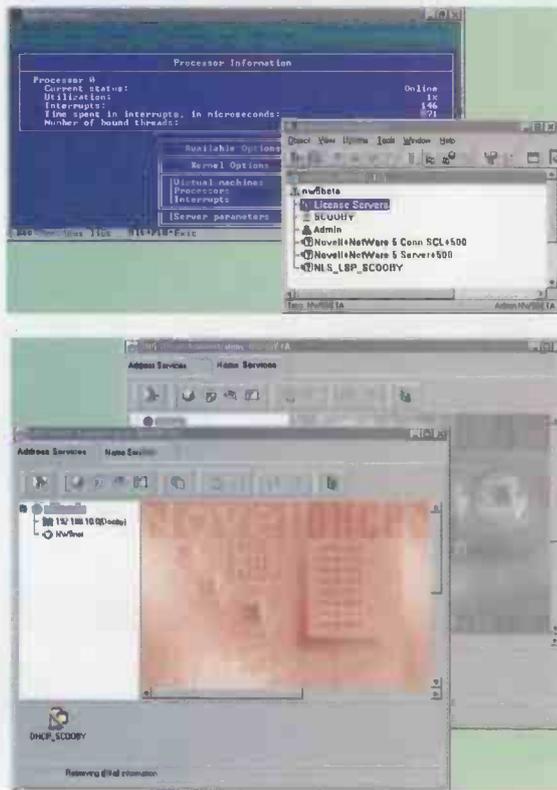


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Novell NetWare 5

Novell NetWare has lost ground to Microsoft Windows NT in recent years. But the game is on again because NetWare 5 is not your father's NetWare. Based on internet standards, Java-enabled for cross-platform applications, year 2000-compliant and with a secure global directory service in NetWare Directory Services, NetWare 5 is set to take PC networks into the next millennium.

Many NetWare users will not feel the need to upgrade immediately, but NetWare 5 lays out the road ahead for NetWare. And it is a very clear route, signposted and secured by NetWare Directory Services (NDS) and open to anyone



Above NDS is the key to NetWare's future

using internet standards-based software. NetWare 5 now defaults to IP-only although traditional NetWare IPX is still supported, and several co-existence options allow a measured migration from earlier versions.

Compatibility mode enables IP NetWare 5 servers to service IPX applications and clients because NetWare core services, although now implemented in IP, can still respond to IPX requests.

Mixed IPX and IP networks can be accommodated by Migration Gateway, which creates a virtual IPX network at the NetWare 5 IP server and routes traffic to IPX segments. A Bindery Gateway supports NetWare 3.x co-existence.

NetWare 4 and earlier servers can co-exist, but NetWare 3.x holdouts who have been wondering whether to switch to Windows NT now have a clear choice between waiting for Windows NT 5.0 or upgrading now to NetWare 4.11 or 5.0 in order to participate in NDS.

NetWare Directory Services

Now IP-enabled, NDS includes integrated DNS (Domain Naming System) and DHCP (Dynamic Host Configuration Protocol) services as well as a global catalogue which can be

queried by applications using the Lightweight Directory Access Protocol (LDAP). NDS also has an Active Directory Service Interface enabling it to be supported by the Microsoft Active Directory due in Microsoft Windows NT 5.0. A Service Location Protocol (SLP) conforming to internet standards provides the network discovery service formerly handled by the IPX Service Address Protocol (SAP).

Since NetWare 5 supports internet standards, it becomes possible for anyone to access NetWare 5 services over the public network with standards-based software. Provided they have the right authentication, NDS will allow them to browse the directory and will only reveal resources for which they have permissions. NetWare 5 NDS includes a cryptographic services layer supporting the Secure Socket Layer (SSL) now, and extensible absorb internet standards for privacy, certification, and non-repudiation as they emerge.

Java

With IP and NDS, Java is the third member of the NetWare 5 triumvirate. The Java engine in the kernel supports server-side Java "glue" to unite clients with back-end databases in cross-platform applications. Java enables Novell to provide cross-platform administrative tools and allows users to access NetWare services with the same tools from multiple platforms, thus keeping training costs down.

In the beta we viewed, the first indication of NetWare's Java future appears during the install process when a Java console fires up to take you through the rest of the install process. NetWare 5 will include a number of Java-based utilities which snap into a Java-based "ConsoleOne" administrative console. It won't happen overnight, but eventually all NetWare administration utilities will be Java based.

Java also enables Novell to offer developers a standards-based applications development environment. Programmed access to NetWare 5 network services is available through a variety of new routes, including Java and JavaScript. For the developer, NetWare 5 includes an integrated Java development environment, a debugger, support for JavaBeans for NetWare, and a CORBA-compliant ORB (Object Request Broker).

Kernel enhancements

The server kernel has been rewritten to support multi-processor systems, virtual memory, Java, and a scheduler which enables applications to be prioritised. A protected memory environment enables server applications to be loaded into protected memory (Ring 3) where, if they happen to crash, they will not take the server down. Hardware support has been updated, Hot Plug PCI support added, and a fast 64-bit indexed storage system supports file sizes up to eight terabytes. Server clustering is an optional extra.

Other new features include an enhanced version of the NetWare SBACKUP utility, a five-user version of the Oracle 8 database, Netscape FastTrack web server, Netscape Communicator web browser, and NetWare online documentation in HTML format.

The administrative tools included — Novell Application Launcher & Workstation Manager, which enable applications to be distributed automatically to both desktops and roaming users — are a subset of the ZEN (Zero Effort Networks) package which will be available separately. The full ZEN package, announced in February and now in beta, adds desktop asset management, administration and remote support, and problem-solving options. The recently-shipped NDS for NT package which brings Windows NT domain management into the NetWare fold is not included but will be available as an extra-cost option for NetWare 5.

NetWare can also be extended with Novell's ManageWise network management and GroupWise messaging and groupware options.

With NetWare Directory Services, the Java engine and IP services, Novell's new NetWare 5 enables companies to connect to the world at large while maintaining tight control over the security of their network resources and stored data.

Java Office Suites

Java — OK for animated web pages but no good for office applications? Pioneering work from Corel and Lotus has not only rendered this a moot point, but has also produced innovative Java tools and technologies.

Converting an existing office suite to Java is a very bad idea, as Corel demonstrated in 1997 when it released the Corel Office Suite for Java. It's something CEO Mike Cowpland publicly admitted recently while introducing much better Java-based products.

A much smarter idea was analysing the work done by office workers in order to define the 20 percent of must-have features for office applications, and this helped Lotus deliver eSuite, a lightweight Java office suite for network computers and Windows PCs alike. Lotus also came up with the InfoBus which allows Java applets to share and exchange information with no programming required. InfoBus was recently incorporated into the Java specification.

Lotus eSuite

The server-based applets are presented on the client systems within the eSuite WorkPlace desktop which runs on any client with a Java Virtual Machine. The applets communicate via the InfoBus to enable, for instance, a chart to be incorporated into a document. Since it is server based, each person's eSuite WorkPlace maintains its state when they log off and they can return to their tasks as they left them when they log on again.

eSuite applets don't provide heavy-duty DTP and financial modelling services but there's nothing to stop them being used in conjunction with full-blown applications. The primary aim of eSuite is to provide the basic tools that most office workers use, in a framework that can easily be extended if necessary, and to make them easy to use in order that management and training costs are kept low. The demo version we reviewed is certainly easy to use, with lots of colour and clearly-marked task-orientated menus which pop up on a single click of the mouse.

If necessary, developers can extend the capabilities of eSuite with eSuite DevPack which packages the applets as JavaBean components. DevPack doesn't have to be used in conjunction with eSuite WorkPlace. It complements any developer tool that supports JavaBeans, from web-page editors to full-blown programming languages. Lotus has signed up several licencees who will bundle eSuite, including Netscape NetCenter, Novell, Sun, IBM and Oracle. AOL plans to give the email component to its users.

Corel

Corel may have stumbled with Corel Office Suite for Java, which made a brief beta appearance at the beginning of 1997, but it has learned a lot. In March this year it bounced back with Corel OpenJ and jBridge. OpenJ is foundation technology which enables web applications to be assembled quickly and easily from JavaBean components.

OpenJ works with any Java Virtual Machine on any hardware and is based on Applications Description Markup Language (ADML). Developed by Corel, ADML can be used to create applications with any text or XML (eXtensible Markup Language) editor.

Corel jBridge, a thin-client/server technology, enables 32-bit Windows applications running on a Windows NT server to be displayed on any Java-enabled client (it sounds very much like Citrix MetaFrame for Windows Terminal Server).

Corel is also working on jSuite, a set of office applets due to ship this summer alongside Corel's own network computer and the OpenJ and jBridge tools.

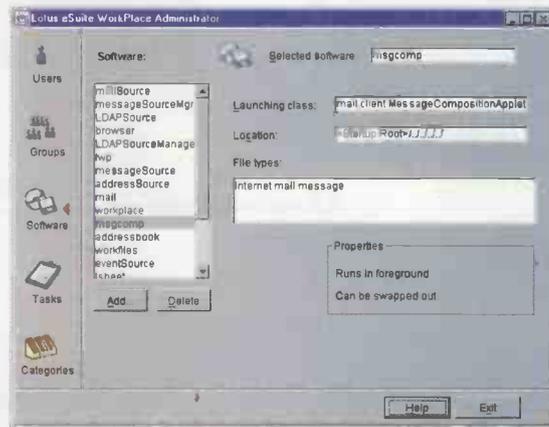
Directions

Lotus may have been faster on the uptake than Corel but the lesson is the same. Java is not a new way of creating old tools. It's a tool for producing new ways of working. The Lotus and Corel products look at the way we work now, and then utilise and extend Java to reveal new methods which are not apparent when locked into a "software upgrade/hardware

upgrade" cycle. What especially appeals is that these new Java products do not mandate any major changes in existing ways of working, since they embrace and extend the Windows desktops we already have. They enable the processing load to be distributed more evenly while centralising management at the server where it is much easier to control. This squares neatly with the networked computing path that both Microsoft with Windows NT 5.0 and Novell with NetWare 5.0 are following. Processing is split between the server and client while data management is controlled by the server.

The Lotus and Corel products are also the first from major vendors to point to the benefits of Java "servlets" that run on the server and display on clients. Servlets can replace CGI scripts and enhance web servers, but they can do much more because they support the JavaBeans component model, Java Database Connectivity (JDBC) and the Remote Method Invocation (RMI) for distributed applications. As Java develops — and let's not forget that it's barely three years old — it is becoming obvious that its forté is in providing the glue for distributed applications of which Lotus eSuite is an early but very worthwhile example. Corel's Java applications, due for release this summer, will enable businesses to create cross-platform business applications, incorporating 32-bit Windows applications if they wish, without having to become Java programmers. Lotus eSuite is available now and can be put to use immediately in an office environment.

■ **Contacts** Lotus eSuite esuite.lotus.com
Corel Java www.corel.com



Above Lotus eSuite comprises a suite of task-orientated Java applets: word processor, spreadsheet, calendar/scheduling, email, address book, and presentation software

Conclusion

Only the rise of Windows in the early nineties provoked a level of debate in the computer industry to rival that now swirling around Java and Network Computers as the millennium approaches. In reality, it's the same debate: what is required to run an application?

With Windows, the issue was the applications interface. With the NC it is the resource required to support the interface. Network computing broadens the market for computing because it enables processing to be distributed in a more granular format than Windows. This enables useful application services to be delivered on devices down to SmartCard format.

Keeping it simple

Making network clients more functional means making the network more intelligent, which in turn reduces the client processing requirement and leads to the thin client. Contrary to widespread belief, thin clients do not threaten Windows. We're not going to be able to run up a presentation on a SmartCard any more than we'll be able to slip a card-sized PC into a kiosk in order to check our email on the move. The traditional Windows client will continue to develop. As Bill Gates said at the 1998 Windows Hardware conference in March: "We need all the power to make the PC a simple device".

The major change driven by network computing is to the client/server model that replaced mainframes and terminals with intelligent PC clients and servers for file and print, messaging, and database à la NetWare and Windows NT. The two-tier client/server split works for smaller applications,

and processing resources can be distributed so as to balance the load on the network and place processing as close to the data sources as possible.

At birth, Java was little more than a vehicle for animations on web pages. Three years on, it's a different story. Java 1.2 (due this summer) addresses user interface, performance, security, and printing deficiencies, and provides a component model, JavaBeans. Much Java development goes unnoticed because it happens behind the scenes within corporate networks, but Java's cross-platform appeal has attracted the consumer industry as well as business. Numerous digital TV set-top boxes are being developed with Java, and major consumer web sites such as Sony Online are heavily dependent on Java.

Sun is still in charge of Java but now it is being prepared, with broad industry support, for approval by the International Standards Organisation, probably within the next two years. Sun's current firm control of Java is often maligned, but history shows that the rapid development of Java as a complete development environment encompassing embedded to enterprise solutions would not have occurred under a committee. Java, like Windows, is being developed under strong central control. Unlike Windows, it is being developed as a cross-platform environment from the start.

Windows might have provided a distributed applications environment, but until recently the Microsoft approach has been to exclude competition and become ever more Intel-orientated. Microsoft envisaged everything coming into and leaving the network going through Windows NT, which itself

was losing the cross-platform portability it started with and becoming almost entirely Intel orientated. As a further disincentive, it is still not possible to develop a single Windows application that runs cross-platform on Windows-only platforms like Windows 95, Windows NT and Windows CE.

Here's to the winners

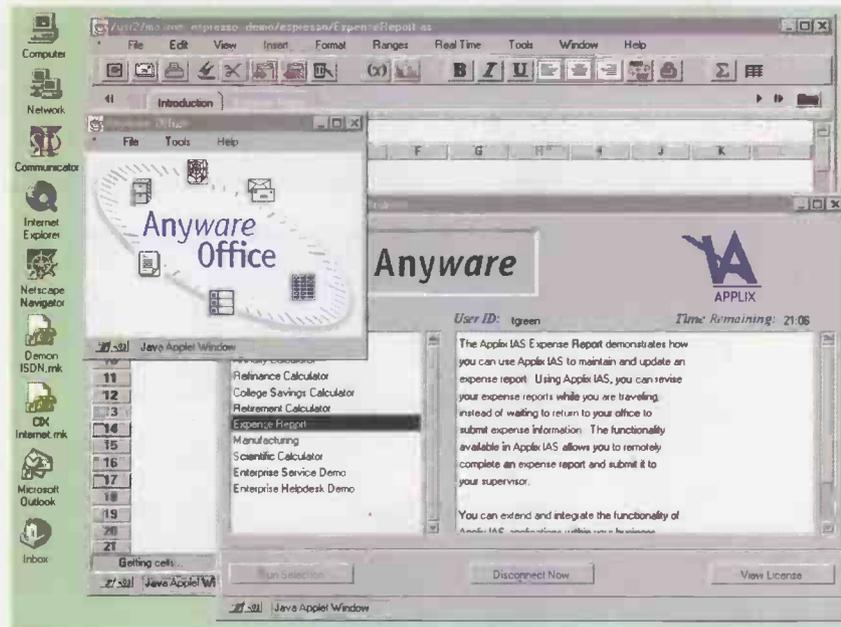
Java and NCs are often pictured as being in a battle for domination with Windows, and the number of NCs or the immaturity of Java are frequently put forward as evidence that Windows will win. The truth is that both will win because each complements the other and as a result the market grows larger. One only has to remember the transformation of Windows and Intel in 1997 and the consequent burgeoning opportunities for both, as well as for network computers — this change would not have happened without Java's impetus.

Eighteen months ago, Intel and Microsoft dismissed the NC, countering with the NetPC in March 1997. Nine months later, Intel had all but forgotten about the NetPC when it announced the Lean PC guidelines. In April this year, IBM announced that it was working with Intel to optimise JavaOS for Business to

meet the compliance requirements of both the hardware-independent NC and the Intel-based Lean PC. JavaOS for Business is a pure Java package which IBM will offer to Intel OEMs together with Lotus eSuite.

Competition and opportunity

A year ago, Microsoft licensed Citrix technology and today we have Windows Terminal Server and Citrix MetaFrame enabling any device to access 32-bit Windows applications. Windows CE is shaping up as a processor-independent Windows platform competing against Java. Competition has expanded the opportunity. There is no battle to the death: Windows and Java will co-exist for many years. In competing against Java, Microsoft is doing what any responsible supplier should do to protect customer investments. As Bertrand Russell once said: "Change is indubitable... progress is a matter of controversy." ■



Sony likes Java so much, it licensed the Applix Anyware thin-client Java development platform in order to build a global manufacturing workflow system

but costs a fortune to scale up to the bandwidth and availability standards expected of mission-critical services.

Then the internet changed everything, revealing platform-independent communications and a common user-interface that offered the prospect of standardised distributed applications. Under the open systems model all the lower layers, from the physical layer up through the transport and presentation layers, are common, leaving only the applications layer to be settled. At a stroke, an enormous proportion of the middleware was standardised and the three-tier architecture (browser client, web server, back-end database) that web applications display became possible for the first time.

Early summer Sun

In May 1995, however, Sun unveiled Java and this offers the possibility of a multi-tier, fully-distributed applications environment. Clients can range from thin to the fattest PC,

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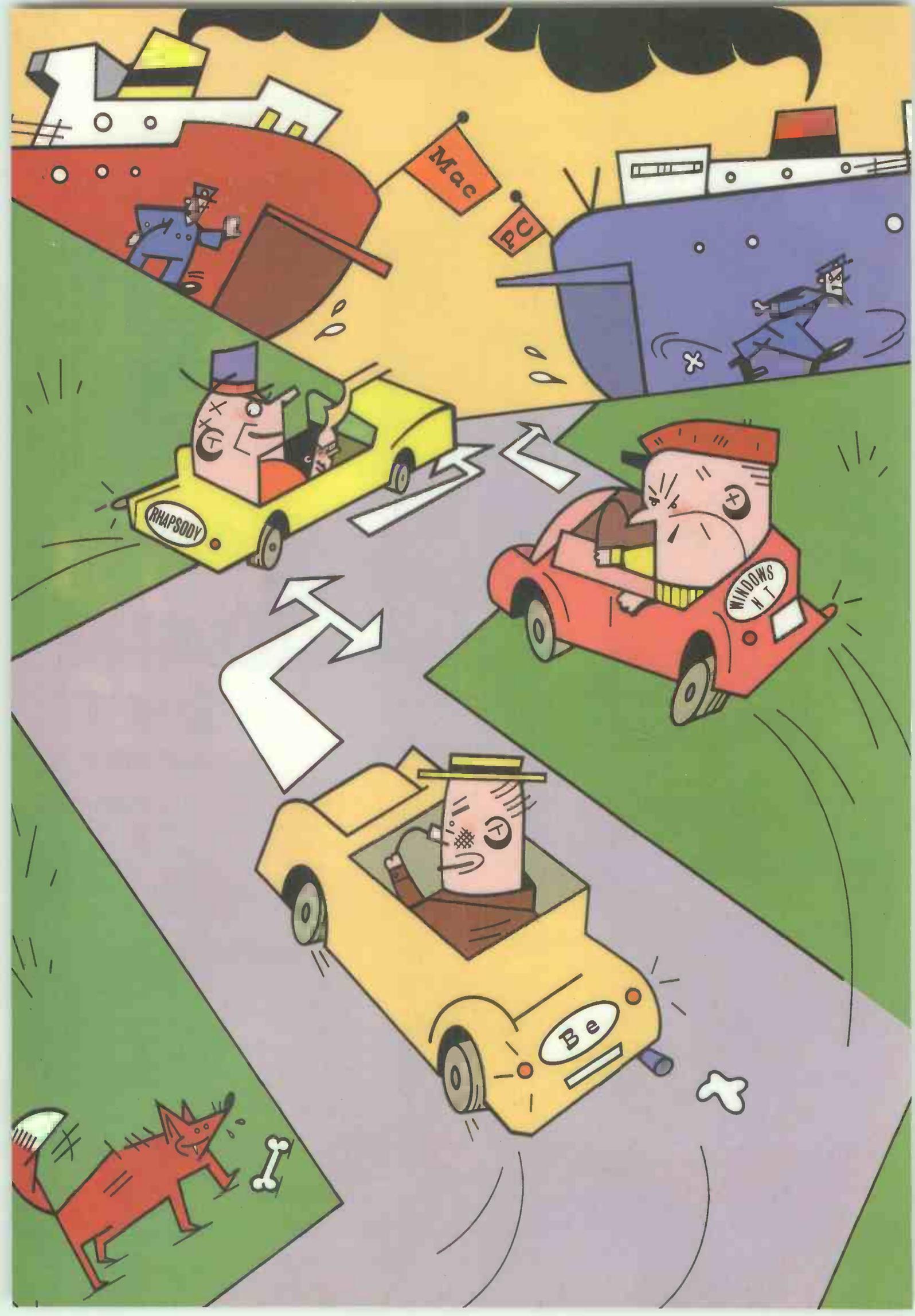


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BeOS in your bonnet

Although the innovative BeOS wasn't ready on time, so missing the boat in becoming Apple's new operating system, two years on, its arrival is still eagerly anticipated. And this time, it has been augmented to run on PCs too. Cliff Joseph checks Release 3.0 for any sting in the tale.

Be Inc. won't be a well-known name to most PC users. But about two years ago, it looked as though the Be Operating System (BeOS) might be the future of the Mac.

Among the various crises that Apple has been through in recent years was the failure of Copland, a new operating system that Apple hoped would replace the current Mac OS. Apple desperately needed a response to the success of Windows 95, so Gil Amelio, Apple's CEO at the time, began to look outside Apple for an alternative operating system. And, for a time, it looked as if the BeOS might be the answer to Apple's prayers.

Be Inc. was founded by Jean-Louis Gassée who had been a top executive at Apple only a few years earlier. Gassée's plan was to develop a new operating system that was designed specifically to cope with the demands of the new media that were just becoming popular: digital video, 3D graphics and high-resolution digital images.

Apple's core users tend to be creative types working in just these fields, so Apple and Be looked like a marriage made in heaven. Rumours about an Apple takeover of Be flew around for a few months; then, to everyone's surprise, Apple went and bought NeXT Software instead. The reason for this decision was simple. Apple needed a new operating system in a hurry, but the BeOS was nowhere near finished. However, NeXT's OPENSTEP operating system provided many of the same features and was a mature product that had been available for almost a decade.

Sensible move

Having missed its opportunity to get a foothold in the Mac market, Be decided to produce an Intel version of the BeOS as well. This made sense, as PC users are moving into the graphics and video fields only to find that Windows isn't that well suited to this type of work.

An example of the limitations of Windows is its inability to cope with video files that are more than 1Gb in size. A gigabyte isn't much when you're dealing with high-quality video, so the BeOS provides a 64-bit file system that can support terabyte file sizes (1Tb = 1,000Gb). Power is also important for graphics and video work, and the BeOS provides better support for multi-processor systems than Windows 95, NT or the Mac OS.

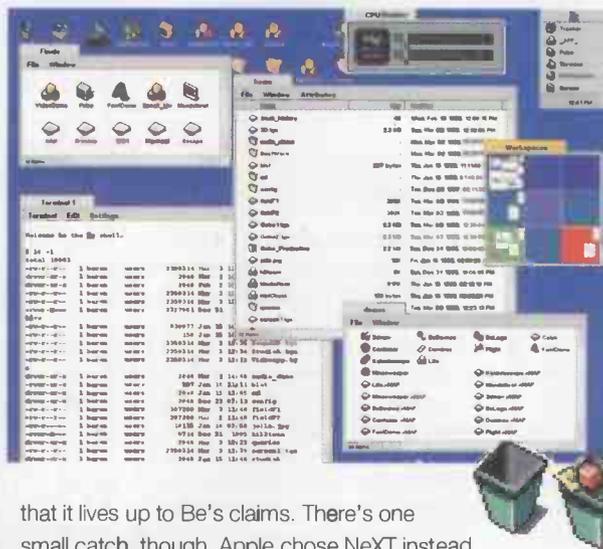
Having an operating system that runs on both Mac and PC hardware has other advantages, too. Developers only need to produce one version of any Be application. If you develop an

application using the BeOS running on a Mac, Be claims that you can recompile the application to run on the PC version of the BeOS in just a few hours.

It all sounds very impressive, and demos of the BeOS suggest



Above The BeOS was specifically designed to cope with new media such as 3D and video
Left Its underlying architecture is different, but on the surface, the BeOS looks very much like the MacOS



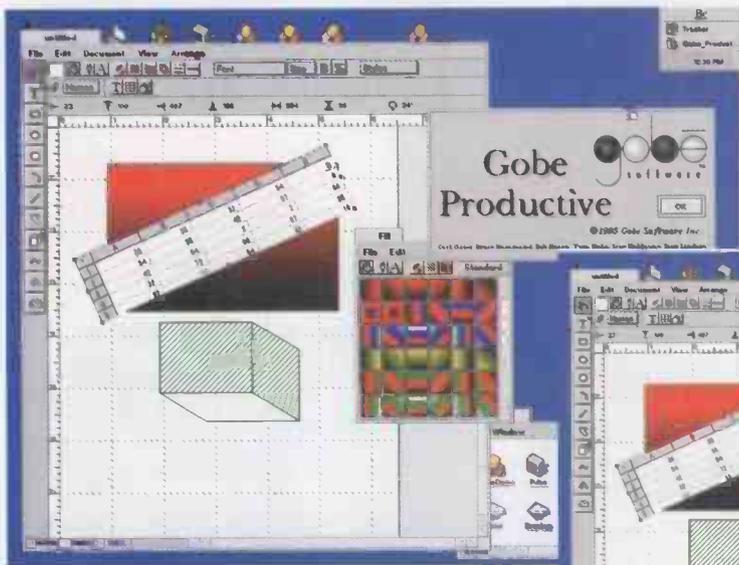
that it lives up to Be's claims. There's one small catch, though. Apple chose NeXT instead of Be because the BeOS wasn't finished. Two years later, the BeOS still isn't finished. The current version is called Release 3, which might suggest that this is version 3.0. In fact, Be openly admits that Release 3.0 is "for geeks, enthusiasts and the curious only", and that it is "not yet a complete operating system".

Installation problems

This became obvious when we tried to install the software. We were unable to install it onto either of our test PCs (both standard IBM Pentium systems) due to hardware incompatibilities. Installation onto a PowerPC-based Mac was more straightforward, although not without its problems. The BeOS was installed on a partition created on the Mac's hard disk, but its file-management system was unable to write to the primary Mac partition or copy files onto floppy disk. This meant there was no way for us to transfer files between the two



APPS/idea



Above & right
Even though the BeOS is not yet finished, there are a number of basic productivity programs already available for it

operating systems. There's still a lot of work to be done on the plumbing, then.

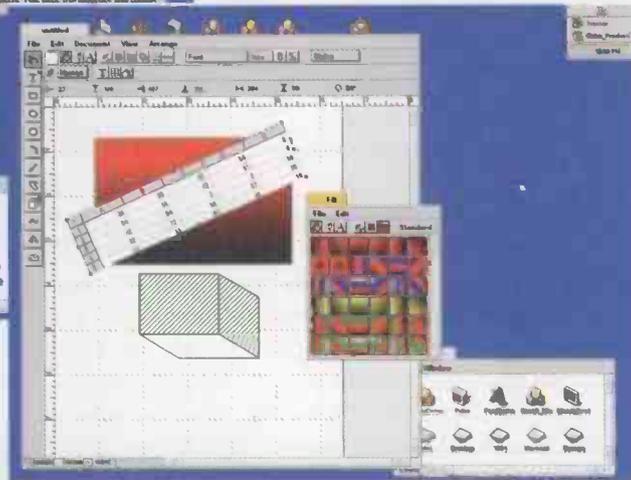
Even so, this version of the BeOS is quite stable and allowed us to run a few of the applications that have already been developed for it — enough for us to assess the basic look and feel of this innovative new operating system.



The Be interface

Not surprisingly, the Be interface looks a lot like the Mac. The colour scheme is similar to that of Windows but the layout of the desktop is very Mac-like. The desktop part of the operating system is called the Tracker, and is very similar to the Mac's Finder. There's a trashcan icon, rather oddly situated in the top

left corner of the screen, and alongside it is the Disks icon that you double-click to reveal the contents of your machine's various storage devices. Over in the top right-hand corner



of the screen is the Tracker menu which, just like the Mac's Finder menu, provides a pull-down list of all the currently open items on the desktop. The desktop file-

Be applications

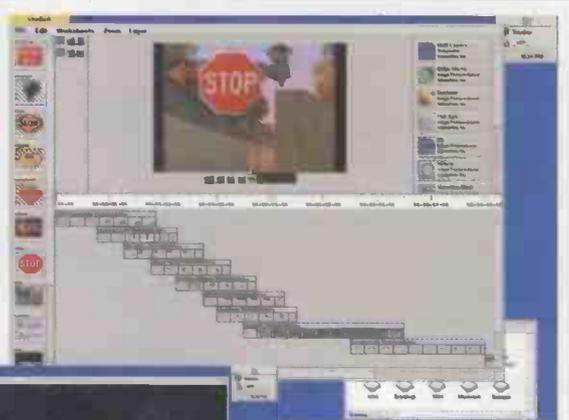
The BeOS cannot run existing Mac or Windows applications, so like any new operating system its success will depend on the quality and quantity of third-party applications that become available for it.

The outlook here is mixed. Even though it's not finished, there are hundreds of programs already available for the BeOS. The bad news is that most of them are little utilities that are unlikely to win over any new converts, let alone turn the BeOS into a mainstream operating system.

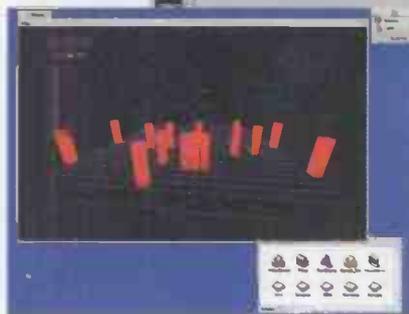
There's a decent selection of basic productivity tools, most notably Be Basics and Be Studio from BeatWare. Be Basics includes a word processor and a spreadsheet, while Be Studio provides bitmap and vector graphics editing tools. There are some interesting graphics and video software, like the recently released Adamation animation program. But there's still no sign of the killer app that could do for the BeOS what PageMaker and Photoshop did for the Mac.

It's also worth noting that the vast majority of Be software currently available only runs on PowerPC processors (i.e. on Macs). Very little of it has yet been converted to run on Intel hardware, although Be claims this is just a simple matter of recompiling the code. This reflects the fact that many Be developers come from a Mac background.

At one point there was work being done on a Mac emulator that would allow the BeOS to run Mac software. However, the company developing the emulator went bust and it's unclear whether any other company intends to continue the project. There's no sign of Windows emulators



Above Be hopes that applications like this video-editing suite will attract specialist users. **Left** High-performance architecture makes new apps possible, like this 3D visualisation of recorded sounds



on the horizon, so PC users may have to wait a bit longer for that BeOS killer app to appear.

Wisely, Be is not attempting to replace the Mac nor Windows, but is instead aiming to complement them. The hope is that users will opt for dual-boot systems that can run the BeOS alongside an existing operating system. This will allow users to continue using their existing Mac and Windows software, while also giving them the option of running high-performance BeOS software when necessary.

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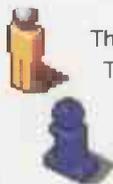
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management system very much follows the style of the Mac. There's no equivalent of the Windows Explorer, and you gain access to all your folders and files by moving through multiple windows on the desktop.

Windows contain 3D icons similar in style to those used on the Mac, although it's fair to say that both Apple and Be copied these from NeXT in the first place. The contents of each window can be viewed either as a series of icons or as a list of items.

One element that is similar to Windows is that each window has its own series of pull-down menus in its title bar. This allows you to switch between icon and list views, and to display or hide attributes such as file size. You can close windows by clicking the "close" box in the left-hand corner of the title bar, and there's a nice little touch in the resize button that shrinks or enlarges the window to exactly the size needed to display its contents.



The architecture

To be honest, the BeOS interface is functional and visually attractive but offers nothing particularly new. It is the underlying architecture that makes it special. In

addition to its 64-bit file system and multi-processor support, the BeOS makes efficient use of multi-threading. This allows you to open multiple copies of any file or application with which you want to work. Each copy is contained in its own "thread", and these threads can communicate dynamically with each other.

Reflecting changes

Suppose you are editing a high-resolution image in a program such as BeatWare's Be Studio (see box, "Be applications", p130). You could have a normal-sized copy of the image in one window, and a magnified view of one section of the image in a second window. You could use the magnified view to perform finely detailed editing, and any changes you make will automatically be reflected in the normal-size view in the adjacent window, allowing you to see the effect of your changes as you go along.

Time and tide

Features like this will hold obvious appeal for designers and other content developers. As the saying goes, it'll be nice when it's finished. The problem, of course, is that it is still not finished and Be is not committing itself to a shipping date for the completed software. Time could be crucial to Be's chances of success. Microsoft has its eye on the content creation market and it is already making inroads with Windows NT. At the same time, Apple is close to completing Rhapsody, the new operating system based on the OPENSTEP software which Apple chose over Be two years ago. Even so, the content creation market is on the verge of an explosive expansion. In the future, all TV, video, graphics and audio content will be digital, and the digital media marketplace will be more than big enough to support specialist niche players like Be. So who knows? The BeOS operating system has a lot of advanced technology under its bonnet, and there is certainly a big market waiting for it. All they have to do now is get around to finishing it.

The BeOS has a built-in web browser and support for TCP/IP

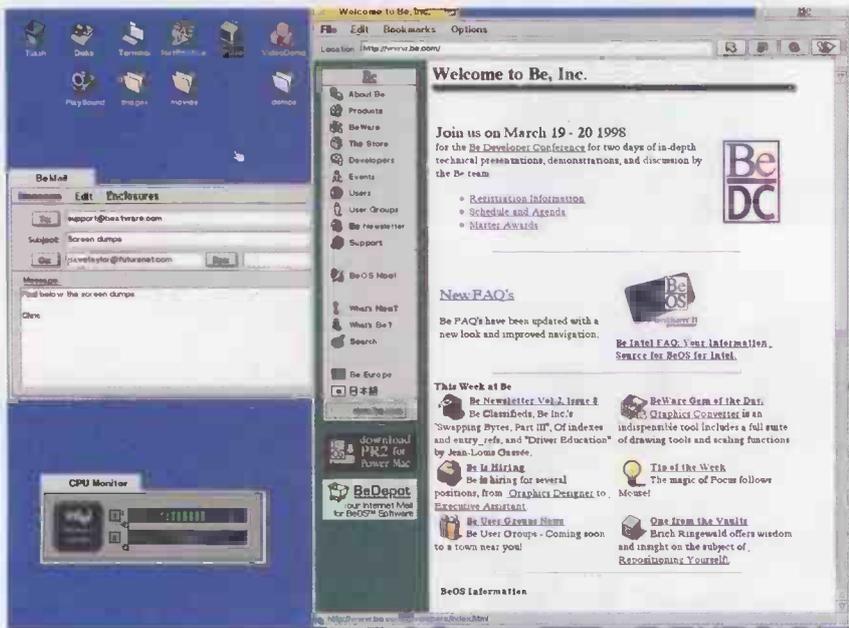
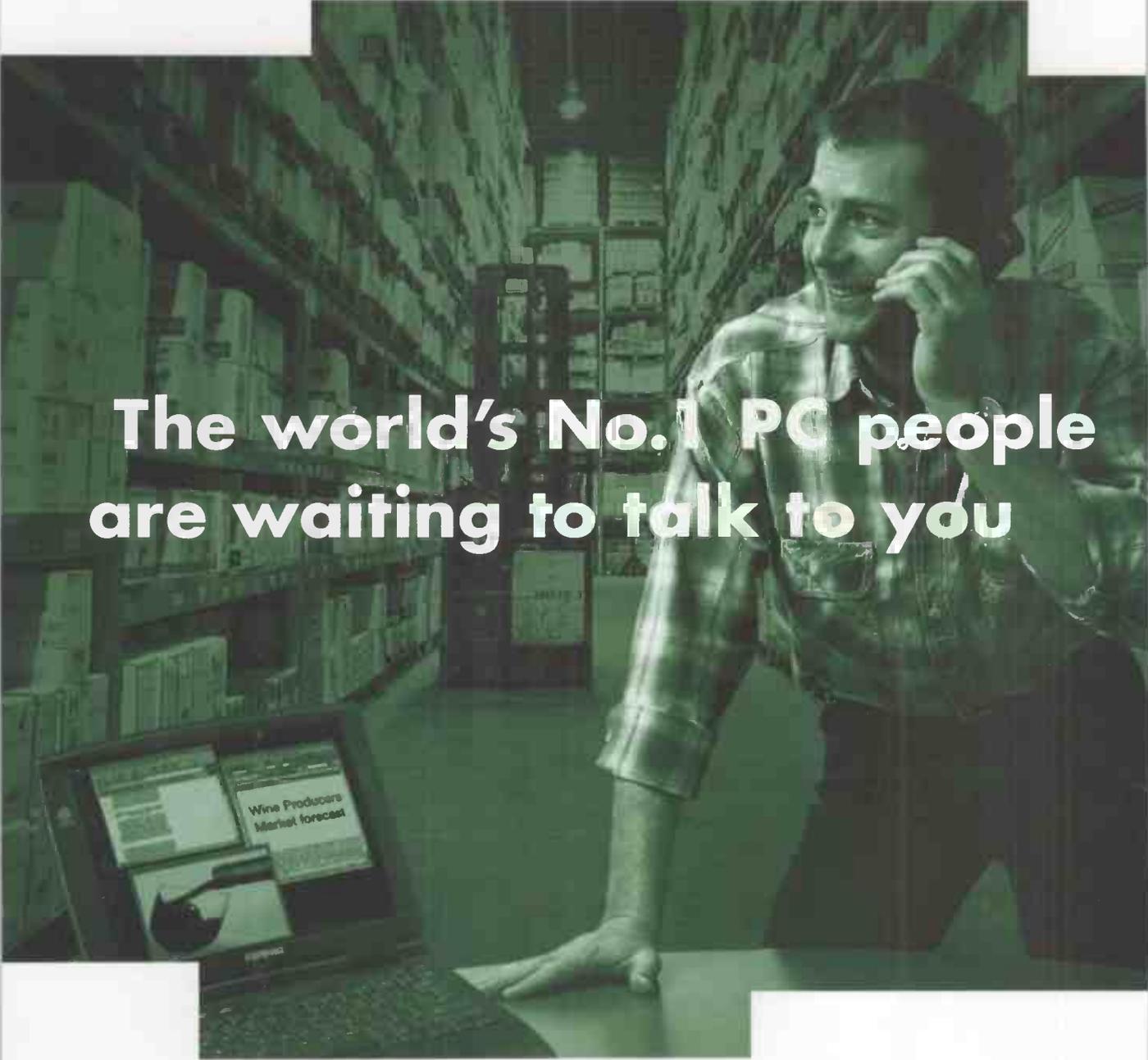


Table of Features

	BeOS Release 3	MacOS 8.x	Windows 95
Hardware Requirements			
Processor (*see note below)	PowerPC 601/603/604e, Pentium or Pentium II	PowerPC 601/603/604e/750	Intel 486 or above
Memory	16Mb	16Mb	16Mb
Storage	150Mb hard disk, CD-ROM	50Mb hard disk, CD-ROM	100Mb hard disk, CD-ROM
Graphics/audio	Limited — see www.be.com for latest details	Any Mac PCI or NuBus cards	Any Windows PCI or ISA cards
Supports TCP/IP	●	●	●
Multithreading	●	●	●
Multitasking	●	○	○
Runs non-native s/w in emulation	○	● (Windows)	○

* This refers only to the basic processor requirements. Although Be provides a list of compatible PowerMac systems, it does not guarantee compatibility with any specific Intel-based PC system.

Key: ● Yes ○ No



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† Source: Dataquest estimates:- Feb'98, worldwide Total PC market units 1997

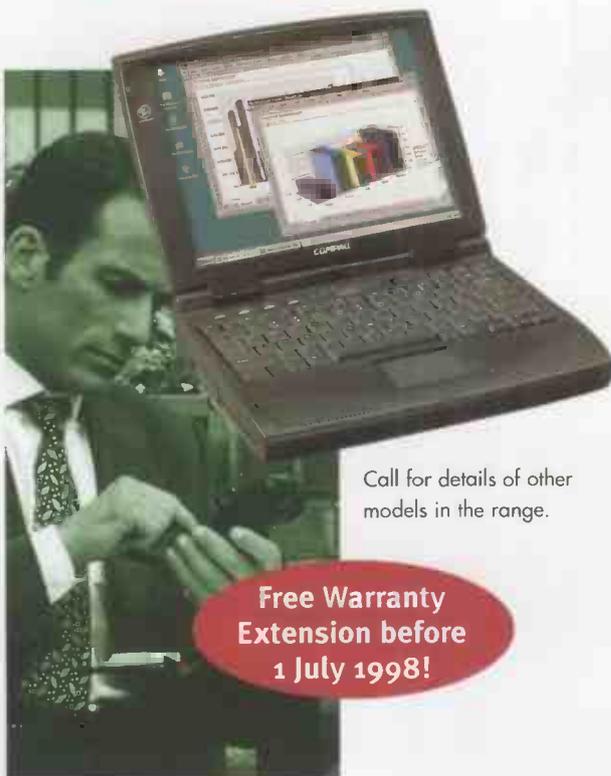


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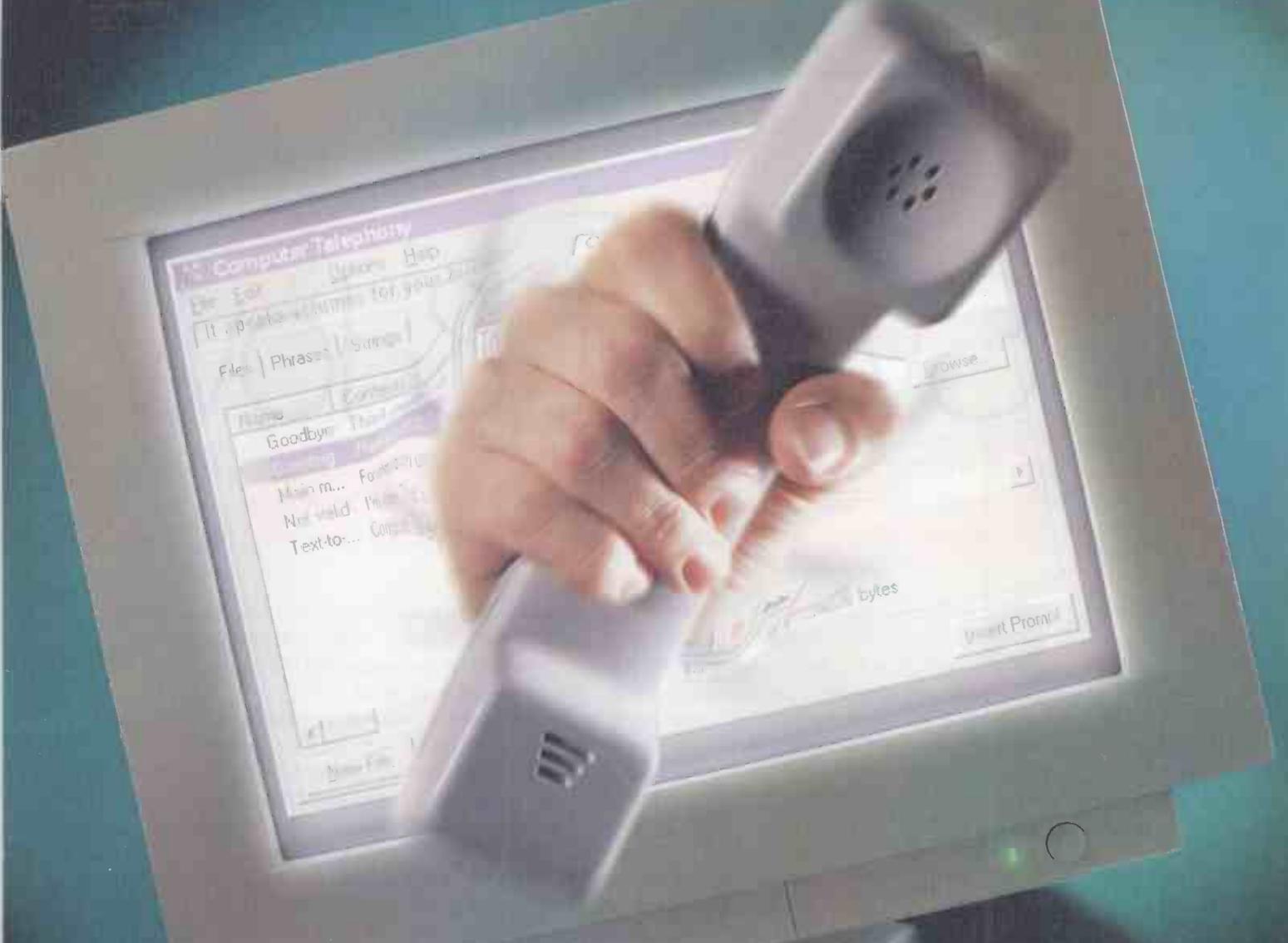
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Sweet & low

Following its Cyrix acquisition, Brian Halla hopes to make his company, National Semiconductor, the top player in the market for low-cost PCs and tomorrow's "information appliances". Here, he gives Geof Wheelright a glimpse of the future.

Brian Halla is ready to ride the low-cost PC wave. Unlike some of his competitors, he is in a good position to do that, having been one of the first leaders of a major computer processor manufacturing company to already have done so. The 51-year-old chairman of the board, president and chief executive officer of National Semiconductor Corporation believes that, for once, he may have the jump on arch-rival, Intel.

Many industry analysts have criticised Intel for being slow to react to demand for lower-cost home and business PCs. It was not until April this year, for instance, that Intel announced its Celeron chip for "Basic PCs" (see box, "Intel Celeron Processor", p136). Halla says he foresaw demand for this breed of low-cost PC and has pulled off a quartet of major acquisitions over the past two years to prepare National Semiconductor to take advantage. Halla says that as a result of these acquisitions, his company, which enjoyed revenues of \$2.5bn in 1997, is now better able to benefit from what he suggests will be a vast market for computer processors that offer a complete "system-on-a-chip".

A chance with Cyrix

Vital to this strategy was National Semiconductor's acquisition last year of PC chip-maker Cyrix. This purchase has given National Semiconductor a strong chance to better compete against Halla's former employer and current arch-rival, Intel. Early evidence of this improved competitive position came in January when the company announced that it had successfully produced functioning Cyrix 6x86MX processors on 0.25 micron process technology at a pilot manufacturing facility in California. Simply put, it means that National Semiconductor is now positioned to begin manufacturing "state of the art" Intel-compatible computer processors this summer which, it claims, will offer performance comparable to flagship Intel's Pentium II.

While Cyrix has been producing Intel-compatible chips for years, it has always been hampered by the fact that it did not own its own chip manufacturing plants. This limited the speed with which new processors could be brought to market. It meant that Cyrix needed to book capacity at the chip "foundries" of other semiconductor

makers, and it limited the amount of proprietary design that could be carried out, since Cyrix had to design something that it was sure other foundries could manufacture on its behalf.

Now that Cyrix is owned by National Semiconductor, which can provide it with "home-grown" manufacturing capacity to complement existing foundry agreements with key players such as IBM Microelectronics, the company can take a much more aggressive stance on both performance and "time to market".

National Semiconductor expects to continue its foundry agreement with IBM Microelectronics, which is currently making the Cyrix 6x86MX. In addition, the company states that it also has agreements in place with foundries in Asia to make 6x86MX chips. National Semiconductor suggests that available capacity for the Cyrix processor is expected to be well in excess of ten million units in 1998.

By using this 0.25 micron design, the company says it has achieved a major breakthrough over previous technologies, reducing the chip size from 150sq mm to 88sq mm. (A micron is about 1/25,000 of an inch, making the circuits on this design about 200 times smaller than the width of a human hair.) Smaller "line widths" on the circuits should allow National Semiconductor to increase revenues by squeezing more chips onto every wafer produced.

Smart moves

According to Halla, this chip also gives his company an edge in the market for low-cost PCs. Industry figures suggest that about 40 percent of the desktop PCs sold in the US in the final quarter were in the sub-\$1,000 category, yielding a growing market opportunity for Halla. "The architectural design, compact size, and low power consumption [of the 6x86MX chip] make it ideal for the rapidly-growing sub-\$1,000 and \$1,500 mid-range desktop PC marketplaces," he says.

Halla suggests, though, that the longer term opportunity is for devices that go well beyond today's standard processors and include everything from sound to optimisation for playing downloaded videos. Many of these functions are already included in the Cyrix



processors that have been quietly stealing market share from Intel in the sub-\$1,000 home and small business market. These are used by market leaders like IBM and Compaq in some of their latest systems. He predicts that in the near future, this "system-on-a-chip" will be in huge demand as a key component of a new range of "smart appliances", the market for which Halla suggests might be at least as big as today's desktop PC business.

The Cyrix acquisition was a key part in trying to make that dream reality. But up until the time the deal was announced in July last year and then until it received final approval four months later, Halla had been worried that someone else would see the huge potential of Cyrix and scupper the deal with a better offer. "Timing was so perfect that I was nervous right up until the deal closed

that someone would try and steal it [the deal] out from under us," he says, suggesting that arch-rival Intel missed the boat in not preparing for the low-cost computer boom. "Intel got caught blindsided by the sub-\$1,000 PC."

Strategic imperatives in the early hours

Now he says the challenge is to make the most of its new resources to stay ahead of the competition. "Our goal at National is to put a whole PC on a chip," Halla adds, explaining that he is very big on setting goals for both himself and his staff. In fact, Halla has made it clear that he wants everyone at National to know and understand exactly where the company is headed.

"At my first employee meeting, I said I wanted to be

p136 >

Brian Halla is confident that National Semiconductor will rise to the challenges that lie ahead. Wherever there's a PC, he believes, his "system-on-a-chip" will be behind it

able to call any employee at two o'clock in the morning and ask them what the three strategic imperatives were and what the strategy was," he says. "There is no question in my mind now that every employee knows exactly what they are. I have to tell you I haven't done it at 2am, but I have done it, and there are an awful lot of employees who are ready to be called at 2am."

Three degrees

Halla's "three strategic imperatives" for the company are to use state-of-the-art process technology, achieve world-class manufacturing, and a six-month "time-to-market" methodology. The goals are as much strategic aims for National as they are the product of lessons learned by Halla before taking up his current post. He joined the firm in May 1996, having spent eight years with LSI Logic Corporation and, previously, a number of years with National Semiconductor nemesis, Intel.

In his first year at National Semiconductor, Halla made major changes to the company in order to focus on his "system-on-a-chip" strategy. He also worked to revamp process technology and manufacturing, and "fast-tracked" the opening of a new 8in wafer facility in South Portland, which ran its first 0.35-micron wafers in May 97. The plant is designed to move quickly to the next generation of the aforementioned 0.25-micron technology.

The invisible PC

National is developing other system chips to power what he says will be a "broad range" of information appliances. "First the PC goes on a chip," says Halla. "Next, the PC becomes a plug-in behind the dashboard of your car, behind a flat-panel display in your kitchen, or

inside a set-top box. The PC disappears just the way electric motors are invisible in our lives. We use them all day long, but we only think about the appliance, not the motor. Nobody knows how many RPMs drive their coffee grinder and nobody will care how many megahertz power their DVD player."

The company's approach to system-level integration employs on-chip distributed processing, in which different parts of the chip are optimised to perform specific functions like multimedia or communications, as opposed to running every function via a single premium-priced processor. "Assigning the tasks to specialised engines is the smart way to provide great performance at reasonable cost," says Halla.

Core plan

Critical to the project is National's reusable cores methodology, which allows its design engineers to shorten time to market by drawing from a library of functional, or core, building blocks such as processor, input/output, graphics, video decompression, power management, network and audio to create the final product. The cores are designed to specifications that make them interchangeable depending on customer requirements. For the first implementation, all the major PC functions, except for memory and high-voltage parts of the power supply, will be integrated on the chip.

As to the challenges that lie ahead, Halla sounds ever-optimistic; particularly so as he looks at the increased numbers of devices that are likely to have a PC at their core. Whatever it is — it may not even have been invented yet — Halla believes his "system-on-a-chip" will be the processing engine that drives it. ■

Processors for low-cost PCs

There will be many low-cost Pentium PCs on offer in the coming months.

This prediction follows the announcement by Intel in late April that it would immediately begin shipping a successor to the Pentium in the consumer PC market, and pushing the Pentium II processor in the PC enthusiast, corporate desktop and server markets.

For most consumers, the big news will be the arrival of the Intel Celeron processor operating at 266MHz which the company now says will be used in "Basic PCs" that typically sell for under \$1,000 in the US. The company also claims that Intel Celeron processors will deliver better overall performance than the Pentium processor with MMX technology which is offered in most low-cost PCs today.

Intel has long been looking for a way to stop the cannibalisation of its business-sector sales by consumer PCs. And it seems to think that having a processor dedicated to the consumer market and optimised for consumer applications, is the way to achieve this goal.

"Intel's goal is to deliver the best products for each segment of computing," explains Paul Otellini, executive vice president, Intel Architecture Business Group. "Pentium II processor-based systems bring the highest levels of performance and functionality to business and consumer users, while Intel Celeron processor-based PCs deliver the quality, value and compatibility that users expect from Intel."

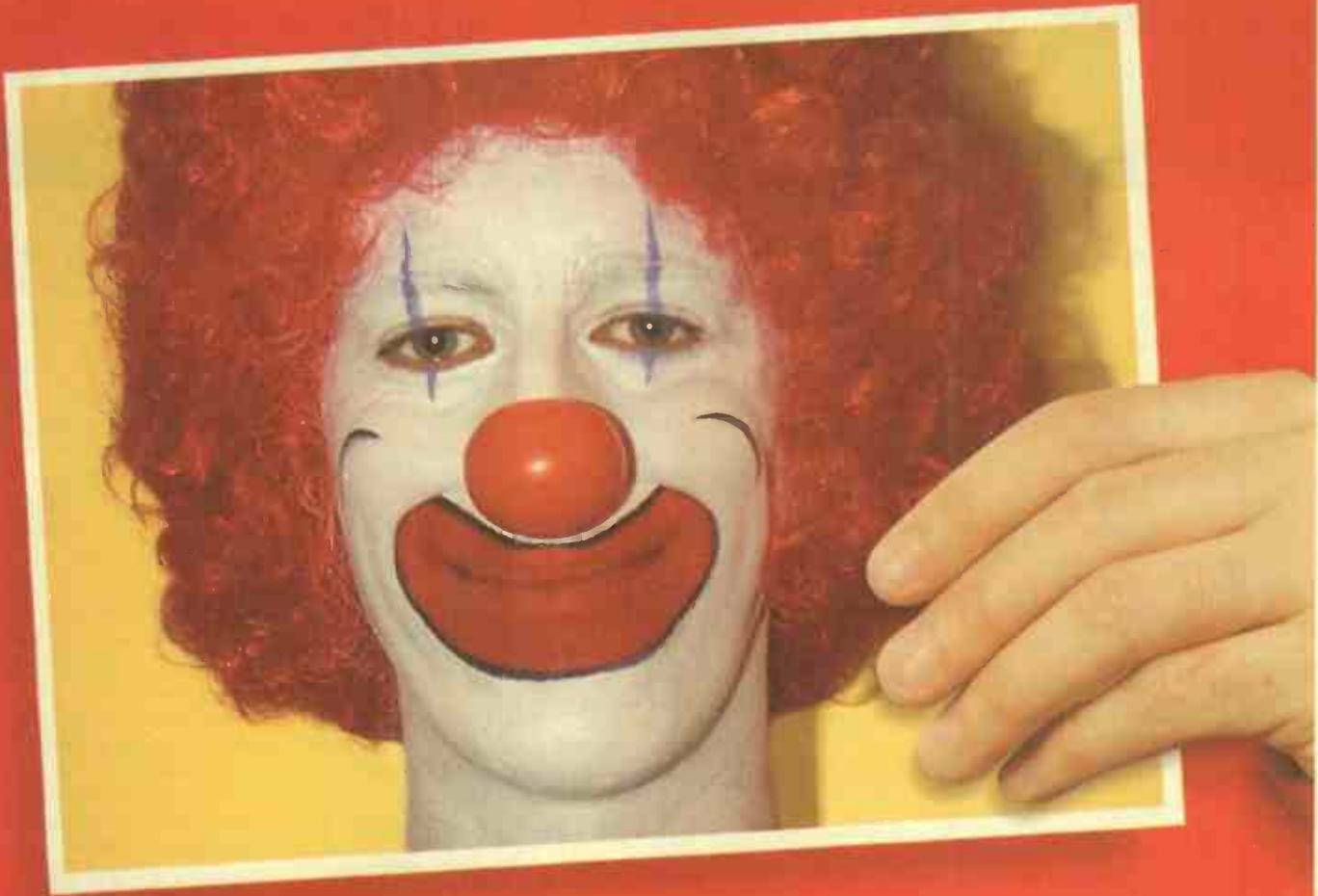
The Celeron is based on the same P6 micro-architecture as existing Pentium II processors but with the Level 2 cache removed.

The Celeron processor is supported by the Intel 440EX AGPset, which Intel says is the first AGPset designed specifically for this "basic PC" market segment.

Intel's Celeron was barely out of the starting gate when National Semiconductor responded to it with a new Cyrix chip. On 14th April, the company unveiled the Cyrix M 1199-300 processor. It claims that its chip offers "no-compromise" Pentium II-class performance and features that make it a "superior solution" for the entry-level PC market.

Intel further cites independent testing which supposedly indicates that performance of the M 1199-300 processor is up to 25 percent higher than that of the Celeron 266MHz, on systems with equivalent configurations. Additionally, Cyrix claims that the M 1199-300 processor delivers industry-standard benchmark scores in the same range as the 300MHz Pentium II.

"Our newest processor enables workstation-class performance at entry-level prices," boasted Halla in announcing the chip. "Others may try to 'decelerate' and devalue the performance of entry-level systems, but we believe customers are smart enough to figure out that game and demand higher performance. Systems using the M 1199-300 processor do not compromise on features or performance. In fact, using the Cyrix M 1199 processor enables OEMs to make a higher profit in the entry-level PC market. This means consumers get the state-of-the-art performance and features they want at a very affordable price."



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"RECOMMENDED" PC ADVISOR, MAY 1998

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- ◆ Executive Carry Case
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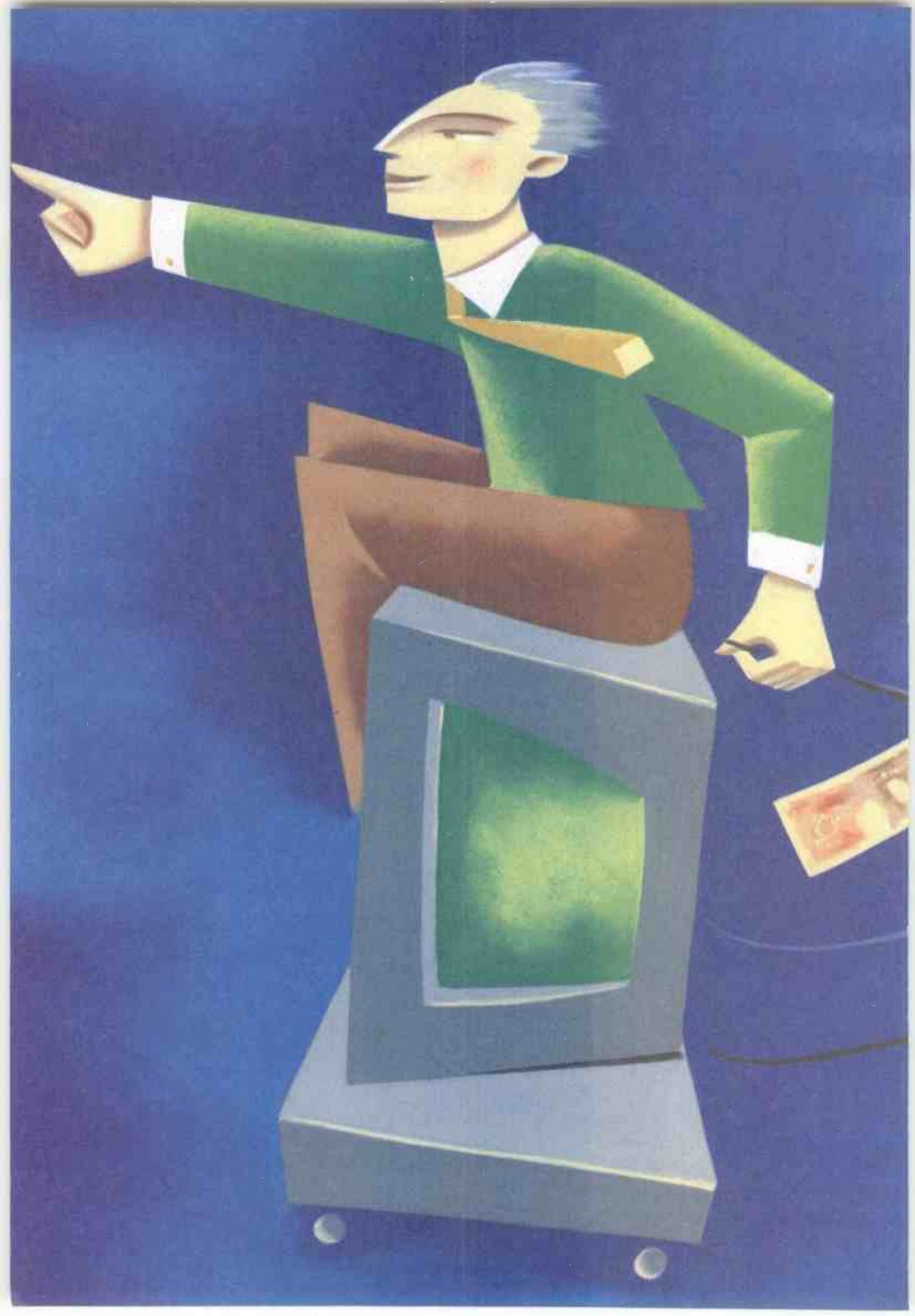
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Grand design

Just what kind of kit can you get for just under £1,000? Something quite good, as these PII PCs show. Tested and reviewed by Paul Trueman.

PC prices have been falling faster than an asteroid on its way towards Earth, and it makes for sobering reading to flick through back copies of *PCW* and see what £999 (ex VAT) could have got you a year ago. If you were in the mood to empty your wallet to the tune of a grand, chances are you'd have ended up with a P133 with 16Mb (32Mb if you were lucky) and maybe a 2Gb hard drive. But today, the PC industry is involved in a savage price-cutting war about which nothing is certain, other than the consumer is on the winning side — at least, so far.

Eager to see just what dream PC packages were out there, we rounded up ten machines, setting a price limit of £999 (ex VAT). But we deliberately left the technical specifications open, letting the vendors make their own choices on what components to include.

We simply made two requests. The first was that the monitor size should be fixed at 15in, to stabilise the cost of the overall system and concentrate on the PC systems themselves. We were also particularly interested in the recent phenomenon of plummeting PII prices, so our other specification was that the PCs must use a PII processor.

We were expecting some high-powered systems, but were genuinely impressed by the processing power of some of the machines we received. In April, Intel announced its brand new PIIs running at 350 and 400MHz, but even the relatively high price of these processors didn't stop one of the companies in this group test putting a 350MHz chip in its PC.

Who needs to spend £2,000 to get the latest and greatest kit? Just read our group test and you will see for yourself what sort of high-end punch-per-pound performance our ten companies rustled up for around a grand.

£999 PIIs Contents

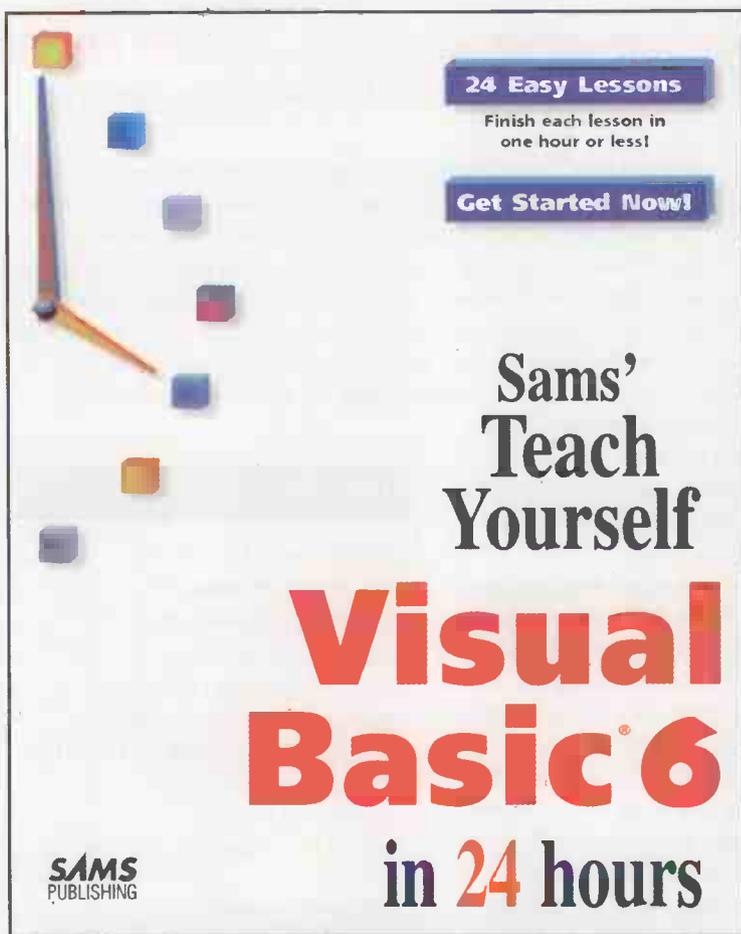
- 143 Avontech PII 266
- 143 Brother Professor 971
- 145 Choice Systems Ultra
- 145 Dan Dantum II/W5
- 150 Dell Dimension XPS D300
- 150 Dotlink Magnum II-333SE
- 157 Mesh Elite Professional PII350 BXA
- 157 Mustard MC 753MT
- 159 Roldec Predator
- 159 Viglen Contender
- 148 Graphics cards
- 152 Monitors
- 161 CPU overclocking
- 164 Table of features
- 170 Performance results
- 170 How we did the tests
- 171 Editor's Choice

Ratings

- ★★★★★ Buy while stocks last
- ★★★★★ Great buy
- ★★★★★ Good buy
- ★★★★★ Shop around
- ★★★★★ Not recommended

p143 >

What a difference a day makes.



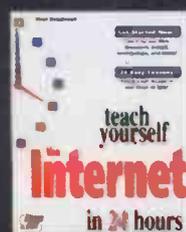
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Avontech PII 266

Avontech is a relatively new company, founded in 1994 and based in Bristol. Although its core customers are mainly corporates and government departments, it has recently begun to sell to individual home users.

The Avontech PC had a PII 266 processor, rather than the 300 and 333MHz processors supplied in other machines, but it still

performed well in the SYSmark test compared to PCs with more powerful specifications. The AL440LX Intel motherboard had plenty of room for expansion, partly as a modem was not included, and on-board sound was provided by the Yamaha OPL/4 chip, leaving two ISA and four PCI slots free.

Anyone looking to upgrade RAM would be pleased to note that all 64Mb of SDRAM was on the one slot, although it might be necessary to disconnect the IDE ribbon from the socket adjacent to the DIMMs, as it made it difficult to get at the other two free DIMM slots.

Avontech had opted for a graphics card we hadn't seen before, a 4Mb Micro Star MS-4415 using a Cirrus Logic chip.

We weren't overly impressed by its scores in the Final Reality test and, although its processor was running at a lower clock speed than other PCs in the test, other 266MHz models produced better 3D test results.

This was one of the widest PCs we saw, and it took up rather a lot

of room on the desktop. It did seem well built though, with a sturdy case, and all connections and wires inside were neatly taped up. A helpful guide on the rear of the case helps you to get the right connections into the right ports.

The same attention to detail in the build quality wasn't carried through to the presentation of the accompanying documentation, though. Our manuals were collected in a static-free bag, and there was no accompanying software other than Windows 95. We weren't expecting large software bundles, but the absence of anything but the operating system reflects Avontech's corporate background. On the other hand, the Zytec speakers supplied were excellent: 64W with a deep, clear sound.



PCW Details

Price £1,175 (£999 ex VAT)

Contact 01275 462260 www.avontech.co.uk

Good Points Good build quality. Upgradable.

Bad Points Unimpressive 3D card. Poor presentation of documents.

Conclusion A decent machine outgunned by its rivals.

Build Quality ★★★★★

Performance ★★★★★

Value for Money ★★★★★

Overall Rating ★★★★★

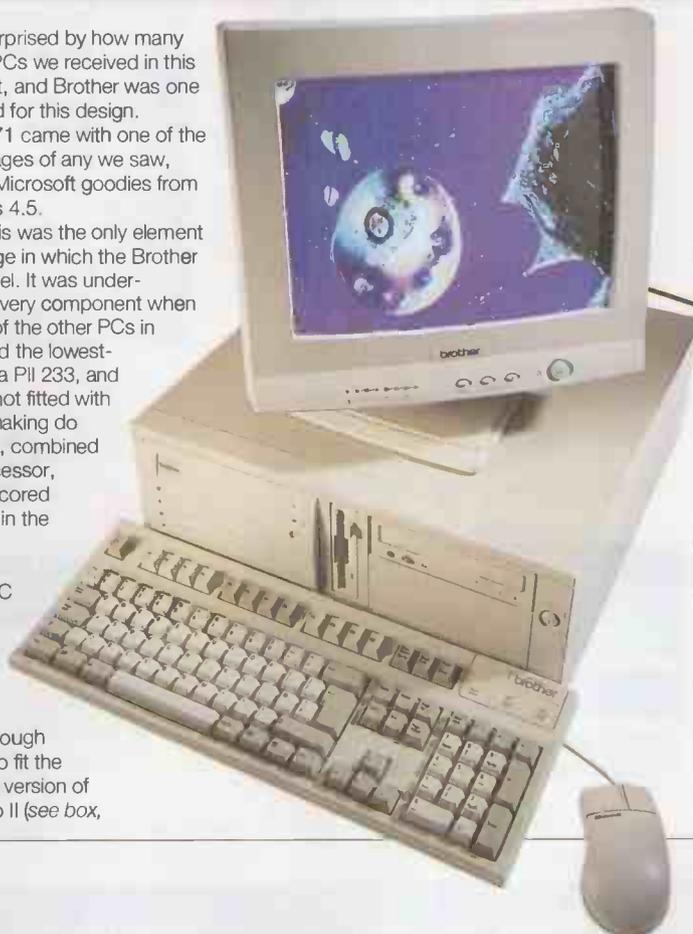
Brother Professor 971

We were surprised by how many desktop PCs we received in this group test, and Brother was one company who opted for this design.

The Professor 971 came with one of the best software packages of any we saw, with a whole raft of Microsoft goodies from Encarta 98 to Works 4.5.

Unfortunately, this was the only element of the overall package in which the Brother could be said to excel. It was under-specced in almost every component when compared to most of the other PCs in this group test. It had the lowest-clocked processor, a PII 233, and it was the only one not fitted with 64Mb of SDRAM, making do with just 32Mb. This, combined with the slower processor, meant the Brother scored worse than its rivals in the office applications SYSmark test.

It was the only PC in the test to have a PCI graphics card rather than an AGP card. The motherboard had a single AGP slot, although Brother had opted to fit the system with the PCI version of the ATI 3D Rage Pro II (see box,



page 148, for details). It's no coincidence that the Brother scored badly on the 3D Final Reality tests.

If we were worried about the low specification of most of the components, our fears were hardly allayed by the 3Gb hard drive fitted inside. 4Gb worked out as the standard in our group test for this price point, with some companies offering 6Gb hard drives — double the Brother's capacity.

The build quality wasn't in question, the manuals were well written and provided plenty of technical support, and there was a full set of drivers in the box. But the low specifications of this PC let it down badly, both on the tests and in comparisons on value. For £1,000 Brother is offering consumers Last Year's Model.

PCW Details

Price £1,175 (£999 ex VAT)

Contact Brother 01275 462260 (no URL)

Good Points Excellent software.

Bad Points Shame about the rest of it.

Conclusion Last year's model.

Build Quality ★★★★★

Performance ★★★★★

Value for Money ★★★★★

Overall Rating ★★★★★

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Choice Systems Ultra

Choice sent us its promisingly-named Ultra: a short, wide tower case housing a 4.3Gb Maxtor hard drive as well as the ubiquitous 64Mb of SDRAM. With some machines there seemed to be an obvious trade-off between the speed of the

processor and the quality and quantity of other components. The Choice PC was a good example of this, and while the company had not fitted a modem, the Ultra was fitted with a PII 333MHz processor and its SYSmark scores were suitably impressive.

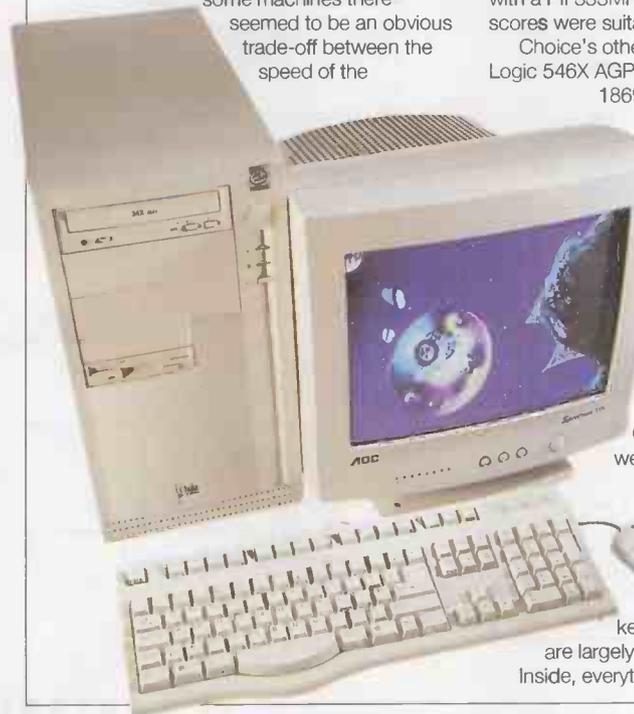
Choice's other components were a Cirrus Logic 546X AGP graphics card and an ESS 1869 sound card. The Cirrus Logic card was not one we had reviewed before and the disappointing Final Reality scores didn't exactly breed confidence in its 3D abilities. The SYSmark scores show that the 546X is probably a card better suited to 2D graphics, and that the Ultra would be a good bet for a powerful office PC.

The Ultra comes with Contec's 50W speakers that were rather too tinny for our liking, and the impressive mouse from the aptly-titled Cool Mouse Company. We weren't so keen on the deep, spongy keyboard, but then, peripherals are largely a matter of personal choice. Inside, everything seemed to have been

put together with care and there were some nice touches, like the plastic grip ensuring that the AGP card stayed in place. All the ribbon cables were neatly taped out of the way, and there was plenty of room to upgrade, with two free 5.25in bays and one free 3.5in bay.

Choice had minimised the size of the case by positioning the power unit vertically over the motherboard, rather than horizontally above it, adding inches onto the tower-case size. While this saves desktop space, it lends the interior of the case a somewhat cramped feel and hampers access to the SDRAM modules. If you wished to remove the processor, for example, you would have to take the power unit out first.

The exterior was attractive, with power and hard-drive indicator lights neatly refracted through triangular, transparent plastic.



PCW Details

Price £1,175 (£999 ex VAT)
 Contact Choice 0181 993 9003 www.choice.co.uk
 Good Points Well-built machine with a powerful processor.
 Bad Points Poor graphics capabilities.
 Conclusion Good performer for 2D applications.
 Build Quality ★★★★★
 Performance ★★★★★
 Value for Money ★★★★★
 Overall Rating ★★★★★

Dan Dantum II/W5

We were impressed by this PC as soon as we saw what Dan had put into it. It was one of the few in the test to include more than a spartan set of components, being kitted out with both a modem and a 64-bit sound card and with quality components throughout.

We were rather puzzled on first starting up, as pressing the power button seemed to have little effect. We quickly realised that this was because InstantON had been enabled in the BIOS, although this is not how Dan normally configures its PCs.

When we opened the Dan up we were impressed by the neatness and order of the innards, although we did find a CD audio cable that was detached from the CD-ROM. Sound was provided by the excellent Creative Labs AWE-64 sound card, and another ISA slot was filled with a Pace 56K modem.

This modem was Editor's Choice in our last modem group test, and a flash upgrade to the new V.90 standard will be available in September.

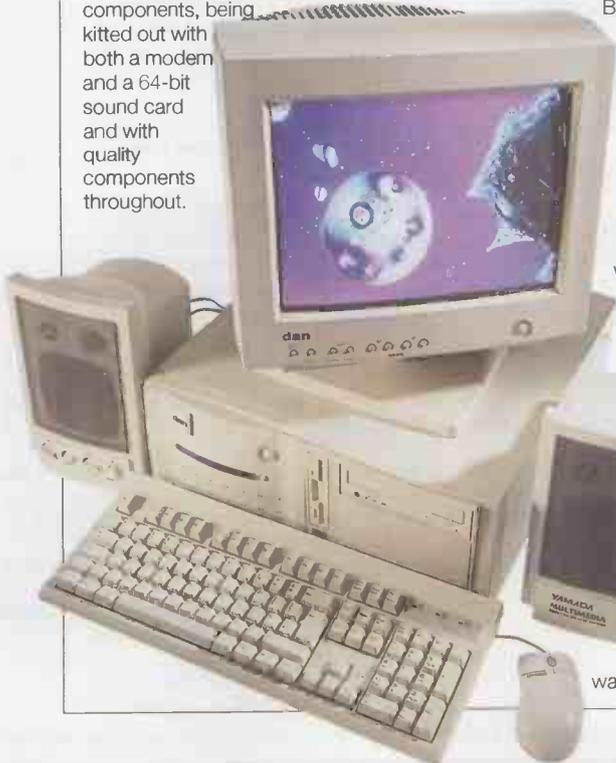
That left one ISA slot free, and all four PCI slots were free too — handy if you want to upgrade. The AGP slot was taken up with ATI's Xpert@Work which uses a 3D Rage Pro chip. (For more on graphics cards, see page 148.)

The 64Mb of SDRAM was contained on a single DIMM

memory module, leaving one slot empty should 64Mb prove insufficient.

The Dan also had a very generous 6.4Gb hard drive, 2Gb larger than the 4Gb drives supplied by most manufacturers in this test. Despite having only a PII 266 processor, this PC outperformed other higher-clocked machines, scoring impressively on both the Final Reality 3D test and the SYSmark test.

As well as being one of the few PCs to provide a modem, Dan also included a considerable software package — Lotus SmartSuite97, as well as the DTP package, Serif PagePlus 3. The documentation supplied was also first-rate, with manuals and drivers that covered everything from the Super P6SLA motherboard to the Atapi CR-586B CD-ROM drive.



Personal
Computer
World
Editor's
Choice

PCW Details

Price £1,175 (£999 ex VAT)
 Contact Dan 0181 830 1100 www.dan.co.uk
 Good Points Excellent all-round configuration.
 Bad Points We couldn't find any.
 Conclusion A winner.
 Build Quality ★★★★★
 Performance ★★★★★
 Value for Money ★★★★★
 Overall Rating ★★★★★

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- ◆ 512KB Internal Cache
- ◆ 6.4GB ATA-33 Hard Drive
- ◆ STB nVidia 4MB 3D AGP Video Card
- ◆ 17" Colour TCO 95 SVGA Monitor (0.28 dot pitch, 15.9" Viewable Area)
- ◆ 3 PCI, 1 ISA, 1 PCI/ISA Shared and 1 AGP Expansion Slots
- ◆ 14/32X CD-ROM Drive
- ◆ Turtle Beach Montego A3D 64 Voice PCI Sound Card and Altec Lansing ACS295 speakers with Subwoofer
- ◆ Mini Tower Chassis
- ◆ Microsoft® Home Essentials 98 (MS Word, MS Money UK)
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DELL DIMENSION XPS D333 MT

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DELL DIMENSION XPS D300 MT

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DELL DIMENSION XPS D300

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- ◆ 64MB SDRAM
- ◆ 512KB Internal Cache
- ◆ 4.3GB ATA-33 Hard Drive
- ◆ STB nVidia 4MB 3D AGP Video Card
- ◆ 17" Colour TCO 95 SVGA Monitor (0.28 dot pitch, 15.9" Viewable Area)
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DELL INSPIRON 3000 D233 XT

£1,799

DELL INSPIRON 3200 D266 XT

"RECOMMENDED" PC ADVISOR, MAY 1998

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- ◆ 80MB RAM
- ◆ 512KB High Performance Cache
- ◆ 4GB ATA-33 EIDE Hard Drive
- ◆ 24X Modular CD-ROM and 3.5" floppy Disk Drives
- ◆ Extra High Performance 128-bit PCI Graphics Controller with 2MB Video RAM
- ◆ Infrared communication port (IrDA 1.1 compatible)
- ◆ Zoomed Video Support
- ◆ 2 Cardbus PCMCIA type II slots or 1 type III
- ◆ Integrated Synaptics Touchpad
- ◆ USB Port
- ◆ Monitor, Serial, Mouse, Parallel Ports
- ◆ Lithium Ion "Intelligent" Battery
- ◆ Microsoft Windows 95
- ◆ Microsoft Office 97 Small Business Edition
- ◆ Executive Carry Case
- ◆ Deskdock Solution
- ◆ Inspiron Port Replicator
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Graphics cards

The graphics card is a vital part of a PC system. Together with the monitor, it underpins the quality and speed of the picture you see on your screen. In an industry used to rapid development and change, the graphics-card sector is perhaps the most bewildering: the sheer amount of new hardware, specifications and standards can leave even the most enthusiastic watcher bemused. Here is a quick guide to some of the most common terms.

2D, 3D and 2D/3D

The difference between 2D and 3D graphics is pretty obvious: 2D is flat, like an office application, while 3D has depth, giving the impression of going into your screen, as in games like Quake. In addition to supporting three dimensions, 3D cards allow developers to include special effects like fogging, translucency and reflections, which help to make the 3D environment more realistic and immersive. 2D/3D cards can handle both types of graphics, while 3D cards work alongside an existing 2D card.

AGP

New Pentium II-based PCs can use AGP (Accelerated Graphics Port) cards which slot in a different slot to the old PCI cards. This allows the graphics card much faster access to the computer's main memory, allowing larger textures to be used and making the 3D graphics more detailed and realistic.

DirectX

This is Microsoft's standard for 3D graphics. If your graphics card supports DirectX, it will run **any** game written using DirectX. The latest version, DirectX 5, has been criticised for being unnecessarily slow and not supporting the full features of many graphics cards. This is why you often see versions of games modified specially for particular 3D cards. There have been hints that DirectX 6 — just around the corner — will address these problems, leading to far better 3D performance.

OpenGL

A competing standard in the world of 3D graphics which some developers believe is faster and better than DirectX.

The developers of Quake II supported OpenGL instead of DirectX, but not all cards on the market have full OpenGL compatibility.

3D chipsets

There have been two main competitors in the 3D battle up until now, PowerVR from NEC and Voodoo from

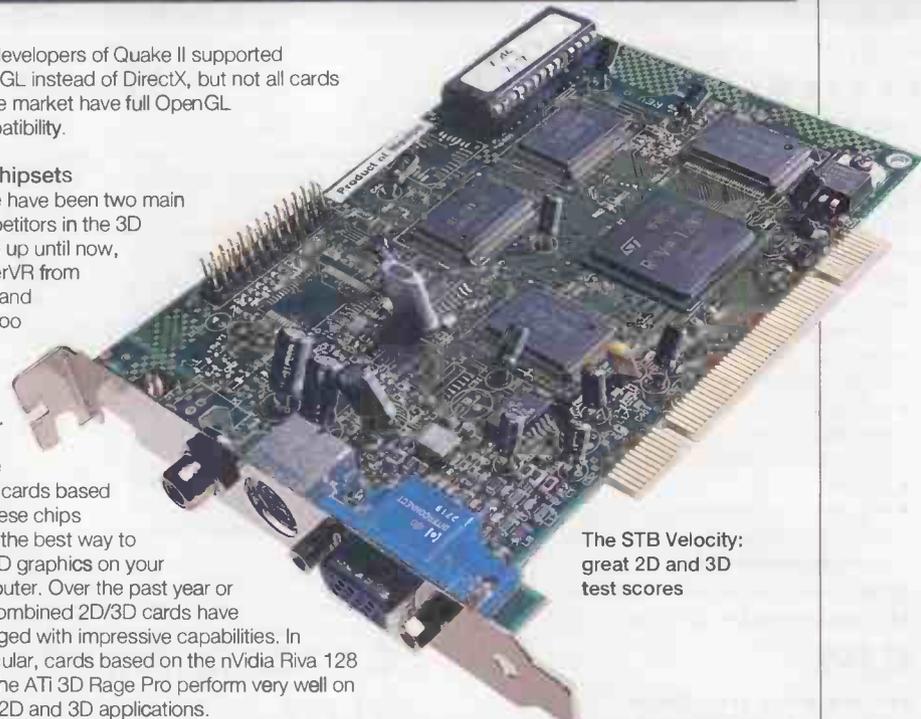
3DFx.

For some time, cards based on these chips were the best way to get 3D graphics on your computer. Over the past year or so, combined 2D/3D cards have emerged with impressive capabilities. In particular, cards based on the nVidia Riva 128 and the ATI 3D Rage Pro perform very well on both 2D and 3D applications.

But there is always something just around the corner, and new, more powerful versions of the PowerVR and Voodoo chipsets have just been announced by the manufacturers. The first Voodoo2 card is already on the market, courtesy of Creative Labs, while PowerVR II cards are expected soon. Also imminent are a number of cards based on Intel's new i740 chip, which is designed purely for AGP graphics cards.

The cards

The ATI Xpert@Work is the probably the most commonly bundled 2D/3D graphics card in the systems we have reviewed over the last few months. It is something of a surprise, then, to see only two in this group test, used by Dan and Dotlink. There are some similarities between all the



The STB Velocity: great 2D and 3D test scores

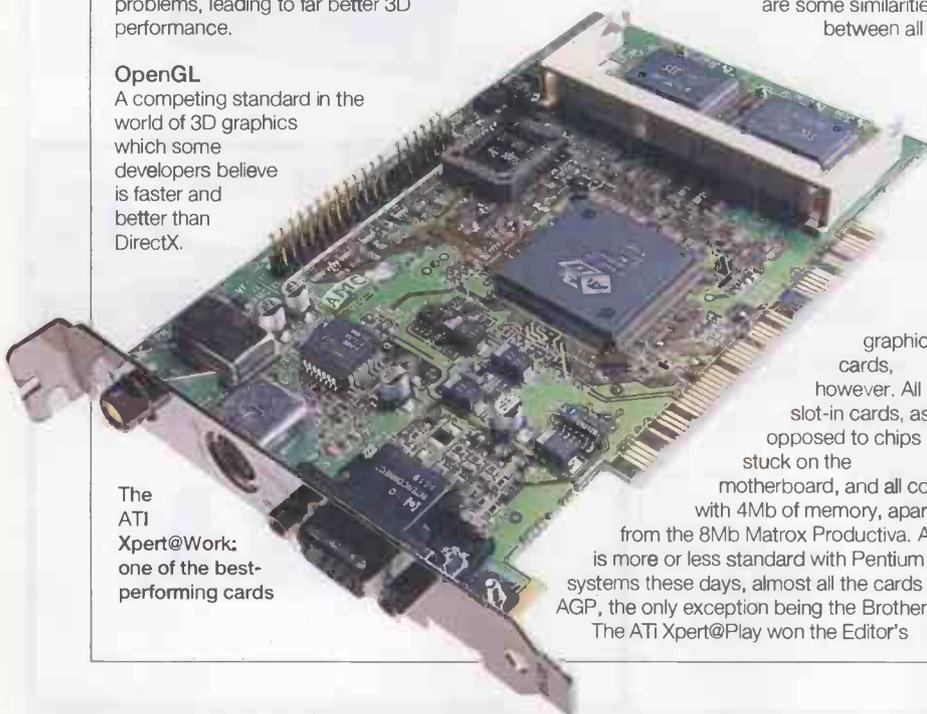
Choice award in our last 3D graphics card group test (*PCW* December 1997). The Xpert@Play is essentially the same card as the Xpert@Work. It's a solid performer with a host of 2D and 3D features, and a TV tuner. Based on the 3D Rage Pro chipset, its 230MHz RAMDAC (speed at which it can process information) can output a maximum non-interlaced vertical refresh rate of 85Hz at 1,600 x 1,200 resolution, so you are well served no matter how big your monitor is. On the software side, an ATI icon on the Windows 95 toolbar provides easy access to both display and device settings. The other ATI cards in the group test are the AGP 3D Rage Pro fitted to the Viglen, and the PCI (non-AGP) 3D Rage Pro II in the Brother.

There are also two STB Velocity 128 cards, courtesy of Dell and Roldec. The STB claimed a Highly Commended award in our December 1997 issue, and it's easy to see why. Using the nVidia Riva chipset, it has a number of well-designed features. Right-clicking on the desktop lets you change the resolution and colour depth from a comprehensive drop-down menu, and zoom, virtual desktop and multiple desktop are supported.

The other cards which feature in the group test are the Microstar MS4415, using a Cirrus Logic chip, and fitted to the Avontech machine; the SiS 6326 card in the Mustard PC; and the Cirrus Logic 546X card in the Choice. These cards are produced by manufacturers better known for making on-board chips for budget PCs and notebooks. None were impressive performers, and it might be worth paying a little more and specifying a well-known brand of card.

The only 2D card in the test is the brand-new Matrox Productiva, fitted in the Mesh PC. As a 2D card it did badly on our Final Reality tests, which are predominantly 3D orientated, although it did well in the SYSmark 2D office applications test.

Adam Evans



The ATI Xpert@Work: one of the best-performing cards

graphics cards, however. All are slot-in cards, as opposed to chips stuck on the motherboard, and all come with 4Mb of memory, apart from the 8Mb Matrox Productiva. As is more or less standard with Pentium II systems these days, almost all the cards are AGP, the only exception being the Brother. The ATI Xpert@Play won the Editor's

"Power by name and powerful by nature"

"If cost is the key, then it is difficult to beat the Powercom Powernote..."

...Power by name and powerful by nature, it offers great performance at a price just a whisker away from being the lowest in this group test...Although the Powercom and the Toshiba are very different we recommend them both..."

Powernote MMO - What PC? Recommended February 1998

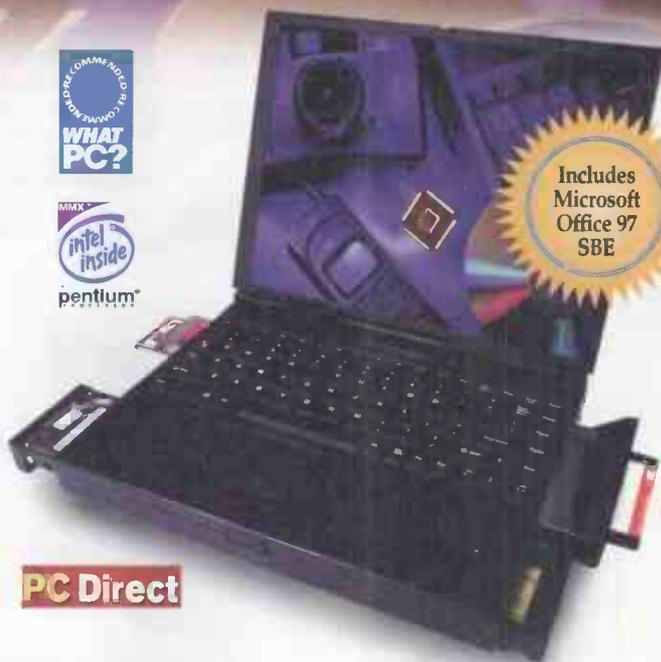
"The Dell, Viglen & Powercom models all posted high results,

however, the Powercom's extra 16Mb of memory helped it come top in the Business Winstone 97 test. At £2399 the Powercom also undercuts the other two by a substantial margin and when you consider that it comes with a spare battery, a massive hard disk and MS Office 97 Small Business Edition, it looks like an attractive package."

Powernote MMO - Expert Buyer Review PC Direct January 1998



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PC Direct

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PC Plus Review - September 97

- 11.3" SVGA (800 x 600) DSTN colour display
- Intel mobile Pentium Processor with MMX technology 133 - 166MHz
- Intel Mobile Triton 82430MX chipset • PCI Bus
- 24Mb EDO standard expandable to 72Mb
- 256Kb Level 2 cache
- Neomagic 2090ZV 128bit graphics accelerator
- Removable 10X CD-ROM & 1.44 floppy drive
- Toshiba 810Mb E-IDE HDD 4200RPM, 128K cache, 7.14ms
- 16 ESS 688 stereo sound with stereo speakers & microphone
- 2 x Smart NiMH batteries
- 85 key keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Zoomed video port • Cardbus ready
- Integrated Synaptic touchpad
- Parallel (EPP/ECP), Serial (16650) & Infra red (IRDA 1), VGA, Docking connector & PS2 Port • Built in Microphone
- Weight 2.9Kg • A/C adaptor • Dims: 299 x 226 x 51mm
- Executive carry case • System utility disks • Manuals
- Microsoft Windows 95

Powernote MMX

PC Direct "This screen is a good one... For raw portable power, the Digital leads the way followed closely by the Powercom and Gateway notebooks... If long battery life at a low price is a priority then Powercom's Powernote is well worth considering."
PC Direct Review - June 97

- 12.1" SVGA (800 x 600) DSTN or TFT colour display
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- Intel Mobile Triton 82430MX chipset • PCI Bus
- 256Kb Level 2 cache
- 32Mb EDO standard expandable to 80Mb
- Neomagic 2093ZV 128bit graphics accelerator
- Combo 12X CD-ROM and 1.44 floppy drive
- Toshiba 2.1 Gb E-IDE HDD 4200RPM, 128K cache, 7.14ms
- 16 ESS 1878 wavetable stereo sound with stereo speakers & MIDI
- Lithium ion 45W battery
- 85 key keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Zoomed video port • Cardbus ready
- Synaptic Integrated touchpad
- Parallel (EPP/ECP), Serial (16650) & Infra red (IRDA 1), VGA, Docking connector & PS2 Port
- Built in Microphone • Weight 2.9Kg • Dims: 299 x 226 x 51mm
- International adaptor • Executive carry case
- Microsoft Windows 95

Powernote MMO

"This is the first 266MHz notebook to be available in the UK, just beating Dell & Gateways offerings. The processor is the latest in Intel's line of low power consumption chips, designed specifically for notebook PC's..."
**** What PC? Review March 98

- 12.1 SVGA (800x600) or 13.3 XGA (1024x768) TFT display
- Intel 200 / 233MHz / 266MHz / PII 233 / PII266 Low voltage Mobile Processor with MMX Technology
- Intel Mobile Module (MMO)
- Intel Mobile Triton 82430TX Chipset
- 48Mb SDRAM Standard, Exp to 144Mb
- 512Kb Level 2 Cache • PCI Bus
- Neomagic 2160 3D 128bit Super Fast Graphics Accelerator
- 20X CD-ROM and 1.44 Floppy Drive
- Toshiba 3.3 Gb UDMA HDD
- PC97 Ready • Lithium Ion 45W battery
- Intel PIIX4 EIDE Ultra DMA Controller (33Mb per sec)
- 16bit Wavetable Audio Chip with SRS 3D Stereo Sound with Stereo Speakers & MIDI
- Intel Dynamic Power Management Architecture (DPMA) & SMBUS
- 86/87 Key Keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots • Zoomed Video Port
- Cardbus Ready • Integrated Synaptic touchpad
- Parallel (EPP/ECP), Serial (16650) and Infra red (IRDA 1), VGA, Docking Connector & PS2 Port • USB Port
- Built in Microphone • Weight 2.8Kg • Executive carry case
- Dims: 303 x 234 x 51.5mm • International adaptor
- Microsoft Office 97 SBE • Microsoft Windows 95

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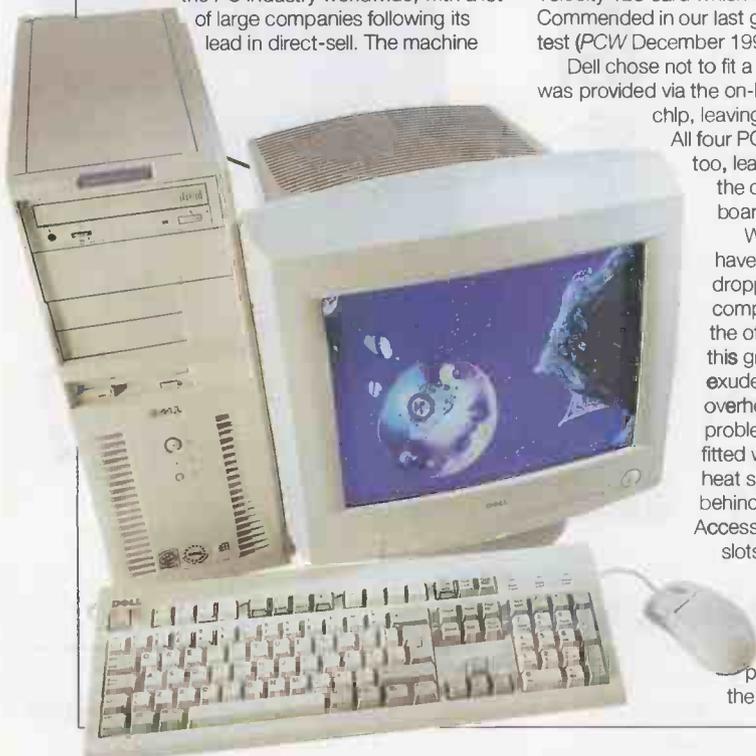


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Dell Dimension XPS D300

Dell has seen its sales and stock soar in the last year, and after a successful 1997 it is the third largest company in the PC industry worldwide, with a lot of large companies following its lead in direct-sell. The machine



Dell sent us is part of its Dimension range, with a 300MHz PII processor, 64Mb SDRAM, a 4Gb hard drive, and the impressive STB Velocity 128 card which was Highly Commended in our last graphics card group test (PCW December 1997).

Dell chose not to fit a modem, and sound was provided via the on-board Yamaha OPL3 chip, leaving both ISA slots free.

All four PCI slots were empty too, leaving the AGP slot as the only one filled on the board.

While Dell might not have produced a jaw-dropping spec in comparison with some of the other companies in this group, its PC did exude quality. Processor overheating shouldn't be a problem, as the PII 300 is fitted with a large metallic heat sink, and a fan is fitted behind it just in case.

Access to the three DIMM slots, two of which were taken with the 64Mb, was unfettered by cabling, so you shouldn't have any problems adding to the RAM. All the ports

were clearly marked and the sound sockets colour-coordinated, while the IDE cables were impressively neat and ordered. The 4Gb hard drive was fixed flush vertically up against the front of the case, freeing up the 3.5in bay slung below the floppy drive.

Dell ships MS Money and Works with the XPS D300. The operating system, in this case Windows 95, was part-installed so the user can configure the final settings to his or her own specification the first time they set up the PC and switch it on. This might not suit everyone, as reboots are necessary and the OS needs information from the CD, but Dell does include a guide to starting up for the technologically unsure.

PCW Details

Price £1,175 (£999 ex VAT)
 Contact Dell 0870 1524850 www.dell.co.uk
 Good Points Good software. High-quality build. Good components.
 Bad Points The internet enthusiast might have wanted a modem.
 Conclusion A shame that such a prominent company couldn't have put together something more exciting.
 Build Quality ★★★★★
 Performance ★★★★★
 Value for Money ★★★★★
 Overall Rating ★★★★★

Dotlink Magnum II - 333 SE

We were immediately impressed by the configuration of the Dotlink PC. Not only did it have top-quality components — 64Mb of SDRAM, a 4.3Gb hard drive, an XPer@Work AGP card — but it also had a PII 333, Creative Labs' AWE-64 sound card and a Pace 56K modem. On top of this Dotlink had included Lotus

SmartSuite97, and SuperVoice for Windows, a voice recognition package.

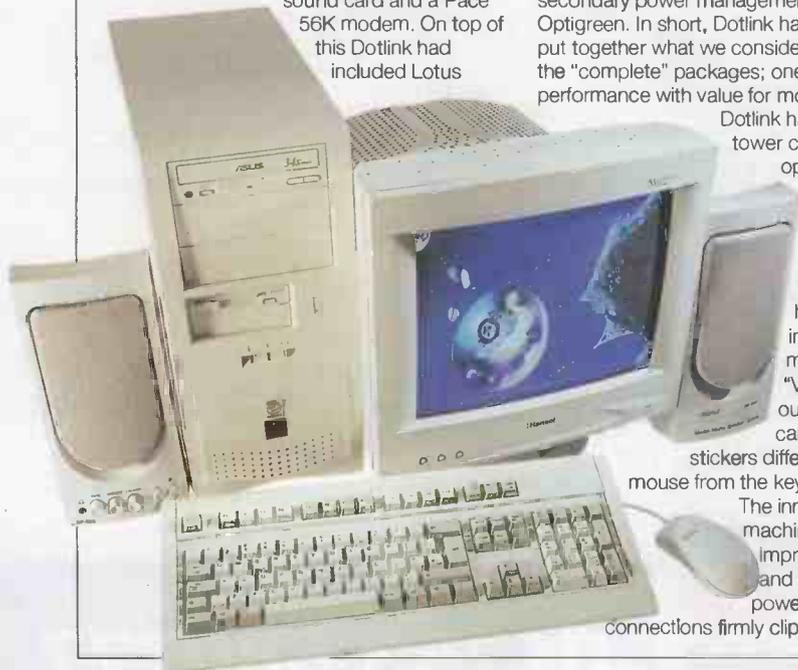
A few security utilities for the nervous user had even been pre-installed. Dotlink's Emergency Utilities allow the user to configure backup or emergency recovery, and there's a secondary power management utility from Optigreen. In short, Dotlink had managed to put together what we considered to be one of the "complete" packages; one that combines performance with value for money.

Dotlink had opted for the tower case design as opposed to the desktop chassis favoured by others. All the ports at the rear had been individually marked, from the "VGA" marking out the graphics card, to the PS/2 stickers differentiating the mouse from the keyboard ports.

The innards of the machine were impressively neat and ordered, with all power and IDE connections firmly clipped out of the

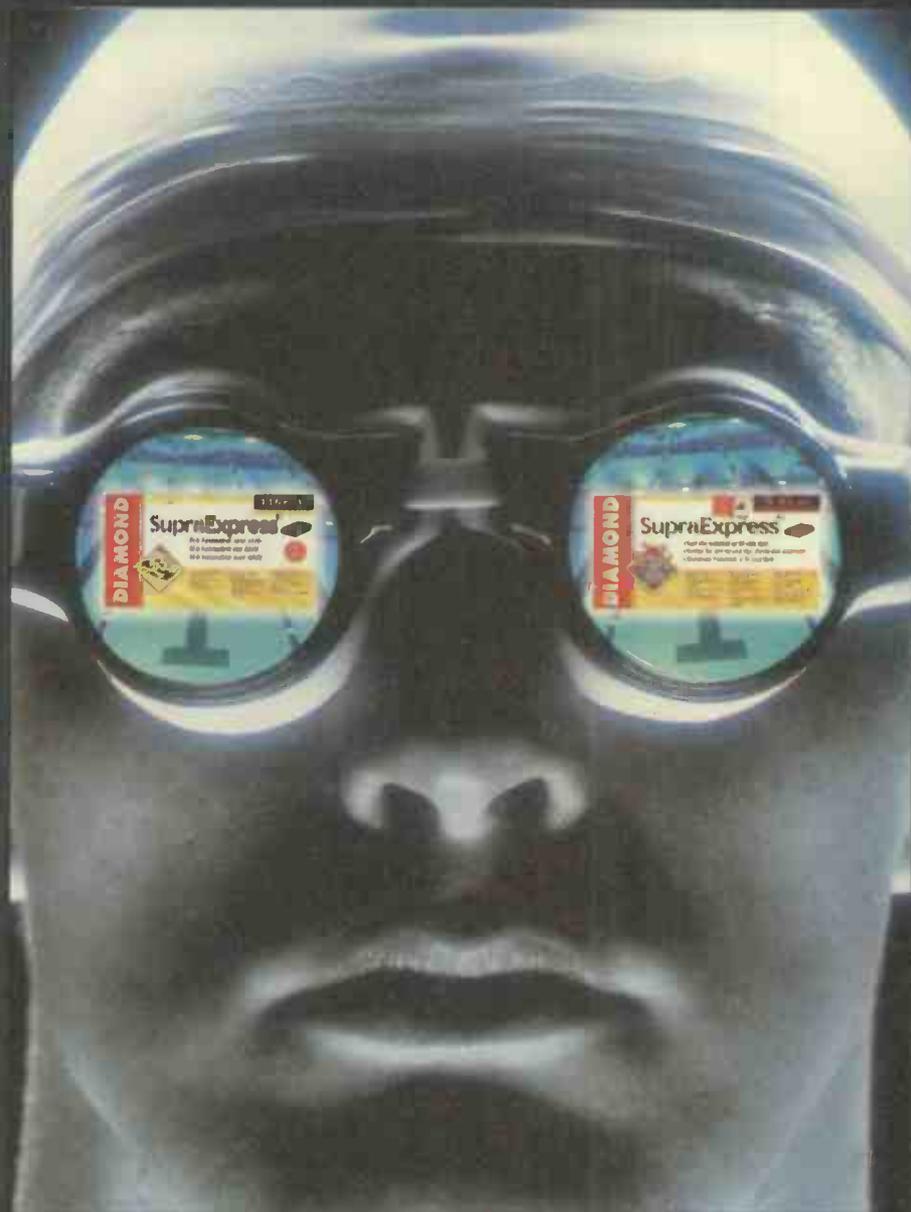
way of the RAM and processor. All four PCI slots were free of cards, with two of the three ISA slots filled with the 56K modem and the AWE-64 sound card. The 64Mb of SDRAM was contained on two DIMM modules, leaving one slot free for additional main memory. There is sufficient room for expansion in this PC, with two free 5.25in forward-facing drive bays, and room for one 3.5in drive slotted between the floppy and hard drive.

Such was the overall quality of the package, that we were a little disappointed by the JUSTer speakers that suffered from slight crackle even at low volume. The Dotlink scored the highest result in the SYSmark test, although its Final Reality score was something of a disappointment in comparison, especially considering that it had the impressive ATI Xper@Work graphics card.



PCW Details

Price £1,175 (£999 ex VAT)
 Contact Dotlink 0181 902 5802 (no URL)
 Good Points Great hardware. Powerful processor.
 Bad Points Relatively disappointing 3D scores.
 Conclusion Very impressive.
 Build Quality ★★★★★
 Performance ★★★★★
 Value for Money ★★★★★
 Overall Rating ★★★★★



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Monitors

For this group test we asked that all ten companies submit 15in monitors, so that manufacturers were not torn between giving us a 17in monitor or more RAM and hard disk. With most 15in monitors, the optimum resolution is 800 x 600 pixels, at which you can expect refresh rates of up to 85Hz. While a non-interlaced refresh rate over 70Hz should give you a flicker-free display, VESA now recommends 85Hz. Good 15in monitors can provide similarly high refresh rates of 1,024 x 768, but at this resolution the details are too small to see comfortably. Many 15in monitors are unable to provide a sufficiently focused picture at 1,024 x 768, as we found time and again in this test.

There was only one monitor in the group test that we found unacceptable, and it was the ideal monitor that Mustard included in its bundle. The 15in SA-564DM monitor was anything but ideal, with a dreadful loss of focus at 1,024 x 768 at 70Hz. While both refresh rate and focus improved at 800 x 600, it still had everyone reaching for the paracetamol. We have reviewed this monitor before, and our original advice still holds: don't waste your money.

The 15in Acer monitor supplied by Dell provided sharp focus and an 85Hz refresh rate at 800 x 600. When the resolution was upped to 1,024 x 768, the refresh rate fell to a disappointing 60Hz and there was a noticeable loss of sharpness.

Roldec had opted for an ADi 15in monitor, the Provista E40, which has a diagonal viewable area of 13.8 inches. The E40 was able to display a resolution of 1,024 x 768 at an excellent refresh rate of 85Hz, although there were minor focus problems. The focus was excellent at a lower resolution of 800 x 600. The E40 didn't have an OSD, but the manual controls were user-friendly.

Hansol supplied two of the companies in the group test, albeit with different models, and the differences showed. Avontech used an unbranded Hansol monitor that



afforded a decent picture at 1,024 x 768, although with a refresh rate of only 60Hz non-interlaced. Dropping the resolution to 800 x 600 sharpened the picture and bumped the refresh rate up to 85Hz. We were much more impressed by the Hansol Mazellan 501P monitor that we received with the Dotlink system. It provided a crisp focus at 1,024 x 768, and could display this at a refresh rate of 85Hz as well as offering resolutions of up to 1,280 x 1,024 pixels, although this resolution can be too high even on a 17in monitor. The 501P was one of the few 15in monitors we saw to include OSD (On-Screen Display), although the controls were rather fiddly.

Taxan also supplied two companies in our test. Mesh had chosen the excellent Taxan Ergovision 550 to accompany its PC. Most of the 15in monitors we saw in this group test could display 800 x 600 with sharp focus, but the 550 had the sharpest focus of any monitor we saw at 1,024 x 768, and with an excellent 85Hz refresh rate. The 550 also had an impressive OSD that enabled the geometry controls to be altered. The other Taxan monitor, the BM 87 rebadged unit from Brother, could only muster a refresh rate of 60Hz at 1,024 x 768. At this resolution there was some loss of focus, and a barrelling effect. The refresh rate rose to 75Hz



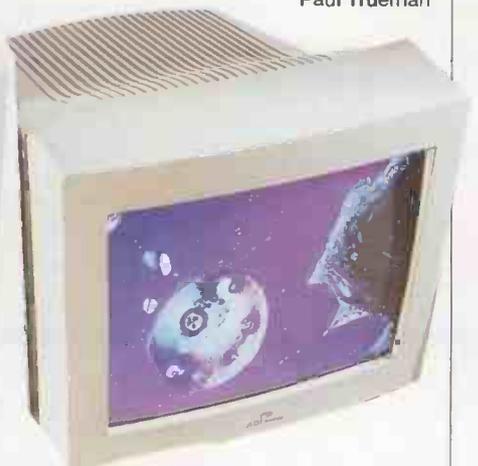
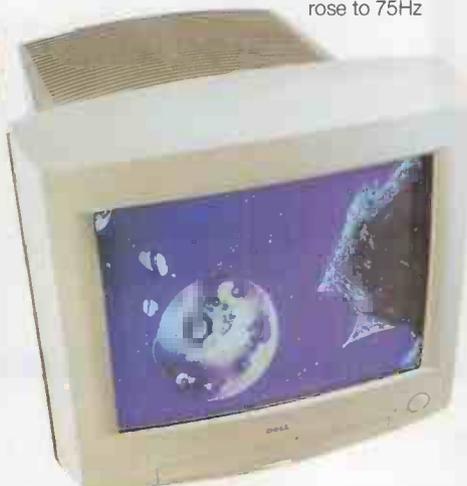
when the resolution dropped to 800 x 600, but there was still some loss of focus in the top two corners of the screen.

The Spectrum series of monitors from AOC has been around for years, and Choice had opted to use one of the latest additions to the family. The 5Vlr 15in monitor was impressive, one of the few we saw that could support a 1,024 x 768 resolution at a healthy 85Hz. It could also do 1,280 x 1,024, although only at a refresh rate of 60Hz, and such high resolutions with 15in monitors are rather pointless anyway as it requires a magnifying glass to make out anything on a 15in screen.

Viglen used the AX1595 from Mag, and the speakers attached to the side of the monitor. We were impressed by the OSD, with its user-friendly icons and responsive controls. The AX1595 could display resolutions up to 1,280 x 1,024 and so had no problems with a resolution of 1,024 x 768, and could produce it at a refresh rate of 85Hz.

The 1569SE Dan 15in monitor from CTX was one of the few in the group test that was as impressive as the accompanying PC system. It could display a resolution of 1,024 x 768 at an impressive 85Hz, while the 13.8in of viewable area remained sharp. An excellent OSD allowed the user to alter the screen's geometry, with user-friendly controls and an easily comprehensible display.

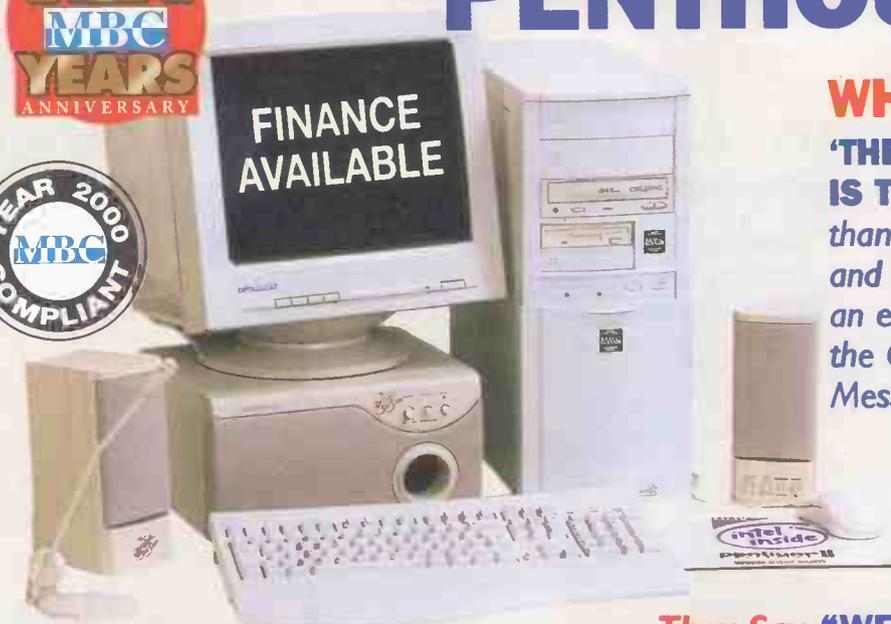
Paul Trueman



■ Ten systems and ten different monitors — some impressive, and some that will have you running for the painkillers

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- Microsoft Windows 95 pre-loaded and supplied with CD and Manual • Lotus SmartSuite 97
- MS Family CD Pack
- IBM Simply Speaking voice recognition software with headset mic.

CPU	EX VAT	INC VAT	FLEXIPAY
Pii 233 MMX	£665	£781.38	£28.52
Pii 266 MMX	£685	£804.88	£29.38
Pii 300 MMX	£735	£863.63	£31.52
Pii 333 MMX	£795	£934.13	£34.09

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- Microphone • MS Family CD Pack
- Microsoft Windows 95 pre-loaded and supplied with CD and Manual • Lotus SmartSuite 97
- IBM Simply Speaking voice recognition software with headset mic.

CPU	EX VAT	INC VAT	FLEXIPAY
Pii 233 MMX	£795	£934.13	£34.09
Pii 266 MMX	£815	£957.63	£34.95
Pii 300 MMX	£865	£1016.38	£37.10
Pii 333 MMX	£925	£1086.88	£39.67

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- 15" Non Interlaced/Low Radiation Colour Monitor
- 32x Speed EIDE CD-Rom Drive
- Creative Labs SoundBlaster AWE64 Wavetable sound
- HI-FI 80W Speakers
- 1 Parallel & 2 Fast Serial Ports, USB
- 1.44MB Floppy Disk Drive
- ATX Style Midi Tower Case
- Windows 95 UK Keyboard • Microsoft Mouse
- Microsoft Windows 95 pre-loaded and supplied with CD and Manual
- Lotus SmartSuite 97 • MS Family CD Pack
- IBM Simply Speaking GOLD Voice recognition software with headset mic.

INTEL BX
CHIPSET

CPU	EX VAT	INC VAT	FLEXIPAY
Pii 233 MMX	£825	£969.38	£35.38
Pii 266 MMX	£845	£992.88	£36.24
Pii 300 MMX	£895	£1051.63	£38.38
Pii 333 MMX	£955	£1122.13	£40.96
Pii 350 MMX	£995	£1169.13	£42.67
Pii 400 MMX	£1095	£1286.63	£46.96

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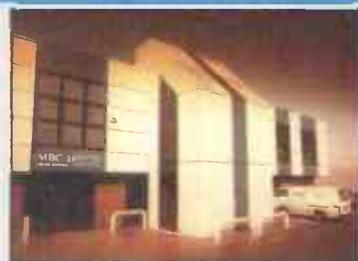
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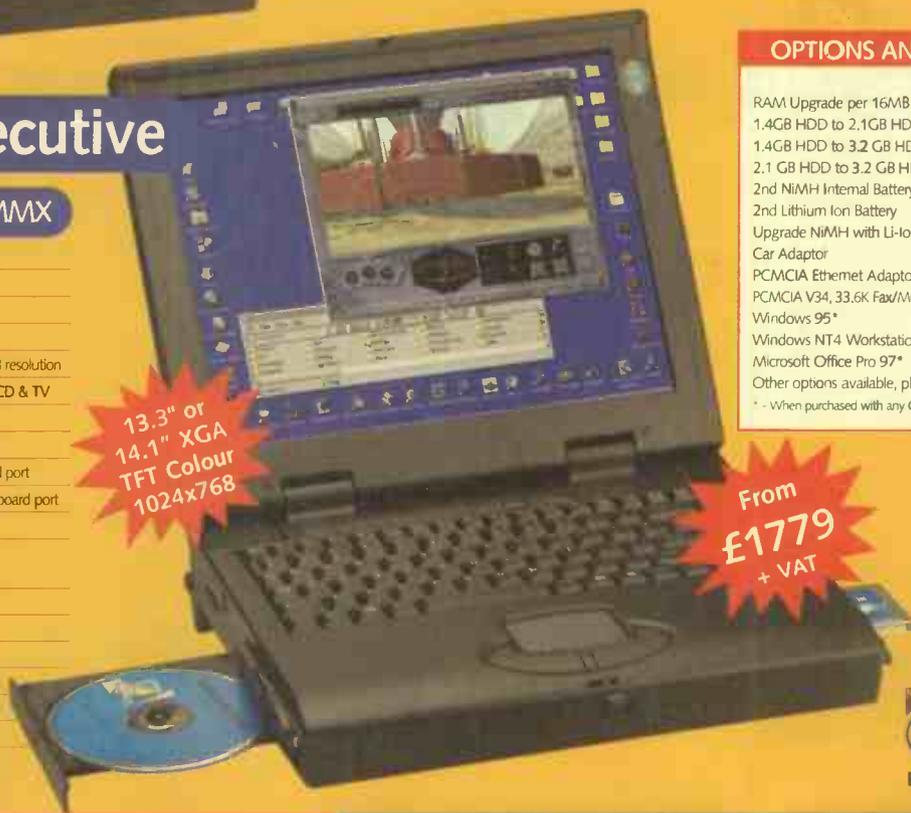
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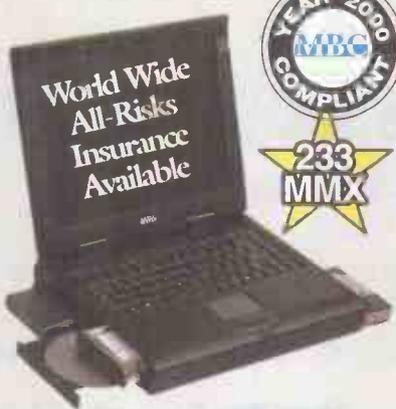
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- ✓ MPEG & ZV Port ready
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- ✓ 20X CD-ROM
- ✓ 4MB EDO Graphics Ram
- ✓ 3D Wave Table Stereo Audio System
- ✓ MPEG & Zoom Video ready
- ✓ Lithium-Ion Battery



MBC Prostar

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- ✓ 24X CD-ROM
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- ✓ MPEG & ZV Port ready
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- Intel Pentium MMX
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- 1024 x 768 on external CRT • Fast 20X speed CD ROM Drive
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 - Integral stereo speakers and microphone
- Infra red wireless communications port (IRDA 1.1 and FIR compliant) • Central chassis touch pad mouse pointing device
- Windows 95 keyboard • Lithium-Ion Battery
- Zoom Video compliant • PCMCIA 2 X II and 1 X III ports
 - LCD system status indicator • TV output port
- External SVGA monitor port • Docking station port
- Games joystick/Midi port • UART16550C serial port
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Supplied complete with:

- Leatherette carry bag • Hardware documentation
- System drivers supplied with CD
- AC charging/power adaptor • Weight 3.4 Kg

PROTEUS 12.1" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P233 MMX	£995	£1169.13	£42.67

Above prices based on Intel Processor, 32MB EDO RAM, 2.1GB HDD, 20x CD & Multimedia features, Li-Ion Battery.

- Intel Pentium MMX • 512KB secondary cache pipeline burst synchronous RAM • 4MB EDO Video RAM • 32MB EDO RAM expandable to 128MB • Removable 2.1GB Hard Disk (higher options available) • Accelerated 64-bit PCI bus • 13.3", 14.1" XGA display • 1024 x 768 resolution on LCD • Up to true colour 24-bit • 1280 x 1024 on external CRT • Fast 20X speed CD ROM Drive
- Removable 1.44MB 3.5" Floppy Disk Drive, swappable with optional 2nd battery, MO Drive, • Both CD and Floppy are simultaneously installed • 3D 16-bit full duplex stereo soundcard with 1MB of Wave Rom Synthesis (SoundBlaster and General Midi Compliant) • Integral stereo speakers and microphone • Infra red wireless communications port (IRDA 1.1 and FIR compliant) • Central chassis touch pad mouse pointing device • Windows 95 keyboard • Lithium-Ion Battery
- LCD system status indicator • PCMCIA 2 X II and 1 X III ports
 - 2 USB ports • TV output port • External SVGA monitor port
 - Docking station port • Games joystick/Midi port
 - UART16550C serial port • Parallel port (EPP/ECP comp)
 - PS2/External keyboard port

Supplied complete with:

- Microsoft Windows 95 pre-loaded and supplied with CD and Manual and Lotus SmartSuite 97 CD • Leatherette carry bag
- System drivers supplied with CD • Hardware documentation
- AC charging/power adaptor • Weight 4.1Kg

PRONOTE 13.3" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P233 MMX	£1345	£1580.38	£57.68

PRONOTE 14.1" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P233 MMX	£1445	£1697.88	£61.97

Above prices based on Intel Processor, 32MB EDO RAM, 2.1GB HDD, 20x CD & Multimedia features, Li-Ion Battery, Microsoft Windows 95 pre-loaded and supplied with CD and Manual and Lotus SmartSuite 97 CD.

- Intel Pentium MMX & MMO options • 512KB secondary cache pipeline burst synchronous RAM • 4MB EDO Video RAM • 32MB EDO RAM expandable to 128MB • Removable 2.1GB Hard Disk (higher options available) • Accelerated 64-bit PCI bus • 15.1" XGA display • 1024 x 768 resolution on LCD • Up to true colour 24-bit • 1280x1024 on external CRT • Fast 24X speed CD ROM Drive • Removable 1.44MB 3.5" Floppy Disk Drive, swappable with optional 2nd battery, MO Drive & Zip drive • Both CD and Floppy are simultaneously installed • 3D 16-bit full duplex stereo soundcard with 1MB of Wave Rom Synthesis (SoundBlaster and General Midi Compliant) • Integral stereo speakers and microphone • Infra red wireless communications port (IRDA 1.1 and FIR compliant) • Central chassis touch pad mouse pointing device • Windows 95 keyboard (includes numeric keypad) • Lithium-Ion Battery • LCD system status indicator • PCMCIA 2 X II and 1 X III ports • 2 USB ports • TV output port • External SVGA monitor port • Docking station port • UART16550C serial port • Parallel port (EPP/ECP comp) • PS2/External keyboard port

Supplied complete with: • Microsoft Windows 95 pre-loaded and supplied with CD and Manual and Lotus SmartSuite 97 CD • Leatherette carry bag • System drivers supplied with CD • Hardware documentation • AC charging/power adaptor • Weight 4.4Kg

PROSTAR MMX 15.1" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P233	£1725	£2026.88	£73.98

PROSTAR MMX MMO (IMM) 15.1" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P200	£1925	£2261.88	£82.55
P233	£1975	£2320.63	£84.70
P266	£2065	£2426.38	£88.56

Above prices based on Intel Processor, 32MB EDO RAM, 2.1GB HDD, 24x CD & Multimedia features, Li-Ion Battery, Microsoft Windows 95 pre-loaded and supplied with CD and Manual and Lotus SmartSuite 97 CD.

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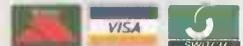
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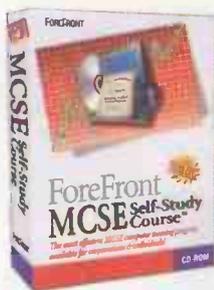
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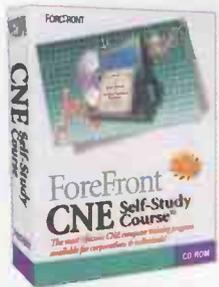
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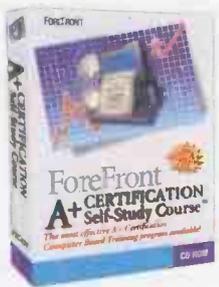
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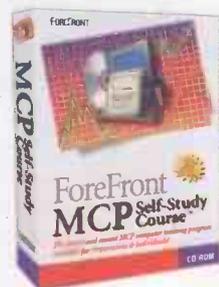
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Mesh Elite Professional PII 350BXA

Mesh has a habit of surprising us in group tests, and this time was no exception. While it looked as if a PII 333 would be the fastest processor submitted by any manufacturer, Mesh leapt ahead of the competition and put the latest PII 350 in its PC. While this processor only runs at a slightly higher clock speed, the real

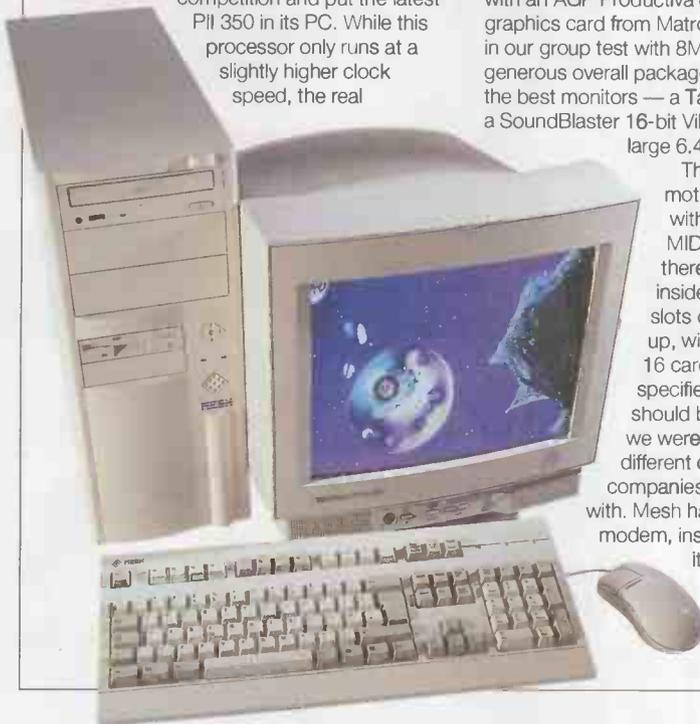
difference in performance is to be found in the increase in the system-bus speed, jumping from 66MHz with previous processors to 100MHz in the 350 and 400MHz PIIs.

In addition, the Elite Professional was fitted with an AGP Productiva card, the latest 2D graphics card from Matrox and the only card in our group test with 8Mb of SGRAM. This generous overall package also included one of the best monitors — a Taxan ErgoVision 550, a SoundBlaster 16-bit Vibra sound card and a large 6.4Gb hard drive.

The 440BX motherboard was held within a standard ATX MIDI tower case, and there was plenty of room inside. Of the three ISA slots only one was taken up, with the SoundBlaster 16 card. We hadn't specified that the machines should be internet-ready, as we were interested to see the different configurations the ten companies would come up with. Mesh hadn't included a modem, instead opting to make its machine more performance-driven. The AGP slot was taken up with the Matrox

Productiva graphics card, and all the four PCI slots were free. For those users who like to buy a performance-orientated PC and upgrade, there were two free forward-facing 5.25in bays and two free 3.5in bays — one internal and one front-facing.

We were expecting performance increases from the Mesh because of the increase in processor and system-bus clock, but we were still surprised at how the Elite's SYSmark results blew the competition away. The Productiva, despite having 8Mb of memory on the card, is still primarily a 2D card, so its scores on the 3D Final Reality test were, as could be expected, less jaw-dropping. However, this card contributed considerably to the excellent SYSmark scores.



PCW Details

Price £1,145 (£999 ex VAT)
Contact Mesh 0181 452 1111 www.mesh.co.uk
Good Points Powerful PII350 processor. Large hard drive.
Bad Points Slightly disappointed by the 3D scores.
Conclusion A PC for the power-hungry.
Build Quality ★★★★★
Performance ★★★★★
Value for Money ★★★★★
Overall Rating ★★★★★

Mustard MC 753MT

Mustard Computers is a relatively new company, formed last year by ex-employees of Crown. They provided the kind of system configuration most of the manufacturers had chosen for this group test: 64Mb of SDRAM, an AGP graphics card, a 4Gb hard drive and on-board sound. The processor was clocked at only 266MHz, although

Mustard was one of the few PCs here to be fitted with a modem.

We had no problems connecting to the internet, using AOL, one of the online services bundled freely with Windows 95. The advantage of a higher-speed modem, in this case 56K, is that less time is spent waiting for pages to be downloaded from the server, so phone bills are kept to a minimum.

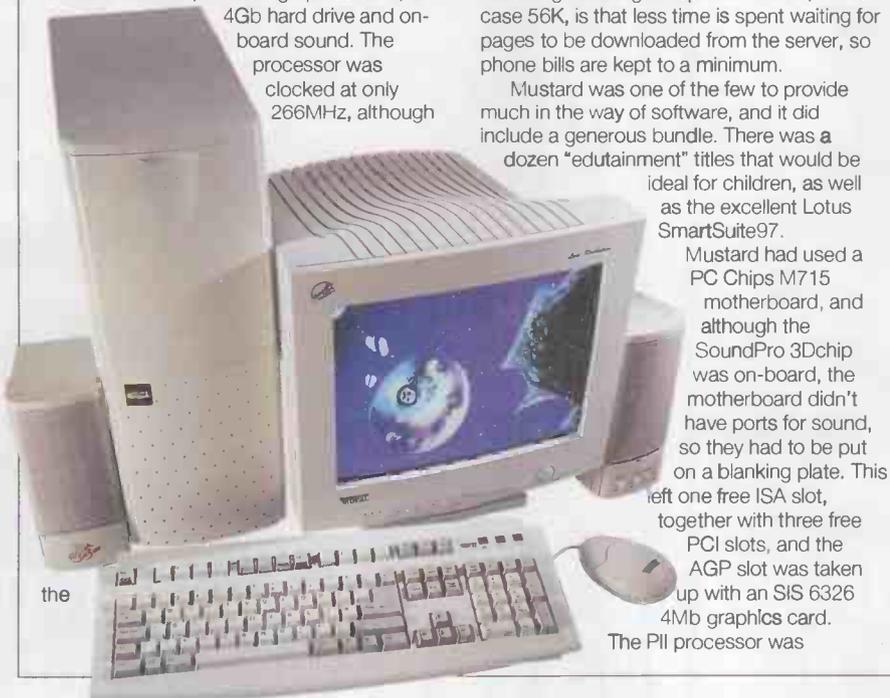
Mustard was one of the few to provide much in the way of software, and it did include a generous bundle. There was a dozen "edutainment" titles that would be ideal for children, as well as the excellent Lotus SmartSuite97.

Mustard had used a PC Chips M715 motherboard, and although the SoundPro 3Dchip was on-board, the motherboard didn't have ports for sound, so they had to be put on a blanking plate. This left one free ISA slot, together with three free PCI slots, and the AGP slot was taken up with an SIS 6326 4Mb graphics card.

The PII processor was

positioned alongside the PCI slots, making room for the RAM SIMM slots that are an increasingly rare sight on motherboards nowadays. There were four SIMM slots and two DIMM slots in all, although access to them was somewhat hampered by the EIDE ribbon cables. All 64Mb of RAM was contained on one DIMM module.

If you were to fill the other DIMM slot, there would be considerable pressure against it, from the ribbon cable linking the motherboard to the hard drive. Also remember that on some boards you cannot actually mix SIMM and DIMM memory, or if you have a board that does support this, the faster RAM will simply clock itself down to run at the speed of the slower RAM.



PCW Details

Price £1,175 (£999 ex VAT)
Contact Mustard 01727 732005 www.mustard-uk.com
Good Points An internet-ready machine, with bundles of software.
Bad Points Rather fiddly access to the RAM.
Conclusion You could do a lot worse.
Build Quality ★★★★★
Performance ★★★★★
Value for Money ★★★★★
Overall Rating ★★★★★

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metal halide lamp £2225

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- True SVGA resolution
- Complete with carry case and cables
- 16.7 million true, bright colours
- Compact and ultra portable



Sony

VPL - X600 (1024 x 768)
600 ANSI lumens 5.8Kg £4395
VPL - S600 (800 x 600)
600 ANSI lumens 5.8Kg £3495

Sony introduce two superb, innovative super bright, ultra portable multimedia projectors. With a choice of XGA (1024 x 768) or SVGA (800 x 600) models both 600 ANSI lumens rated.

- True XGA (1024 x 768) or SVGA (800 x 600)
- Magnesium diecast body - lightweight (5.8kg, 12lbs), rugged, compact design
- APA (Auto Pixel Alignment) - automated set-up for optimum image quality
- UHP Lamp - 95% bright even at end of 2000 hour lamp life
- Easy lamp change, laser pointer and remote mouse control
- Optional, easy to interchange, lenses



Viewsonic

PJ800 (800 x 600) £2499
550 ANSI lumens

Very competitively priced, this Viewsonic PJ800 high bright (550 ANSI lumens), fully featured true SVGA (800 x 600) multimedia projector is seriously impressive value for money. Providing superb quality images on data and video courtesy of polysilicon technology, the presenter can always be in control with this model's power zoom and built-in mouse control features.

- True SVGA (800 x 600) and XGA (1024 x 768) on compression
- Full feature remote control with built-in mouse
- Unique image shift with auto keystone correction
- 2 x Data (PC or Mac) inputs and Video
- 260W Metal Halide Extended Life (3000 hours) lamp



Sharp

XG-NV2E (800 x 600) £2999
700 ANSI lumens

Market innovator Sharp offer the XGNV2E, true SVGA (800 x 600), polysilicon and super high bright with 700 ANSI lumens light output. With XGA on intelligent compression and remote mouse this is a very competitively priced full feature projector.

- Super Bright 700 ANSI lumens
- Remote mouse with laser point
- Built-in amplifier with stereo speakers
- Large 300", 16.7 million full colour projection



Viewsonic

PJL802 Viewbook (800 x 600) 5Kgs £2849

Weighing just 5 kg, this is Viewsonic's new, tiny viewbook model. And with this model, small really is beautiful. Utilising polysilicon technology and with 400 ANSI lumens high light output, the PJL802 once again gives outstanding value for money for every presentation.

- Weighs only 5 Kg (9lbs)
- True SVGA (800 x 600) XGA (1024 x 768) on compression
- Polysilicon with bright 400 ANSI lumens output
- Ultra portable, ultra compact
- Built-in PC card slot for computer free presentations



NEC

LT-80 (800 x 600) £3249
600 ANSI lumens

NEC introduce the LT-80. Bright, sleek, incredibly lightweight, with digital zoom/focus and providing highest quality DLP images, the true SVGA (800 x 600) projector provides 600 ANSI lumens light output for superb data and video projection.

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- DLP technology
- Digital zoom and focus
- 600 ANSI lumens

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Roldec Predator

The Roldec Predator had a PII 300, along with 64Mb of SDRAM and a 3.2Gb hard drive. While the Quantum Fireball is a good-quality hard drive, it was still half the size of some of the other drives we saw. This was really the only component in which Roldec seemed uncompetitive with the other companies, as otherwise it had put

together an attractive package.

There was no sound card. Instead, sound was provided via the popular Yamaha OPL3 chip on the motherboard and relayed through excellent Arowana Multimedia speakers. Roldec had also fitted out the Predator with an STB Velocity 128 graphics card with 4Mb of SGRAM (see page 148). A 56K modem was provided.

Obtaining access to the PC's innards usually requires a screwdriver, but the Roldec casing was screw-free.

Instead, a single fastener had to be taken out, before pressure was applied to the top and bottom springs and the side panel "snaps" off. It sounds easier than it is, and a first-time user could be convinced that they'd ripped their PC apart.

The insides were impressively orderly, with cables neatly taped up and power cables from the power unit to the motherboard kept out of the way of the SDRAM DIMM

modules. Two of the three DIMM slots were taken up on the Intel AL440LX motherboard, leaving one free for extra main memory should you wish to upgrade. As the sound is fitted on-board, there was one free ISA slot. The other was filled with the 56K modem, while all four PCI slots were free. There was one spare front-facing 5.25in drive bay, as well as two free front-facing 3.5in drive bays, should you wish to install extra drives.

With a PII 300 processor, the Predator did not do as well on the 2D SYSmark test as we might have expected, scoring relatively average results. But thanks to the STB graphics card it performed very well on the 3D Final Reality test, earning the best overall score in the group.



PCW Details

Price £1,175 (£999 ex VAT)

Contact Roldec 01902 456464 www.roldec.co.uk

Good Points Good graphics card. Fast modem. Good games machine.

Bad Points Smaller hard drive than most.

Conclusion A powerful PC.

Build Quality ★★★★★

Performance ★★★★★

Value for Money ★★★★★

Overall Rating ★★★★★

Viglen Contender II

Viglen has been around for years and, as a respected player in the PC industry, it has a reputation for building quality machines. The Contender II was an impressive PC that managed the difficult trick of combining both quality components with a good quantity of extras for our relatively low price margin.

Viglen opted for a desktop chassis and had kitted it out with an impressive array of components. It had a PII 333 processor, with the standard 64Mb of SDRAM. There was no sound card; instead, sound was provided by the popular on-board Yamaha OPL3 chip.

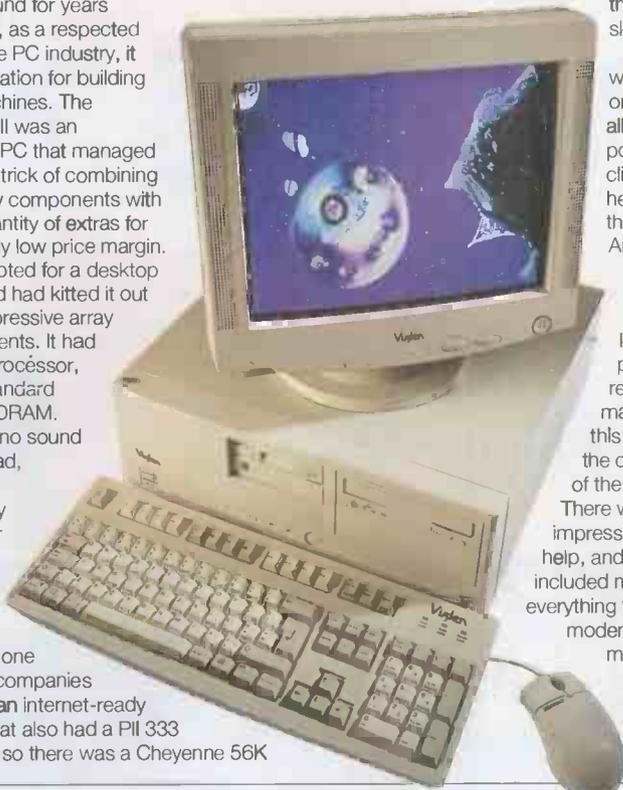
Viglen was one of the few companies to provide an internet-ready machine that also had a PII 333 processor, so there was a Cheyenne 56K

modem in one of the two ISA slots.

The insides were neatly ordered, with all EIDE and power cables clipped and held away from the DIMM slots. Any first-time PC users would have liked the clear labelling of ports at the rear of the machine, and this extended to the colour-coding of the sound ports. There was impressive technical help, and Viglen had included manuals on everything from the modem to the motherboard, and all necessary drivers. Viglen

also offered a Windows 95 tutor for any less experienced end-users, as well as MS Works. As a bonus for the PC-proficient, Viglen had preloaded Amidiag software that could run hardware diagnostics on the PC system. In fact, the package offered was very well-rounded, even down to the MS IntelliMouse.

This machine is aimed at the experienced end user interested in performance but who might be looking to upgrade in the future. There was plenty of room for extra components, while the basic power requirements were amply met by ATI's 3D Rage Pro graphics card and the PII 333. As a result, it scored very well in both the 3D Final Reality and the 2D SYSmark office-suite tests, offering excellent all-round performance no matter what it is being used for.



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PCW Details

Price £1,175 (£999 ex VAT)

Contact Viglen 0181 758 7000 www.viglen.co.uk

Good Points Great performance. Stacked full of quality components.

Bad Points None that we could find.

Conclusion An excellent machine.

Build Quality ★★★★★

Performance ★★★★★

Value for Money ★★★★★

Overall Rating ★★★★★



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CPU overclocking

Overclocking refers to the process of running your CPU at a clock or bus speed that the CPU hasn't been specified for, typically a higher speed. In most cases this is achieved by changing a few settings on your motherboard. In return for five minutes of your time, you can increase the performance of your PC for zero cost. The curious thing is that most PCs can benefit from mild overclocking: provided you don't go mad, your PC will probably run just fine. Needless to say, CPU manufacturers take a dim view of overclocking and try to discourage it.

Just about every sort of x86 processor can be overclocked. The 486, Pentium, Pentium Pro and Pentium II can all be overclocked, as can non-Intel processors from the likes of AMD and Cyrix. However, it has to be said that the best results are often obtained from Intel silicon, presumably because they are so conservatively rated. In my experience, AMD and Cyrix processors tend to run hot to start with and overclocking makes them hotter still, which is not what is wanted.

Turning up the heat

This highlights the main problem of overclocking, which is heat. Overclocked processors run hot and unless the CPU is properly cooled, overheating can cause the

processor to misbehave and in the long term cause a kind of internal chip "rot" called electromigration. Most chips can safely run at 80°C, which is very hot indeed, too hot to touch, but a cooling fan can drop this to 50°C or less, so this degradation needn't be a major threat.

So if you're bent on overclocking, the first thing to do is to track down a decent heat sink plus cooling fan. I have to say, most cooling fans I've seen sold are very low-quality devices with a really short life. Do try to track down decent-quality ball bearing motor fans. Another tip is to use some silicon heat-sink compound to bond the heat sink to the CPU top — this makes a big difference to the transmission of the heat.

Cutting speed

Another point to bear in mind is that overclocking doesn't always deliver significant speed gains. There are certain CPU speeds which may not be worth overclocking. These are the ones that involve cutting the bus speed. So, overclocking a P133 to a P150, or a P166 to P180, is generally not a good move, as in both cases you drop your system speed by ten

percent from 66MHz to 60MHz, and the PCI speed from 33MHz to 30MHz, while gaining very little in terms of internal CPU speed. This is borne out by iCOMP scores for the P133 and P150, 1110 vs 1176. In other words, a 13 percent increase in clock speed translates into a performance gain of just six percent.

By the same token overclocking anything faster than 150MHz Pentium (including the Pentium Pro and Pentium II) seems to offer the best bang per buck.

Roger Gann

CPU Internal Speed	System Speed	PCI Bus Speed	Multiplier
Pentium			
75MHz	50MHz	25MHz	50x1.5
90MHz	60MHz	30MHz	60x1.5
100MHz	66MHz	33MHz	66x1.5
120MHz	60MHz	30MHz	60x2
133MHz	66MHz	33MHz	66x2
150MHz	60MHz	30MHz	60x2.5
166MHz	66MHz	33MHz	66x2.5
200MHz	66MHz	33MHz	66x3
233MHz	66MHz	33MHz	66x3.5
Pentium II			
233MHz	66MHz	33MHz	66x3.5
266MHz	66MHz	33MHz	66x4
300MHz	66MHz	33MHz	66x4.5
333MHz	66MHz	33MHz	66x5

Step by step

Before we go any further, I have to keep the PCW lawyers happy and issue a very stern warning to you, gentle reader. I have to stress that overclocking your processor is not for the faint hearted, and if you don't know what you're doing you could end up frying your processor or motherboard, or worse. Only attempt this if you're not worried about your warranty (which will probably be invalidated) or toasting your CPU. Beyond this point, you are on your own!

■ If you have a modem "jumperless" motherboard, then the changes required to overclock can be performed from the keyboard via CMOS setup. All other

motherboards will require you to take the cover off your PC and move some jumper sleeves or DIP switches, so you'll definitely need your motherboard manual for this. Sometimes the jumpers are labelled on the motherboard but often they're not, so hunt down that manual and read it thoroughly.

■ There are two motherboard settings that need to be changed in order to overclock, the bus speed and the processor multiplier. See the table for details of bus speed and multiplier for a given processor speed.

■ The Pentium (and Pentium Pro) supports three bus speeds, 50, 60 and 66MHz, but some very recent motherboards additionally

offer 75 and 83MHz as well. The Pentium II supports just 66MHz. To change the bus speed, look in your motherboard manual for something like "CPU External (BUS) Frequency Selection" — these are the jumpers that need moving. If it's set to 66MHz, leave it set to this

value unless you can go up to 75MHz.

■ If you do up the bus speed, remember this also increases the PCI bus (which runs at 50 percent of the system bus speed), from 30 or 33MHz to 37.5 or even 41.6MHz. This can cause grief with PCI cards, which expect to run at 33MHz. Also at faster bus speeds, memory can get iffy and you really need good-quality RAM to run at these speeds.

■ Each CPU uses a multiple of the bus speed, the so-called bus multiplier. For example, a P120 uses a X2 multiplier on a 60MHz bus while a P166 uses a X2.5 multiplier on a 66MHz bus. Intel Pentium CPUs support the following multipliers: x1.5, x2, x2.5 and x3. Intel Pentium Pro CPUs support x2.5, x3, x3.5 and x4. To change this setting, find something like "CPU to BUS Frequency Ratio Selection" in your motherboard manual.

■ Another thing that often needs changing is the power supply to the CPU — processors that run faster, draw more juice. Although recent Pentiums should draw 3.3V, when overclocked you may find they run better at 3.45V, the VRE setting. Don't be overly concerned about pumping too many volts into your processor — a Pentium has a relatively wide voltage safety margin.

■ Finally, keep in mind that very often the best, most stable results are achieved by going up a notch in speed, i.e. from 166 to 233MHz or 233 to 266MHz. If you overdo it, you'll probably just wind up with a hung system or maybe even worse. In which case, simply put the jumpers back the way they were.

Roger Gann



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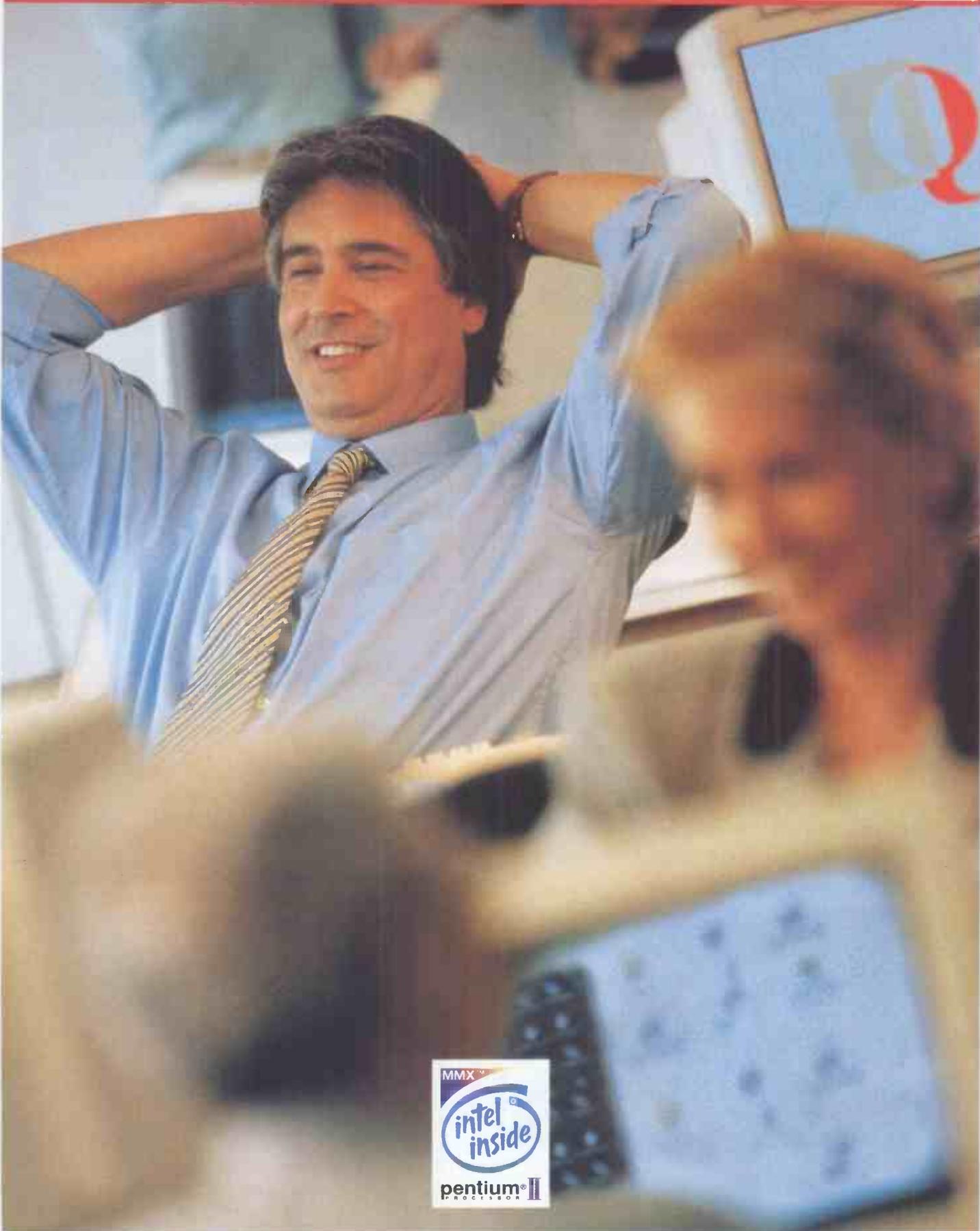
Personal Computer World
Editor's Choice

Table of Features



Manufacturer	Avontech Computer Systems	Brother	Choice Systems	DAN Technology	Dell
Model	PII-266	Professor 971	Ultra	Dantum II/W5	Dell Dimension
Price (ex VAT)	£999	£999	£999	£999	£999
Price (inc VAT)	£1,175	£1,175	£1,175	£1,175	£1,175
Telephone	01275 462260	01279 416888	0181 9939003	0181 830 1100	0870 1524850
Fax	01275 462203	01279 418130	0181 9939936	0181 830 1122	01944 723695
Web site address	www.avontech.co.uk	kyodai.brother.co.uk	n/a	www.dan.co.uk	www.dell.com
Standard warranty	3yrs RTB	1yr onsite	2yrs RTB	1yr RTB	1yr CAR
Warranty options	n/a	extend to 2/3yrs	2yrs onsite	On-site upgrade	4yrs on-site
Technical support	9-6 Mon-Fri	9-6pm Mon-Fri	9.30-6pm Mon-Fri	9.30-6pm Mon-Fri	8-8Mon-Fri
Hardware spec					
Processor	PII-266	PII 233	PII 333	PII 266	PII 300
RAM	64Mb	32Mb	64Mb	64Mb	64Mb
RAM type	SDRAM	SDRAM	SDRAM	SDRAM	SDRAMMaxtor
Hard disk	Fujitsu	Seagate	Maxtor	Seagate Medalist	DiamondMax
Size(Gb)/interface	4.3Gb/EIDE UDMA	3.2Gb/EIDE UDMA	4.3Gb/EIDE UDMA	6.4Gb/EIDE UDMA	4.3Gb/EIDE UDMA
Motherboard components					
Motherboard	Intel ATX	Elite ATX	Chaintec ATX	SuperMicro ATX	Intel ATX
Chipset	Intel 440LX	Intel 440LX	Intel 440LX	Intel 440 LX	Intel 440LX
L2 cache	512Kb Intel Flash	512Kb	512Kb	512Kb	512Kb
BIOS type	Upgradeable	Phoenix	Award	AMI	Dell/Phoenix
BIOS Revision	v5.0	v4.05	v1.0	v1.34	A07
Expansion and I/O					
Spare bays 3.5in/5.25in	2/2	0/2	1/2	1/2	3/1
AGP slots	1	1	1	1	1
PCI / ISA / shared slots	4/2/1	4/2/1	5/3/1	4/3/1	3/1/1
USB/serial/parallel/PS2	2/2/1/2	2/2/1/2	2/2/1/2	2/2/1/2	2/1/1/2
Multimedia					
CD-ROM manufacturer	Panasonic CR 586V	Panasoni CR-585V	Goldstar 24X	Panasonic CR-586	Toshiba XM6202B
CD-ROM speed/interface	32X/EIDE	24X/EIDE	24X/EIDE	32X/EIDE	32X/EIDE
Sound card manufacturer	Yamaha	Yamaha	ESS	SoundBlaster	Yamaha
Sound card model	OPL2	OPL3	1869	AWE64	OPL3 Onboard
Speakers	Zifi 2	Deluxe	OEM 50Watts	Dan Hi-Fi	None
Graphics & Monitor					
Graphics card	Trident 3DImage 975	Ati 3D Charger	Cirrus Logic 546X	Ati Xpert@Work	STB Velocity
Graphics RAM/Max RAM	4Mb/4Mb/VRAM	4Mb/4Mb/SGRAM	4Mb/4Mb/VRAM	4Mb/8Mb/SGRAM	4Mb/4Mb/SGRAM
Monitor model	Hansol 15in E15AL	AOC 5VLR	15in Viewpoint 5Vlr	CTX 1569se	Dell D828-L
Monitor size (inches)	15in	15in	15in	15in	15in
Max refresh rate @ 1,024 x 768 (NI)	60Hz	60Hz	85Hz	85Hz	60Hz
Other Information					
Modem speed (Kbps)	n/a	56	n/a	56	56
Other extras	None	None	None	None	None
Software	None	MS Works v.4	None	Lotus SmartSuite97 Quicken SE PagePlus v.3 MS Works	MS Works MS Money Dell DMI
Y2k compliant?	●	●	●	●	●
Key: ● Yes ○ No					

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PC Magazine May 98

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In presenting Quantex with their Gold Award PC Home said "This really is one impressive machine. In terms of speed it's way beyond its closest rival. That's just one aspect to why it's marched straight into the number spot but there are other reasons too".

PC Home May 98

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Technology

With Power-to-Spare 

Quantex has always been a technology leader bringing you tomorrow's technology today. Our inclusion of the latest SE440BX chip set utilising the 100MHz front side bus means that our systems operate at least 33% faster than the current standard - with improved reliability. This coupled with Intel's fastest processor, running at 400MHz, means our systems give a performance level with reliability that few other companies can match. Our strategic alliances with industry leaders like Intel and Microsoft enable us to quickly bring the latest technology to our customers. Features such as the super-fast 82440BX second generation AGP set that supports the 100MHz front side bus and gives better 3-D performance and improved texture rendering. A Quantex system increases manageability by complying with the Wired for Management WfM 1.1 specification, as well having support for DMI v2 and LANDesk® service agent. This simplifies asset management and off-hours maintenance and lowers the total cost of ownership. As you would expect from a Quantex compatibility is never an issue with our line of Network-ready, 3COM-certified workstations. Need we say more? Simply put, if it's cutting edge and reliable, you'll find it at Quantex.

EDITOR'S CHOICE

QP6/266 M-2x

"...this is an unrivalled choice"

PC Magazine May 98



Why Quantex?

Winning constant praise

Why do Quantex PC's come out on top time and time again? Why is it that Quantex is ranked number one when you need support 24 hours a day seven days a week? Why do our customers keep coming back to order more systems from us? In a word - **Reliability**. Not just our systems but Quantex as a whole. Just look at all of the awards we received for product and support excellence. These include numerous Best Buy®, "5 Star Excellence", "Excellent Overall Ranking", "PC Home Gold Star Award" and "Buy It" recommendations from some of the industry's most respected trade publications. Last month Computer Buyer said "this is an exemplary system for a great price and come very highly recommended." PC Magazine (12/97) bestowed an "Editors Choice" on our QP5/233 M-3 and in May 1998 our QP6/266 M-2X won another "Editors Choice". There's no doubt about it - professionals who really know PC's just can't help giving Quantex their seals of approval. PC Magazine (May 98) said about Quantex "this is an unrivalled choice". Need we say more?

PC HOME - GOLD AWARD

"This really is one impressive machine"

PC HOME May 98



Support

Backing you 100% of the time

Quantex is proud to offer one of the most comprehensive service and support packages in the industry. From pre-sale consulting to post-sale assistance, we're behind you every step of the way. It all begins when our sales consultants work with you to evaluate system needs and help you make an informed purchasing decision. And as expected, we fully back all products with a complete warranty and service program created specifically for your needs. Such thorough dedication on our part is clearly recognised by our customers. In a recent technical support survey, we scored a rating of "Excellent" for our ability to handle technical problems quickly and inexpensively.



Quantex - "...an unrivalled choice

QP6/400 M-4x

(featuring the Pentium® II processor)

£1799 +VAT **£2113.83** Inc. VAT

- Intel® Pentium® II Processor 400MHz (100MHz front side bus)
- Intel SE440BX PCI Chipset, 2 Universal Serial Bus (USB) Ports
- 128MB SDRAM 100MHz Memory / 512KB L2 Cache
- 11.5GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Intel 740 Graphics 8MB SGRAM AGP
- 19" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Ensoniq 32-Bit Wavetable Sound Card
- 56Kbps Fax/Modem w/Voice Mail and Speakerphone
- Altec Lansing ACS-45 Speakers with subwoofer
- ATX Tower Case, 105-Key Keyboard With MS PS/2 Mouse
- Fully PC '97 Compliant Wired for Management
- MS Windows '95 With MS Plus, Value Multimedia Software Bundle
- 1-year warranty, 24-hr./day, 7-day/week Technical Support

QP6/300 M-4x (featuring Pentium® II Processor)

£1419 +VAT **£1667.33** Inc. VAT

QP6/333 M-4x (featuring Pentium® II Processor)

£1499 +VAT **£1761.33** Inc. VAT

QP6/350 M-4x (featuring Pentium® II Processor)

£1649 +VAT **£1937.58** Inc. VAT

QP6/M-4x SE

Includes all features of M-4, plus:

- Replace 32X CD-ROM with 2nd Generation DVD-ROM Drive
- Replace Intel 740 Graphics 8MB SGRAM AGP with Mpxact2 DVD Video Engine W/8MB

QP6/266 M-4x SE (featuring Pentium® II Processor) **£1429** +VAT **£1679.08** Inc. VAT

QP6/300 M-4x SE (featuring Pentium® II Processor) **£1519** +VAT **£1784.83** Inc. VAT

QP6/333 M-4x SE (featuring Pentium® II Processor) **£1599** +VAT **£1878.83** Inc. VAT

Quantex does it again. We've taken ultra-advanced technology and combined it with the best software and at a remarkable price. Our rock-solid reliability is backed by our award winning technical support team available 24 hours a day 365 days a year. They're the best in the business.

Once again Quantex brings you the ultimate in high-performance multimedia in the QP6/400 M4X. The engine of this powerhouse is Intel's fastest, most powerful Pentium® II processor, at 400MHz. This incredible power is transmitted to the rest of the system via the new 100MHz front side bus and 100MHz memory. Inside this system there is a huge 11.5Gbyte Ultra-ATA hard drive and 128MB of very fast SDRAM.

Value Multimedia Series

Standard Features

All M* series systems come with the following unless stated otherwise:

- 2 Universal Serial Bus (USB) Ports
- 56Kbps Fax/Modem w/Voice Mail and Speakerphone
- Ensoniq 32-Bit Wavetable Sound Card
- Quantex Tower Case
- 105-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Value Multimedia Software Bundle
- *M1 Modem extra

QP6/266 M-1

(featuring the Pentium® II Processor)

£699 +VAT **£821.33** Inc. VAT

- Intel® Celeron™ Processor 266MHz
- Intel 440LX PCI Chipset
- 32MB SDRAM Memory / 512KB Pipelined Burst Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Diamond Viper 330 AGP 4MB
- 15" Digital Monitor (.28dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Altec Lansing ACS-90 Speakers
- 1-year warranty, 24-hr./day 7-day/week Technical Support
- Modem extra

QP6/266 M-2

(featuring the Pentium® II Processor)

£999 +VAT **£1173.83** Inc. VAT

- Intel® Pentium® II Processor 266MHz
- Intel 440LX PCI Chipset
- 32MB SDRAM Memory / 512KB Pipelined Burst Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Diamond Viper 330 AGP 4MB
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Altec Lansing ACS-45
- 56Kbps Fax/Modem W/Voice Mail and Speakerphone
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/300 M-2x (featuring the Pentium® II Processor)

£1089 +VAT **£1279.58** Inc. VAT

QP6/333 M-2x (featuring the Pentium® II Processor)

£1169 +VAT **£1373.58** Inc. VAT

QP6/300 M-3x

(featuring the Pentium® II Processor)

£1199 +VAT **£1408.83** Inc. VAT

- Intel® Pentium® II Processor 300MHz
- Intel 440LX PCI Chipset
- 64MB SDRAM Memory / 512KB Secondary Cache
- 8.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Intel 740 Graphics 8MB SGRAM AGP
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Altec Lansing ACS-45
- 56Kbps Fax/Modem W/Voice Mail and Speakerphone
- 1-year warranty, 24-hr./day 7-day/week Technical Support

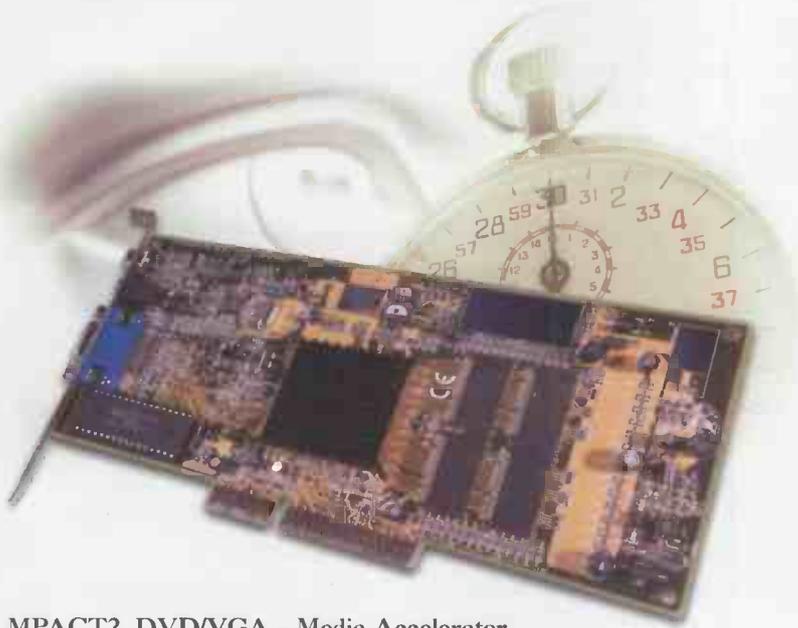
QP6/333 M-3x (featuring the Pentium® II Processor)

£1279 +VAT **£1502.83** Inc. VAT

QP6/350 M-3x (featuring the SE440BX Chipset)

£1399 +VAT **£1643.83** Inc. VAT

...simply the best" (PC Magazine May 98)



MPACT2 DVD/VGA - Media Accelerator

- Q **400MHz Pentium® II processors** delivering exceptional speeds
- Q **Hard Disk Drive with unprecedented speeds and 11.5GB storage capacity**
- Q **Visually-Stunning Monitors featuring 19" screens and a wealth of features**
- Q **100MHz front side bus- 33% faster than current standard systems**
- Q **The first DVD/VGA Media Accelerator with full 3D and Video capabilities**

Experience amazing multi-media performance. Yet again Quantex brings you the latest and best in advanced technology. Take for example our SE systems, these feature the Toshiba 2nd-Generation DVD-ROM drive with MPACT2 decoding. We have also incorporated the advanced

MPACT2 3D graphics engine that combines incredible 3D power and hardware MPEG-2 decoding. This delivers the highest quality graphics with theatre quality audio for a truly remarkable multimedia experience.

QP6/333M-Editors Choice

(Featuring the Pentium® II Processor)

£1299 +VAT **£1526.33 Inc. VAT**

- Intel® Pentium® II Processor 333MHz
- Intel 440LX PCI Chipset
- 128MB SDRAM Memory / 512KB Secondary Cache
- 6.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Intel 740 Graphics 8MB SGRAM AGP
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- Altec Lansing ACS-45 Speakers with subwoofer
- 56 Kbps Fax/Modem W/Voice Mail and Speakerphone
- 1-year warranty, 24-hr./day 7-day/week Technical Support

Call your sales consultant for more information regarding custom upgrades, business leasing, personal financing, extended warranty options and installation. All major credit cards accepted.

UPGRADES (available with system purchase)

+VAT (Inc. VAT)

- Panasonic PD/CD-Rom Drive w/ one 650MB PD cartridge.....£ 189 (£220.08)
- Panasonic PD Cartridge.....£ 25 (£29.38)
- Panasonic ZIP Drive.....£ 69 (£81.08)
- Microsoft® Sidewinder™ 3D Joystick....£ 39 (£45.83)

(All upgrades covered by manufacturer's warranty. Call our Sales Desk for information regarding other upgrade options.)

SOFTWARE BUNDLE FOR VALUE MULTIMEDIA

- Corel Office Suite ■ MS Money '97 ■ Compton's Interactive Encyclopedia ■ Compton's Interactive World Atlas ■ Key Master Maps ■ Body Works 6.0 ■ American Heritage Talking Dictionary ■ Amazon Trail II ■ Internet the City ■ Compton's Reference Collection ■ Dr. Solomons Anti-Virus ■ Windows 95 with MS Plus ■ One-month trial membership to PIPEX Dial



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Quantex delivers industry leading Value,

QP6/400 SM-4x

(featuring the SE440BX Chipset)

£1899 +VAT **£2231.33 Inc. VAT**

- Intel® Pentium® II Processor 400MHz (100MHz front side bus)
- Intel SE440BX PCI Chipset, 2 Universal Serial Bus (USB) Ports
- 128MB SDRAM 100MHz Memory/512Kb L2 Cache
- 11.5GB EIDE (Maxtor) HD / 3.5" 1.44MB Floppy Drive
- Intel 740 Graphics 8MB SGRAM AGP
- 19" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Ensoniq 32-Bit Wavetable Sound Card
- 56Kbps Fax Modem with Voicemail and Speakerphone
- Altec Lansing ACS-45 Speakers with subwoofer
- ATX Tower Case, 105-Key Keyboard With MS PS/2 Mouse
- Fully PC '97 Compliant Wired for Management
- MS Windows '95 With MS Plus, Value Multimedia Software Bundle
- 1-year warranty, 24-hr./day, 7-day/week Technical Support

QP6/300 SM-4x (featuring Pentium® II Processor)

£1599 +VAT **£1878.83 Inc. VAT**

QP6/333 SM-4x (featuring Pentium® II Processor)

£1679 +VAT **£1972.83 Inc. VAT**

QP6/350 SM-4x (featuring Pentium® II Processor)

£1769 +VAT **£2078.58 Inc. VAT**

QP6/SM-4x SE

Includes all features of SM-4, plus:

- Replace 32X CD-ROM with 2nd Generation DVD-ROM Drive
- ACS-45 with ACS 490 speaker system
- Replace Intel 740 Graphics 8MB SGRAM AGP with Mpack2 DVD Video Engine W/8MB

QP6/266 SM-4x SE (featuring Pentium® II Processor) **£1529 +VAT** **£1796.58 Inc. VAT**

QP6/300 SM-4x SE (featuring Pentium® II Processor) **£1619 +VAT** **£1902.33 Inc. VAT**

QP6/333 SM-4x SE (featuring Pentium® II Processor) **£1699 +VAT** **£1996.33 Inc. VAT**

Who else but Quantex can give you the most reliable, powerful and user friendly multimedia system available today? We redefine the meaning of value, or as PC Magazine enthused, "represents simply the best value for money".

Why are the monitors Quantex supply so good?

"Crisply focused and rock steady pictures at resolutions right up to a maximum of 1,600 x 1,200 at a 75Hz refresh rate." (Computer Buyer 04/98).

All of our monitors are compliant with the most stringent European standards of power saving, emission levels and ergonomics. These include, TCO 92 or 95, MPRII and Energy Star. All our monitors provide crisp, sharp and flicker-free images. This is combined with an environmentally conscious attitude through the utilisation of recyclable packaging and pollution regulated manufacturing. We don't just supply a monitor, we ensure the best blend of science and technology. Incidentally, Computer Buyer added "I can't find anything to criticise about the keyboard and mouse either".

Picture Power Plus. To begin with, the QP6/400 SM-4x systems in our Power Multimedia Series really give you the BIG picture: a 19" digital monitor (.26dot pitch, 1600x1200 maximum resolution, complying to the latest TCO 95 radiation standards). Not the typical 15" monitor you would expect. Enjoy extraordinary stress-free screen performance, not to mention a truly unique viewing experience.

Power Multimedia Series

Standard Features

All SM series systems come with the following unless stated otherwise:

- 2 Universal Serial Bus (USB) Ports
- 56Kbps Fax/Modem w/Voice Mail and Speakerphone
- Ensoniq 32-Bit Wavetable Sound Card
- Quantex Tower Case
- 105-Key Keyboard With MS IntelliMouse
- MS Windows '95 With MS Plus
- Power Multimedia Software Bundle (including MS Office '97 SBE)

QP6/266 SM-1

(featuring the Pentium® II Processor)

£899 +VAT **£1056.33 Inc. VAT**

- Intel® Celeron™ Processor 266MHz
- Intel 440LX PCI Chipset
- 64MB SDRAM Memory / 512KB Pipelined Burst Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Diamond Viper 330 AGP 4MB
- 15" Digital Monitor (.28dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- 56Kbps Fax/Modem W/Voice Mail and Speakerphone
- Altec Lansing ACS-90 Speakers
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/300 SM-1x (featuring the Pentium® II processor)

£1059 +VAT **£1244.33 Inc. VAT**

QP6/333 SM-1x (featuring the Pentium® II processor)

£1149 +VAT **£1350.08 Inc. VAT**

QP6/300 SM-2x

(featuring the Pentium® II Processor)

£1239 +VAT **£1455.83 Inc. VAT**

- Intel® Pentium® II Processor 300MHz
- Intel 440LX PCI Chipset
- 64MB SDRAM Memory / 512KB Secondary Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Intel 740 Graphics 8MB SGRAM AGP
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- Altec Lansing ACS-45 w/subwoofer
- 56Kbps Fax/Modem W/Voice Mail and Speakerphone
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/266 SM-2x (featuring the Pentium® II processor)

£1149 +VAT **£1350.08 Inc. VAT**

QP6/333 SM-2x (featuring the Pentium® II processor)

£1319 +VAT **£1549.83 Inc. VAT**

QP6/333 SM-3x

(featuring the Pentium® II Processor)

£1379 +VAT **£1620.33 Inc. VAT**

- Intel® Pentium® II Processor 333MHz
- Intel 440LX PCI Chipset
- 64MB SDRAM Memory / 512KB Secondary Cache
- 8.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Intel 740 Graphics 8MB SGRAM AGP
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- Altec Lansing ACS-45 w/subwoofer
- 56Kbps Fax/Modem W/Voice Mail and Speakerphone
- 1-year warranty, 24-hr./day 7-day/week Technical Support

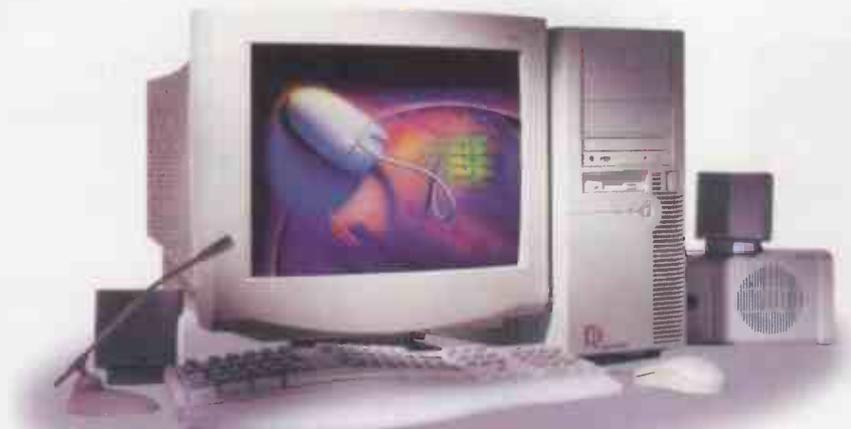
QP6/300 SM-3x (featuring the Pentium® II processor)

£1299 +VAT **£1526.33 Inc. VAT**

QP6/400 SM-3x (featuring the SE440BX Chipset)

£1599 +VAT **£1878.83 Inc. VAT**

Quality, and Ergonomics.



System shown with optional equipment.

Technology Power Plus. We've combined the first ever 100MHz front side bus system with Intel's most powerful CPU yet, and added an 11.5GB Ultra ATA hard disk drive for a huge amount of fast access space. But there's more - many more super quality components and technology that the competition doesn't offer. It's even Wired-for-Management! In short, the best-of-the-best brand name components that extend the life of your PC and safeguard your hard-earned investment.

Award-Winning Systems. Quantex's Power Multimedia systems have been recognised with some of the industry's highest honors by PC World Magazine. In the past three months alone, four Quantex PC's were awarded a "Best Buy". In fact, just recently our QP6/333 won the PC Home Gold Award. They said, "This really is one impressive machine. In terms of speed it's way beyond its closest rival. That's just one aspect to why its marched straight into the number one spot". We take great pride in such coveted recognition as we continue to make our systems stand out from the crowd.

UPGRADES (available with system purchase)

	+VAT	(Inc. VAT)
■ Panasonic PD/CD-Rom Drive w/ one 650MB PD cartridge.....	£ 1 89	(£220.08)
■ Panasonic PD Cartridge.....	£ 25	(£29.38)
■ Panasonic ZIP Drive.....	£ 69	(£81.08)
■ Microsoft® Sidewinder™ 3D Joystick....	£ 39	(£45.83)

(All upgrades covered by manufacturer's warranty. Call our Sales Desk for information regarding other upgrade options.)

SOFTWARE BUNDLE FOR POWER MULTIMEDIA

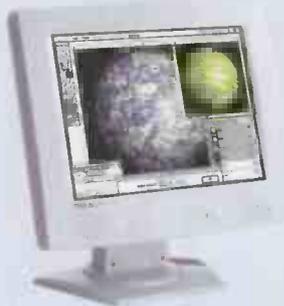
- MS Office '97 SBE ■ MS Money '97 ■ Office Mate
- Day Planner Pro ■ Power Business Plans ■ Form Designer Pro
- Project Manager Pro ■ Labels Unlimited ■ Compton's Reference Collection ■ Dr. Solomons Anti-Virus ■ Windows 95 with MS Plus ■ One-month trial membership to PIPEX Dial
- Autoroute

QP6/300 SM-Executive

(Featuring the Pentium® II Processor)

£1799 +VAT £2113.83 Inc. VAT

- Intel® Pentium® II Processor 300MHz
- Intel 440LX PCI Chipset
- 128MB SDRAM Memory / 256KB Internal L2 Cache
- 8.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Intel 740 Graphics 8MB SGRAM AGP
- LCD TFT Flat Screen Display 14.5" (17.5 million colours, 1024x768, Internal Amplifier)
- 32X Max EIDE CD-ROM Drive
- Built-in Speakers
- 56Kbps Fax/Modem W/Voice Mail and Speakerphone
- MS Windows '95/MS Plus!/Microsoft Office SBE '97
- 1-year warranty, 24-hr./day 7-day/week Technical Support



In place of Flat Screen Display, deduct:

- £429+VAT for 17" (.26dp) monitor
- £299+VAT for 19" (.26dp) monitor
- £30+VAT for 21" (.26dp) monitor

QP6/333 SM-4Executive (featuring the Pentium® II processor)

£1899 +VAT £2231.33 Inc. VAT



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We're really getting down to business



At Quantex, we take great measures to ensure that our systems meet all the high performance, reliability and security standards that you demand. We build our systems on a virtually "crashproof" NT platform, and include technology advanced enough to handle everything you can throw at them. Bundled with tools to maximise efficiency, the QP6/400 SB-4 is guaranteed to take productivity to new heights. Create your very own web pages, evaluate your financial performance, and even generate exciting, professional-looking marketing materials - now, you're really in business.

QP6/400 SB-4

(featuring the Pentium® II processor)

£1899 +VAT **£2231.33** Inc. VAT

- Intel® Pentium® II Processor 400MHz 512Kb L2 Cache
- Intel SE440BX PCI Chipset
- 100MHz Front Side Bus Wired for Management
- 64MB SDRAM 100MHz Memory
- 11.5GB EIDE (Maxtor) HD / 3.5" 1.44MB Floppy Drive
- Intel 10/100 PCI Ethernet Adaptor with WOL
- Intel 740 Graphics 8MB SGRAM AGP
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- ATX Tower Case, 105-Key Keyboard with MS PS/2 Mouse
- Fully PC'97 Compliant
- MS Windows NT Workstation 4.0, MS Office '97 Small Business Edition
- 1-year warranty, 24-hr./day, 7-day/week Technical Support
- Panasonic Zip Drive

QP6/300 SB-4 (featuring Pentium® II Processor) **£1589** +VAT **£1867.08** Inc. VAT

QP6/333 SB-4 (featuring Pentium® II Processor) **£1669** +VAT **£1961.08** Inc. VAT

QP6/350 SB-4 (featuring the SE440BX Chipset) **£1769** +VAT **£2078.58** Inc. VAT

Windows NT, Microsoft's recommended operating system for companies of all sizes, brings increased scalability and multitasking capabilities to our line of Business Desktops. It also enables you to run every 32-bit application up to 24% faster than Windows 95. Combine this with the ultra-fast performance of the Pentium® II processor, and these machines give you the power to move you and your company into the future. In addition, we back all of our systems with the Quantex premier service package that includes a comprehensive warranty program, around the clock technical support, advanced PC Health Monitoring, On-Site service, and business consulting. In other words, we take our relationship with you very seriously, so you'll never be left out in the cold.

Business Desktops

Standard Features ■ 2 Universal Serial BUS (USB) Ports / DMI 2.0

- 105-Key Keyboard with MS Mouse ■ 1-Yr. warranty ■ 24 hr./day, 7 day/wk. Tech Support
- Q-Sentry Technology (Including Intel LANDesk® Client Manager V.3.1, Win '95 Only)

Call your sales consultant for more information regarding custom upgrades, business leasing, personal financing, extended warranty options and installation. All major credit cards accepted.

QP6/266 SB-1

(featuring Pentium® II processor)

£699 +VAT **£821.33** Inc. VAT

- Intel® Celeron™ Processor 266MHz
- Intel 440LX PCI Chipset
- 32MB SDRAM Memory / 512KB Pipeline Burst Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Intel 10/100 PCI Ethernet Adaptor with WOL
- Cirrus 5465 AGP 4MB RDRAM
- 17" Digital Monitor (.28 dp, TCO 95 compliant)
- Quantex Tower Case, Fully PC'97 Compliant
- MS Windows 95 with MS Plus!
- Panasonic Zip Drive

QP6/300 SB-1 (featuring Pentium® II processor)

£899 +VAT **£1056.33** Inc. VAT

QP6/333 SB-3

(featuring Pentium® II processor)

£1279 +VAT **£1502.83** Inc. VAT

- Intel® Pentium® II Processor 333MHz
- Intel 440LX Chipset
- 32MB SDRAM Memory / 512KB Secondary Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- Intel 10/100 PCI Ethernet Adaptor with WOL
- 32X Max EIDE CD-ROM Drive, Cirrus 5465 AGP 4MB RDRAM
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- ATX Case, Fully PC'97 Compliant
- Microsoft Windows NT Workstation 4.0, MS Office '97 SE
- Panasonic Zip Drive

QP6/266 SB-3 (featuring Pentium® II processor)

£1069 +VAT **£1256.08** Inc. VAT

QP6/300 SB-3 (featuring Pentium® II processor)

£1199 +VAT **£1408.83** Inc. VAT



GOOD CHOICE.™

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LIKE A MILLION PROFESSIONALS IN BUSINESS AND IT, YOU'VE TURNED TO VNU.



By turning to this page, you're now looking at magazines that reach over a million professionals across the UK. It's not surprising, because at VNU we produce more business-to-business titles than you might think. In fact, we have a total of 16, extensively covering business, finance and the IT market.

We've also launched *mag.net*, VNU's official website which contains features and editorial from our magazines; *job.net*, the UK's most comprehensive Internet recruitment site; and

Newswire, our exclusive 24-hour news service. We're promoters of 4 popular exhibitions every year: *Networks*, *Internet World*, *ITEXPO* and *PCLive*. And through VNU's *Datafile*, we're able to offer details of the most influential professionals in the UK.

By investing in more than just our leading publications, VNU is clearly the first choice for business-to-business communication. So if you want your advertising to work harder, you know where to turn.



VNU BUSINESS PUBLICATIONS



Table of Features



Manufacturer	Dotlink	Mesh Computers Elite Professional	Mustard	Roldec Systems	Viglen
Model	Magnum II - 333 SE	PII 350BXA	MC753MT	Predator	Contender II
Price (ex VAT)	£999	£999	£999	£999	£999
Price (inc VAT)	£1,175	£1,175	£1,175	£1,175	£1,175
Telephone	0181 9025802	0181 452 1111	01727 732005	01902 456464	0990 944944
Fax	0181 903 6508	0181 208 4493	01727 732199	01902 452592	0181 758 7080
Web site address	n/a	www.meshpic.co.uk	www.mustard-uk.com	www.roldec.com	www.viglen.co.uk
Standard warranty	3yrs RTB	2yrs RTB	1yr onsite	5yrs RTB	1yr RTB
Warranty options	n/a	3yrs on-site	3yrs onsite	3yrs onsite	n/a
Technical support	9.30-6pm Mon-Fri	9-5.30 Mon-Fri	9-5.30 Mon-Fri	9-5.30pm Mon-Fri 10-5 Sat	9-6pm Mon-Fri 9-1pm Sat
Hardware Spec					
Processor	PII333	PII 350	PII 266	PII 300	PII 333
RAM	64Mb	64Mb	64Mb	64Mb	64Mb
RAM type	SDRAM	SDRAM	SDRAM	SDRAM	SDRAM
Hard disk	Maxtor Diamond	IBM Deskstar5	Seagate	Quantum Fireball SE	GB IBM
Size(Gb)/interface	4Gb/EIDE UDMA	6.4Gb/EIDE UDMA	4.3Gb/EIDE UDMA	3.2Gb/EIDE UDMA	4.3Gb/EIDE UDMA
Motherboard components					
Motherboard	DFI P2XLX ATX	ASUSTeK ATX	PC Chips ATX	Intel ATX	Intel ATX
Chipset	Intel 440LX	Intel 440 BX AGPset	Intel 440LX	Intel 440LX	Intel 440LX
L2 cache	512Kb	512Kb	512Kb	512Kb	512Kb
BIOS type	Award	Award	AMI	Intel/Phoenix	Intel/Phoenix
BIOS revision	v4.51	v4.51PG	v2.5	v7.0	v7.0
Expansion and I/O					
Spare bays 3.5in/5.25in	1/2	2/2	1/2	2/1	1/1
AGP slots	1	1	1	1	1
PCI / ISA / shared slots	4/3/1	4/3/1	3/2	4/2/1	4/2/1
USB/serial/parallel/PS2	2/2/1/2	2/2/1/2	2/1/1/2	2/2/1/2	2/2/1/1
Multimedia					
CD-ROM manufacturer	Asus34	TEAC CD-532E	Sony CR611	TEAC 32X	Panasonic 24X
CD-ROM speed/interface	34X/EIDE	32X/EIDE	24X/EIDE	32X/EIDE	24X/EIDE
Sound card manufacturer	Creative Labs	Creative Labs	Sound Pro	Yamaha	Yamaha
Sound card model	AWE64	Vibra 16	3D	OPL3	OPL3
Speakers	Juster 965	Contec Con 50W	Surf Sound	Arowana	On monitor
Graphics & Monitor					
Graphics card	Ati Xpert@Work	Matrox Productiva G100	SIS 3D Pro	STB Velocity	ATI 3D Charger
Graphics RAM/Max RAM	4Mb/8Mb/SGRAM	8Mb/8Mb/SGRAM	4Mb/4Mb VRAM	4Mb/4Mb/SGRAM	4Mb/4Mb/SGRAM
Monitor model	Hansol 501 P	Taxan ERGO 550	Videal MO15VID	ADI E40	Viglen Envy ISDS
Monitor size (inches)	15in	15in	15in	15in	15in
Max refresh rate @ 1,024 x 768 (N1)	85Hz	75Hz	70Hz	75Hz	75Hz
Other information					
Modem speed (Kbps)	56	n/a	56	56	56
Other extras	None	None	None	None	None
Software	Lotus SmartSuite97	Lotus SmartSuite 97	Lotus SmartSuite97 19 Educational titles	Lotus SmartSuite97 PC Check	MS Works
Y2k compliant?	●	●	●	●	●
Key: ● Yes ○ No					

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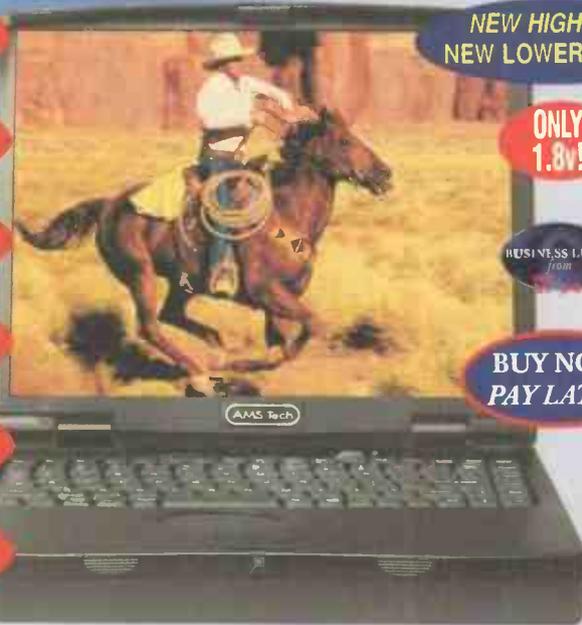
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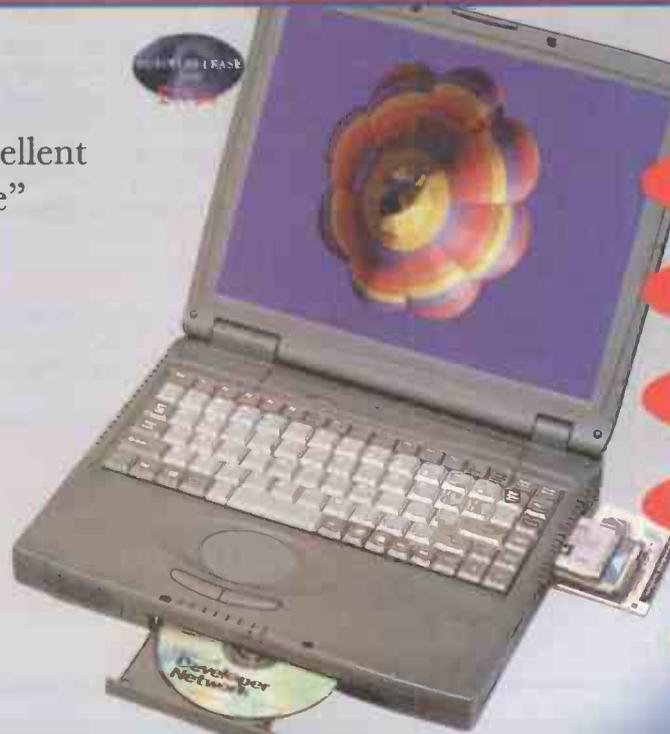
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BAPCo SYSmark Windows 95 test results



Final Reality 3D and overall test results



How we did the tests

The SYSmark test is provided by BAPCo (Business Applications Performance Corporation) who specialises in designing tests based on widely-used applications. Its members include heavyweight figures in the industry like Intel, Compaq, and IBM. The BAPCo SYSmark tests measure the speed of the PC running eight office applications: MS Word 7, Lotus WordPro 96, MS Excel 7, Borland Paradox 7, CorelDraw 6, Lotus Freelance Graphics 96, MS Powerpoint 7, Adobe Pagemaker 6. The test measures the time taken by the PC to perform a variety of tasks in each application, and each test is performed three times to ensure results are consistent. Performance

depends on a variety of factors: processor speed; RAM; graphics card and disk I/O. As the tests are based on business software, the result reflects how the PC will perform in a real world situation. The better the score, the longer the bar.

Final Reality is a suite of graphical tests designed to examine the processing power of the 3D accelerator on your graphics card, 2D image processing and AGP. It runs under Win95 and DirectX 5 and uses a 3D engine developed by Remedy. It supports Direct3D, a 3D standard designed by Microsoft, and looks at how the graphics accelerator handles the kind of data it would have to process when playing a game. Final

Reality tests the speed of the processor and visual appearance, that is how the card handles techniques like transparency, fogging, and alpha blending. It tests these visual appearance features at different points during the benchmark test and it performs the tests simultaneously just as in a real game. The visual appearance factors are weighted in importance and combined with the processing speed to produce an overall mark. Again, the higher the score, the better the result. Final Reality can be downloaded from www.vnu.co.uk.

Monitors are scrutinised using Display Mate for Windows, and tested at a number of resolutions and colour depths.

Editor's Choice

The price slashing we have seen over the last year may spell the end for some small PC companies, but it has heralded the start of truly affordable computing for the consumer. There is an argument to be made against the rapid advance of PC technology, that buying a PC is now like buying a car. In both cases, the value of the purchase begins to depreciate almost as soon as you have bought it. This is undoubtedly true, but with prices cut so low, the consumer can afford to invest in those new technologies a little more often.

While there were PCs in this group whose configurations we thought a little stingy, at least half represented an impressive blend of performance and value. We looked at machines that would be as suitable in the office as in the home, some processing behemoths that would suit the PC power-hungry boy racer, or all-round entertainers that could offer something to all the family.

While these weren't ultimately the winners in this group test, honourable mentions should go to a few PCs we still thought represented quality and good performance. The well-built Predator from Roldec deserves a mention. It had a good all-round configuration, but although it was fitted with a 56K speed modem, its 3.2Gb hard drive did not live up to the expectations set by the hulking 6.4Gb we saw in other machines.

The machine that came closest to stealing an award was the Dotlink PII 266. It had a very impressive configuration, and would surely have picked up a prize had it not been for the comparatively poor Final Reality 3D scores, which were a disappointment given the speed of the processor.

Sometimes in group tests there is a single PC that stands head and shoulders above the rest, making the Editor's Choice an easy one. This month though, picking an overall winner has resulted in much wringing of hands and brow-furrowing. The first **Highly Commended** award goes to Mesh for its Elite Professional PII. The Professional's stunning SYSmark scores should dispel talk that there aren't large performance gains to be had from graduating from a 333MHz to the 350MHz. We were impressed by the size of the hard drive accompanying such a powerful processor, because when some PC companies supply very fast CPUs they tend to cut corners in areas like the hard drive and main memory. The Mesh PC was one of only a handful of the PCs to be fitted with a 6.4Gb hard drive, as well as the ubiquitous 64Mb of SDRAM.

The Professional was a strong contender for the main prize, but size isn't everything, and we felt that the use of the mainly 2D Productiva card might limit it largely to office users. If you are looking to purchase a PC for business that will run your 2D applications as if they were on greased rails, then look no further. However, despite the 8Mb of SGRAM on-board, we were disappointed by the 3D Final Reality results,

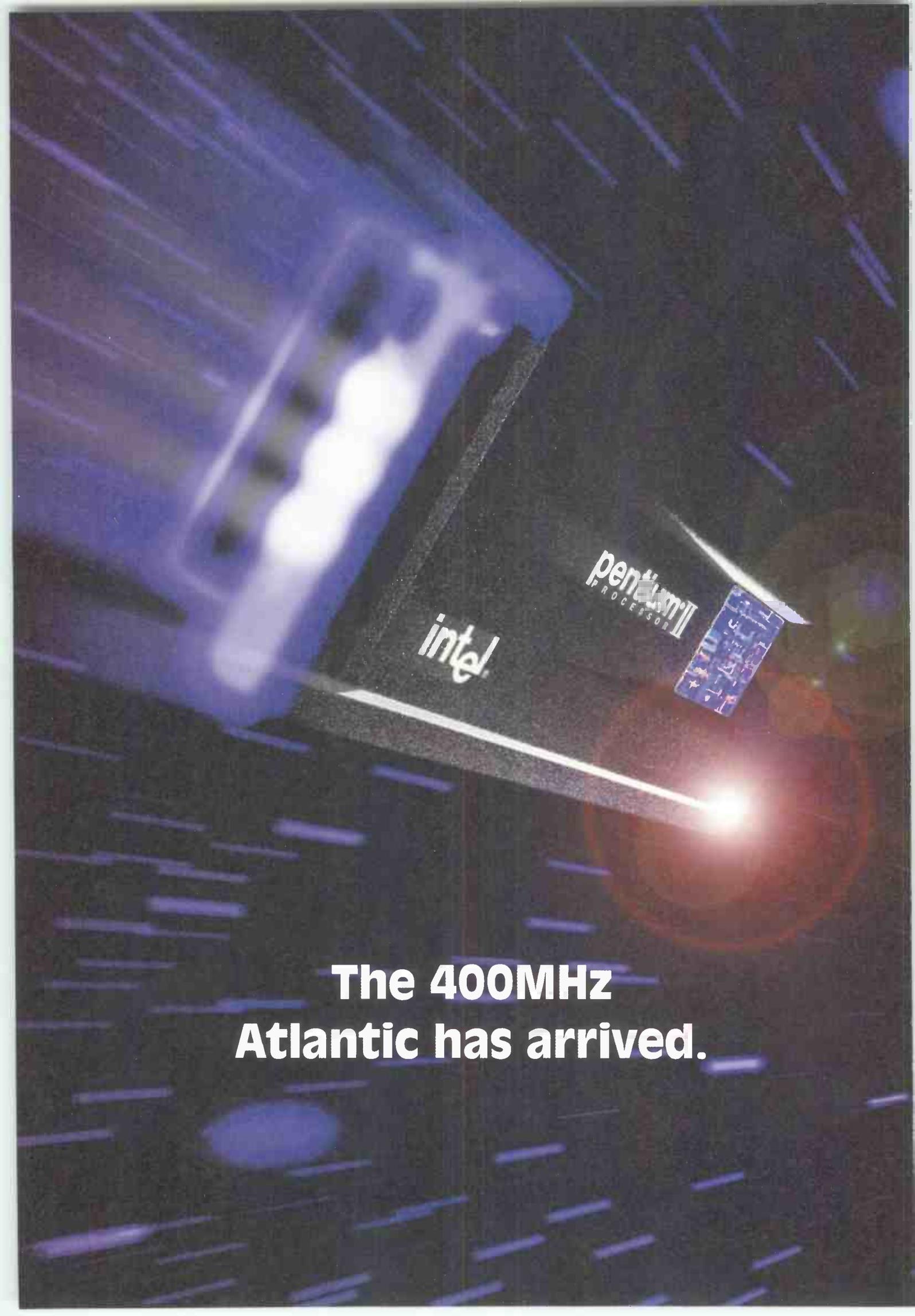
in comparison with the stunning SYSmark scores.

The other **Highly Commended** goes to the excellent **Contender II** from Viglen. It was particularly impressive in the sets of tests we ran, scoring very strongly in both 2D and 3D tests. This was combined with an excellent configuration: large processor, 56K modem and excellent technical help.

It was a very difficult decision choosing an eventual winner, and it is safe to say all three award recipients represent excellent value and good performance. The **Editor's Choice**, however, is the **Dan Dantium II**, which scored very impressively in both 2D and 3D tests, despite having a slower processor on paper. Dan had combined the PII 266 with an excellent package of components: a huge 6.4Gb hard drive, 56K modem and AWE-64 sound card. The monitor, a Mag AX1595, was one of the best in the group test, and it combined well with the impressive ATI Xpert@Work graphics card. Dan had also put together a generous software package, with Lotus SmartSuite 97, Quicken, Page Plus and MS Works.

Above Dan Dantium II
Far left Mesh Elite Professional
Left Viglen Contender II





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PANACOM



£1699

Atlantic Panacom notebooks are popular with users who need high performance multi-media PCs which are both powerful and portable. Sharp colour screens, ergonomic design and exceptional build quality all weigh in under 3Kg. Intel Mobile Pentium Processors and Mobile Pentium II Processors assure better performance and increased battery life when compared with other notebooks.

- 13.3" XGA TFT colour display
- Intel® mobile Pentium® Processor with MMX™ technology
- 3.2Gb Ultra ATA DMA-33 hard drive
- 32Mb SDRAM expandable to 80Mb
- 512K level 2 cache
- Neomagic 128bit 2Mb graphics accelerator
- 20 speed CD-ROM & 3.5" 1.44Mb drive
- 3D Stereo wavetable sound with stereo speakers, wavetable with MIDI
- SMART Lithium 45W battery
- 85 key keyboard + MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Zoomed video port • 1 USB port
- Cardbus ready • Synaptics® touchpad™
- Infrared IrDA 1.1 communication port
- Built in microphone
- Weight 2.9Kg • Dims: 299 x 226 x 51
- Carry case , A/C adapter, manuals
- Microsoft® Windows 95
- SOFTWARE
- IBM Simply speaking voice dictation software.
- Lotus Smartsuite 97
- 1Yr parts & labour warranty, two years RTB
- Lifetime technical support

	Ex VAT	Inc VAT	*Per Month
233MHz	£1699	£2013.95	£88.01
266MHz	£1799	£2131.45	£93.14

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price after six months. 0% interest free

£1049

- 12.1" SVGA DSTN display (TFT option)
- Intel mobile Pentium® Processor with MMX™ technology
- 2.1Gb Ultra ATA DMA-33 hard drive
- 32Mb EDO RAM expandable to 72Mb
- 256K level 2 cache
- Neomagic 128bit 2Mb graphics accelerator
- Removable 12 speed CD-ROM
- 3.5" 1.44Mb disk drive
- 16bit stereo sound with stereo speakers & microphone
- 2 x smart NiMH batteries
- 85 key keyboard + MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Synaptics® touchpad™
- Infrared IrDA 1.1 communication port
- Built in microphone
- Weight 2.9Kg • Dims: 299 x 226 x 51
- Carry case , A/C adapter, manuals
- Microsoft® Windows 95
- SOFTWARE
- IBM Simply speaking voice dictation software.
- Lotus Smartsuite 97
- 1Yr parts & labour warranty, two years RTB
- Lifetime technical support

	Ex VAT	Inc VAT	*Per Month
150MHz	£1049	£1250.20	£54.63
166MHz	£1099	£1308.95	£57.20

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price after six months. 0% interest free

NEXUS



£1199

Nexus systems come equipped with full DVD subsystem and ATI Xpert@play AGP graphics with TV output for DVD playback, 3D games and business presentations. Audio is provided by the award winning AWE-64 wavetable soundcard from Creative Labs, and Nexus PCs can be ordered featuring Intel Pentium II Processors up to a blistering 400MHz.

- Intel Pentium® II Processor
- Intel® 440LX or 440BX AGP set
- 512k Internal cache
- 96Mb SDRAM
- 6.4Gb Ultra ATA DMA-33 hard drive
- ATI® 8Mb 3D AGP graphics card with MPEG2 DVD decoding
- 17" 0.28 SVGA colour monitor
- DVD-ROM drive
- Creative AWE-64 wavetable soundcard
- 300 Watt (PMPO) stereo speakers
- 56k voice fax & data modem
- 3.5" 1.44Mb disk drive
- 105 Key Windows® 95 keyboard & mouse
- ATX mini tower or desktop case
- 4 PCI & 2 ISA slots 1 AGP
- 2 USB ports
- Headset Microphone
- Gameport Joystick

- SOFTWARE
- Microsoft® Windows 95*

AGP enhanced software bundle:
Red Line Racer, G-Police, Tonic Trouble, O-Zone, Beyond the Third Dimension, F22 Air Dominance Fighter.

Lotus Smartsuite 97 including:
WordPro 97, Organiser 97, 1-2-3 97, Approach 97, Freelance Graphics 97

Corel Draw suite 4 including:
Draw, Photopaint, Chart, Show.

IBM Worldbook Encyclopedia 97
IBM Simply speaking voice dictation software

IBM Antivirus 3

The Family Doctor™, Design It! 3D™
Kitchen Gourmet™, The Oregon Trail™
Key Home Gardener™, Typing Teacher™

Pipex Dial 4 - one month free internet access account. No credit card required. (Software supplied on CD-ROM with on-line documentation where appropriate).

Intel Pentium® II Processors

	Ex VAT	Inc VAT	*Per Month
233MHz	Discontinued		
266MHz	£1079	£1285.45	£56.17
300MHz	£1149	£1367.70	£59.77
333MHz	£1249	£1485.20	£64.90
350MHz	£1349	£1602.70	£70.04
400MHz	£1499	£1778.95	£77.74

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price after six months. 0% interest free

PROTEUS



£1499

The Proteus offers a high-end feature set to users running the latest multimedia and Internet application software. Utilising Pentium II processors, the Nexus performance AGP graphics system with 19" monitor, 128Mb system RAM, DVD-ROM and large 8.4Gb hard drives assure outstanding performance and future proofing to satisfy the most demanding PC user.

- Intel Pentium® II Processor
- Intel® 440LX or 440BX AGP set
- 512k Internal cache
- 128Mb SDRAM
- 8.4Gb Ultra ATA DMA-33 hard drive
- Iomega® 100Mb internal Zip™ drive
- ATI® 8Mb 3D AGP graphics card with MPEG2 DVD decoding
- 19" 0.26 SVGA colour monitor
- DVD-ROM drive
- Creative AWE-64 wavetable soundcard
- 300 Watt (PMPO) stereo speakers
- 56k voice fax & data modem
- 3.5" 1.44Mb disk drive
- 105 Key Windows® 95 keyboard & mouse
- ATX mini tower or desktop case
- 4 PCI & 2 ISA slots 1 AGP
- 2 USB ports
- Headset & Microphone

- SOFTWARE
- Microsoft® Windows 95*

AGP enhanced software bundle:
Red Line Racer, G-Police, Tonic Trouble, O-Zone, Beyond the Third Dimension, F22 Air Dominance Fighter.

Lotus Smartsuite 97 including:
WordPro 97, Organiser 97, 1-2-3 97, Approach 97, Freelance Graphics 97

Corel Draw suite 4 including:
Draw, Photopaint, Chart, Show.

IBM Worldbook Encyclopedia 97
IBM Simply speaking voice dictation software

IBM Antivirus 3

The Family Doctor™, Design It! 3D™
Kitchen Gourmet™, The Oregon Trail™
Key Home Gardener™, Typing Teacher™

Pipex Dial 4 - one month free Internet access account. No credit card required. (Software supplied on CD-ROM with on-line documentation where appropriate).

Intel Pentium® II Processors

	Ex VAT	Inc VAT	*Per Month
233MHz	Discontinued		
266MHz	£1399	£1661.45	£72.61
300MHz	£1459	£1731.95	£75.69
333MHz	£1559	£1849.45	£80.82
350MHz	£1649	£1955.20	£85.44
400MHz	£1799	£2131.45	£93.14

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price after six months. 0% interest free

WARRANTY

All Atlantic PC systems come with full parts and labour warranty for the first year. After that, you receive free labour for the lifetime of the system for any upgrades or add ons you may require in the future. Seven day a week extended hours hardware support is offered for assistance whenever you need help or advice on service or upgrading.



EXTENDED 3 YEAR ON-SITE WARRANTY ON REQUEST.

What the papers say

Personal Computer World
Good Points: Software bundle, large hard disk, excellent graphics card.
Bad Points: None
Conclusion: Great specifications and good selection of software make this an attractive choice.
(ATX Proteus PCW Feb '97)
Computer Shopper
"The presentation of this system is good and it boasts high quality components."
(ATX Pro 97 Best Budget Buy Computer Shopper May '97)
PC Advisor
"...this Atlantic machine performed confidently throughout our rigorous testing procedures. The Atlantic gives good performance for an excellent price."
(Pro 97 Recommended PC Advisor Sept '97)
PC Home
"A damn fine machine. The Atlantic PC was head and shoulders above the others."
(Pro 98 PC Home Jan '98)

Buy now pay later

Typical example: Total cash price £1191.45
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Atlantic PC's are always supplied with the latest release of Windows 95. A voucher to upgrade to Windows 98 on it's release is available for £15 + VAT



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PCW Awards 1998

Welcome to the 1998 *Personal Computer World Awards*. Over the following pages we will reveal the top products, companies and services of the year. Those which have made a significant contribution or difference to the PC industry in 1998 by offering outstanding performance, innovation and value for money.

The judges this year comprised the entire *PCW* Editorial team, joined by the VNU European Labs, key contributors and, for the fourth year running, you, the *PCW* readers.

In our February and March issues we invited you to vote for your favourite products, companies and services, and as usual you didn't disappoint us. Your contribution has played a big part in deciding the nominees and overall winners of our 1998 Awards.

In the case of our first six awards, for PC service and reliability, the decision has been yours entirely. The results of this exclusive reader survey are shown on the next page, and you can be certain that these will be scrutinised and taken very seriously by the computer industry.

Beyond these six exclusive Reader Awards we have a further 24 categories, reflecting the PC industry and its changes over the past year. Old favourites such as Best Business, Home and Budget PCs are joined by Best Digital Camera, Best Web Software and Best ISP, the latter being a category with an overwhelming number of reader nominations.

All the products nominated are worthy best buys that are currently available. Our overall winner and two equal runners-up in each category are the products, companies and services you should be considering first when it comes to making your next buying decision.

So now, without further ado, check out the winners and worthy runners-up. Some you may expect, but there are a few surprises too.

Gordon Laing
Managing Editor

Winner of reader draw

Congratulations to Mrs J Van Gardingen of Fenstanton, Cambridgeshire, who has won £1,000 to spend with a *PCW* advertiser of her choice. A big well done also to the 100 runners-up who will receive the latest issue of *PCW* on CD.

PCW Awards 1998 Contents

Reader Awards

- 179 Best High Street Retailer
- 179 Best Direct PC Supplier (Mail Order)
- 179 Best Software Dealer
- 179 Best Telephone Support
- 179 Best Hardware Dealer
- 179 Most Reliable PC Manufacturer

PCW Awards

- 181 Best PC for Business
- 181 Best PC for Home
- 181 Best Budget PC
- 182 Best Notebook
- 182 Best Personal Laser Printer
- 182 Best Business Laser Printer
- 184 Best Inkjet Printer
- 184 Best Monitor
- 184 Best Flat Panel Monitor
- 188 Best Scanner
- 188 Best Modem
- 188 Best Graphics Card
- 190 Best Sound Card
- 190 Best Digital Camera
- 190 Best Handheld Computer
- 195 Best Suite
- 195 Best Creative Software
- 195 Best Accounting Software
- 196 Best Utility
- 196 Best Game
- 196 Best Reference/Home CD
- 198 Best Web Software
- 198 Best Web Site
- 198 Best Internet Service Provider
- 201 Table of Winners

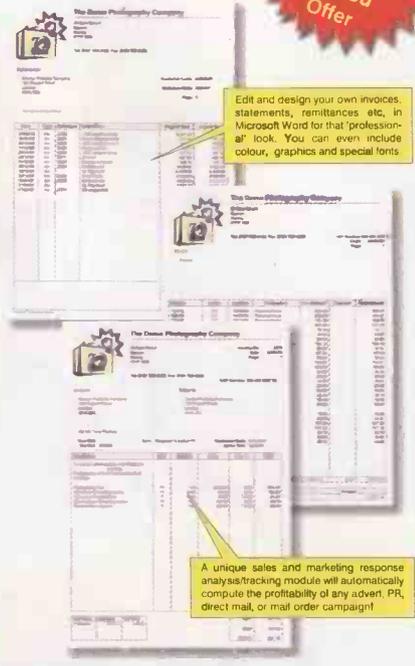
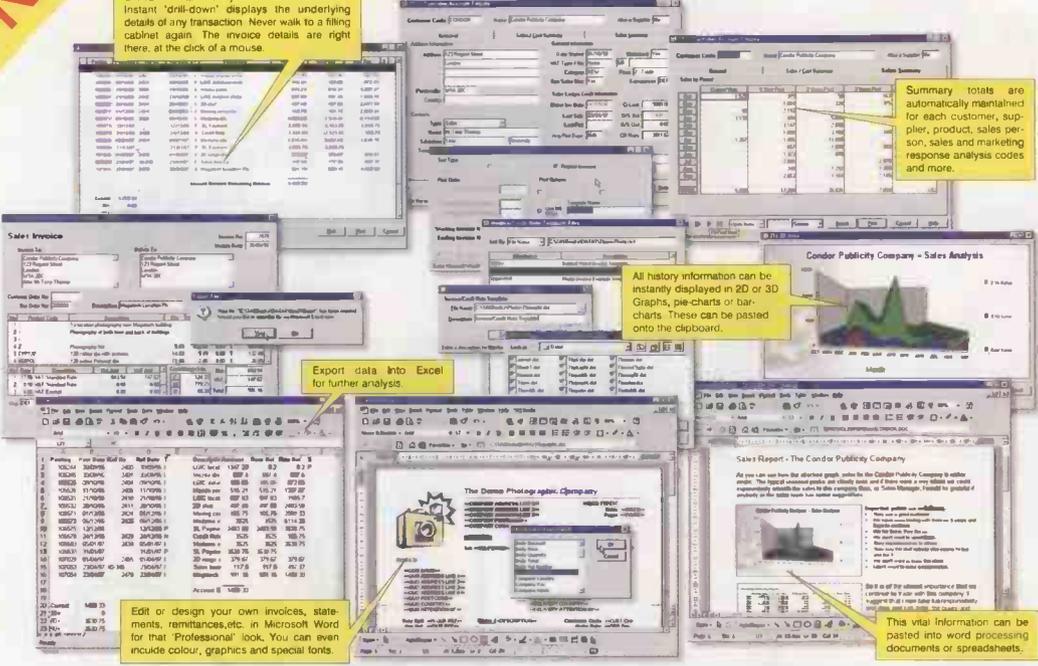
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Now that's seamless integration with Microsoft Office...

Have you ever wanted to use Microsoft Word to enhance or design your quotations, invoices, credit notes, statements, remittances and overdue account letters? Use your favourite fonts, colour and graphics to boost your company's image?

Have you ever wanted to export your accounts data and automatically fire up Excel? Or export sales and marketing data or sales persons or products ... and so the lists goes on and on.

Have you ever wanted to graph those vital trends in customers, suppliers, products, income accounts and cut and paste them into Microsoft Word?

Well, your answer is just a phone call away. TAS Books for Windows 95/NT... Simply said, you have never seen anything like it. It has turned accounts data into accessible management information with functions and features that are simply unheard of - all at a small business price!

TAS Books for Windows 95/NT leaves all other accounting software standing. The formal accreditation by the Institute of Chartered Accountants in England and Wales and an unconditional money back guarantee means that there is absolutely no risk and makes TAS Books the easiest and obvious choice for your (or your clients') business.

Special Offer from £399 for just £99!

We have saved the best news until last. TAS Books costs £399 for single-user or £599 for the multi-user network version, but for a limited period we are selling TAS Books at a 'Special Offer' price of just £99 for single-user or £199 for multi-user. That's a saving of £300 or £400 on the normal selling price.

The multi-company version is a £200 add-on but is now available for just £100. This version does consolidations and is also suitable for book-keeping bureaux. This is not a cut-down version. You get absolutely everything, including 3 months telephone helpline.

Megatech's Total 'Risk Reversal' Policy

You can buy the software direct from Megatech or from the retail channel (PC World, etc.) under a unique 60-Day Money Back Guarantee. If you like the product you keep it. If not, just send it back to Megatech within 60 days with your receipt, (regardless who you bought it from) and we'll refund your money. Immediately! This £99 offer won't last long. As you can see there's absolutely no risk, so phone or fax us your order today.

Here's how to order and use it tomorrow...

Phone or fax us your company and credit card details. Orders received before 3pm are shipped the same day so you can use it tomorrow! (UK mainland - everywhere else may take a day or so longer).

Single-User Version:	£ 99	(£126.91)
Multi-User Network Version:	£199	(£244.41)
Multi-Company Add-on:	£100	(£117.50)

Prices in brackets include handling, shipping and VAT.

Tel: 01372-727274 (24hr)
Fax: 01372-721414



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"Purchasers should ensure that the Licensed Programmed Material ("the Materials") meet their own specific requirements. Notwithstanding any accreditation of the Materials, the Institute of Chartered Accountants in England and Wales shall not be liable for any loss or damage incurred by any person, occasioned by the use of the Materials or any related products or services, howsoever caused."

BASDA/HM C&E VAT Level 2 Accredited

TAS Books was the first accounting system to be accredited with the BASDA Level 2 Specification of VAT for Computerised Accounting Systems. This specification was drawn up as a joint initiative between BASDA (the Business and Accounting Software Development Association) and HM Customs and Excise. It gives guidance on good practice in interpreting and implementing VAT and Intrastat legislation.

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Is a high-speed, integrated 32-bit accounting system for Windows 95 and Windows NT. It incorporates Megatech's award winning 'Account Processor' technology which allows for any mistake to be transparently corrected so it takes all fear of making mistakes away.

It consists of Nominal, Sales and Purchase Ledgers, Cash Book and Goods and Services Invoicing. TAS Books includes unique Sales & Marketing and Data Warehouse-type Analysis Modules. This is functionality that's unheard of even in systems costing thousands of pounds. Space here is limited so send for more information or better, buy and try your own copy today!

Order today and use it tomorrow...

Just telephone us or send/fax this coupon or the complete ad. Orders received before 3pm are normally shipped the **same day so you can use it tomorrow!** (UK mainland - everywhere else may take a day or so longer).

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PCW 980601



Reader Awards

For the fourth year running, *Personal Computer World's* readers were invited to vote for the suppliers and companies they believed were doing the business in 1998. And, as in previous years, the response was enormous.

The PC industry takes these awards extremely seriously because they reflect what you, the actual buyers out there, really think and where you end up spending your money. In the six categories below, the decision was entirely down to reader votes and reader votes alone. So, here are the results of the *PCW* Reader Awards for 1998.

Best High Street Retailer

PC World 0990 464464



Runners-up
 Lyons 08000 682868
 Time 01282 777111

Best Direct PC Supplier (Mail Order)

Gateway 0800 362000



Runners-up
 Dan Technology 0181 830 1100
 Dell Computers 01344 724872

Best Software Dealer

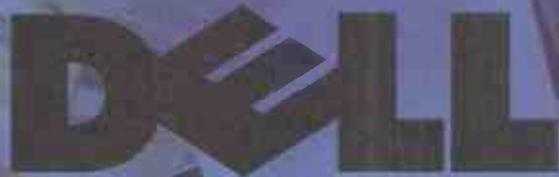
Software Warehouse 01675 466467



Runners-up
 Direct 0800 674467
 Electronics 01582 745555

Best Telephone Support

Dell Computers 01344 724872



Runners-up
 Technology 0181 830 1100
 Gateway 0800 362000

Best Hardware Dealer

Simply Computers 0181 498 2100



Runners-up
 Direct 0181 286 2222
 Peripherals 01909 530242

Most Reliable PC Manufacturer

Dan Technology 0181 830 1100



Runners-up
 Computers 01344 724872
 Hewlett-Packard 0990 474747

Millennium 1001 – the expert view

"A great budget laptop that's got a very neat design, good build quality and a very low price. With a TFT screen, it would be hard to fault..."

...The Millennium has plenty going for it, particularly, the integrated floppy and CD-ROM drive. The Millennium is very sturdy. The plastic casing feels thicker than most, giving the impression of something a lot more expensive... When you combine these factors with the decent performance and the low price, many would be hard-pressed to justify buying anything more expensive."

May'98

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on 1st Year & Extended Warranties

"The after-sales package sounds too good to be true"
COMPUTER SHOPPER May'98

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we charge only for non-Warranty spares
- **BORDER INFORMATION SYSTEMS – R Milner, Dir**
"I have been dealing with computer suppliers for over 25 years and I have to admit I have never received better service anywhere."
- **LEADER INSTRUMENTS EUR – J Pierce, Gen Mgr**
"I'm still impressed by the level of support I continue to receive, and that is precisely why every single computer in our company has your logo on it."
- **UNISON – Alan Cawdell, IT Manager**
"In our organisation we have to consider not only price and performance, but also reliability and support. I am glad to say our choice of *Portables Direct* proved right on all counts."

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200MHz MMX • 32Mb RAM
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ONLY £1295 +vat
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200MHz MMX • 32Mb RAM
• 20x CD • 2.1Gb UltraDMA
HD
ONLY £945 +vat
12.1" TFT
+£125 +vat

Millennium 2000

- Year 2000 compliant**
- XGA: 1024 x 768
 - UltraDMA HDD
 - 1 swap-bay: can use CD, HD, FD & battery together
 - 2nd battery bay
 - fast USB port
 - 512k L2 cache
 - PCMCIA/CardBus: 1/2 x type III/II
 - ZV port
 - Long-life Li-Ion batt • 4Mb 64-bit video • Built-in mic
 - + stereo speakers
 - + 16-bit wave-table
 - + surround sound
 - TV out
 - weighs only 8lb
 - **1-year Worldwide Warranty**

233MHz	.....	£1895
MMO	.....	£226.63
266MHz	.....	£1995
MMO	.....	£2344.13
64Mb RAM	.....	+£120
		£141.00
128Mb RAM	.....	+£360
		£423.00
3.2Gb HD	.....	+£79
Ultra DMA	.....	£92.83
4.1Gb HD	.....	+£199
Ultra DMA	.....	£233.83
2nd Li-Ion battery	.....	£145
		£170.38
Internal 33.6k	.....	£95
faxmodem	.....	£111.63
Internal 56k	.....	£135
faxmodem	.....	£158.63
Mini Docking station	.....	£195
		£229.13

VoyageNote 2000

- Year 2000 compliant**
- XGA: 1024 x 768
 - Removable UltraDMA HD
 - 1 swap-bay: fits combined CD+FD module or 2nd batt
 - fast USB port
 - 512k L2 cache
 - PCMCIA/CardBus: 1/2 x type III/II
 - ZV port
 - Long-life Li-Ion batt • 4Mb 64-bit video • Built-in mic
 - + stereo speakers
 - + 16-bit wave-table
 - + surround sound
 - TV out • Game port
 - weighs only 7lb
 - **1-year Worldwide Warranty**

200MHz	.....	£1295
MMX	.....	£1521.63
233MHz	.....	£1325
MMX	.....	£1556.88
14.1" TFT screen	.....	+£100
		£117.50
64Mb RAM	.....	+£120
		£141.00
128Mb RAM	.....	+£360
		£423.00
3.2Gb HD	.....	+£79
Ultra DMA	.....	£92.83
4.1Gb HD	.....	+£199
Ultra DMA	.....	£233.83
4.1Gb HD	.....	+£199
Ultra DMA	.....	£233.83
2nd NIMH batt	.....	£79
		£92.83
2nd Li-Ion batt	.....	£145
		£170.38
Port replicator	.....	£79
		£92.83

Millennium 1001

- Year 2000 compliant**
- SVGA:-800 x 600
 - All-in-one – Ultra DMA HD, 20x CD & FD all built in
 - fast USB port
 - 256k L2 cache
 - PCMCIA/CardBus: 1/2 x type III/II
 - ZV port
 - NIMH battery
 - 2Mb 32-bit video
 - Built-in mic
 - + stereo speakers
 - + 16-bit wave-table
 - + surround sound
 - weighs only 7lb
 - **1-year Worldwide Warranty**

200MHz	£945
MMX	£1110.8
233MHz	£975
MMX	£1145.63
12.1" TFT screen	+£125
		£146.88
64Mb RAM	+£120
		£141.00
96Mb RAM	+£240
		£282.00
3.2Gb HD	+£79
Ultra DMA	£92.83
4.1Gb HD	+£199
Ultra DMA	£233.83
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Best PCs: Important information — please read

Each of our three PC categories comprises systems selected from a variety of recent group tests that sufficiently impressed us and the reader

voters to be nominated for an award. You should note that due to the different specifications and prices at the time of testing, we have listed just the manufacturer

name and contact number at the end of each category. Please call the company direct for the specifications applicable to your requirements, and for the latest prices.

Best PC for Business: Hewlett-Packard Vectra VL

It seems only a short time ago that there was a clear distinction between home and business. Today, with countless small groups and individuals setting up by themselves, a business could be contained within a corner of your living room, a million miles away from the conventional office environment.

In the very near future, big businesses may well opt for the network-computer concept of a single large server with a collection of dumb terminals attached. It's ironic, since it's these very same big businesses which dumped essentially the same system a

few years bago in favour of a PC on every desk. For now, though, most businesses, large and small, are still buying self-contained PCs. Our award for Best PC for Business

takes the small-to-medium-enterprise approach of specifying an excellent system from a good, reliable supplier. The runners-up are



Viglen and Elonex, which particularly impressed us with their Ultimate PC266W and PTX-6300/I systems respectively. Both are fine choices for a decent, solid, business PC.

The winner is Hewlett-Packard for its Vectra VL, one of the first 400MHz Pentium II systems we tested. Not only does it boast awesome performance, but its build quality is superior too. The Vectra VL is a system on which you can utterly rely.

PCW Details

Hewlett-Packard 0990 474747
Elonex 0181 452 4444
Viglen 0990 944944

Best PC for the Home: Mesh Elite Professional PII

What makes an award-winning home PC? For some, the ideal domestic PC will be one that meets the strictest of budgets, while others may demand the fastest games machine or perhaps a system ideally suited to basic business applications. Some users will demand a higher raw performance than others. Today's typical home PC features decent

multimedia facilities. In terms of high-quality sound, 3D graphics and, increasingly common these days, a DVD drive with MPEG video decoding.

Home PC users are becoming far more sophisticated, and instead of tinkering with a little accounting and letter writing, they are throwing themselves into desktop publishing, music production, photo retouching, web browsing and even the creation of their own web pages.

As far as we're concerned in our 1998 Awards, a home PC is a good all-rounder which, in terms of price, falls between our entry-level and business PC categories.

Our runner-up prizes go to Armari and Evesham Micros, which have turned out fine systems in the past year. Both companies

have produced consistently high-performing PCs, often including innovative components and always built to the highest standards.

Our award for the Best Home PC goes to Mesh for its Elite Professional PII, reviewed in this issue (p157). It boasts a spectacular specification and very strong performance for only £999 (ex VAT) at the time of writing. It's a perfect home PC at a great price.

PCW Details

Mesh 0181 452 1111
Armari 0181 810 7441
Evesham Micros 0800 634 5999

Best Budget PC: Linear Computers Linear Excel

It's fun looking at budget PCs to see what they can offer at rock-bottom prices. To us, a budget PC is one which sells for around £500 (ex VAT) and we are often amazed at their quality and flexibility.

Generally, you'll get a system based on a 200MHz Pentium-class processor with 16-32Mb of RAM, a disk drive with at least 2Gb capacity and basic multimedia capabilities. But you can't expect too much in the monitor department and 14in models are the norm. Nevertheless, our nominees managed to source some quite reasonable displays. A budget PC will be sufficient for most day-to-

day tasks like basic office applications, accounts, games and getting onto the internet. Okay, it may not match the power of the fastest systems, but unless you've got one sitting



next door for a direct comparison, a budget PC could be exactly what you're after.

Our runners-up this year are Watford Electronics' Aries Multimedia Pro and Roldec's Pro System, both offering superb configurations at rock-bottom prices.

The winner is Linear Computers which matched our £500 challenge in the May issue and built a great machine, aptly named the Excel, of which anyone could be proud.

PCW Details

Linear Computers 0800 622094
Roldec 01902 456464
Watford Electronics 01582 745577

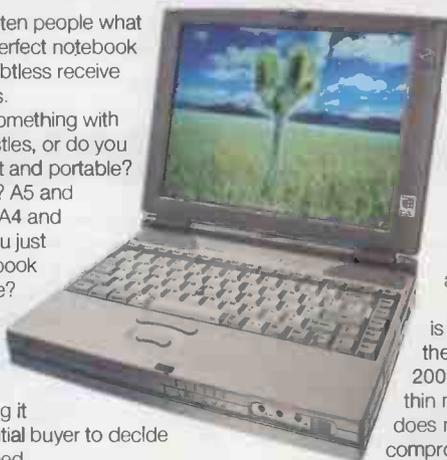
Best Notebook: Toshiba Satellite Pro 440

If you were to ask ten people what their idea of the perfect notebook is, you would doubtless receive ten different answers.

Do you require something with all the bells and whistles, or do you need something light and portable? If so, in what format? A5 and reasonably thick, or A4 and wafer thin? Or do you just need a reliable notebook at a reasonable price?

This year, more than any other, notebooks have astounded us with their diversity, making it difficult for the potential buyer to decide exactly what they need.

Our choices this year reflect that diversity.



The first runner-up is the IBM ThinkPad 770, for housing not only the first Tillamook chip but also the first 14.1in TFT screen, and for being the first notebook to have 3D graphics. It is also capable of accepting DVD when it becomes available.

The second runner-up is a very different machine, the Digital HiNote Ultra 2000. It's a light and very thin notebook, but one which does not force you to compromise on either functionality or performance.

Our best notebook this year wins not for

flashy technology, but for all-round value for money. The Toshiba Satellite Pro 440 was a runner-up in our last notebook group test, not because it had the most impressive spec, but because it's very well built, performed well in our tests and offered the best value for money in the long run.

PCW Details

Toshiba Satellite Pro 440 £2263.05 (£1926 ex VAT). Toshiba 01932 828828
IBM ThinkPad 770 £4,230 (£3,600 ex VAT). IBM 0990 727272
Digital HiNote Ultra 2000 £3,166.63 (£2,695 ex VAT.) Digital 0345 227228

Best Personal Laser Printer: Panasonic KX-P6300

The past year has seen the development of a new type of laser printer: the personal laser printer. For the first time, prices have fallen sufficiently for the average user to seriously consider a laser printer for personal use. If you need superb text and graphics but can do without colour, the world is now your oyster.

The first runner-up, the Minolta PagePro 6, won a deserved Highly Commended award in our February group test. It is a quick, fully-featured printer with excellent-quality output on text and graphics. It has 2Mb of memory as standard and supports native DOS printing via 5e PCL emulation.

The second runner-up, the Kyocera FS-600, is another Highly Commended award winner. It topped the charts in our image quality tests and we were especially impressed with the solid blacks and graphic images. The standard 2Mb of memory is

upgradable to a whopping 34Mb if required.

The winner of the PCW Award for Best Personal Laser Printer is the **Panasonic KX-P6300**. It was our Editor's Choice in the February group test because of its combination of speed, quality and value for money. Admittedly, it lacks many of the features



present on the more expensive models: for instance, it doesn't have a straight paper path for non-standard media and can only print from Microsoft Windows operating systems.

However, output quality is excellent and it went like a rocket in our speed tests. And, when you take into account the low, low, price, you just can't get any better than this.

PCW Details

Panasonic KX-P6300 Street £202.10 (£172 ex VAT). Panasonic 0500 404041
Kyocera FS-600 Street £262.03 (£223 ex VAT). Kyocera 01734 311500
Minolta PagePro 6 Street £286.70 (£244 ex VAT). Minolta 01908 200400

Best Business Laser Printer: HP LaserJet 4000TN

Just as the price of personal laser printers is falling, so the range of functions on business lasers is growing. Ever-diminishing print times, with pin-sharp output quality, makes them suitable for networked business use.

The first of our two runners-up in this category is the **QMS DeskLaser 1400P**. Boasting a maximum output of 14ppm and a 550-sheet paper tray, this machine has a surprisingly small footprint. An 11Mb memory and a 40MHz RISC processor come as standard. It is PostScript L2 and PCL5e compliant with a maximum



resolution of 2400dpi, and all at a great price.

The **Lexmark Optra S1250** is similarly crowned for its 12ppm engine, 250-sheet input tray expandable to 1,250, and small footprint. It has true 1200dpi resolution output, 4Mb RAM as standard and a wide range of direct or network connection options.

Hewlett-Packard's LaserJet 4000TN walks away with the winner's trophy. It is the first product designed specifically for use with HP's JetSend technology, allowing documents to be sent direct from peripheral to peripheral without computer

intervention. Network-ready with a 100MHz RISC processor and a maximum 100Mb RAM, this speedy unit delivered ten pages of text in just 54 seconds in our tests. The 10,000-page toner cartridge and dual 250-page paper-feed trays mean this printer will need little human intervention in a busy environment. Duplexing modules, memory upgrades and hard drive cards are optional.

PCW Details

HP LaserJet 4000TN £1,662.63 (£1,415 ex VAT). Hewlett-Packard 0990 474747
QMS DeskLaser 1400P £938.83 (£799 ex VAT). QMS 01784 442255
Lexmark Optra S1250 £1,056.33 (£899 ex VAT). Lexmark 01628 481500

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Best Inkjet Printer: HP DeskJet 720C

Last year saw a proliferation of inkjets in both the workplace and the home. The technology behind them put high-quality colour printing capabilities into the hands of everyday users, and a drop in price made them an affordable purchase.

The first of the two runner-up awards this year goes to Epson for its Stylus Photo, a printer which more than deserves its name for its unbeatable reproduction of photographic-quality



images with bright, vibrant colours on a wide variety of paper types.

The second runner-up award goes to Canon for its BJC-80, one of the smallest, smartest printers ever reviewed by PCW. It survives on exceptionally cheap supplies and incorporates an ingenious scanner option to replace the print head. In the Christmas group test, it was our Editor's Choice. It was fast, and produced a full-bleed A4 photo in just over 12 minutes.

This year's winner, for the second year running, is Hewlett-Packard. Its new DeskJet 720C provides excellent all-round output, coping admirably with both photographic and business graphics as well as presenting

good-quality text output on normal office paper. The new ten-picolitre technology championed by this brand ensures that the minimum of white paper shows through on light areas, while the fast print engine took one minute to deliver five full pages of black text. Its paper-handling abilities, coupled with its relatively small footprint, make the DeskJet 720C a first-class printer.

PCW Details

- HP DeskJet 720C £270.25 (£230 ex VAT). Hewlett-Packard 0990 474747
- Epson Stylus Photo £233.83 (£199 ex VAT). Epson 01442 61144
- Canon BJC-80 £233.83 (£199 ex VAT). Canon 0121 680 8062

Best Monitor: Sony MultiScan 400PST

The predominance of 17in monitors was confirmed in 1998 as they won their battle over the formerly predominant 14in and 15in models. At the time of last year's PCW Awards we were beginning to see the emergence of large-screen projectors and wider use of flatpanel displays; yet this year we find them hardly more prevalent than they were 12 months ago, largely on account of cost. The introduction of 19in screens has brought greater choice.

This year, the Diamond Pro 700 monitor from Mitsubishi receives one of our runner-up awards. With a 16in viewable diagonal, this Trinitron tube easily displays flicker-free images up to an impressive 1600 x 1200. The picture is crisp and colours are vibrant.

The Nokia Multigraph 447Za, an April 98 PCW Editor's Choice, receives a similar award

for its 19 easy-to-use front-mounted controls and built-in 5W speakers. The 15.6in viewable diagonal tube has an impressive non-interlaced refresh rate of 90Hz at 1024 x 768.



The clear winner,

however, is the baby of the bunch, the 19in

Sony MultiScan 400PST. Attractive, and with a full 18in viewable diagonal Trinitron tube, this monitor has both D-SUB and BNC connectors for connecting it to two computers at a time, and there is little variation in picture sharpness across the screen. A comprehensive and easy-to-use on-screen display with a 75Hz non-interlaced refresh rate at 1600 x 1200 resolution, makes this monitor a joy to use.

PCW Details

- Sony MultiScan 400PST £821.33 (£699 ex VAT). Sony 0990 424424
- Nokia Multigraph 447Za £440.63 (£375 ex VAT). Nokia 01793 512809
- Mitsubishi Diamond Pro 700 £569.88 (£485 ex VAT). Mitsubishi 01707 276100

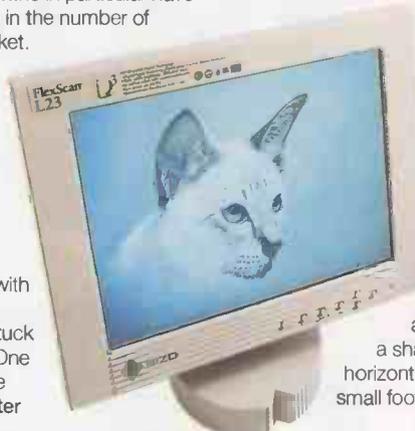
Best Flatpanel Monitor: Eizo FlexScan L23

Flatpanel monitors have continued to get bigger and cheaper over the past year.

The last six months in particular have seen a huge increase in the number of flatpanels on the market.

When they first appeared, flatpanels were mostly produced by the larger manufacturers who already made notebook screens. Now, every monitor manufacturer has completed its range with a flatpanel.

However, a few stuck out from the crowd. One of our runners-up, the Samsung SyncMaster



400TFT with its 14.1in screen, impressed us not only by the quality of its image but also by the speakers being cunningly fitted into its conical base, and by the inclusion of a USB port (also on the base).

The second runner-up is the NEC MultiSync 400V (V for value). While this monitor is not as cheap as our winner, it is much less expensive than some other flatpanels. With a 14.1in screen, it has roughly the same viewable area as a 15in monitor, but it has a sharp image, an excellent horizontal viewing angle and a very small footprint.

The award for the Best Flatpanel Monitor goes to the Eizo FlexScan L23. Eizo has a range of flatpanels and we saw this 13.8in display at the beginning of the year. We were impressed by the screen quality and it was one of the few flatpanels to have dual input, so you can attach it to more than one PC. Its recent and dramatic price drop also makes it extremely attractive.

PCW Details

- Eizo FlexScan L23 £1,056.33 (£899 ex VAT). PDS 01483 719500
- NEC MultiSync 400V £1,991.63 (£1,695 ex VAT). NEC 0645 404020
- Samsung SyncMaster 400TFT £1,173.83 (£999 ex VAT). Samsung 0800 521652

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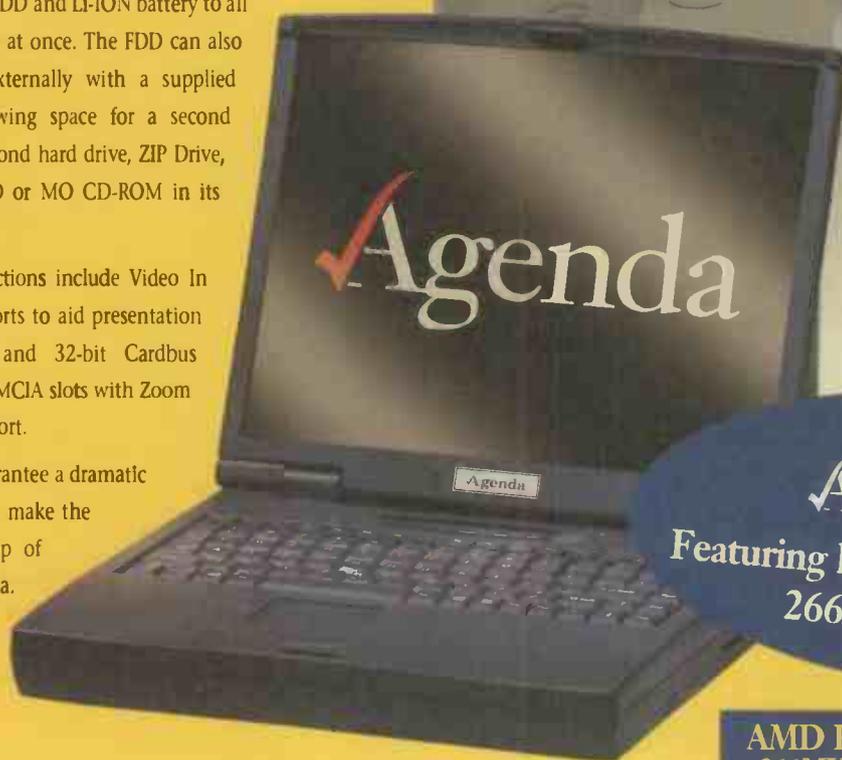
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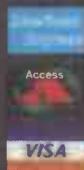
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Best Scanner: Umax Astra 610P

1 997 may have seen scanner prices fall, but this year they've absolutely plummeted. It's remarkable that you can pick up quite a respectable flatbed colour scanner for less than £100 (inc VAT). That's not to say that the scanner market has disappeared entirely at the budget end of the spectrum. There are still many decent mid-range and high-end products being released for those who demand a little extra.

There have also been some welcome developments in ease of use. Let's face it — most people aren't interested in adjusting gamma curve; they just want images on their PC with the minimum of fuss and effort. And this is exactly where our winner and two runners-up come in.



All three hail from quite different price ranges but all can be considered affordable

and, most importantly, easy to use.

Our first runner-up comes from Hewlett-Packard. Its ScanJet 6100C is a doddle to use. This 600dpi SCSI model provides high-quality results quickly, and is supplied with a

neat 35mm transparency adapter. Much the same can be said of the superb Agfa SnapScan 600, part of a wide range to suit all budgets. Another 600dpi SCSI model,

the SnapScan 600 is well built and performs like a dream.

Our winner is Umax for its Astra 610P, costing a remarkable £81.07 in its basic parallel interface model. It may not match our runners-up in terms of quality, but it takes the prize for sheer value for money. At that price, digital imaging is available to all.

PCW Details

- Umax Astra 610P** Price £81.07 (£69 ex VAT). IMC 01344 871329
- Agfa SnapScan 600** Price £269.07 (£229 ex VAT). Agfa 0181 231 4906
- HP ScanJet 6100C** Price £527.57 (£449 ex VAT). HP 0990 474747

Best Modem: Pace 56 Voice

Last year was the year of the great standards spat. Two competing 56K standards were produced, with 3Com and X2 in one corner, and Rockwell Lucent, K56flex and the vast majority of modem manufacturers in the other.

The two sides first sent in their marketing people and then the lawyers to slug it out, until the ITC finally won agreement on a single 56K standard, V.90. But no sooner had this been agreed than new speeds came up, including one that will let you run two 56K modems in tandem and, of course, ADSL.

Our two runners-up come from opposite sides of the fence. We have given 3Com a runner-up award for its X2 modem, the 56K Voice Faxmodem Pro. 3Com was the first to come up with the 56K standard

and this modem continues the innovative approach, with good telephony functionality. Second runner-up is the TDK Global Freedom 5660 which, with its ability to recognise and adapt its

behaviour to virtually any land line in the world, is one of the best PC Card modems around. It incorporates PCS-1900 mobile phone technology for a digital service, clear connections, and two-way paging via Short Message Service (SMS). Our winner is the Pace 56



Voice, the best-performing modem we've seen this year. It was designed from scratch to cope with 56K technology and performed well in all aspects, from installation to voice functionality, to the all-important download speeds. Pace has given PCW a sneak preview of the next generation of this modem, with enhanced telephony functionality, and we were impressed.

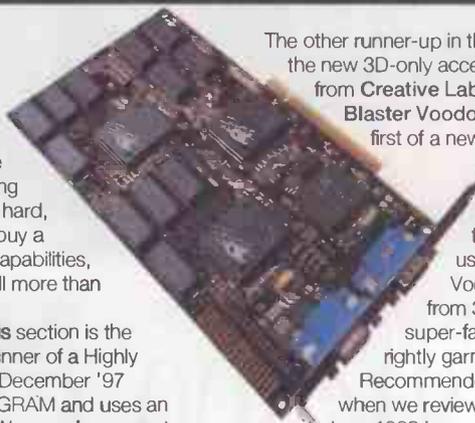
PCW Details

- Pace 56 Voice** £139 (£118.30 ex VAT). PMC 0990 561001
- 3Com X2** £139.83 (£119 ex VAT) 3Com 0800 225252
- Global Freedom 5660** £209 (ex VAT) with GSM upgrades from £99. TDK 0118 921 6230

Best Graphics Card: ATI Xpert@Play

The graphics card market is the most turbulent sector of the computing industry. And when you think of the general pace of change in the PC world, that's saying something. These days it's hard, but just about possible, to buy a graphics card without 3D capabilities, and our three finalists are all more than proficient in that area.

The first runner-up in this section is the Velocity 128 from STB. Winner of a Highly Commended award in our December '97 group test, it has 4Mb of SGRAM and uses an nVidia Riva graphics chip. We were Impressed by both 2D and 3D performance, and the software drivers have an admirably comprehensive list of features.



The other runner-up in this category is the new 3D-only accelerator card from Creative Labs, the 3D Blaster Voodoo2. This is the

first of a new wave of 3D cards which will appear over the next few months using the Voodoo2 chipset from 3Dfx. This super-fast board rightly garnered a PCW Recommended award when we reviewed it in our June 1998 issue.

The winner of the 1998 award for Best Graphics Card is the Xpert@Play from ATI. The 4Mb card came out tops in our

December 1997 group test with a combination of solid performance and superb value for money. The quality of the 3D images were particularly impressive, scoring a peerless 100 percent on our visual appearance test. Overall, it does everything you need at a price that won't send you running for cover.

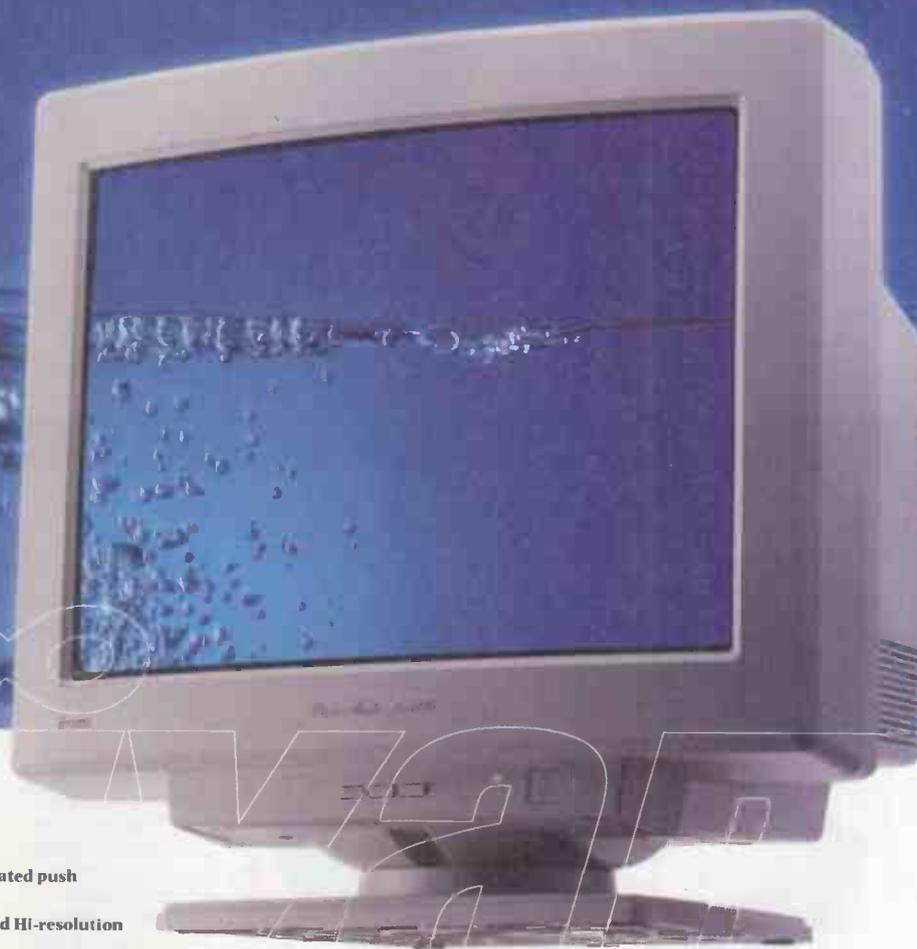
PCW Details

- Xpert@Play** £109 (£93 ex VAT) ATI 01628 533115
- 3D Blaster Voodoo2** £229 (£194.90 ex VAT) Creative Labs 01245 265265
- Velocity 128** £115 (£97.88 ex VAT) STB 0181 897 1003

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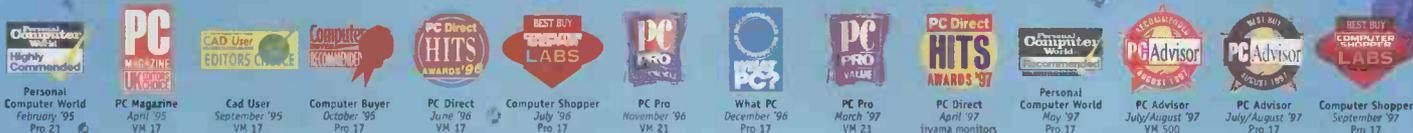
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iiyama

Best Sound Card: Terratec EWS64S

The past year has seen some interesting movements in the field of PC audio. With a sufficiently powerful main processor it is, in fact, possible to generate sound through software alone. Yamaha in particular has made some interesting developments in this field with its SoftXG software. Until this technology is proven, however, and super-fast PCs are the norm, audio capabilities currently remain in the hardware domain.

Most audio hardware on modern PCs are supplied as part of the main motherboard itself, but if yours is silent or just not cutting the mustard, it's time to consider a new sound card (check out our annual group test on page 206). Interestingly, the ageing ISA expansion bus used almost exclusively by



sound cards today looks set to be superseded by PCI in the very near future. (Our winner and two runners-up still currently fly the old technology flag of ISA.)

Our first runners-up prize goes to the **Guillemot Home Studio Pro 64**,

boasting a host of features which include digital I/O on a handy daughterboard.

Our second runner-up award goes to the ubiquitous **Creative Labs**

SoundBlaster AWE-64 Gold, still going strong with foolproof 16-bit SoundBlaster support and a pain-free installation under Windows 95.

The winner is **Terratec** for its **EWS64S**, a cut-down version of the heavyweight **EWS64XL**. The S model is considerably cheaper and offers the same features, decent software and even an aluminium flight case.

PCW Details

EWS64S £149.23 (£127 ex VAT)
Terratec 01600 772111

AWE-64 Gold £129.25 (£110 ex VAT)
Creative Labs 01245 265265

Home Studio Pro 64 £249.10 (£212 ex VAT)
Guillemot 0181 944 1940

Best Digital Camera: Agfa ePhoto 1280

Last year digital cameras were gimmicky gadgets which gave you poor-quality pictures that were difficult to download. This year they have improved out of all recognition — and the prices keep falling. The major improvement has been the introduction of mega-pixel cameras in the sub-£1,000 price bracket, while most of the cameras can actually be bought for around £600 (inc VAT).



The **Kodak DC-210** was the first of the mega-pixel cameras to become truly affordable. Building on the reputation of Kodak's existing range, notably the DC-50 and DC-120, the DC-210 has a mega-pixel CCD giving the camera a maximum resolution of 1160 x 864. The zoom lens is equivalent to a 29-58mm lens on a 35mm film camera and it looks great, too. For this, it wins a runner-up award.

The second runner-up is the **DSC-F1** from **Sony**. Among 640 x 480 pixel cameras it stands out as the best for image quality and superb functionality.

You can twist the whole thing through 180 degrees to take pictures of yourself. It has a 4Mb memory, TV-out port and IrDA infra-red. In short, a fun camera.

This year's winner just had to be the **Agfa ePhoto 1280**. Not only is it a mega-pixel camera with a top resolution of 1280 x 1024, but it also has a 3X zoom lens, equivalent to a 38-114 mm lens on a 35mm film camera. The functionality of this camera is astonishing, letting you adjust every aspect of the image on the camera itself.

PCW Details

ePhoto 1280 Street price £616.88 (£525 ex VAT). Agfa 0181 231 4906

DC-210 Street price £527.58 (£449 ex VAT). Kodak 0800 281487

DSC-F1 Street price £457.08 (£389 ex VAT). Sony 0990 424424

Best Handheld Computer: Psion Series 5

It has been an exciting year in the world of handheld computers. We have seen the first Microsoft Windows CE 2.0 machine, the first colour displays and a new version of the 3Com Palm Pilot, the Palm III. Low-power software modems are becoming more common and the Microsoft Palm PC is just around the corner.

The first runner-up in this category is the **Palm Pilot Pro** from 3Com. One of the sleekest, smallest devices around, it isn't hard to find plenty of people willing to rave about it. The Graffiti handwriting



recognition system does away with the need for a keyboard and there is plenty of third-party software available.

The other runner-up in this section is the **620LX** from **Hewlett-Packard**. The first colour CE 2.0 machine to make it to the UK, it represents the cutting edge of handheld technology. The screen is superb and the keyboard is bigger than those of its rivals, giving it an edge for those who need to do a lot of typing.

The winner of this year's award for Best Handheld Computer is the **Psion Series 5**. It is the best

piece of design we have ever seen on a computer. From the futuristic pen to the notebook-like keyboard, every part of the machine has benefited from the utmost care and attention to detail. The poor contrast of the touch-sensitive screen is a bit of a let-down, but as a total package, the Psion Series 5 cannot be beaten.

PCW Details

Series 5 £429.95 (£365.92 ex VAT; 8Mb version). Psion 0990 143050

620LX £799 (£680 ex VAT). Hewlett-Packard 0990 474747

Palm Pilot Pro £229 (£194.90 ex VAT). 3Com 0800 225252

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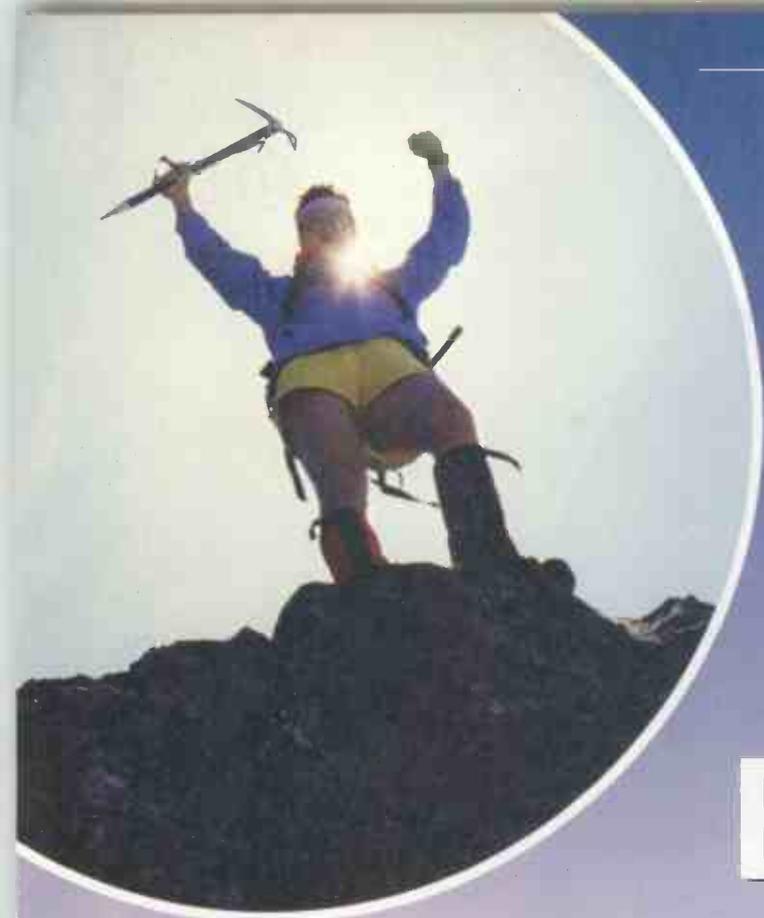
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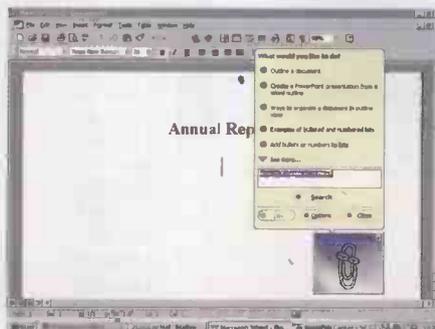
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Best Suite: Microsoft Office 97 Professional

In the past twelve months we have seen the internet placed at the heart of the software suite. The first of our runners-up, Claris, impressed us with **ClarisWorks 5 Office**. It contains excellent net publishing software as well as a dizzying array of office document templates. It lacks some of the features available in the more expensive suites, but this slimmed-down office application is ideal for the small-to-medium enterprise due to its attractive price and range of applications tailored to the small business.

Our second runner-up, **Lotus SmartSuite 97**, battled it out for suite supremacy during 1997 and we particularly like the SmartSuite's team-friendly applications, designed to be used by multiple users over a network. SmartSuite reaffirms the use of the internet as an everyday office



resource by integrating it into almost every application in the suite.

The winner is the **Microsoft Office 97 Professional** suite, with several of its key applications having undergone substantial changes since Windows 3.1. This suite has

made the leap to full web integration. We were impressed by the wizards used for creating HTML documents and the option to upload files to a web server. Separate applications like the drawing app, Visio, and Personal Information Manager have been dispensed with, to be replaced by a more cohesive approach that incorporates those features into the core applications.

PCW Details

Office 97 £483 (£411 ex VAT).
Microsoft 0345 002000

ClarisWorks 5 Office £116.33 (£99 ex VAT).
Apple Information Centre 0870 6006010

SmartSuite 97 £374 (£318 ex VAT)
Lotus 01784 455445

Best Creative Software: Adobe Photoshop 4

We have touched on different bases in this year's Creative Software awards: a high-end image processor, multimedia web authoring and a simpler, whacky, image-editing package.

This last piece of software, **Kal's Power Soap**, receives a runner-up award. It reflects a trend from last year for no-nonsense art packages aimed at the home user with a digital camera or scanner.

One of the leading lights in this market has been Kai Krause, and we were impressed by his latest product. It uses a beautiful interface, as user-friendly as it is pleasing to the eye. We loved the idea of the various prep rooms where artwork is given tone and colour before being realised in the finish room.

Our second runner-up is **MacroMedia's Director 6**. The easy-to-use, intuitive Behaviour Inspector that enables interactive scripting, and the optimisation of the



Shockwave plug-in for Java, are among the new features available in the new Director 6.

Adobe Photoshop 4 is a package that sets the standard by which others are judged, and it wins our award for Best Creative Software. The interface has been improved in all sorts of areas: this new version has an improved zoom facility, a thumbnail

navigation palette, and right-mouse-button context menus.

A brilliant new feature is the introduction of Adjustment Layers, improving on the Layers feature from version three.

But some things only get better and Photoshop 5, reviewed in its beta form in the June '98 issue of PCW, improves still further on version 4.

PCW Details

Photoshop 4 £399 (£339.57 ex VAT).
Adobe 0181 606 4000

Director 6 £999 (£850 ex VAT RRP).
Computers Unlimited 0181 200 8282

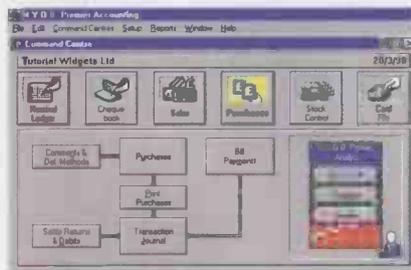
Photo Soap £39.95 (£34 ex VAT).
Computers Unlimited 0181 200 8282

Accounting Software: MYOB

Accounting software is one of the few software packages no small business can be without. Whether you are a sole trader, a small company with only a couple of colleagues, or you employ 500 staff, the packages we have selected should cover all your basic needs.

The first runner-up is **TAS Books for Windows** from Megatech. It is aimed at small to medium-sized businesses and is the best bookkeeping package around. Its remarkably powerful data analysis and marketing analysis features make it equally desirable for any manager wanting to analyse sales in-depth.

As the best personal finance and sole trader package, **Microsoft Money Financial Suite 98** also wins a runners-up award. It has an account register where you record receipts and payments and analyse them to categories. It offers online banking services



with your bank whereby, via modem, you can electronically pay bills, download bank statements or transfer money between accounts. You can manage your investment portfolio and receive online share prices.

The award for best accounting package goes to **MYOB (Mind Your Own Business)**.

It is ideal for the owner-manager and is good for bookkeepers, too. Navigation around the screens is fast, slick and logical, and non-accounting managers in particular will adapt to MYOB with ease. In terms of features and versatility it scores high marks in all areas. A superb all-rounder.

PCW Details

MYOB RRP £229.13 (£195 ex VAT);
street price £135.13 (£115 ex VAT).
Bestware 01752 201901

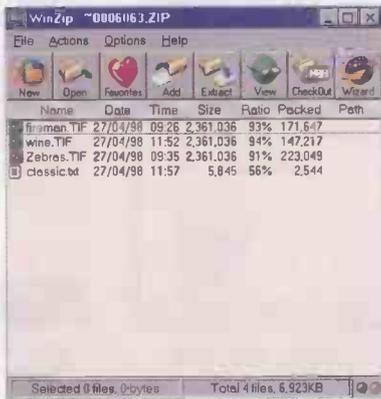
Money RRP £39.99 (£34.03 ex VAT); street
£37.60 (£32 ex VAT). Microsoft 0345 002000

TAS Books for Windows RRP £116.33
(£99 ex VAT); no street price.
Megatech Software 01372 727274

Best Utility: WinZip 6.3

Utilities are the unsung heroes of computer software, and the first runner-up in this category is **Software Post-it Notes** from 3M. A beautifully simple utility, it is essentially an information management tool. Entering information is like jotting something down on a physical Post-it Note with the additional benefits of storing all your notes on memo boards, setting alarms on individual notes, and a superb full text search facility.

The second runner-up is **Adobe Acrobat Reader**, which reads documents created in Portable Document Format. The beauty of it is that the documents look exactly the same no



WinZip 6.3, a compression utility that is so universal, people expect you to have it on your

matter what platform you use. It is commonly used on the net, and our own PCW CD-ROM archives use the technology to exactly reproduce the printed page.

This year's Best Utility is

PC. Along with its own ZIP compressed file format, it supports a variety of popular file formats including TAR, GZIP and MIME, so you can use it to access most of the files you download from the net. And as if that were not enough, you can also use it to compress files — across several floppy disks if need be. This is one utility everyone should have.

PCW Details

- WinZip 6.3 Shareware (see any PCW cover CD).
- Acrobat Reader Free (see any PCW cover CD). Adobe 0181 606 4001
- Software Post-it Notes £23.60 (£20.08 ex VAT). 3M 01234 229414

Best Game: Grand Theft Auto

This past year has been dedicated to sequels and add-ons. We had Hexen II, Quake II, Tomb Raider II and Riven, the sequel to Myst. Hexen II and Quake II also launched add-on mission packs: Quake's will be incorporated into Quake III later this year. Although good, we thought there were others that were a cut above them.

The first runner-up this year is **Microsoft's strategy game, Age Of Empires**, which is streets ahead of other strategy packages. The animation of characters and surroundings are incredibly detailed, and the gameplay is varied and exciting. We are looking forward to the release of Age Of Empires II later on this year.

Blade Runner, from Virgin, is our second runner-up. We loved the film, and the game



does it justice. Blade Runner is a vast virtual experience with stunning graphics, ambient sound and speech, and more than 70 motion-captured characters. And the game recreates the atmosphere of the film with amazing style.

After hours of indecision and many

arguments, the award for the best game of 1998 goes to **Grand Theft Auto**. This game gives life to every criminal thought you've ever had — but restricts it to the computer. You have licence to run riot, storm the streets in gas-guzzling monsters, deliver drugs, run over cops or shoot the driver in front of you.

Grand Theft Auto is the closest anyone has come to putting Goodfellas on the PC.

PCW Details

- Grand Theft Auto £44.99
- Take 2; 0171 384 7500
- Age Of Empires £39.99. Microsoft 0345 002000
- Blade Runner £44.99
- Virgin Interactive 0171 368 2255

Best Reference/Home CD: Microsoft Encarta 1998 Encyclopedia DeLuxe Edition

CD-ROM has received its share of bad press over the years and this year has not been a good one, with publishing houses cutting back on staff and output. DVD threatens to sound the death knell of CD but 1998 still saw numerous excellent titles.

The first runner-up, **Dorling Kindersley's World Atlas**, has only just been released, but PCW saw it in beta some time ago and we were very impressed by its sheer innovation. It exploits all those new technologies found in new PCs, including PII, DVD and AGP, to create a virtual flyover of the world in gloriously-textured 3D, as well as including a wealth of supplementary information.

IBM World Books wins the second runner-up prize for its **Discoveries** titles. Not only does this hold a wealth of information on historical periods, but presents it in a new and exciting format that will fascinate all ages.



The best CD-ROM of the year is **Microsoft's Encarta 1998**. Just when you assume that Microsoft has created the ultimate CD reference title, it goes and produces something so much better than either its competitors or itself has given us

before, that the whole package blows your socks off.

The **Deluxe** version comes on two CDs, with a study assistant on a third CD to help students keep track of their research. For both the quality and quantity of its content, it stands head and shoulders above the pack.

PCW Details

- Encarta 1998 Deluxe £79.99 (£68.08 ex VAT). Microsoft 0345 002000
- DK World Atlas £29.99 (£25.52 ex VAT). Dorling Kindersley 0171 753 3488
- World Books Discoveries £59.99 (£51.05 ex VAT.) IBM World Books 0990 426426

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Computer Active Magazine, 23rd April '98

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PC Pro magazine, May '98

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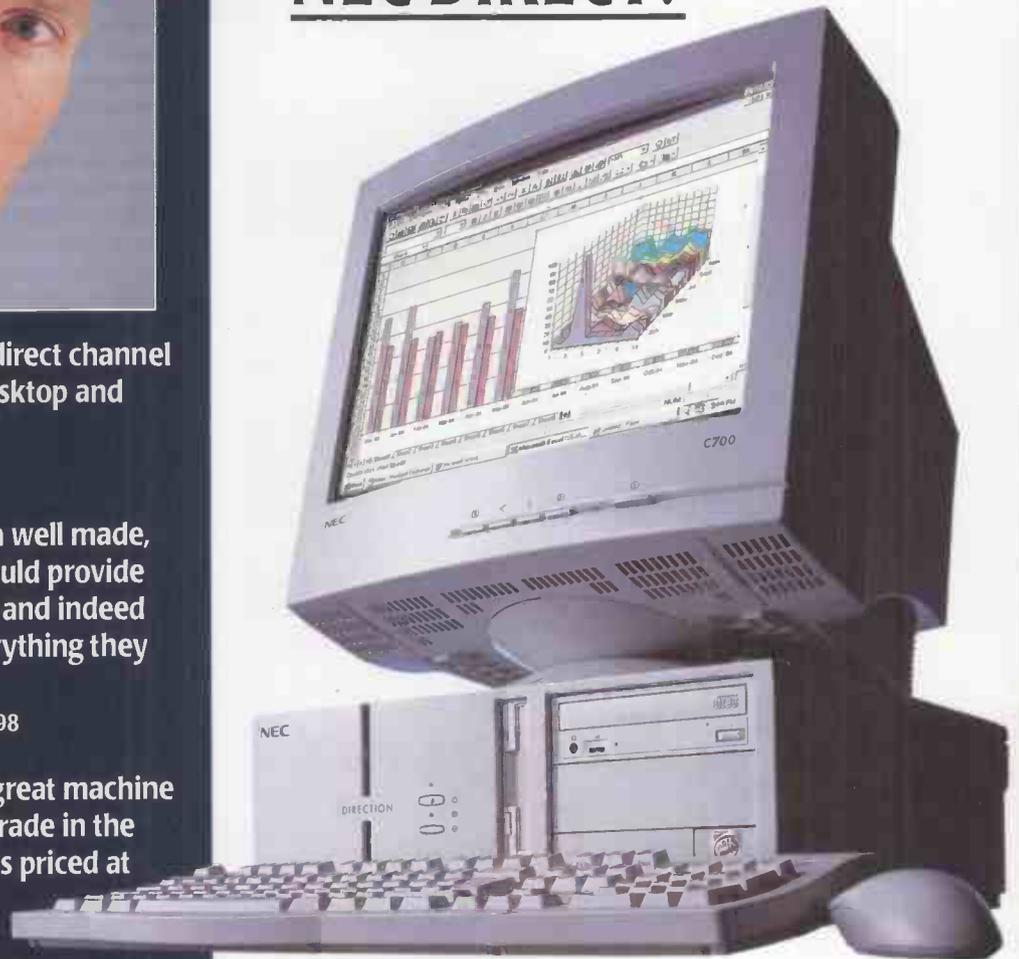
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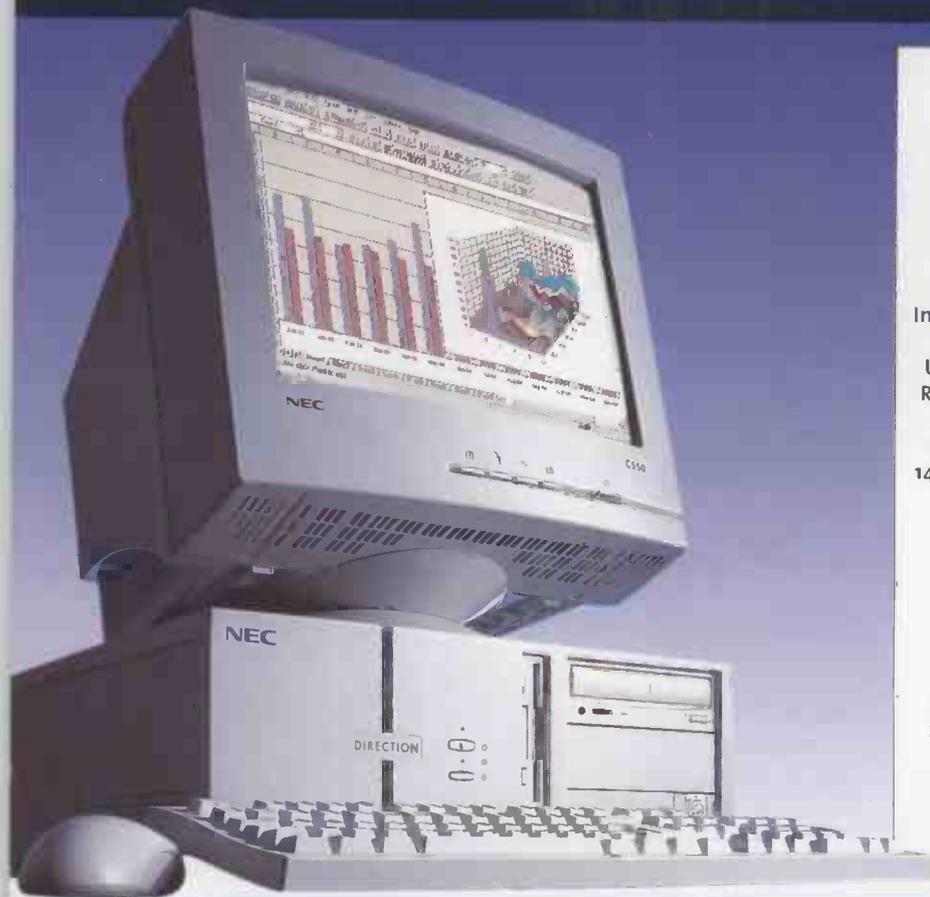
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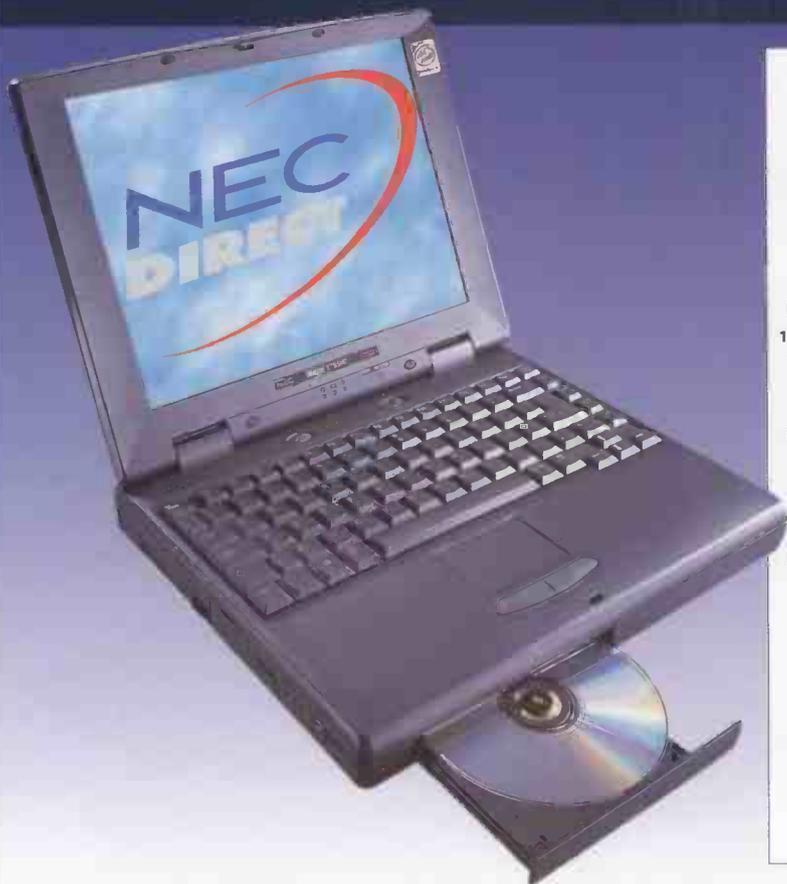
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MARKETING THAT'S MORE DIRECT

Best Web Software: Progressive Networks' RealPlayer Plus

The winners in this category are releasing software that is opening up the internet to an increasingly wide audience, empowering web users everywhere.

E-commerce is something from which most organisations shy away, but with the release of Catalog 2.0, Actinic allowed those with less resources to set up shop on the net. Ideal for small businesses keen to take advantage of the net's myriad opportunities, it lets you trade using the free web space provided by ISPs.

These days it is relatively easy to create your own web site on the net, although making one that is worthwhile to visit is slightly more difficult. We were impressed by the user-friendly, drag-and-drop approach of Adobe's PageMill 3.0, which gets our



second runner-up award. We loved the ease with which you can flip between views, from word processor to web-page preview, at the touch of a button.

The winner is Progressive Networks' RealPlayer Plus. With RealPlayer

installed on millions of PCs across the world, Progressive Networks is redefining the web's use and function. You can download a cut-down version from the internet for free,

although RealPlayer Plus, currently at version 5.0, offers impressive extras. You can record your own audio and video content live from the web and listen to it later, offline, and improve sound and video connections with Perfect Play via its buffer system. You can even customise your own Timecast, a collection of audio and video news delivered to your Player every day.

PCW Details

Catalog 2.0 £410 (£348 ex VAT)
Actinic Software 01932 860524
PageMill £93 (£79 ex VAT)
Adobe 0181 606 4000
RealPlayer Plus \$29.99 www.real.com

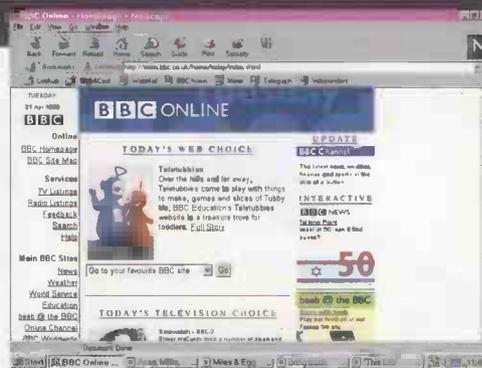
Best Web Site: BBC Online

Last year's PCW Awards divided this category into two sections: Best UK Web Site and Best Web Site Overall. This year, with the continuing homogenisation of global web-based culture, we have selected three sites from the millions that make up the net.

Runners-up this year come in the form of a truly useful site, Streetmap UK, and something to lighten your day, The Onion.

Streetmap shows innovative use of the net. Type in a London street name or postcode for a detailed A-Z style map, or a national OS grid reference or place name for an Ordnance Survey-style drawing of the locality.

The Onion, meanwhile, is the refuge of many an office worker looking for inspiration or just wanting to look busy when the boss passes by. Updated weekly, this spoof news site is guaranteed to have you crying with joy



This year, however, the BBC site in general is rightly awarded our winner's accolade. This well-designed, easy-to-use and engaging site encompasses the whole of the corporation's output. It supplements its broadcast and printed products, and provides connected users with a value-added experience to enhance their enjoyment of the likes of This Life or Kevin and Zoe's Radio1 Breakfast Show.

from the moment you log on.

1997 was the year we saw the first change of government for almost two decades. The coverage of the developing campaign was recorded, deconstructed and analysed on the BBC's dedicated election web site, and for that it won a well-deserved runner-up award.

PCW Details

BBC Online www.bbc.co.uk
The Onion www.theonion.com
The UK Streetmap Page www.streetmap.co.uk

Best Internet Service Provider: Demon Internet

The list of ISPs in the UK is growing by the day. Last year, this category was split into Best Content Provider and Best ISP. But as more ISPs are offering dedicated content, the distinction between the two becomes blurred; so, for our 1998 Awards, they are judged side by side.

Last year's PCW Awards highlighted the improvement in quality of general web standards, but what was said then is equally true today: "There is a level of garbage design out there that is intensely frustrating".

AOL, our first runner-up, is doing its best to eliminate this garbage. Its clear and easy-to-navigate Interface, along with efficient, flexible, email and trial-run facilities, make it an attractive proposition for the first-time online user. Similarly, Pipex Dial, our second runner-up, operating under the umbrella of UUNet, gives users almost worldwide points of



of free web space, unlimited email addresses and an extensive ftp site, make Demon Internet an excellent choice for personal and business users. Running its IRC server, it puts something back into the net for even non-members to enjoy. POP3 customers can collect their email via dedicated web pages, and its sponsorship of TPC's email-to-fax server gives email users worldwide fax for free.

presence through a global roaming facility, and 5Mb of free web space.

The winner of this category for 1998 is Demon Internet which, for £10 per month (ex VAT) offers 100 percent UK local call access on ISDN and standard lines. Five megabytes

PCW Details

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AOL From £4.95 per month (VAT not applicable)
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Pipex Dial £14.98 (£12.75 ex VAT) 0500 474739

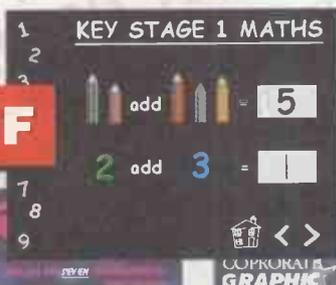
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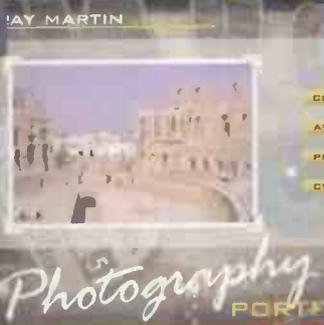
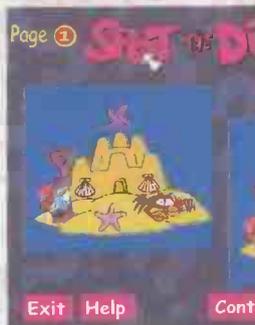
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PCW Awards 1998: Full list of winners

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BEST PC FOR HOME	MESH ELITE PROFESSIONAL PII	0181 452 1111	www.meshplc.co.uk
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BEST INKJET PRINTER	HEWLETT-PACKARD 720C	0990 474747	www.hp.com
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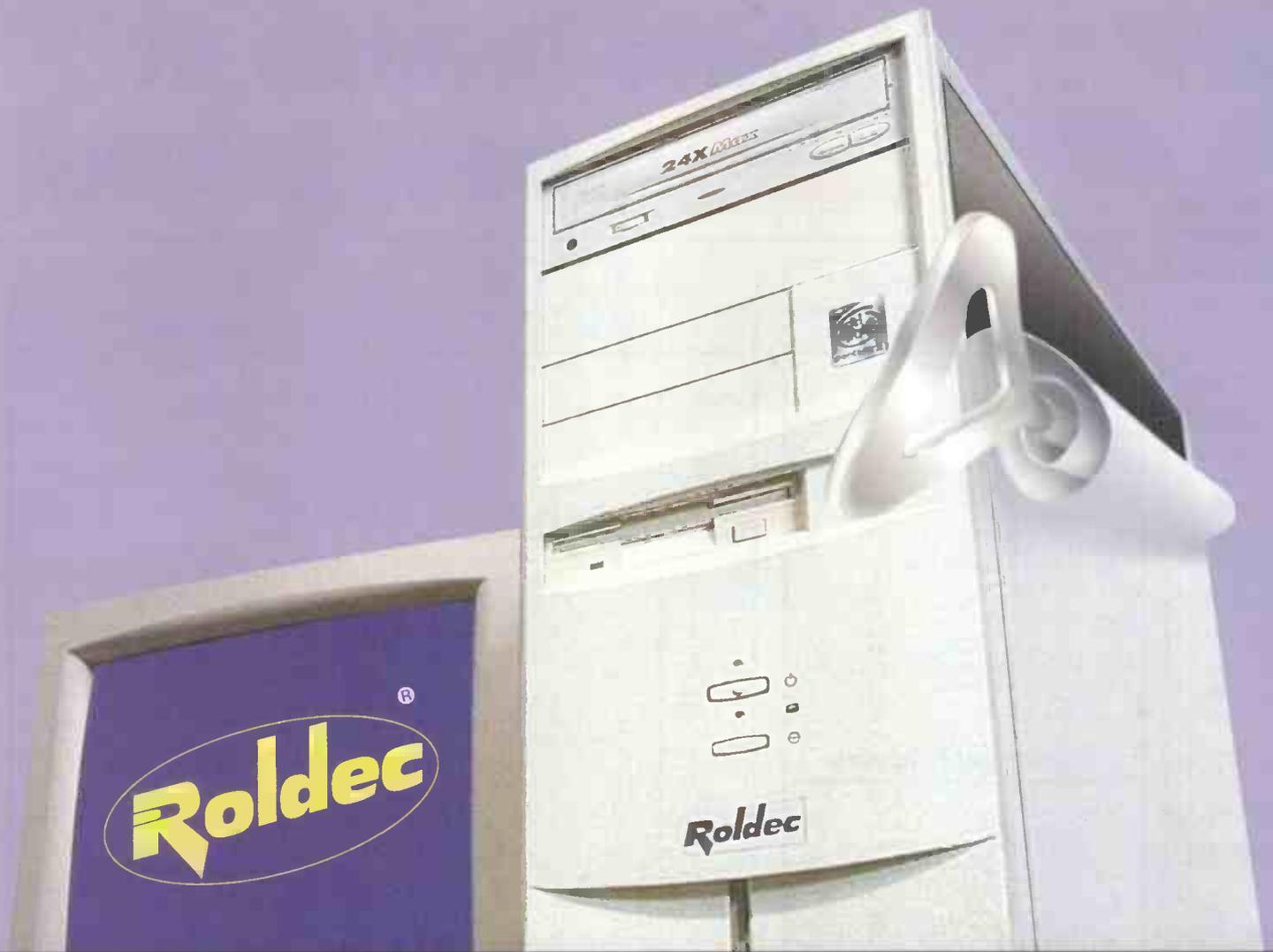
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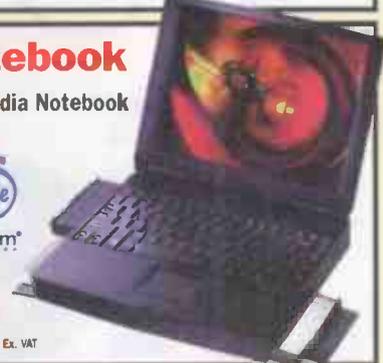
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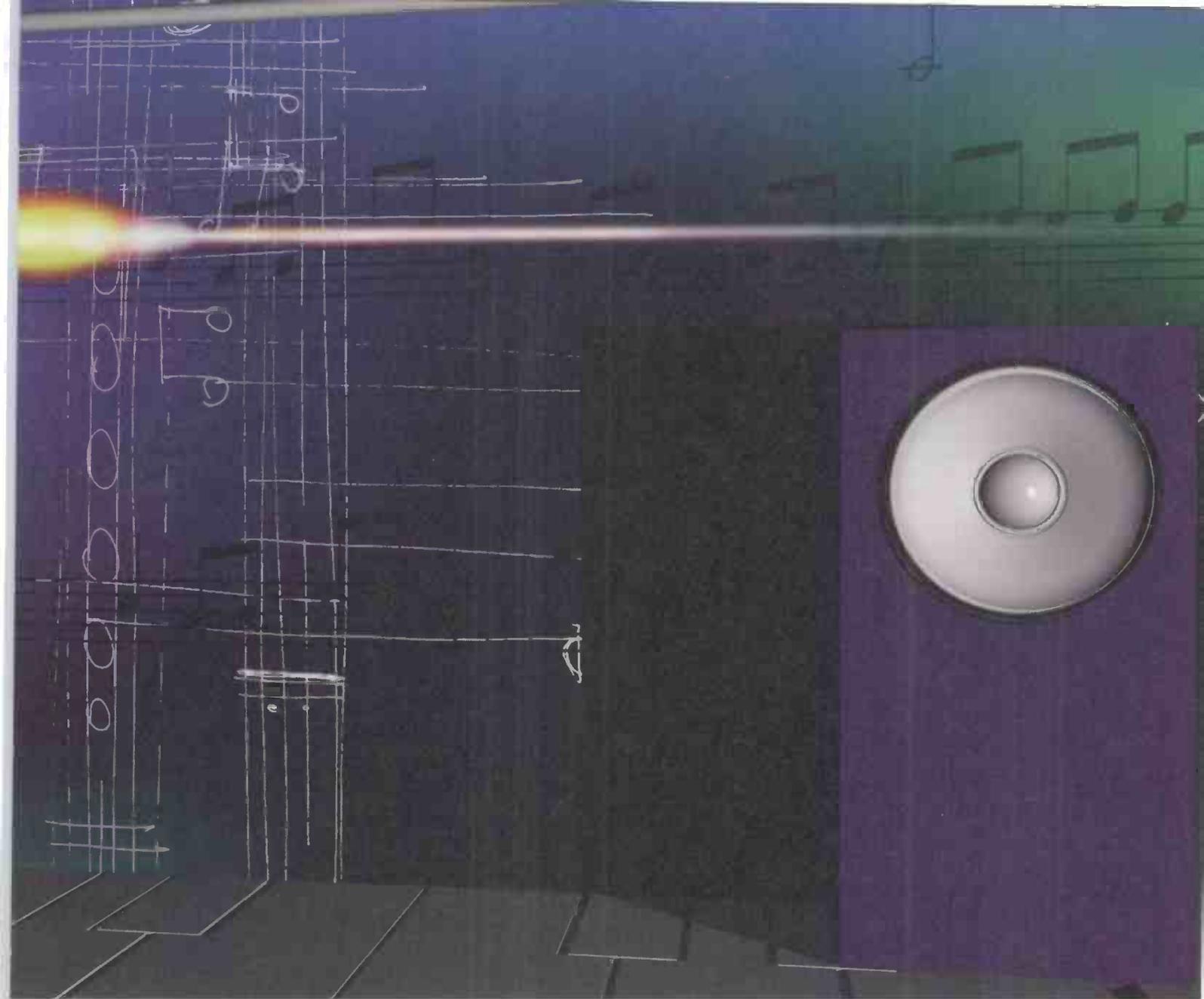
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Stop, look **listen**

You and your PC can make sweet music together: you'll need a sound card and some software to get the best from it. Steven Helstrip reviews a range of products designed to make a musician out of you.



Sound cards are essential if you want to get the most from today's games and multimedia applications. However, SoundBlaster-compatibles are no longer cutting edge, nor up to the job. As PCs continue to plummet in price as their specifications near that of high-end workstations, so something similar is happening in the sound-card market.

If you've ever dreamt of setting up a home studio but thought it would be too expensive, think again. For around £150 you could kit yourself out with a high-quality WaveTable synthesiser, a sampler, audio and MIDI recording software and still have support for all your favourite games with change left over.

For this year's annual round-up of sound cards we've focused on the best packages for making music on your PC; from complete studio solutions to professional, yet affordable, multi-output cards. Gamers shouldn't be put off, though, as we've also

tested the latest PCI 3D accelerator cards to meet the demands of tomorrow's games. And, we take a look at emerging software-based synthesisers that could one day replace sound cards altogether.

Software technology has greatly improved and now anyone can compose, edit and master their own CDs without having to worry about expensive studio time. We've taken a look at some of the most popular packages to appeal to all skill levels, and explained how sound cards work to help you get the most out of them.

● *For a practical guide to making music, see our MIDI workshop on p232 and the Hands On Sound column on p293.*

Ratings

- ★★★★★ Buy while stocks last
- ★★★★★ Great buy
- ★★★★★ Good buy
- ★★★★★ Shop around
- ★★★★★ Not recommended

Sound cards Contents

- 209 Aztech PCI-128 Wave
- 209 Creative Labs AWE-64 Gold
- 209 Diamond Monster Sound PCI
- 209 Event Electronics Gina
- 210 Gadget Labs Wave/4
- 210 Guillemot Home Studio Pro 64
- 210 Orchid NuSound 3D
- 210 Terratec EW64 S
- 212 Terratec EW64 XL
- 212 Turtle Beach Pinnacle
- 212 VideoLogic SonicStorm
- 212 Yamaha SW60XG

- 208 How sound cards work
- 211 Glossary
- 211 PCI and software synthesisers
- 214 Sequencing and audio software
- 218 Audio and sample bank editing
- 219 Table of features
- 221 Editor's Choice

How sound cards work

Before we look at the techniques that sound cards use to do their stuff, let's first recap on the physics of sound, which is key to understanding how digital audio and WaveTable works.

When two or more objects collide, they release waves of energy into the air around us. Sound waves travel in all directions from the disturbance, like the ripples produced when a raindrop falls into a puddle, which in turn produces changes in air pressure. Our brain interprets these changes as sound through sympathetic movement of the ear drums.

Subtle changes in air pressure created from, say, a pin hitting the floor, can just about be heard. But you can often feel the trembling waves that follow a jet aeroplane as it is taking off, and you can even see them if you place a candle in front of a loudspeaker.

When sound is recorded through a microphone, the changes in air pressure cause the microphone's diaphragm to move in a similar way to that of the ear drum. These minute movements are converted into changes in voltage which can be stored magnetically on tape, or as digital information on a computer's hard disk when processed by a sound card's ADC (analogue-to-digital converter).

Sampling

The process of recording digitally is known as sampling. The ADC's job is to take "samples" of the incoming sound many times per second in order to generate a digital representation of its waveform (Fig 1).

Two factors determine the accuracy, and therefore the quality, of the recording: the resolution at which amplitude (or the height of the waveform) is measured, and the rate at which samples are taken. The current crop of sound cards can sample in stereo up to 48kHz in 16-bit resolution, although the standard for both CD and digital audio within games is 44.1kHz, which is why sound-card manufacturers often refer to their products as being "CD-quality".

When it comes to playing back a sample, a digital-to-audio-converter (DAC) converts the binary information back into an analogue voltage. This is amplified many times before appearing as sound from a loudspeaker, which in turn vibrates, causing changes in air pressure.

WaveTable

The second method sound cards use to play audio employs an on-board synthesiser. Although FM synthesis is still widely supported to provide compatibility with older games, newer titles use more realistic WaveTable synthesis. Whereas FM creates sound by mixing basic waveforms to reproduce something that might vaguely resemble a flute, WaveTable plays back samples of the real instrument.

Fig 1 The finer the steps, the better the digital approximation of the original analogue sound

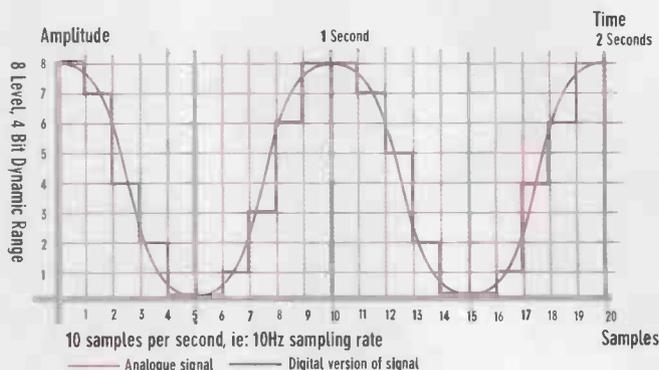
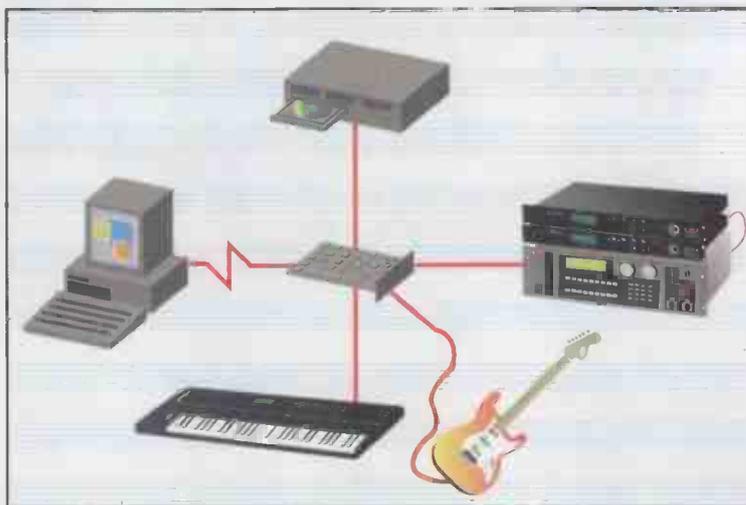


Fig 2 MIDI allows you to connect together many musical instruments and your PC



ISA-based cards generally store samples in ROM, although newer and cheaper PCI products use your PC's main system RAM. These banks are loaded when Windows starts up and can theoretically be modified by games developers to include new sounds. WaveTable banks store up to 700 instrument samples within 1, 2, 4 or 6Mb. This doesn't necessarily mean there will be 700 instruments to play with, though, since instrument patches are made up of several samples to improve their quality.

In real life, instruments produce subtly different tones depending on how they are played. For instance, when a piano is played softly, you don't hear so much of the hammers as they hit the strings. When played harder, not only can you hear the keys and hammers strike, but there are changes in tonal quality as every other string begins to vibrate, or resonate. Instruments also produce differing tones over a range of pitches.

To reproduce these qualities more accurately with WaveTable synthesis, a greater number of samples and additional processes are required. Some cards use tone filtering to change the way instruments sound at differing levels, and Creative Labs, with its software-based WaveSynth, has adopted Physical Modelling. This is a technique some professional keyboards use to further enhance realism by mathematically modelling, say, the differences in tone that are produced when a guitar is plucked as

opposed to being strummed.

Digital effects also enhance the card's quality. These include reverb and chorus algorithms which are calculated by on-board DSPs (digital signal processors). Reverb adds a room quality to a sound, giving the impression that it's being played in, say, a large open space such as a church hall. Chorus is used to add body, or depth, to a sound. It works by continuously varying the speed of a delayed second signal

which, when mixed with the original, "thickens" the tone to sound as though more than one instrument is playing.

MIDI

Musical Instrument Digital Interface (MIDI) (Fig 2) is the protocol over which synthesisers and other MIDI-compatible instruments can be configured and played from a remote device such as a MIDI keyboard or MIDI file. MIDI doesn't transmit sound, just simple 7-bit "events". A sequence of events might instruct the synth to first select a violin on channel 1, then play middle C for two bars followed by a string of other notes. Each "note on" event contains a velocity value to relay how hard the "key" should be struck.

MIDI provides 16 independent channels over which instruments can communicate, and providing the synth has sufficient MIDI implementation, almost any of its parameters can be "tweaked" in real-time from a MIDI sequencer. This enables programmers to "shape" the way instruments sound and enables effects to be modified.

To ensure accurate playback of MIDI files, sound-card manufacturers adopted the General MIDI specification. This lays down a minimum set of requirements for the synthesiser chip, including a standard set of instruments mapped to specific program numbers and the minimum number of voices to be supported. These specifications are often far exceeded by today's cards.

Personal
Computer
World
Highly
Commended

Aztech PCI-128 Wave

The PCI-128 offers hardware and software synthesis based on a 2Mb WaveTable ROM and Yamaha's S-YXG50 softsynth. The S-YXG50 provides incredible 128-voice polyphony (if you have a fast enough PC), three parallel 24-bit effects and 676 fully-programmable instruments. The on-board WaveTable doesn't come close in terms of sound quality, but is compatible with DOS-based General MIDI drivers and is not quite so processor intensive. SoundBlaster and AdLib are supported within a DOS box for older games.

The installation ran first time and includes a taskbar configuration utility for SRS stereo enhancement which, although very effective, introduces a great deal of noise on the output. The softsynth is supplied with an XG MIDI player and can be set up to provide between 24 and 128 voices, depending on your hardware. The card is full-duplex and can mix independent sample rates up to 48kHz. There are connectors for mic and line in as well as speaker and line outputs. Internal connectors provide TAD, auxiliary and CD audio inputs.

Bundled software includes Voyetra's MIDI Orchestrator Plus, AudioStation and a mixture of sound-related utilities. Although the Aztech card will work with a Pentium 166MHz, a 200MHz MMX is recommended for real-time playback of the softsynth. If you're not planning on using this card for sequencing, this should not be an issue.



PCW Details

Price £70.44 (£59.95 ex VAT)

Contact Aztech 0181 400 9043
www.aztech.co.uk

Good Points Yamaha's Softsynth. Reasonable price.

Bad Points Very noisy output.

Conclusion Read on...

★★★★★

Creative Labs AWE-64 Gold

The AWE-32 paved the way for many of today's audio cards, bringing sampling capabilities, WaveTable synthesis and digital output into the mainstream. Its successor, the AWE-64, adds an additional 32 voices with its WaveSynth/WG software synthesiser, 4Mb of sampling RAM and a much cleaner output, though not the best. The WaveSynth generates greater realism than the instruments stored in its 1Mb ROM, but is a drain on resources and requires a Pentium to run. Because it uses the wave channel to output sound, it will have to be disabled if you want to run audio applications like Cubase VST.

A digital output connector, for use with the synthesiser only, is supplied on a blanking plate which connects to jumpers on the card. A MIDI adaptor kit is also included. Setting up the card takes no time at all and installs a generous suite of applications including a MIDI sequencer, wave editor, sample bank editor and a host of internet audio tools. Additional software includes three General MIDI sound banks, voice recognition and text-to-speech utilities.

The AWE-64 Gold is a good all-round performer. Games compatibility isn't an issue, and there's plenty on offer to kickstart your music-making

career. It might not be the best-sounding of the lot, but it's cheap, reliable and full of features.



PCW Details

Price £129.25 (£110 ex VAT)

Contact Creative Labs
01245 265265 www.cle.creat.com

Good Points Includes MIDI interface and does everything.

Bad Points Proprietary RAM. No daughterboard connector.

Conclusion Cheap-and-cheerful solution for basic gaming and music requirements.

★★★★★

Diamond Monster Sound PCI

Based on Aureal's A3D technology, the Monster Sound PCI is designed to work in parallel with your existing sound card to provide accelerated Direct Sound and positional 3D audio. More and more games are supporting A3D, which is likely to catch on as a new standard. It will also work as a standalone card, although there is no support for legacy DOS software.

The WaveTable synth resides on a daughterboard and provides 32 voices from 2Mb ROM with digital effects. There are internal connectors for CD and auxiliary inputs as well as a proprietary modem socket for PC telephony. The rear panel has a line input which would be used to connect your existing card (cable provided), a mic input and two line outs for enhanced four-speaker surround sound.

The card installed first time around and includes a taskbar utility with A3D demos. There are no music applications bundled; instead you get full versions of Outlaws, Sim Copter and Tiger Shark that make use of 3D audio.

Given the range of cards that now support both A3D and SoundBlaster, I can't see why anyone would choose this card which now appears outdated. The WaveTable synth is nothing out of the ordinary and there are no additional features for your money. Apart from the games, of course.



PCW Details

Price £129.25 (£110 ex VAT)

Contact Diamond Multimedia
01189 444400
www.diamondmm.com

Good Points Smooth installation. A3D compatible.

Bad Points No SoundBlaster support. Overpriced.

Conclusion Cannot compete with the competition.

★★★★★

Event Electronics Gina

The Gina is a pro-standard two in, eight output, PCI-based digital audio card for use with

direct-to-disc recording applications. It is supplied with an audio breakout box that provides 0.25in jack connectors for balanced input and unbalanced outs. The rear panel has phonos for SP/DIF digital I/O capable of 24-bit recording and playback up to 48kHz. Analogue inputs will sample up to the same rate in 16- or 20-bit resolution for crystal-clear audio. Input gain is adjustable by half-decibel increments using the standard Windows 95 mixer applet. Alternatively, you can enable EasyTrim to provide automatic gain adjustment to ensure you use the full 20-bit dynamic range.

The card installed without any problems and provides a utility to test your PC's audio performance. A special version of Cool Edit Pro is included in the package, which retains most of the functionality of the full application but lacks the DSP processing and 64-track capability. There are also demos of Cubase, SoundForge and Waves' DirectX plug-ins.

Audio quality is stunning and noise is barely noticeable. With a 98dB dynamic range, this card is ready to take on any job, from the home studio right up to professional applications.

For less money, the Daria version provides much the same functionality but doesn't include the breakout box or digital I/O.



PCW Details

Price Gina £499.38 (£425 ex VAT),
Daria £299.63 (£255 ex VAT)

Contact Key Audio 01245 344001
www.event1.com

Good Points Sound quality. Price.

Bad Points Cable to breakout box could be longer.

Conclusion Stunning quality at an equally stunning price

★★★★★

Gadget Labs Wave/4

If you're planning to use your PC as a virtual studio for recording, say, a live band, then you'll need a multi I/O card. The Wave/4 has two stereo inputs and two stereo outputs to provide four independent channels for recording and playing back digital audio. There's also a MIDI interface providing in, out, and thru, in addition to a daughterboard connector. The connector only supports mini cards, though, which excludes the Yamaha DB50XG. Two cards can be installed to give eight in and outs, which are synchronised via the drivers. All inputs and outputs can be used simultaneously and appear in audio applications as individual cards.

Round the back, the card's got a line out for the WaveTable option, four mini stereo jacks and a D-type connector for MIDI. A MIDI adaptor kit is included, as are four jack-to-phon

converters. All sampling rates up to 48kHz are supported and the card has a signal-to-noise ratio greater than 93dB. To ensure glitch-free recording, the card features a 64Kb static RAM cache.

The Gadget card installed first time and instructions are given to optimise its performance for use with popular sequencers including Cakewalk and Cubase VST. We tested the card with the latter and found that it does exactly what it says on the box.



PCW Details

Price £269.08 (£229 ex VAT)

Contact Et Cetera Distribution
01706 228039,
www.gadgetlabs.com

Good Points Good sound quality. Low noise.

Bad Points Daughterboard connector.

Conclusion A good-quality multi I/O, although you don't get a lot for your money.

★★★★☆

Guillemot Home Studio Pro 64

If you're setting up a home studio, you'll find much of what you need here. This is an impressive card, based around the Dream chipset, offering a complete 16-track direct-to-disc recording suite. For sequencing there's a MIDI adaptor kit, high-quality 64-voice WaveTable synth with user sample support, real-time four-band parametric EQ and digital effects for all audio sources. A second daughtercard provides gold-plated phono connectors for line in/out and SP/DIF digital I/O. This does not require an additional slot and connects to the main board via a ribbon cable. The installation caused problems initially but a clean installation of Windows did the trick and we were soon sequencing.

Support is provided for all major sound standards, including DirectSound 3D and SoundBlaster emulation in Windows and DOS modes. The main board has line and mic inputs and two line outs for four-speaker positional audio. A utility is supplied with configurations for many current games titles and is good for 800 user presets. Bundled software includes

proprietary Quartz Audio Master for audio and MIDI sequencing, a sample bank manager and Cakewalk Express. Audio quality is excellent, and upgrade options include

WaveTable daughterboard and user RAM to 20Mb maximum.



PCW Details

Price £249.10 (£212 ex VAT)

Contact Guillemot 0181 944 1940
www.guillemot.com

Good Points Price. Professional spec. Intuitive software.

Bad Points 44.1kHz maximum sampling rate.

Conclusion High-quality board for music production. Not to be overlooked.

★★★★☆

Orchid NuSound 3D

The NuSound is based on Aureal's Vortex chipset to provide up to 64-voice WaveTable synthesis and A3D Interactive positional audio, which looks set to become the standard for Win95 games. The hardware installed with no problems, although DLLs were missing for the A3D demos, as were three games which are supposed to be included in the package. We eventually found the missing DLLs and finished the installation manually, but we are still searching for the games.

Successfully-located applications were supplied by Voyetra and include MIDI Orchestrator, Audio Station and a rather disappointing range of utilities that we would have expected to see bundled with cards three years ago. However, there's full SoundBlaster support in Windows and DOS modes, for older games.

The Orchid card has internal connectors for CD audio, auxiliary, and video devices such as DVD. A Tad port enables compatible modems to be connected to provide two-way telephonic communications. Round the back there's the usual complement of connectors for speaker output, mic and line in. These are colour-coded, which is a great help when you're crouched behind your PC trying to remember which lead plugs in where. We weren't blown away by the WaveTable synth, which lacked any depth, but the digital audio output was clean and noise free.



PCW Details

Price £49.35 (£42 ex VAT)

Contact Orchid 01256 479898
www.orchid.com

Good Points Cheap. A3D compatible.

Bad Points Poor software

Conclusion Good card for the money, shame about the software.

★★★★☆

Terratec EWS64 S

Whereas the EWS64 XL (p212) is geared to pro-audio applications and has games compatibility, the 64S is primarily a games card with some pro-audio features. Like the XL, it shares the same sampling capabilities (and much of the same software) and offers hardware-accelerated DirectSound and Direct3D. The synth/sampler provides up to 64 voices with real-time digital effects for all audio sources, and there's 2Mb of WaveTable RAM, expandable to 64Mb.

The 64S was the only card to arrive in an aluminium flight case. Installation was successful first time around, setting up all that's needed including a copy of Cubase AV for combined MIDI and audio sequencing. Also on the accompanying CD are demos of Cubase VST, ReBirth, squillions of samples and no less than 40 shareware audio utilities. The sound quality is better than any other card in this price range and although the GM sound set isn't groundbreaking, additional banks, which can also be found on the CD, can be downloaded if you install extra SIMMs.

Round the back there are two line outputs for four-channel sound, mic and line inputs. A digital I/O option is available, adding both optical and SP/DIF functionality. For gaming and audio applications, this card is gonna take some beating.



PCW Details

Price £149.23 (£127 ex VAT)

Contact Terratec 01600 772111
www.terratec.co.uk

Good Points Price. See review for the rest.

Bad Points We looked for some but failed.

Conclusion Nothing comes close at this price.

★★★★☆

Personal Computer World
Highly Commended

Personal Computer World
Editor's Choice

PCI cards and software synthesisers

The first generation of PCI cards is now coming to light and will provide enhanced features and performance for both gaming and music applications. But why PCI?

As greater demands are made on audio processing, traditional cards fall short due to the physical constraints of the ISA bus. The problem is bandwidth. The ISA bus can only throughput 7Mb of data per second, compared with 133Mb over the PCI bus. This limits audio to just 16 channels — more than enough for any game. But for professional audio applications, 32 (or better, 64) channels are preferred. Some ISA cards implement proprietary technology to increase throughput, but it's in everyone's best interests that the industry moves towards a standard.

PCI-based cards deliver greater performance. Due to high overheads inherent with ISA technology, it is estimated that up to 20 percent of a CPU's capacity can be blocked when playing a 16-bit stereo sample at 44.1kHz. PCI significantly reduces the performance bottleneck, freeing up the CPU.

Perhaps the greatest gain for the consumer is a sharp drop in price for a basic gaming card that has increased functionality over traditional SoundBlaster-compatibles. Due to PCI's high bandwidth, WaveTable sample banks can be stored in main system memory so there's no need for expensive ROM chips, but you're left with less memory. This is not to say that all PCI cards will work in this way. Aztech's PCI-128 Wave provides both hardware and software WaveTable technology, and Yamaha is developing a high-end XG card with a 20Mb WaveTable ROM.

DirectX

Microsoft's role in this has been the development of DirectX drivers, which includes DirectSound and Direct3D. This enables software developers to write directly to any DirectX-compatible sound card with multiple audio streams, while utilising 3D audio effects. Each audio channel can be treated individually, supporting multiple



Fig 1 (top) Yamaha's virtual synth sounds and looks real
Fig 2 (above) ReBirth's great for creating dance music

sample rates and the ability to add software-based effects.

In the past, individual sound cards were written for specifically, and not all were compatible. Now, though, the SoundBlaster's register set is widely supported by sound-chip vendors and is unlikely to disappear overnight.

So should you rush out and buy a PCI card? Our advice is, not yet. From the cards we have seen, none have excelled in all areas. There will be no shortage of options over the coming year though, as the industry moves towards a better standard.

Software synthesisers

A software-based synthesiser uses your PC's CPU to generate tones in real-time. But we're not just talking basic FM waveforms here. Both Yamaha and Roland have implemented full XG and Sound Canvas emulation respectively. Not only are all the instruments software-generated, but the effects are, too.

Yamaha's S-YXG50 can provide up to 128 voices with selectable playback frequency up

to 44.1kHz. Although a 200MHz Pentium is recommended, it will run on a basic 166MHz with 16Mb RAM. The software provides an XG MIDI player (Fig 1) and a virtual MIDI device driver. There is some delay when playing instruments in real-time from a MIDI keyboard, but playback is solid from a MIDI file and the quality is stunning.

The playback comes through your sound card's wave channel, or DAC. If you have a high-quality card there's no reason why it shouldn't sound every bit as good as the DB50XG daughterboard. A 90-day demo is available from Yamaha's web site and you can download a cut-down version, the SYG20, for slower machines. The SYG20 is limited to 32 voices and 22kHz playback, but it still far outstrips the WaveTable ROMs supplied with many sound cards.

Other software-based synthesisers, like ReBirth 338, mathematically model the characteristics of vintage analogue synths, which are highly sought-after among the dance fraternity. ReBirth provides two virtual Roland TB-303s and two drum machines (Fig 2). All the knobs and dials work in real-time, affecting the tone and shape of the sounds. A sequencer is built-in to each module and there are digital effects to hand, including delay and distortion.

You can synchronise ReBirth to a MIDI sequencer, literally adding four virtual instruments to your collection. Several shareware clones are available on the internet. Check out Rubberduck, which additionally provides two audio channels for playing sampled loops.

PCW Contacts

ReBirth www.propellerheads.se

RubberDuck, Virtual Sound Canvas and other soft synths <http://sorry.vse.cz/maz/synths.html>

Yamaha S-YXG50 www.yamaha.co.uk/

Glossary

ADC (Analog to Digital Converter)

A device that takes an analogue signal and converts it to numerical digital data.

Chorus

A doubling effect used to enhance sound.

CODEC

Single chip ADC/DAC with analogue mixer.

DAC (Digital to Analog Converter)

The reverse operation of an ADC.

DSP (Digital Signal Processor)

Used for calculating effect algorithms.

FM (Frequency Modulation)

Old technique for synthesising instruments but still widely supported to provide compatibility with older items.

Full Duplex

A card that can record and playback digital audio simultaneously.

Gain

Input or recording level.

GM (General MIDI)

A specification enabling MIDI files to be played back correctly on any GM-compatible synthesiser.

MIDI (Musical Instrument Digital Interface)

Protocol for instruments to communicate over 16 independent channels.

Multi-Timbral

The number of simultaneous instruments a synthesiser can play.

Polyphony

The number of voices a synthesiser can play at any one time.

Sequencer

Software for recording and editing MIDI files.

SP/DIF (Sony Philips Digital Interface)

A protocol for transferring audio digitally.

WaveTable

A bank of instrument samples stored in RAM or ROM.

XG

Yamaha's extension of General MIDI that provides many instrument variations and more digital effects. Many instrument parameters can be controlled in real-time.

Terratec EWS64 XL

It's difficult to know where to begin with this card — there's so much to talk about. As well as offering full games and DirectX compatibility, the EWS64 XL has all the features for music production you could ask for. It has not just one digital output, but two. And it's got both SP/DIF and optical digital inputs, too. With two MIDI interfaces and two stereo line inputs/outputs, we have here a potentially seriously desirable card.



To support these features, the card has a front panel that fits in a 5.25in bay to provide a headphone socket, MIDI and digital I/O. Inside there's a daughterboard connector for an additional synth. The onboard synth/sampler has 6Mb RAM (expandable to 64Mb) and provides up to 64-voice polyphony. DSPs provide real-time digital effects for all audio sources and, in principle, hardware mixing for up to 32 stereo channels.

Sample editing and sample bank management rivals that of professional samplers, enabling up to 64 keyboard splits, velocity switching and 24dB resonant filters. With all this, and the rest, we were expecting conflict nightmares. We were wrong. Plug-and-play saved the day and we were up and running in less than five minutes. Sound quality is superb, though not as rich as the Pinnacle (alongside), and the software implementation and design is very powerful, if a little intimidating.

PCW Details

Price £399.50 (£340 ex VAT)
Contact Terratec 01600 772111
www.terratec.co.uk
Good Points Cascadable. Excellent software. Sound quality.
Bad Points Price is a tad steep when you compare the spec to the EWS64 S.
Conclusion Nothing else offers this much at this price.
 ★★★★★

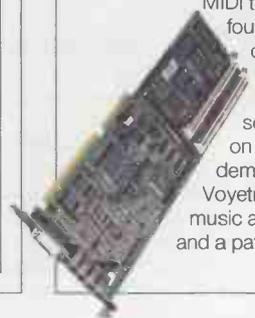
Turtle Beach Pinnacle

This is Turtle Beach's top-of-the-line card, featuring pro-standard WaveTable synthesis, daughterboard connector, sampling capabilities and digital I/O option. The installation ran first time on our test machine under a plug-and-play configuration. Two IRQs are required (three if you enable the EIDE interface), in addition to a 32Kb block of upper memory and three I/O ranges. Although it's heavy on resources, CPU usage is minimal due to the cards's Hurricane architecture that pumps audio through, up to eight times faster than DMA-based cards such as the AWE-64.

There's no support for DOS games, but under Windows this card really performs and is best suited to audio applications. You can forget noise issues: the Pinnacle is so quiet, you won't know it's plugged in. The 4Mb Kurtzweil synth is lush, and up to 48Mb can be installed for additional samples. The 20-bit analogue/digital converters are clean, equalling those of professional samplers.

The Pinnacle's sampling software is disappointing and doesn't

let you tweak the basic synth parameters like filters and LFOs. Applications include Digital Orchestrator SE, which provides effects processing, unlimited MIDI tracks and four audio channels. There are 24Mb of sound banks on the CD, demos of Voyetra's range of music applications and a patch librarian.



PCW Details

Price £448.85 (£382 ex VAT), or £498.20 (£424 ex VAT) with digital I/O option
Contact Et Cetera Distribution 01706 228039 www.tbeach.com
Good Points Overall sound quality is second to none.
Bad Points Disappointing software support.
Conclusion If audio quality is your main concern, look no further.
 ★★★★★

VideoLogic SonicStorm

This is VideoLogic's debut sound card and was one of the first PCI audio solutions. Based on the Maestro-1 processor, the Sonic Storm can handle up to 64 audio channels and provides acceleration for DirectSound and DirectSound 3D. Its 2Mb WaveTable bank is stored in main system memory, keeping its price low, while the DSP provides digital effects and 64-voice polyphony. The quality of instruments is disappointing, but given that games are moving away from WaveTable sounds in favour of CD and sampled audio, this is becoming less of an issue. The Sonic Storm provides SoundBlaster support for DOS-based games, providing they run under Windows. We experienced MIDI timing instability in this mode, however, which resulted in the music sounding jumpy. There were no problems with DirectX applications.



First attempts at installing the card proved fruitless. Swapping the card to another slot solved the problem and we were in. All software and help files are accessed using a web browser, which simplifies the process and provides links to VideoLogic's home page for updated drivers. Bundled software includes a trial version of Dance eJay (see page 293, this issue), Midisoft Studio Lite and MixMan's 3-Mix, which lets you be a virtual DJ. The card has internal connectors for video, a PC speaker and an auxiliary input. All in all, a reasonable games card.

PCW Details

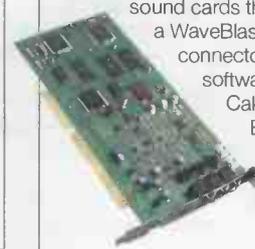
Price £48.18 (£41 ex VAT)
Contact VideoLogic 01923 260511 www.videologic.com
Good Points Price. Reduced CPU load over ISA cards.
Bad Points Poor sound set and unstable SoundBlaster support
Conclusion Well-equipped games card for newer items.
 ★★★★★

Yamaha SW60XG

Even though this card has been around for nearly two years, few sound cards have come even close to matching its high-quality WaveTable sounds. Based on Yamaha's XG chipset, which can be found at the heart of professional synthesizers in studios all over the world, the SW60XG provides a 32-voice polyphonic synth with three parallel 24-bit DSP effects. With 676 voices and 21 drum kits stored in 4Mb ROM, a rich and full sound is produced, with greater realism than any other all-in-one solution.

The SW60XG is a WaveTable card only and is intended for use alongside your existing sound card. With no digital audio or whizzy 3D enhancements, it requires no IRQs and is therefore a breeze to set up. Your existing card connects to the line input, enabling both to be heard simultaneously. Disappointingly, the relevant cable is not supplied. You'll also find a microphone connector round the back, which can be routed through the internal DSPs to be enhanced by one of 64 effects. These include reverbs, choruses, delays and pitch-shift algorithms.

When using the effects with an external device (mic or line input; any will do) the synth is reduced to 30 voices. The daughterboard equivalent, the DB50XG, is compatible with sound cards that feature a WaveBlaster connector. Bundled software includes Cakewalk Express and bags of XG MIDI files.



PCW Details

Price £149.23 (£127 ex VAT)
Contact Yamaha 01908 366700 www.yamaha.com
Good Points Quality and depth. 18-bit resolution.
Bad Points Hmmm... 64 voices would have been better.
Conclusion If you're looking for high-quality WaveTable sounds and already have a sound card, buy an SW60XG, now.
 ★★★★★



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**ADI** MicroScan
Display Excellence
www.adi.com.tw

Sequencing and audio software

To make music with your PC, you'll need a sequencing package. Sequencers let you record and edit MIDI and digital audio in a variety of ways and are now easier to use than ever. Nearly every sound card in this group test came with a sequencer, and although mostly cut-down versions of professional packages, they provide more than enough functionality to create a masterpiece.

To get the most from a MIDI sequencer, you need a MIDI keyboard to play-in the parts. They start from around £70 and connect to your sound card using a MIDI adaptor kit (around £15). If you don't want to splash out on a MIDI keyboard, multimedia has brought dozens of applications that will work with just your PC's keyboard and a mouse. Many require no musical knowledge to get great results and can encourage children to take an interest.

The best thing about music applications is that they don't require the latest and fastest PCs to run. A 133MHz Pentium with 16Mb RAM will suffice and any 16-bit sound card can be used. High-end audio sequencers like Cubase VST are the exception. As they rely on the CPU to calculate real-time digital effects, a 200MHz Pentium fitted with 64Mb is recommended. Given the size of digital audio files, a fast hard drive is also important for solid playback of multiple tracks.

Here we have rounded up a selection of music applications for all skill levels. And in our Hands On Sound column (p293), there's a review of Dance Jaj.

Cubase

With three releases on offer, Cubase caters for all levels of MIDI and audio sequencing. It's quick and easy to learn, and is established as the industry standard. For newcomers,

Cubasis Audio provides eight tracks for audio, unlimited MIDI tracks and basic editing facilities. Cubase VST is a powerful all-in-one studio solution. There are 32 tracks for audio and a bundle of professional, real-time digital effects. Each audio channel provides a four-band parametric EQ and the whole system can be automated. Cubase Score provides all this, plus professional notation editing. The main screen has an intuitive design.



Above Cakewalk Professional provides eight tracks for digital audio and as many MIDI tracks as you can throw at it

Right Cubase VST puts a mind-blowing professional studio right on your desktop. You'll need a fast PC to get the most from it, though

Tracks are displayed to the left and recorded parts are shown as blocks to the right. MIDI and audio are seamlessly integrated, and parts can be picked up and dragged to new tracks, copied and spliced with total freedom. You can learn the basics of Cubase in minutes, and get a tune up and running in no time. There are stacks of editors hiding behind the dropdown menus and more gadgets than we have space to mention. Without a doubt, the best sequencer around.



audio tracks, pro score editor, a full complement of sync options and much more.

Mixman Studio

Mixman is included with several cards in this group test and is one of the most gratifying sequencing packages. You remix pre-recorded songs by "dropping in" musical clips that are pre-assigned to keys. You can set the drums in motion, fire up a bass line, trigger a vocal sample and add your own sounds over the top. Because the samples are always looping, it doesn't matter when you drop them in — they'll still be in time and fit musically.

Mixman is also a well-featured 16-track studio with some high-end gizmos like pitch-shifting and auto time-scaling. In the studio, you can plug in a mike or guitar and record your performances over the top. You can structure and record complete songs before outputting the file to a wave file for making a CD. There's a good choice of dance-orientated styles, including hip-hop, house and techno, and well-known bands have released albums in Mixman format.



Mixman Studio enables you to remix the latest dance craze in the comfort of your own home

Cakewalk Express

If you're on a tight budget, take a look at Cakewalk Express. We don't find this package as easy to work with as Cubase, but it offers similar features and two tracks for audio.

There's a notation editor which enables you to print scores, and a virtual MIDI keyboard for entering notes with your mouse. There's also an upgrade path via Home Studio to Cakewalk Professional.

Home Studio has four audio tracks with a mix-down option, and better editing and notation editors. Professional extends functionality to include digital effects processing, eight

PCW Details

Steinberg Cubase

Price Cubasis Audio £146.88 (£125 ex VAT; bundled with Terratec cards). Cubase VST £386.58 (£329 ex VAT). Cubase Score £586.33 (£499 ex VAT)

Contact Harman Audio 0181 207 5050 www.steinberg.net

Cakewalk

Price Cakewalk Express £57.58 (£49 ex VAT; bundled with AWE-64, Home Studio Pro and SW60 XG). Cakewalk Home Studio £116.33 (£99 ex VAT). Cakewalk Professional £233.83 (£199 ex VAT)

Contact Et Cetera Distribution 01706 228039 www.cakewalk.com

MixMan

Price MixMan Studio £46.94 (£39.95 ex VAT)

Contact Time + Space 01837 841100 www.timespace.com

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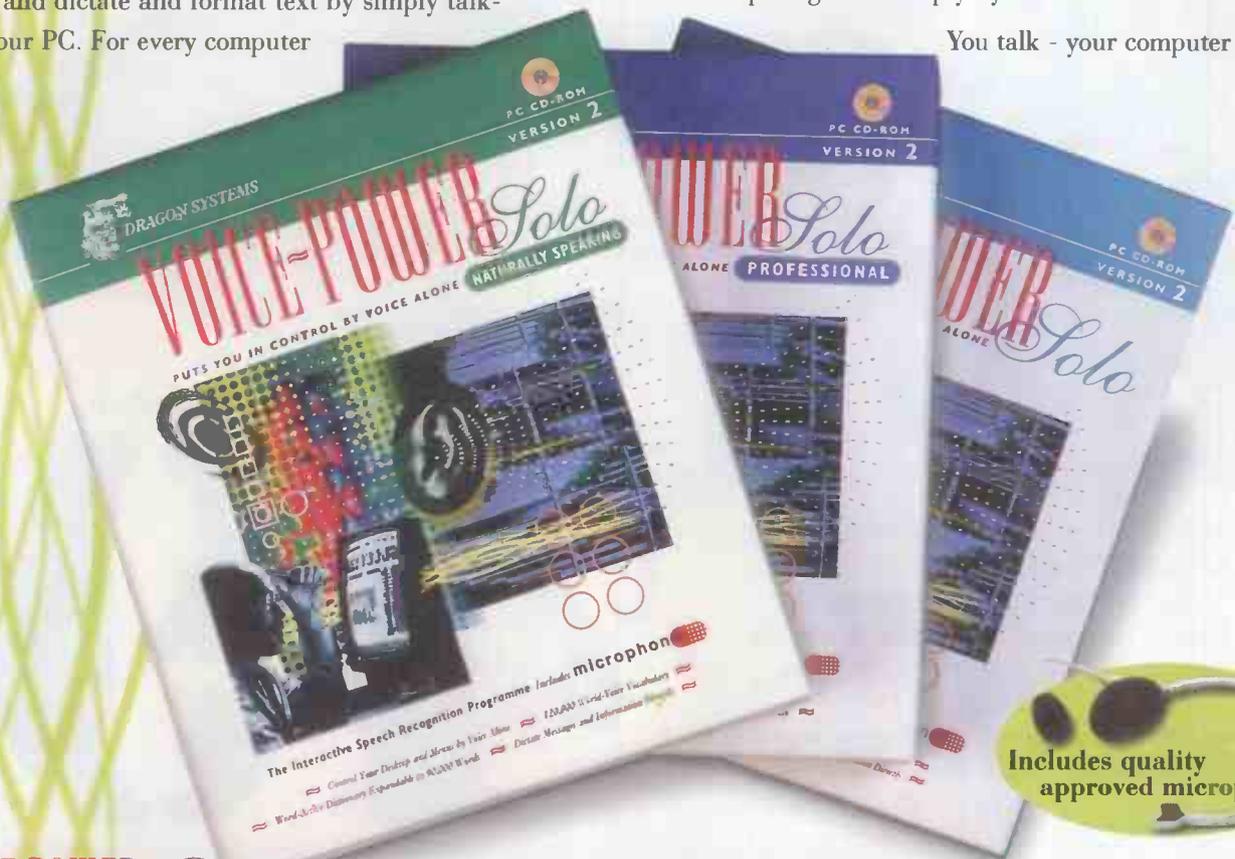
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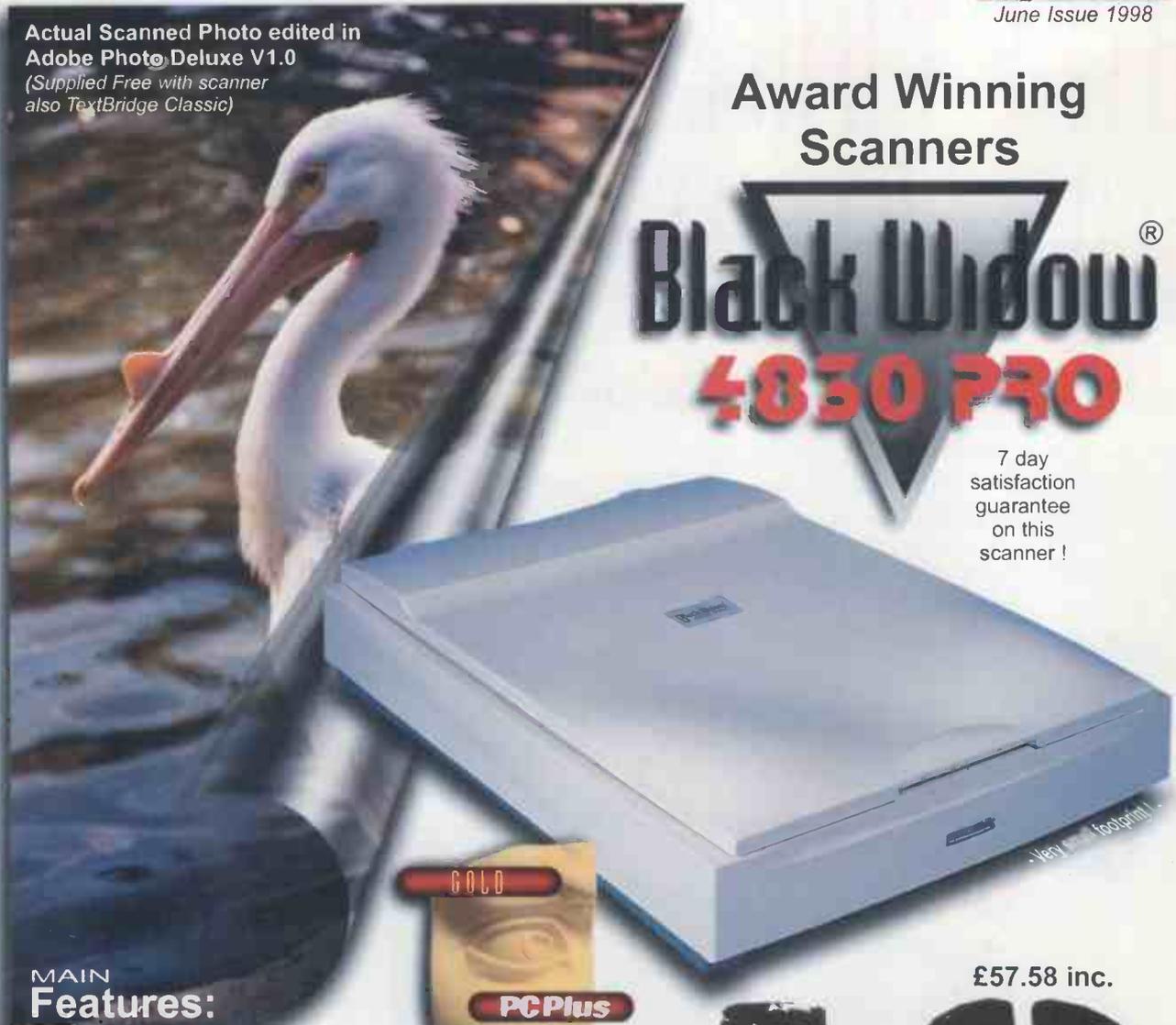
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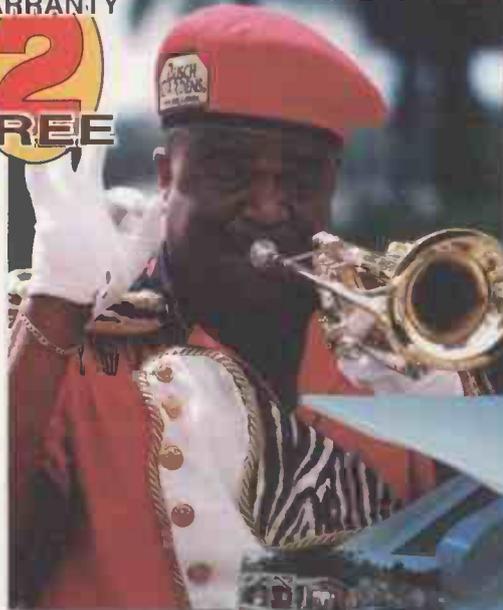
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Audio and sample bank editing

Digital audio editing has come a long way since the release of Windows 95, which enables 32-bit native applications to perform real-time effects processing and allows them to work internally up to 24-bit resolution. These are features that were once exclusive to CD mastering studios, powered by high-end workstations. Now the technology is available for the PC.

But before we look further into the capabilities of current software, let's cover the basic principles and why you might want to use an editor in the first place.

On the crest of a sound wave

Every sound card comes with audio editing software. Some of you will be familiar with Wave Studio, which has been bundled with Creative Labs' cards since the early SoundBlaster days. It's best to think of an editor as a high-quality virtual tape player: when you load up a file, the "tape" is laid out in front of you, displaying its contents as a graphical waveform. Because we're dealing with digital audio, or a tapeless system, it is possible to jump to any point of a recording with the click of a mouse.

The most basic editing features you'll come across let you increase the gain (volume) of a file, remove unwanted sections and change the pitch. When working with audio-equipped sequencers you might record a vocal and decide to keep only a short section from the middle. As audio files take up large amounts of hard-disk space, you'll want to lose the unwanted sections or "crop" the inspired middle bit. Then you might like to hear how it sounds played backwards, perhaps with a touch of echo and with all the bass, or lower frequencies, removed.

Most users will find the editor with their sound card does almost everything they need, including the above example. But if you're interested in sound design, music production, audio for the internet and post-production, you'll need something more versatile.

WaveLab

WaveLab is a powerful two-track editing suite that covers every aspect of audio manipulation through to the CD mastering stage. Using multitasking and 32-bit processing you can apply effects in real-time while loading another file, say. It incorporates an audio database, supports batch processing and provides unlimited and instant undo functions.

WaveLab ships with a range of mastering tools that include Steinberg's high-quality EQ-1 algorithms, a stereo expander and a range of effects. With support for DirectX and proprietary plug-in modules, you can update the processes as your needs change. There are already around 50 third-party plug-ins ranging from compressors and gates through to de-clicking modules capable of removing vinyl scratches, clicks and pops. When you have completed your master, you can burn a CD to Red-book standard, including full PQ coding of track markers.

Version 2.0 will be shipping by the time you read this and will integrate direct sampler support with looping functions, enabling



Left Here's Wavelab utilising Opcode's DirectX Vocoder Plug-in and EQ-1 module

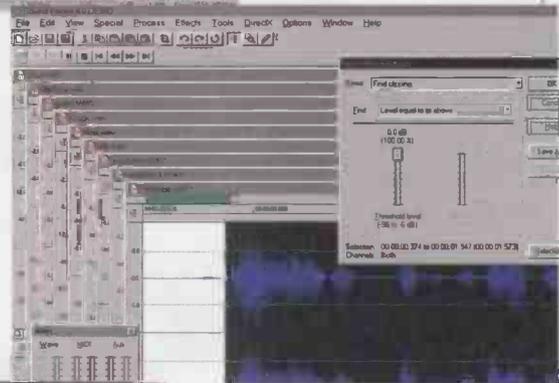
Below Soundforge can handle squillions of audio file types and has SCSI support for external samplers

Below, left Wien removes all the hard work associated with creating soundfonts, automatically looping and assigning samples to keygroups

processed recordings to be transferred via SCSI. Two new plug-ins will be included: Peakmaster, for adding a soft, real-time compression, and Puncher, for giving more attack to over-compressed rhythmic material.

SoundForge

SoundForge offers many features similar to WaveLab's, but is better suited to synchronising to video and general multimedia and



pitch, panning, amplitude and filter settings. You can allocate samples to a range of keys, commonly known as keyboard "splits".

Going for gold

Wien is a new bank manager for Creative's SF2 format, supported by the AWE-32 and 64 and now Terratec's EWS cards. It is supplied as part of a Soundfont package called Wave It Gold. Wien does the hard work for you. Select a group of samples off disc, drop them beneath the keyboard, and Wien detects their

itches and assigns them to the appropriate keys. Samples are intelligently looped and keygroups set up. It really works, and can save you hours of editing time.

internet use, supporting a vast range of sound formats. Although there is no CD support, one feature many will find useful is the ability to trigger audio regions via MIDI, treating it as a sampler. There's extensive support for external samplers and DigiDesign's SampleCell II. Patches can be transmitted and received via SCSI or MIDI and loops can be set up. A pop-up MIDI keyboard lets you preview samples at different pitches.

Basic tools include graphic and parametric EQs, waveform synthesis and tempo analysis. For large files, the auto-search for waveform glitches is handy. Native plug-ins include vinyl restoration, spectrum analysis and noise reduction. DirectX plug-ins are supported.

Sample bank managers

These enable you to create new instrument sets for downloading to your sound card's RAM. Part of editing sample banks includes the ability to tweak synth parameters, allowing you to control how samples are shaped and played back. Common parameters include

PCW Details

Sonic Foundry SoundForge

Price £349 (£297.02 ex VAT)

Contact SCV 0171 923 1892

www.sfondry.com

Steinberg Wavelab

Price £329 (£280 ex VAT)

Contact Harman Audio 0181 207 5050

www.steinberg.com

Wave It Gold

Price £70.44 (£59.95 ex VAT)

Contact Harman Audio (see above)

Table of Features						
Manufacturer	Aztech	Creative Labs	Diamond	Event Electronics	Gadget Labs	Guillemot
Sound Card	PCI-128 Wave 3D	AWE-64 Gold	Monster Sound	Gina	Wave 4	Home Studio Pro 64
Telephone Number	0181 400 9043	01734 344322	01189 444400	01245 344001	01706 228 039	0181 944 1940
URL	www.aztech.co.uk	www.cle.creat.com	www.diamondmm.com	www.event1.com	www.gadgetlabs.com	www.gullemot.com
Price inc. VAT/ex. VAT	£59.95/£51	£129.25/£110	£129.25/£110	£499.38/£425	£269.08/£229	£249.10/£212
Bus Type	PCI	ISA	PCI	PCI	ISA	ISA
Minimum PC Specification	Pentium 166, 16Mb	Pentium 90, 8Mb	Pentium 90, 8Mb	Pentium, 16Mb RAM	486, 75+MHz	Pentium 90, 8Mb
FM Synthesis	●	●	○	○	○	●
Sound Blaster Compatible	●	●	○	○	○	●
WaveTable Synthesis	●	●	●	○	○	●
WaveTable Memory	2Mb ROM / 4Mb RAM	1Mb ROM / 4Mb RAM	2Mb ROM	○	N/A	4Mb RAM
WaveTable DaughterBoard	○	○	●	N/A	●	●
Connector						
Max User RAM	N/A	Additional 8Mb	N/A	N/A	N/A	20Mb
Number of Voices	128	32 + 32 software	32	N/A	N/A	64
Digital Effects	●	●	●	○	○	●
3D Positional Audio	●	●	●	○	○	●
Claimed Signal to Noise Ratio	(Not stated)	90dB	80dB	98dB	93dB	> 91dB
Digital Input	○	○	○	●	○	●
Digital Output	○	Synth only	○	●	○	●
Line Output	●	●	● (x2)	● (x8)	● (x2)	● (x2)
Line Input	●	●	●	Balanced input	● (x2)	●
Microphone Input	●	●	●	○	○	●
Sample Bank Manager	N/A	●	○	N/A	N/A	●
MIDI Sequencer	MIDI Orchestrator Plus	MIDI Orchestrator Plus	None	Demo of Cubase	None	Cakewalk Express
Digital Audio Editor	Voyetra	Wave Studio	None	Cool Edit	GoldWave	Sound Impression
Games	○	○	Outlaws, Sim Copter Tiger Shark	○	○	○
Additional Software	Windows Audio Utilities	Vienna, WebPhone	A3D Demo	SoundForge Demo	Performance Util	Quartz Audio Master 16 DTD

Table of Features						
Manufacturer	Orchid	Terratec	Terratec	Turtle Beach	VideoLogic	Yamaha
Sound Card	NuSound 3D	EWS64 XL	EWS64 S	Pinnacle	3D Sonic Storm	SW60 XG
Telephone Number	01256 479898	01600 772111	01600 772111	01706 228 039	01923 260511	01908 366700
URL	www.orchid.com	www.terratec.co.uk	www.terratec.co.uk	www.tbbeach.com	www.videologic.com	www.yamaha.co.uk
Price inc. VAT/ex. VAT	£49.35/£42	£399.50/340	£149.23/£127	£448.85/£382	£48.18/£ 41	£149.23/£127
Bus Type	PCI	ISA	ISA	ISA	PCI	ISA
Minimum PC Specification	Pentium 133, 16Mb	Pentium 90, 8Mb	Pentium 90, 8Mb	486DX2 8Mb	Pentium 75, 16Mb	486 25MHz
FM Synthesis	●	●	●	○	●	○
Sound Blaster Compatible	●	●	●	○	●	○
WaveTable Synthesis	●	●	●	●	●	●
WaveTable Memory	N/A	6Mb RAM	2Mb RAM	4Mb ROM	2Mb system RAM	4Mb ROM
WaveTable DaughterBoard	○	●	●	●	○	○
Connector						
Max User RAM	N/A	64Mb	64Mb	48Mb	N/A	N/A
Number of Voices	64	64	64	32	●	32
Digital Effects	●	●	●	●	●	●
3D Positional Audio	●	●	●	○	●	○
Claimed Signal to Noise Ratio	(Not stated)	96dB	96dB	97dB	(Not stated)	(Not stated)
Digital Input	○	● (x2)	Optional	Optional	○	○
Digital Output	○	● (x2)	Optional	Optional	○	○
Line Output	Speaker only	● (x2)	● (x2)	●	●	●
Line Input	●	● (x2)	●	● (x2)	●	●
Microphone Input	●	●	●	●	●	●
Sample Bank Manager	N/A	●	●	●	○	○
MIDI Sequencer	MIDI Orchestrator	Cubasis	Cubasis	Digital Orchestrator SE	MidiSoft Studio	Cakewalk Xpress
Digital Audio Editor	Voyetra	Edison	Edison	AudioView	AudioRack	N/A
Games	Not supplied	Demo Worms 2	Demo Worms 2	○	9 Demos	○
Additional Software	A3D Demo	Mixman	Mixman	Audio Station 2	Trial of Dance eJay	Effects Utility

Key: ● Yes ○ No

p221 >

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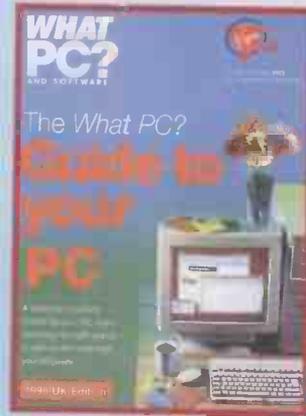
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Gordon Laing, Features Editor for PCW Magazine

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Editor's Choice

Personal Computer World
Editor's Choice

There has never been so much choice when considering which sound card to buy. With prices ranging from as little as £42 to just short of £500, there's plenty to think about before parting with your cash.

If you're looking for a card to make music, you'll want as many options as you can afford. You may not yet require sampling capabilities, but when you're tired of General MIDI presets and lacking inspiration, sampling opens up a world of sounds to explore. You may at some point need digital I/O to record from DAT, CD or miniDisc, and as your needs grow, you will need more MIDI instruments.

Terratec's EWS64 XL is well equipped and meets the criteria, although it is slightly overpriced when you take a look at the EWS64 S, which comes in at just under £130. This cut-down version offers much the same in the way of processing and sampling capabilities, and with accelerated DirectSound and positional 3D audio, it's a great games card. There's also the aluminium flight case in which it comes. The software bundle will take some beating, with Cubasis AV for combined audio and MIDI sequencing, Mixman and stacks of worthwhile audio utilities. With a digital I/O

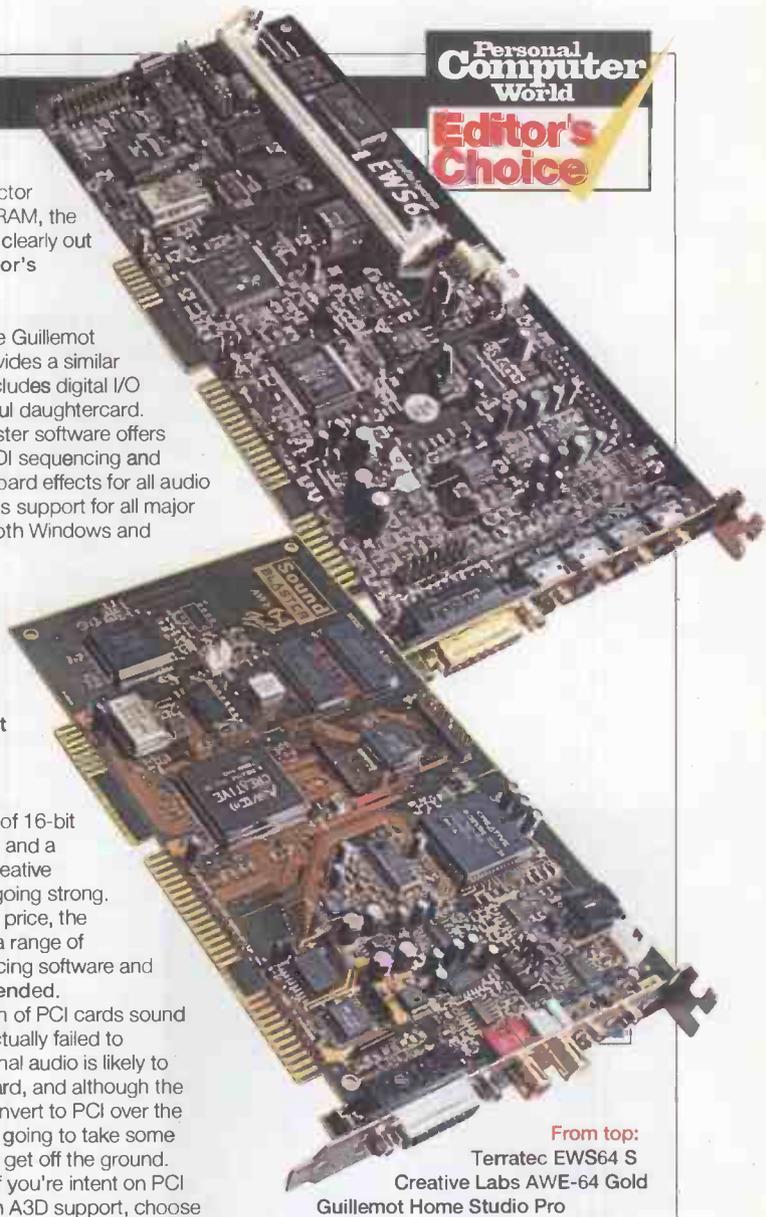
option, WaveTable daughterboard connector and upgradable user RAM, the Terratec EWS64 S is clearly out in front and takes Editor's Choice for best all-round sound card.

Closely behind, the Guillemot Home Studio Pro provides a similar set of features and includes digital I/O as standard on a useful daughtercard. The Quartz Audio Master software offers intuitive audio and MIDI sequencing and there's plenty of on-board effects for all audio sources. Again, there's support for all major sound standards in both Windows and real-mode DOS, and accelerated DirectSound and positional 3D audio. You pay slightly more for the extra features but it's well worth a look, so the Guillemot Home Studio Pro receives our Highly Commended award.

If you need foolproof 16-bit SoundBlaster support and a basic studio setup, Creative Labs' AWE-64 is still going strong. Now at half its original price, the AWE-64 Gold offers a range of sampling and sequencing software and is also Highly Commended.

The first generation of PCI cards sound great in theory, but actually failed to impress. A3D positional audio is likely to become a standard, and although the industry will convert to PCI over the next year, it's going to take some time to get off the ground.

If you're intent on PCI with A3D support, choose the Orchid NuSound. The software is basic but it's cheap and has a high-quality output. The Aztech PCI-128 Wave is a great idea, combining both hardware and software synthesis, but kicks out more noise than is acceptable.

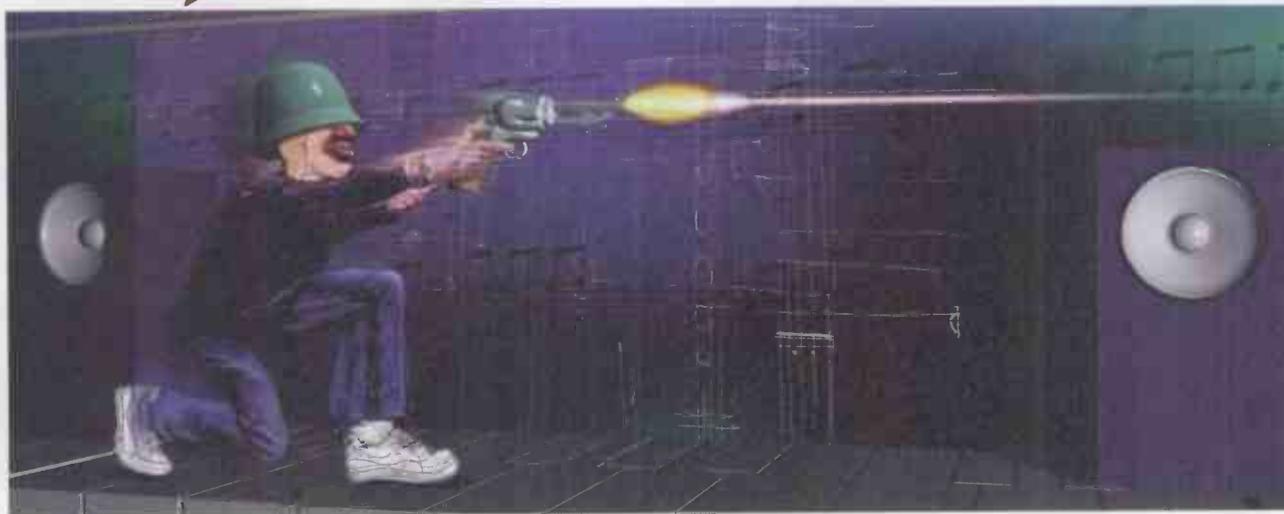
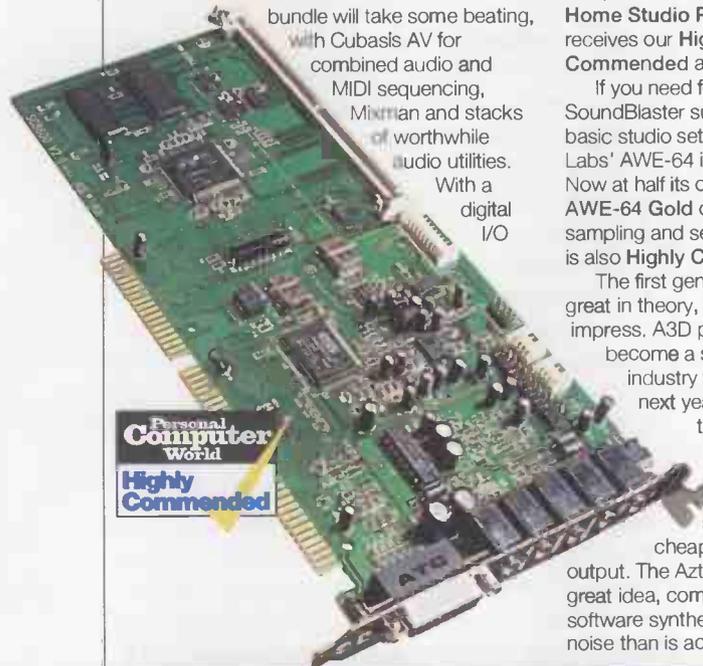


From top:
Terratec EWS64 S
Creative Labs AWE-64 Gold
Guillemot Home Studio Pro

If the Yamaha softsynth is appealing, find another card on which to run it.

● PCI cards are imminent from Creative Labs and Turtle Beach, but were unable to meet our deadlines for this issue.

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Cyc-o-logical

Despite some failure in the past, researchers still dream of cracking the Artificial Intelligence nut. Toby Howard reports on Cog and Cyc, the latest best hopes in AI.

Whatever happened to Artificial Intelligence (AI)? 2001 is looming, but where is HAL?

After some misleading and premature claims for "thinking machines" in the seventies and eighties, AI got itself something of a bad name. But according to two researchers working at opposite ends of the field, true AI really might be just around the corner.

Computer scientist Douglas Lenat believes that before a computer can behave intelligently, it must have common sense. In his view, intelligence is simply a matter of being able to reason about the world and he is building a gigantic database of common-sense facts, called Cyc.

The trouble with common sense is that it isn't written down. To codify it, you have to write down facts and their inter-relationships and, to avoid ambiguities, do so in

excruciating detail. Lenat reports that it took his team three months to write down enough so that Cyc could understand the sentence: "Napoleon died on St Helena; Wellington was saddened". Think of the web of knowledge you need to make sense of this: that Napoleon and Wellington are persons; that people die; that death is final; that people have emotions; that a person's death may cause emotions in others; that Wellington must have known of Napoleon's death... and so on..



The cogs are beginning to turn: AI takes another step forward with Cog, above

Cyc yourself up

The Cyc project is a mammoth undertaking. It began life in 1984 as a government/industry consortium funded to the tune of \$25m over ten years. Now it's managed by Cycorp, a private concern in Texas <www.cyc.com>.

The US government believes in Cyc, and last year provided further funding of \$1.5m. For the past 14 years, a team of programmers have laboriously created a gigantic "knowledge base" which currently contains about ten million facts, written in a special language called Cycl. This was phase one. The second phase, now in progress, is to provide facts to Cyc in plain English. Cyc now has enough common sense to correctly figure

out a good proportion of the sentences fed to it.

Lenat expects Cyc to enter its third and final phase early in the next millennium. By then, Cyc will have enough common sense to automatically read and digest everything it can get its virtual hands on (dictionaries, encyclopaedias, novels) and it will scour the web for new material. Where it finds contradictions or ambiguities, it will ask a human "tutor" for assistance. But most of the time, Lenat says, Cyc will quietly consume human knowledge.

Cyc is a commercial venture, but last year Cycorp released a tiny part of its common-sense database on the web: 3,000 facts which they claim "capture the most general concepts of human consensus reality".

Cog, the intelligent android

While Cyc is undeniably a major achievement, some AI workers think Lenat is barking up the wrong tree. Intelligence is not, they say, an inevitable consequence of having enough common sense. Rather, it can only arise from interacting with the world and learning from direct experience. Scientists at the Massachusetts Institute of Technology (MIT) are taking this approach to its logical conclusion: their goal is to build a robot with human intelligence.

Led by Rodney Brooks, the MIT team have created an android called Cog <www.ai.mit.edu/projects/cog/>. In some respects Cog is humanoid: it has a trunk, a head with video cameras for eyes, and an arm with a grasping hand. Ears, touch sensors, a fully-articulated hand and a voice are on the drawing board. But it can't move around: it's fixed to a heavy iron frame, linked by cables to a rack of dedicated processors which form its brain.

Whereas Cyc seeks intelligence with top-down programming, nobody programs Cog. The idea is that it learns through its experience, like a developing child. Critics have suggested that there's no need to build physical robots since they can be simulated in software. But Brooks defends his engineering approach, claiming that the form of the human body is intimately connected with its internal thought and that physical interaction with the world is crucial to the formation of true intelligence.

Media star

Cog is popular with the media, so much so that Brooks is now refusing all requests for interviews and visits to meet Cog "in person". Brooks and Lenat are worlds apart, and it is too early to tell where these different approaches will lead. Burnt by previous claims, this time around the AI community is being deeply and publicly sceptical. But everyone agrees on one thing: something interesting is happening in Artificial Intelligence. ■

A LEP of faith

Adam Evans reports on the LEP technology phenomenon. In only a few years' time, light emitting polymers could turn the display industry on its head.

Decades ago, the first science fiction movies showed a future filled with big displays hanging casually on the wall, and tiny portable wrist video phones that never needed recharging. We have gone some way to realising that future with Liquid Crystal Display (LCD) panels and gas plasma displays, but these devices are still expensive, heavy, fragile, inflexible and power hungry. And to cap it all, the quality of the images is not that good.

Considering these technologies represent the leading edge of today's display devices, it is a depressingly long list of complaints. Light Emitting Polymer (LEP) displays have the potential to address every single one of those complaints within a few short years.

LEPs were discovered in 1989 as a result of work headed by Richard Friend and Andrew Holmes at Cambridge University's Cavendish Laboratory. Cambridge Display Technology (CDT) <www.cdtttd.co.uk> was formed in 1992 and the role call of investors includes Cambridge University, Genesis (the rock group), Hermann Hauser (a founding director of Acom) and Intel. Intel owns just two percent of CDT, but the computing giant's presence on the list shows the impact CDT has had in just a few years of research and development.

Let there be light

The first LEP produced a yellow-green light and was not terribly efficient, but with some chemical tweaking the research team brought the efficiency up to that of conventional Light Emitting Diodes (LEDs); it was then that they realised the potential of their discovery. The past six years have seen the development of different polymers which, working together, can emit any colour at greater brightness than the original. CDT has a number of licensees to its LEP technology, including Philips, Seiko-Epson and UniAx, an American firm producing lower-cost dot matrix LEP displays with the brightness of LEDs.

Basic displays are made by applying a thin film of LEP on to a glass or plastic backing which has been coated with a transparent indium tin oxide electrode. An aluminium electrode is then evaporated on top of the polymer. Applying an electric field between the two electrodes makes the polymer give off light. If the electrodes are patterned like a grid, light is given off at the junction of the electrode points.

On 16th February 1998, using this technology, CDT and Seiko-Epson unveiled the first prototype LEP television screen. With a 50mm diagonal and measuring a mere 2mm thick, the black-and-white TV can show full TV pictures and, unlike LCD screens, has no restrictions on viewing angles or blurring of fast action shots.

The advantages of LEP displays over the current crop of screens are manifold. Unlike LCD and gas plasma devices, which require thin film processing on two glass plates, LEPs can be fabricated on one sheet of glass or plastic. This simplifies manufacturing processes and lowers costs, and allows displays to be produced in unusual (think "non-flat") flexible shapes. Philips predicts that LEPs will also be used as light sources: "Light-emitting polymers will evolve to become as flexible as fabric and as thin as paper. Formed or flat, applications will place ... lighting on ceilings, walls, floors, or free-hanging." <www.eur.philips.com/design/vof/vofsite6/light/index.htm>

Bright lights, no blurring

LEP displays are low-power devices and are self-emissive. This means the light is bright enough on its own, without the need for a number of components commonly found in LCDs, such as polarisers, colour filters and backlights. Added to this is the 180° viewing angle, the ability to show motion without blurring, and the robustness inherent in a display that is built on a single sheet of flexible plastic.

The applications for LEP displays are limitless. Initially used for intermittent backlights and seven-segment displays (like the one on your microwave cooker), computer monitors and TVs should be commercially available within five years.

Surprise package

All in all, it is an incredible story for a technology discovered only nine years ago. The sheer pace of development has taken the display industry by surprise, and many people are anxiously awaiting the first demonstration of an LEP colour TV. Seiko-Epson and CDT are on track to have a full-sized, full (16 million) colour display ready to show at a Tokyo show in October 1998. Expect to hear the prophets of CRT doom start wailing immediately afterwards. They will be premature, but in 20 years' time the world should be a better, flatter place. ■



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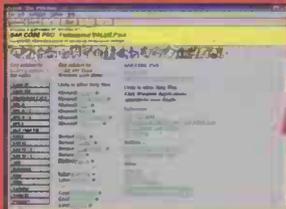
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A		L		Swanntech	263
APT	311	Linefeed	297	Systems Insight	313
C		M		T	
CD I	249	Microcosm	276	Tech Mate	295
Clove Technology	257	O		Token Computers	253
D		One Stop Software	276	Total Web Solutions	243
Desire	249	P		True Print Repro	295
Digital Data	249	Paradigm Technology	265	U	
E		RH Computers	263	Uninet	247
Expotech	265	River Pro Audio	295	W	
J		S		Worthington Data	287
JJA	273	Scanner Technologies	224		
		Secure PCs	276		

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All submissions should be emailed to the author of the appropriate column or snailmailed to Hands On, Personal Computer World Editorial, VNU House, 32-34 Broadwick Street, London W1A 2HG. Questions and short hints and tips can be faxed on 0171 316 9313.

We are constantly working to improve the contents of Hands On. If you have any suggestions, send them to the Editor at the address above, or email them to pcw@vnu.co.uk.

Workshops

Asymetrix 3D/FX 229 **EXTRA!**

Panicos Georghiades looks at this 3D graphics and animation software, free on the *PCW* CD.

Sound/MIDI 232 **EXTRA!**

Steven Helstrip shows you how to set up your PC so you can make beautiful music together.

Client-Server Databases — Part IV 236

Mark Whitehorn is in seventh heaven over the layers into which your database can be split.

Operating Systems

Windows 95 252

Whistle while you work. That's all you'll be doing unless you read this column. Tim Nott tells the sad tale of what happened the day the music died.

Windows 3.1 255

Get a head start by speeding up your startup. And give your system a Windows 95 makeover. With Panicos Georghiades and Gabriel Jacobs.

Windows NT 259

We're in the space age. Andrew Ward warns of the dangers of hitting the space bar when NT is booting.

Unix 272

Remote control. Chris Bidmead looks at Gnutar, which lets you back up a few machines with one tape.

OS/2 275

Mr Fix-It hits *PCW*. Yes, Terence Green has a fix for everything this month: Warp, SCSI, Java and more.

Applications

Word Processing 277

Intellisense capitals undergo punishment as Tim Nott shows how to get over the problem of PCs and MPs.

Spreadsheets 280

Stephen Wells takes scrolling stock of windows, as it's a good time to learn how to scroll two windows together. Plus, listing and sorting, sorted.

Databases 286

Mark Whitehorn does self defence: defending your database security, that is. Brace yourself.

Sound 293

Steven Helstrip's working to full effect. Here he uses VST for insert, mixer and master effects.

Graphics & DTP 296

Not *another* bad-quality image on the web... Ken McMahon's picture problems were fixed by a mix of FlashPix, PhotoCD and Boots.

3D Graphics 300

Get ahead of the game. Benjamin Woolley shows you how to get your 3D graphics into a game without the need for heavy programming.

Programming

Visual Programming 302

The Swinging Nineties? They might not be psychedelic, but Swing for Java is graphical.

Miscellaneous

Handhelds 264 **NEW!**

Stop fiddling with your essential little accessory (your PDI, of course) and let Mark Whitehorn show you how to really make it work.

Internet 243

Our net handyman, Nigel Whitfield, puts you on the right path. But first, a word about Explorer.

Hardware 290

Hammer Horror? How about Hardware Horror? Roger Gann pinpoints the perpetrators when your system gives up the ghost.

Networks 310

Testing, testing... But not here in the UK, if the Americans get their way. Bob Walder reports.

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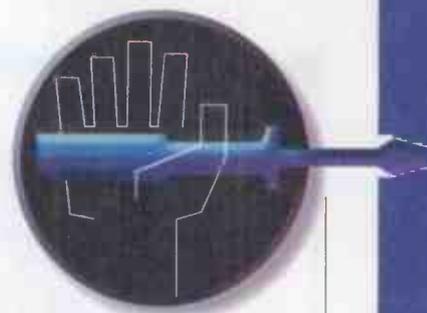
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Star of the show

Panicos Georghiades explains Asymetrix 3D/FX, the 3D graphics and animation software given away on our PCW CD: here's how to get started and how to create your own scenes.

Asymetrix 3DF/X offers many features you will find only in more expensive 3D programs like AutoDesk 3D Studio. It lets you create still pictures and animations with all the characteristics of the 3D world: perspective, lighting effects, shadows and reflections.

Your working space in 3DF/X is called a scene and this is where all your 3D objects (including text) are placed. A scene can also have a backdrop which can be painted using a single colour, a gradient of colours, or another image.

One of the attractions of 3DF/X is its ease of use, partly due to its Catalogue feature. The program includes a library of raw materials which are arranged within the catalogue window. They include models (3D objects), surfaces, lights, backdrops and complete pre-defined scenes which you can alter and use as necessary.

Working with 3DF/X

The way you work with 3df/x is as follows:

1. Drag and drop a 3D object (model) from the Catalogue library into the Scene Preview

window. Resize the model and position it as you wish. Then add a surface material by dragging one from the Surfaces Catalogue onto the model. Many models have multiple parts and you can add a different type of surface to each part, as in real life. There are many surface materials from which to choose; from granite, to gold.

2. Add lighting by selecting from the Lighting Catalogue, the number of lights, their colour and position. You can add more than one type to the same scene.

3. Add a backdrop by selecting from the Backdrops Catalogue.

4. Take a snapshot of the scene. This generates a 3D bitmap image by calculating its 3D characteristics according to the conditions you have set up. You can make this image as simple or as complex as you wish by selecting colour depth, quality of the rendering and whether you want the scene to include shadows and reflections.

5. If what you are after is an animation rather than a still image, you need to define a few more things such as the path of the animation of each object in your scene. You select animation paths from a catalogue for each object, or part of it, in your scene. You can modify the paths, add more than one to each object and so on. Then you create a moving video clip of the animated scene using the paths you have just set.

The program generates a series of snapshots of the scene which become the frames of your movie, each one generated according to the 3D settings you have set. Note that a movie can take a great deal of time (hours, in fact) if you opt for the best and most realistic quality. But these things do take a long time, even when using professional systems. Video files you generate in 3DF/X can include a

soundtrack: a digital audio sound file (.WAV) that plays along with the animation.

Is 3DF/X an original sin?

One of the limitations of 3DF/X is that it has no facility for drawing original 3D models. You must use those available in the supplied catalogues, but there are over 200 which cover a variety of household and business objects as well as cars, aeroplanes and so on. However, the program does let you generate simple 3D models out of the shapes listed in Fig 1

You can also import models created in AutoDesk 3D Studio (.3DS) or AutoCAD (.DXF) and you will find lots on the internet. It is possible to create models from Windows metafiles (.WMF format) and from bitmaps which have well-defined outlines, using the program's Line Trace facility.

In addition, you can create text models using any standard Windows TrueType font installed on your system, and you can edit these to change their thickness and other 3D characteristics such as their edges. You also have access to special, extended, ANSI characters using the standard Character Map Windows accessory — try the Wingdings.

There is a reasonable selection of surfaces which can be applied to models, together with highlights and reflections, and you can use any bitmap image as a surface. But that's not all: 3DF/X lets you use a Video for Windows (.AVI) file as a surface for a model and thus create changing surfaces (as seen on TV). You can have a video projected onto a moving face, or a cube spinning around.

Models can be warped in a number of ways: at the top, side and front using effects like twist, bow and angle. You can

Fig 1 — Shapes available

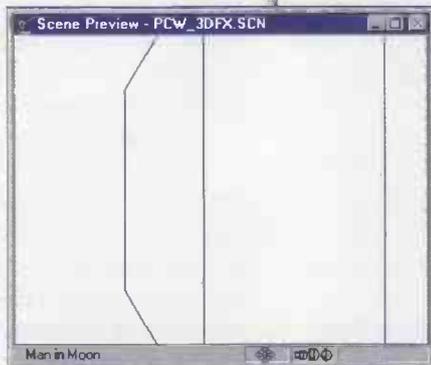
Shape	3D model generated
Sphere	sphere
Ring	ring
Cylinder	cylinder
Cube	cube
Cone	cone, based on a cylinder
Plane	plane, based on a cube
Octahedron	octahedron, based on a sphere
Barrel	barrel, based on a sphere
Gear	gear, based on a cylinder
Hexnut	hexnut, based on a ring
Tube	tube, based on a cylinder
Double Bell	double bell, based on a sphere



Figs 2-4 (clockwise from left)
You can view a 3D model in solid, wireframe, or box views

arrange them anywhere on a scene, rotate them, and add lights and shadows to create more dramatic effects. Camera perspective can be set to normal, wide angle or telephoto.

3DF/X has very good linking facilities. Using OLE, 3DF/X can generate material for use directly in other Windows applications.



work if you set your card and monitor at a resolution of 1,024 x 768 (true colour). But if your machine is a Pentium 133MHz or less and your graphics card has less than 2Mb of VRAM, you will find that

800 x 600 is faster and provides enough working space.

Installation

During the installation procedure you will be asked for a serial number. Although this is not required for the program to work on your machine, you *will* need it if you wish to upgrade to Web 3D (see the upgrade offer in our *Cover Disc Notes* on p14). In addition, you will be asked whether you wish to install Video for Windows.

Important: if you are using Win95 or later DO NOT install Video for Windows, as an updated version is already on your machine. Choose No when asked if you wish Video for Windows to be installed.

Having installed the program, spend a few minutes finding your way around. Use the View menu, and open and close all its options to familiarise yourself with the various windows: in particular the scene contents, catalogue, position palette and animation palettes.

As you will see when you begin opening these, the screen can get crowded. If you have a good graphics card and a very fast machine, you will find it more comfortable to

Creating a simple scene

First, make sure the Scene Contents, Catalogue, Position Palette and Solid Models are all checked in the View menu.

Add a pre-set model

From the File menu, select Open and open the Basic 3DF/X Catalogue (3dfxbasc.cat). From the Catalogue window, select the Models tab and click and drag any model into the Scene Contents window. (Try the Man in the Moon model). At this point, from the View menu, select the three options in succession (boxes, wireframes, solid models) and see how the view of the model changes in the Scene window. (See Figs 2-4). Working with wireframes is faster when resizing and positioning models.

Moving, scaling, rotating

Next, learn how to scale, move and rotate the model using the Position palette. (See Figs 5-7). Click on the right button of the Position palette (a downward arrow) to

open it up: the first button from the left is for rotating the model; the second is for moving it; the third is for scaling/re-sizing; and the fourth button from the left toggles between a picture view of the three options and a numeric view (the latter is faster). You can also use a combination of the mouse and the Shift key to control the three settings. Some experimentation here will be useful.

Adding a surface

A surface is a thin layer placed over the model's geometry. It can be a colour, a bitmap, or a material from the 3DF/X catalogues. You can also layer additional effects on a surface to change its appearance. Surface layers can include:

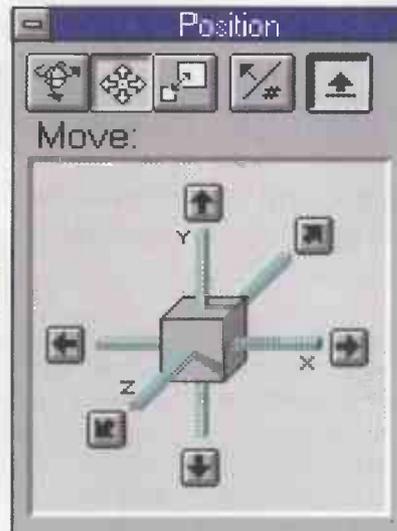
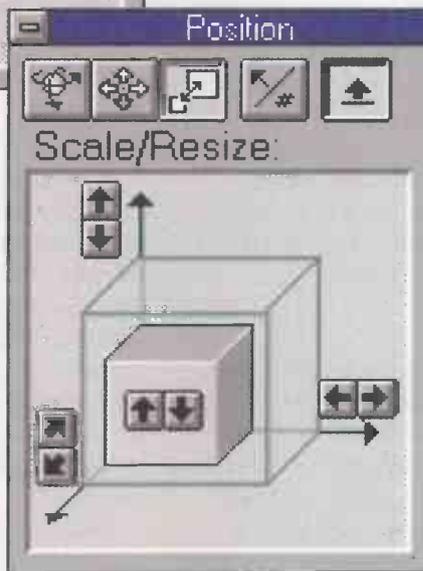
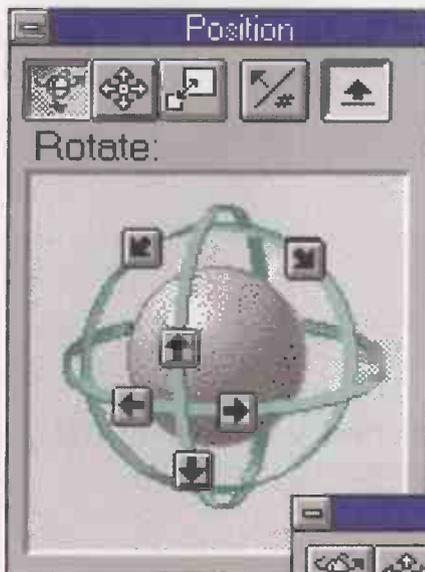
- A bump texture, which is a bitmap that defines a grey pattern and can be placed over a surface to make it appear textured.
- A reflection map defines a simulated reflection. It can be placed over a model's surface to make it appear to reflect the image in the map, rather than the scene.
- An environment map, which is a bitmap that defines a simulated reflection. When applied to an entire scene, all models with reflective surfaces in the scene appear to reflect the image in the environment map.

Press the Surfaces tab in the Catalogue window: from the available surfaces, drag and drop any one onto the model. Note that if you look at the status bar of the Catalogue window you will see a description of each surface you click on, and some have instructions on how to use it. Also note that with reflective surfaces you will not see the final colour/effect when you drag the surface onto the model. This will be visible only after you have created a snapshot.

Having added a surface to the model, click the right mouse button on the model. This will reveal a pop-up window. Select Modify Surface & Color. This brings up a dialog box with options to modify the surface pattern, highlights and effects.

The lights are on...

Lights brighten models in a scene. You can add lights by dragging them from the Catalogue onto the model. Ambient light brightens every surface. Directional light (such as Default Left Light) effects are



Figs 5-7 (clockwise, from above) You can rotate, scale or move a 3D model using the controls in the Position palette

based on whether the model's surface faces towards or away from the light. Lights are always positioned outside the scene.

You can modify a light's direction, brightness or colour. To modify a light follow these steps:

1. From the Scene menu, choose Modify Lights.
2. Under Light Name(s), select a light to modify.
3. Under Settings, set the Intensity (brightness) and click the Color button to select a colour for the light.
4. If you have selected a directional light (not ambient), click in the Preview & Set Light Direction box to move the light to the position you want.
5. To briefly preview the effect of all lights added to the scene, click the Show All Lights button.
6. Click OK to close the dialog box and apply your changes.

Note that as 3D F/X generates a scene with shadows, the progress indicator tracks the calculation of shadows for each light in the scene.

At the backdrop of a hat

You can use a solid colour, a gradient, or a bitmap, metafile, or other graphic as a backdrop.

Models in a scene are always in front of a backdrop. Lights, shadows and fog do not affect it. To add one to a scene, simply click the Backdrops tab in the Catalogue, then drag out a backdrop and put it in the Scene Preview or Scene Contents window. You can show or hide a scene's backdrop by choosing Backdrop from the View menu.

Getting a snapshot

Creating a snapshot can take anything from less

than a minute to many hours. From the Scene menu, select Generate Snapshot. It's a good idea to click on the Snapshot settings button and modify the settings so you can get a fast result, which gives you a rough idea of what your final image will look like before you decide to create one at the best quality.

Set smoothing to none, and set a small image size of 200 x 150 pixels. Set colour depth to 256 and quality to fair.

Fig 8 — Advanced options

- Adding a wall or floor
- Applying a digital video file as a surface
- Creating a "glass" surface
- Creating models which appear to be lights
- Including only a model's shadow in a scene
- Making a colour surface appear transparent
- Making a model a sub-part of another model
- Making a solid material surface transparent
- Making a surface reflect a bitmap
- Making a surface reflective
- Making all models in a scene reflect a bitmap
- Making a scene and backdrop appear smoky or snowy
- Submerging a model in "water"
- Warping a model

Creating an animation

You create animations in 3DF/X by applying animation paths to models. Animation paths are a set of instructions which tell a model how to move and whether the motion starts or ends outside the scene. One animation path of a model must finish before another can start. However, multiple models can be animated simultaneously.

Animations are saved in Video for Windows AVI file format. Here, you will have to select a Video for Windows compression format. If you are unfamiliar with this format, try Video 1 for experimentation and Indeo 3.2 or

Cinepak for final results. The one you select can dramatically affect the quality of your results.

Creating a text model

All the effects we have described so far can be applied to text. 3DF/X enables you to create models from typed text using any TrueType font.

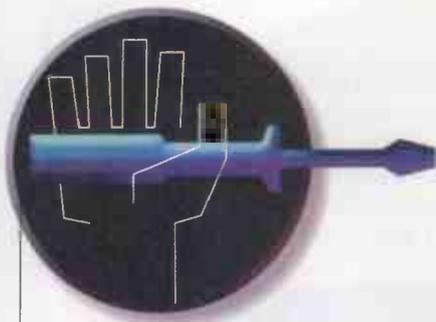
From the Models menu, select Create a Text Model. Then, in the dialog box, type your text, and click on the Modify 3D button. Alter all the settings in turn and, each time, click on the Update button to see the effect — it does not update automatically. Once you have created your text model you can add surfaces, lights and so on as before.

And there's more

In this brief workshop we have only scratched the surface of what 3DF/X can achieve. You may wish to experiment with some of the advanced options (which are listed in Fig 8) using 3DF/X Help. There's a lot to play around with and the only limit is your own creativity. Have fun!

PCW Contact

Email Panicos Georghiades at win3.1@pcw.vnu.co.uk or write to him at the usual PCW address shown on p10.



The food of love

With a PC and a sound card, connect a MIDI keyboard and start making music. It's easy! Steven Helstrup shows you how to hook up, create tracks and sequence your music.

The thought of setting up a home studio can conjure up images of large, expensive boxes. It takes days to fathom out where to put these boxes, let alone to work out what they all do.

The mixing desk could always go in the living room, along with a few keyboards and effects units, while the drums could be set up in the kitchen — if there's room! You might also have to do something about the soundproofing, fit a lot more power supplies and get someone in to lay the cables. Sounds like a nightmare, doesn't it?

Perhaps you'd be more interested in a virtual studio? If you have a sound card in your PC, the chances are you already have much of what's needed to get started and there's no shortage of software to place a powerful studio at your fingertips. The mixing desk can sit discreetly in a window until it's needed.

Even basic sound cards have two synthesisers and effects with which to play. If your card has sampling capabilities, there's no limit to the range of sounds and instruments you can use. Best of all, most of the cabling is taken care of in software.

Whether you want to use your PC to compose and produce your own album, or would just like to dabble with the sounds available, here is where to achieve your

aims. We'll talk you through the steps, from connecting a MIDI keyboard to your PC, through to sequencing your own tunes. If your PC has audio integrated on the motherboard rather than on a separate card, don't be put off — it will still function as a traditional sound card.

Sound advice

Getting sound in and out of a PC is easy. PCs with audio facilities, whether on the motherboard or a dedicated sound card, will feature several connectors for input and output. These are usually small 3.5mm stereo jacks (like Walkman headphone sockets) although more upmarket systems may feature two separate RCA jacks for left and right audio signals. You'll also find a wider D-type connector that doubles as an interface for joystick and MIDI connections.

Using a suitable cable, connect the audio line output of your PC to a pair of powered speakers or, better still, directly to your hi-fi. At the back of your hi-fi there will usually be a spare pair of line input sockets, often named "aux". Connect these to the line output of your sound card using the best-quality cable you can get your hands on. In fact, any of the inputs on your hi-fi should do, apart from the one for a turntable or record player. So if your CD, tuner, tape input or aux sockets are available, feel free to connect away. *Make sure the hi-fi is switched off at the time.*

If you plan to record audio from an external device, connect this to the PC's line input. Once connected, you'll be able to monitor what's being played through your hi-fi via the sound card's mixer, and play along at the same time. Some PCs feature digital audio inputs/outputs allowing you to connect digitally to a CD player, MiniDisc or

DAT recorder without any degradation in sound quality.

MIDI matters

To connect a MIDI keyboard you'll need a MIDI adapter kit, which will set you back around £15 from most computer stores. This is usually a cable with a pair of standard, circular MIDI plugs at one end to connect to your musical instruments, and a single, wide D-Type plug at the other which connects to your PC's MIDI port. The two circular MIDI plugs are labelled MIDI IN and MIDI OUT.

Once the cable is plugged into your PC, connect the MIDI IN plug to the MIDI output socket of your musical keyboard. If your keyboard has sounds as well, connect the PC's MIDI OUT plug to the keyboard's MIDI IN socket.

It may be that the keyboard is just a MIDI controller and has no internal sounds at all. In this case, it won't have a MIDI input socket and the PC's MIDI OUT cable does not need to be used. If you have additional MIDI instruments such as a synthesiser module, either connect this to your keyboard's MIDI thru port, or the PC's MIDI OUT plug if it's not being used. You should now be able to control and play everything from your PC, and with any luck, you're ready to start sequencing.

On the right tracks

When a sequencer launches, you are presented with a list of empty tracks down the left-hand side of the screen. Over on the right is the arrange window, which is where recorded parts for each track will be displayed. Each track can be configured to play any MIDI instrument in your setup by assigning it to an audio output device and

What we used

For this workshop we are running Cubase as our sequencer and have an AWE-64 Gold sound card fitted. Our examples can be applied to most sequencing packages, though, regardless of what sound card you have installed. If you fancy having a go with Cubase, you can find a demo on this month's cover-mounted CD-ROM, in the Audio section of the Software Library.

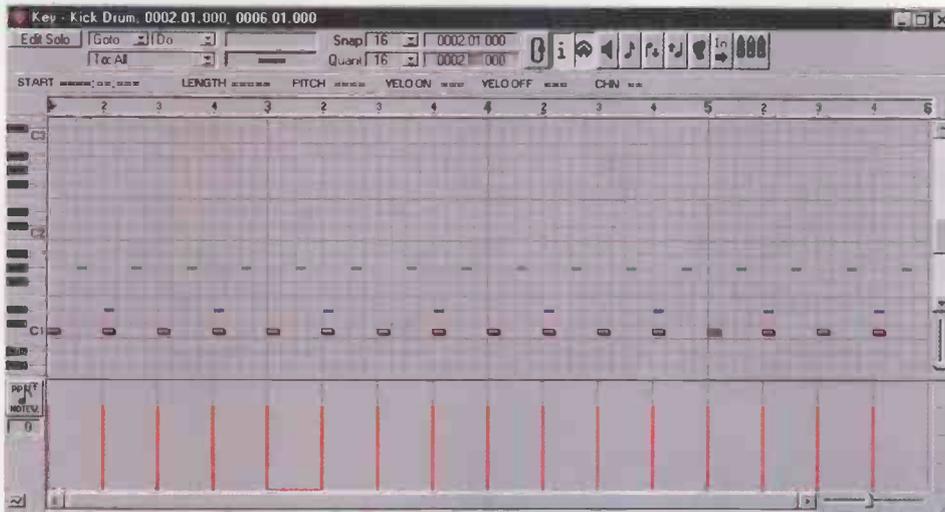


Fig 1 (above) Here is the foundation of our drum loop viewed in the piano roll editor

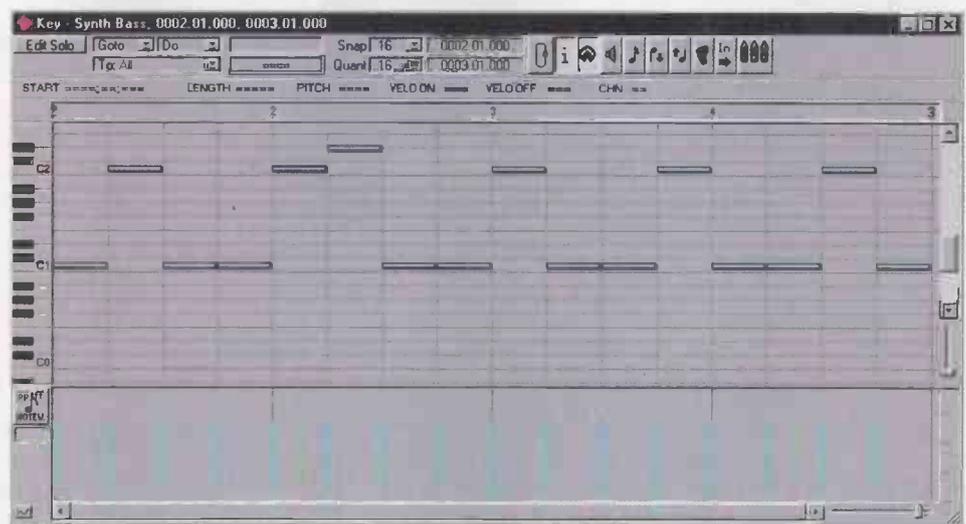
Fig 2 (right) This semiquaver synth bass pattern, presented note by note, using step record

one of 16 MIDI channels. There are three audio output devices available to select from most PCs: either the main WaveTable synth, the FM synth, or an external MIDI device.

On the first track, select the WaveTable output and have a bash on your keyboard. If everything is working fine, you should be able to hear a piano, which is the first program in the General MIDI (GM) set. If nothing can be heard, it's probably because the synthesiser is turned down or muted in the sound card's mixer utility.

You can select different instruments by moving the Program Change parameter up and down, or by clicking on Patch which will bring up a list of instruments. Get a feel for the sounds that are available and try changing other track parameters such as volume and pan.

You'll find the drum patches on MIDI channel 10, which is also part of the GM specification. These differ slightly from instrument patches since each key has a different sound. The standard drum-kit sounds can be found at the lower end of the keyboard starting from C1, and they progress to percussion samples over a five-octave range. You can also choose between seven drum kits, again using program change (PC). However, these are mapped slightly differently and can be found on PC1, PC9, PC17, PC25, PC26, PC41 and PC49.



Sequencers operate in much the same way as a cassette deck, so you should already be familiar with the control buttons on the transport bar (play, rewind and stop). Before recording your first part, you need to set the tempo (speed) at which the sequencer will run. This can be found on, or near, the transport bar depending on which sequencer you're using.

And the beat goes on

It's a good idea to have the metronome enabled when recording, as this will give you a count-in and an indication of where the beat is. This is far more effective than trying to watch the song position pointer as it moves along the top of the screen. The metronome usually defaults to playing a "side stick" drum sample on MIDI channel 10, although this can be changed to any other instrument using the metronome settings dialog.

The only thing left to do is to set the measures (bars) where you want to record. Some sequencers record from the current song position with a two-bar lead-in,

although in Cubase you'll need to set the Left and Right locators. This can be done in one of two ways: you can enter the bar numbers on the transport bar, or use the left and right mouse buttons to set the positions on the bar ruler just above the arrange window.

Recording a dance drum pattern

1. Select MIDI channel 10 and name the track "Kick Drum". The kick can be found on C1, which is usually the lowest key on a four or five-octave keyboard. Set the tempo to 120bpm (beats per minute) and the bar range

from 2 to 6.

2. Following the two-bar lead-in, record the kick drum on the beat for the four bars and press stop. You will notice that a new pattern has been created between the locators. To hear it played back, rewind to the start and hit play. If you enable Cycle mode, the four bars will loop continuously.

3. Before we record a second track, let's first tidy up the kick pattern. Open the Piano Roll editor, which can be found in the Edit menu. Cubase users can simply double-click on the newly recorded part to do this. You can now see the pattern as it was played-in, showing all the notes that are, hopefully, not too far off the beat!

4. To rectify any timing anomalies, the Quantise function shifts notes to the nearest quantise value. This normally defaults to 16ths, or semi-quavers, although any value can be selected. After quantising the part, the kick will fall right on the beat. If any notes have shifted to the semi-quaver before or after the beat, simply drag them back with your mouse.

5. In the lower part of the screen, the

velocity value for each note is displayed, showing how hard the keys were pressed. As we're dealing with a dance pattern, we'll make all these the same level. There's more than one way to do this. If you select the Pencil tool you can manually change the velocity for each note (useful when there are only a handful of notes to modify). The Line tool is better suited in this case, though, enabling you to literally draw a line across a selection of notes at the desired velocity.

6. Fix the velocities to 100 and return to the arrange window.

Laying down two more tracks

Although you can continue to record further drum patterns on the first track, it's better to place individual sounds on their own tracks. This provides greater flexibility further down the line when you might need to remove or copy just one instrument for, say, eight bars. You might also decide to change the output or instrument that's playing the kick pattern. If there are several other instruments on the same track, this will involve a lot more editing.

1. On the second track, record a hand clap

on beats 2 and 4 for the four bars — don't forget to name the tracks as you go along, because you could soon have 30 or more tracks with which to deal. As with the kick drum, quantise the part and fix the velocities to 100.

2. On the third track, play in a simple hi-hat pattern. For instance, this could be an open hi-hat playing on the off-beat. With just three tracks in place, you now have the basis of a dance drum loop.

If you select all the parts in the arrange window and open the Piano roll editor, you should have something that resembles Fig 1. Each coloured pattern shows the contents of each track.

Quick guide to creating SoundFonts

To download a personal sound sample to your Creative Labs AWE-32 or 64 sound card, you first have to create a SoundFont using the Vienna utility. This will have been bundled with your card and can be found in the AWE folder in the Start menu. Right-click on the User Sample Pool folder and select Import Sample. Both mono and stereo samples can be loaded provided they are 44.1kHz 16-bit. Click on the Instrument Pool folder and choose Add Instrument. This prompts you to name the instrument and select the imported sample(s).

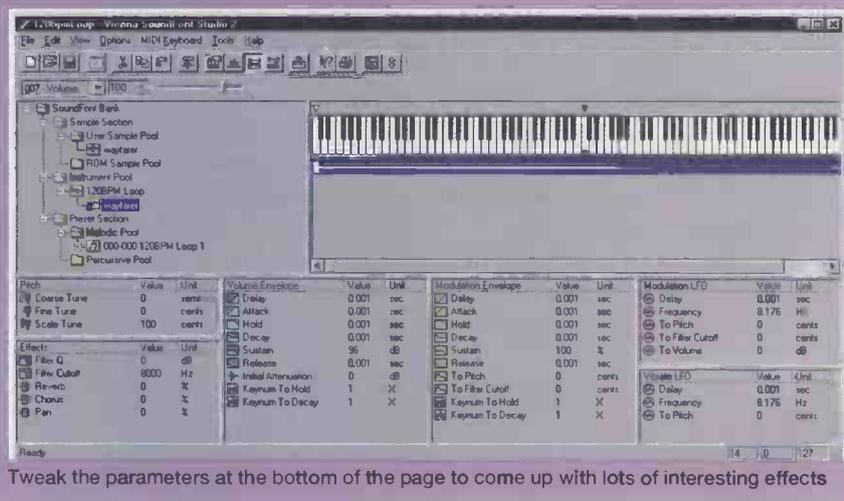
If you have imported a stereo file, you have to select both the left and right channels. Click Add and the instrument appears as a file within the Instrument Pool folder. You can audition the new instrument using the on-screen keyboard and assign the range of keys by dragging the handles beneath it. All AWE synth parameters can be tweaked at the bottom of the screen to shape the overall sound and apply effects. To loop an instrument, right-click on its sample and select Loop.

Once you have the loop points set up and the synth parameters set, right-click on the Melodic Pool folder and select New Melodic Preset. This lets you assign a Bank and Program Change number for your new instrument. Save your new SoundFont and open the AWE Control Panel.

In the User page, select a bank number where you want to load the SoundFont and click Browse to locate the file. Click Apply, and the instrument is loaded. To access the new instrument from a sequencer, open the list editor and insert a single Bank Select event (CC 0) on a new track in the setup bar. Enter the bank number in value 2 and insert a program change event. When these events are played, the track will be set up with your new instrument in place.



If everything has gone to plan you can audition new instruments from the Playback page



Tweak the parameters at the bottom of the page to come up with lots of interesting effects

The piano is my forte

You can continue to add more percussion as you wish, but first let's get some other instruments playing.

1. On a new track, select Synth Bass 1 (PC39) on MIDI channel 1. For this part we're going to enter the notes in step-time, which enables you to program complex patterns note by note.
2. Set a one-bar range and create an empty part, either from the Structure menu or by double-clicking between the locator markers. In the piano roll editor, enable Step Record mode. Check your sequencer's help file if you're unsure how to do this. In Cubase you simply click on the foot icon.
3. There's a complex techno-like bass pattern for you to copy, shown in Fig 2. Ensure the quantise value is set to 16s (semi-quavers) and play in the pattern one note at a time. As you press each key you will see the notes appear on the piano roll grid.
4. When you have completed the one-bar pattern (16 notes), disable Step Record and have a listen. Try changing or deleting some of the notes and use the pencil tool to adjust note lengths in order to come up with an original pattern.
5. When you have something you like the sound of, return to the arrange window. Copy this pattern three times so you have a four-bar sequence to match the drums.

Creating another dimension

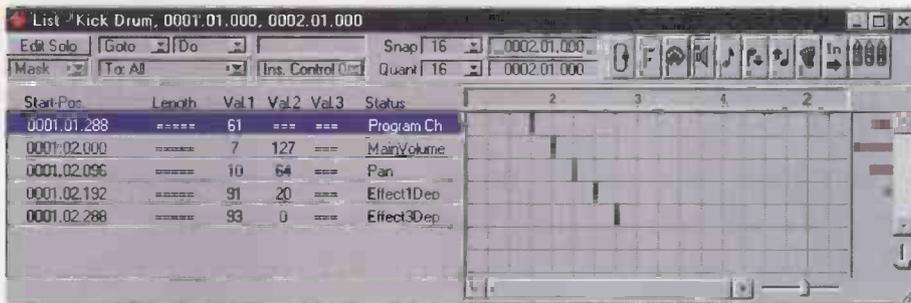
Let's now quickly record a basic chord progression to add some dimension to the existing parts.

On a new track, select MIDI channel 2 and choose a strings patch. As the bass line is based in the key of C minor, you could start with the very same chord for two bars, moving to G minor for bars three and four.

The notes for C minor are C, E flat and G. G minor's notes consist of G, B flat and D. You could also sustain a low C throughout the progression to add more depth.

It's all arranged

With just the drums, bass and strings there



as Windows Media Player, and on any GM-compatible device. To insert individual CCs and program change events, it's best to use the list editor (Fig 3). In the insert dialog, select Continuous Controllers and use the pencil tool to add a CC just after the start of the

let's fade in the strings at the start of the song over the first eight bars. First, select the part and open the editor. To the left of where velocity values are displayed, click on the Event Type Selector and choose MainVolume. Then, while holding the Alt key, use the Line tool to draw a gradient

from 0 at bar 2, to 127 at bar 10: the CCs will automatically be inserted (see Fig 4). You can apply the same technique using pan controllers for the

Fig 3 (left) Use the list editor to insert track parameters in your setup bar

Fig 4 (below) To create a fade-in, or crescendo, use the line tool to draw a gradient while holding the Alt key

is not yet much we can do to structure a song. But we can lay out the parts we have already, to get a feel for arranging.

1. You should now have seven parts set out on individual tracks. Copy these seven times to give you 32 bars in total.
2. Rather than start the song with all the instruments coming in at once, you could start with the strings on their own. Using the Erase tool, remove the parts on each of the remaining tracks for the first eight bars. From here you can bring in the bass, and after a further eight bars, the drums can come in too.

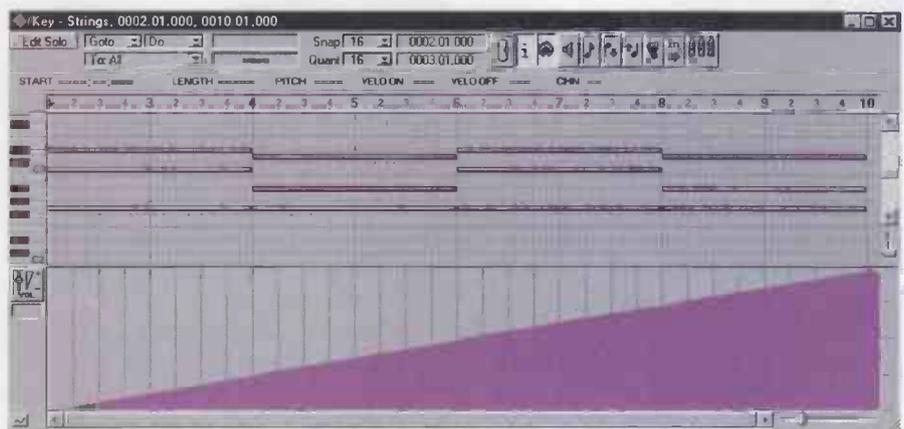
3. With a loose structure in place, choose a piano on a new track and see what ideas you can come up with.

It's good practice to record everything you play; you can always delete an idea, but you may not be able to replay an inspired phrase at a later stage. You can also record on as many tracks as you want, retaining just the ideas you like. They can easily be pieced together in any order using the Scissors and Glue tools.

CCs are not just a matter of power

So far, we have dealt with MIDI instruments, the piano roll editor and basic note information. But MIDI provides a further 128 controllers for changing synth parameters in real time, such as reverb and chorus settings. These are called Continuous Controllers (CCs).

A common use for CCs is to set the volume and pan position for each instrument at the beginning of a song, which is why we have left bar 1 empty. With these in place, along with program change messages on each channel, it is possible to play back the file from any MIDI player such



bar. Two values have to be set for there to be any effect: value 1 selects the controller type (see table, below), and value 2 sets the parameter level from 0-127, where 0 equals off and 127 is maximum.

Not fade away, but fade in

More creative use of CCs enables you to fade-in instruments and pan them between the speakers. This involves inserting many CCs, which is easily done in the piano roll or controllers editor, depending on which sequencer you're using. Using our example,

techno bass riff. There's no reason why it shouldn't move continuously from left to right to create room for an additional bass sound that can sit in the centre.

Don't stop the music

Fig 5 shows the arrangement so far, but there's no reason why you should stop there. There are still 11 channels left for more instruments and as mentioned earlier you can integrate your own samples into the arrangement by downloading samples to your sound card. If you have an AWE-32 or 64 see the box opposite (p234) to see how it's done. And don't write off the FM synth; it may sound outdated, but it can be very effective in some instances.

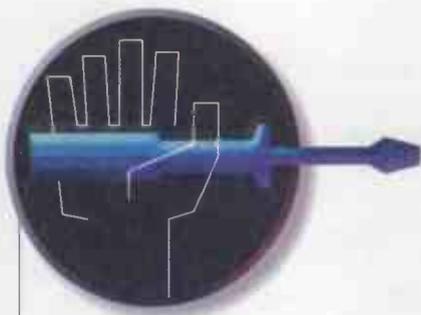
Finally, don't forget to check out my *Hands On Sound* column each month for more sequencing and production tips.

Useful Continuous Controllers

0	Bank Select
1	Modulation Wheel
5	Portamento Time
7	Main Volume
10	Pan Position
11	Expression (secondary volume)
65	Portamento On/Off (0 = off 127 = on)
71	Brightness (frequency cutoff)
74	Resonance
91	Reverb Level
93	Chorus Level

PCW Contacts

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Seven up

In part four of his series, Mark Whitehorn deals with the broad areas involved in upsizing, and considers the seven layers into which your database application can be split.

This is part four of my five-part series looking at how to move a database from a standalone Access application to an SQL Server database. Part one covered the basics of installing SQL Server and getting it up and running. Part two dealt with making an ODBC connection between a workstation and SQL Server. Part three discussed the different upsizing routes possible, given the different versions of Access and SQL Server that are available and then demonstrated how to use the upsize wizard to move a database from Access 97 through to SQL Server 6.5.

Wonderful wizards

The upsizing wizards, as I mentioned last month, are wonderful. They take a lot of the hard work out of upsizing an application. Essentially they do all the "grunt" work: the stuff that doesn't take too much thinking about, but often simply takes time.

A good example is the transfer of the data. Of course, you could look at all your Access tables personally, determine their structure including the field names and data types and work out what is the closest SQL Server data type for each field (see *Access and SQL Server mappings* box, right).

Then you could create the SQL Server tables (ensuring that the field names don't have spaces), transfer the data, and create the links between the Access forms and the respective tables. Well, you could and I could do it as well, but it is essentially mechanical work I can do without.

What the wizards can't do

However, there are certain areas of the translation from Access to SQL server that the wizard simply cannot handle. I would

love to tell you that this is Microsoft's fault, that it didn't write the wizards well enough, but that simply wouldn't be true.

There are certain processes involved in upsizing which cannot be automated. This is because some of the decisions depend on an understanding of what the data "means". Until we get true machine intelligence (don't hold your breath) this will always leave lots of work for humans, or DBAs if no humans are available.

So let's look at these broader areas. We will begin by considering the seven layers into which a database application can be split. Upsizing actually causes these layers to become split between client and server. In turn, it is that separation which provides the problems (er, sorry... *challenges*) you may need to address.

The seven layers of wisdom

• Layer 1 — User interface

This is the part of the application which displays, for instance, the forms which interact with the user. These display information, prompts, provide data and help, allow the entry of information and control the activities undertaken.

• Layer 2 —

Input validation
The checking of data as it is input to ensure that it is of the correct form and type

(e.g. date format checking or numbers in numeric fields). In Access, this is often performed using the GUI rather than, say, VBA. The important point is that this checking is carried out on the form during data input as opposed to checking when the record is posted to the table.

In addition, this type of validation is often performed on the data in a single field ("Is the value in this field > 500?"); as opposed to validation which can be performed between fields (see *below*).

• Layer 3 — Application tasks

These are specific application functions such as calculating the tax or charges, summing entries and so on. An example in Access would be calculated fields in a query which are then used in a report. This is not the same as Input Validation, since the data being manipulated is already in the table. Instead, it is data manipulation performed by the application. Those manipulations do not permanently affect or alter the data in the database.

Access and SQL Server mappings

A useful table (provided by Microsoft) which shows the field type mappings between Access and SQL Server.

Microsoft Access	SQL Server
Yes/No	bit
Number (Byte)	smallint
Number (Integer)	smallint
Number (Long Integer)	int
Number (Single)	real
Number (Double)	float
Currency	money
Date/Time	datetime
AutoNumber	int
Text(n)	varchar(n)
Memo	text
OLE Object	image

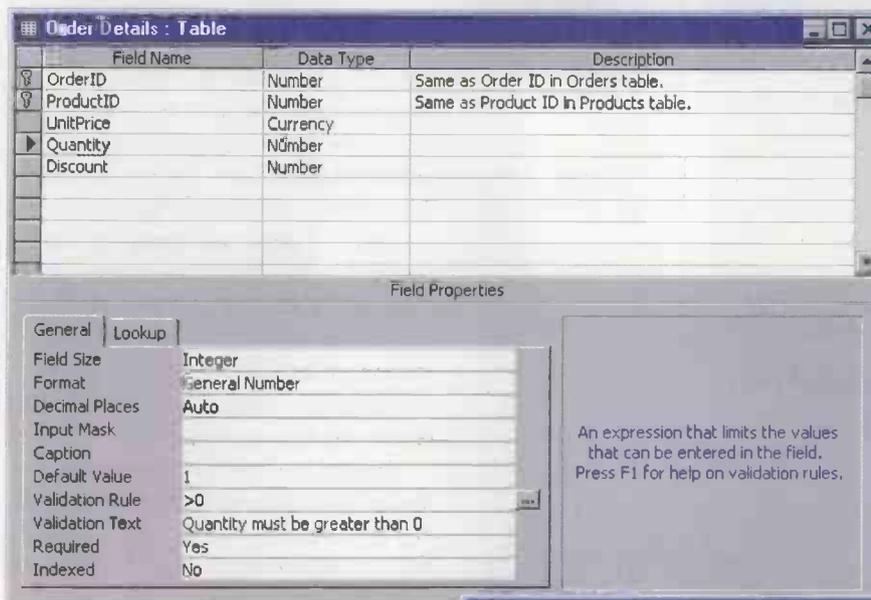


Fig 1 (above) In the original Access database there was a validation rule for the field [Order Details].Quantity

Fig 2 (right) After upsizing the validation rule for the field [Order Details].Quantity seems to have disappeared

• Layer 4 — Business rules

These check the specific business state and context. For example, a customer cannot order more than the amount defined by their credit limit. Note that this type of validation is often performed on the data in an entire record rather than on a specific field. For instance, a check such as "The value in field X must be greater than that in field Y" can only be performed after both figures have been input.

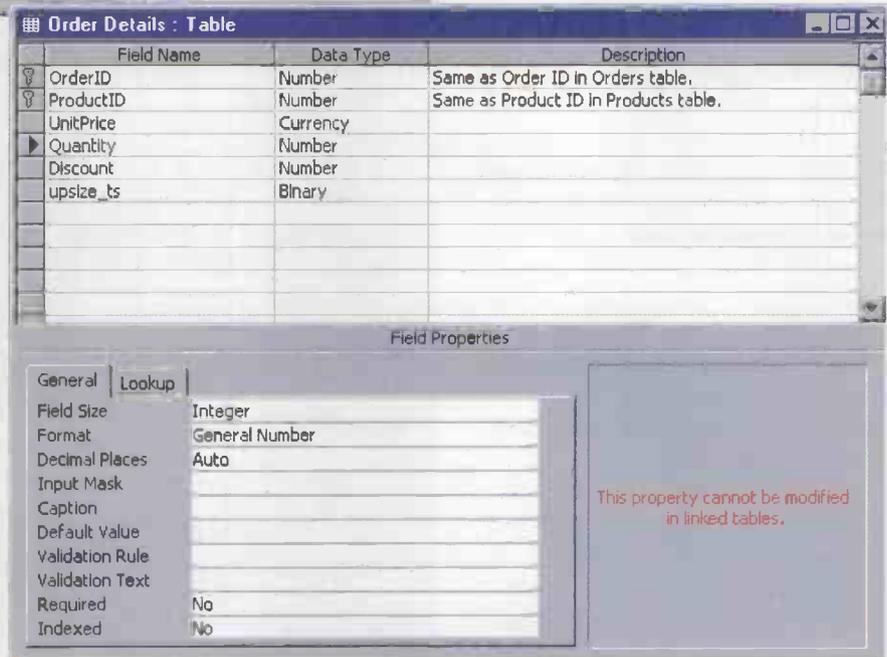
Typically, these checks are performed after the data has been entered into the form, just after the user tries to post the data to the database and before it is actually posted. Again, to put this into Access-speak, it is not unusual for such checks to be bound to the "Before Update" event of the form.

• Layer 5 — Data integrity rules

These are the rules which ensure all the information in the database is correct. If, at this point, you are thinking in terms of entity integrity, primary keys, unique indexes, referential integrity, foreign keys and that sort of business, you are in the right area.

• Layer 6 — Data management

This is the bit where the data is organised,



queried and managed. In other words, this is the guy who actually manipulates the data. On the PC this is the jet engine which sits inside Access; on the server it will be SQL Server.

• Layer 7 — Data storage

Where the data is actually stored and accessed. In Access this is typically the hard disk of the PC but it may be the hard disk of a file server in a shared application. In a client-server system, the data is stored on the disks of the application server and is typically managed by a file system such as the Windows NTFS.

Given a single-user Access database application running on one PC, all seven layers clearly reside on one machine. However, when you upsize to a client-server system some, but crucially not all, of

these move onto the server.

Some are born to serve

OK, let's start with the easy ones. The user interface (layer 1) stays on the PC, the data storage (layer 7) and data management (layer 6) move to the server.

It ought to be reasonably obvious that the data integrity rules (layer 5) have to follow the data onto the server and the wizard takes care of most of these moves. So far, so good.

The ultimate positioning of the remaining layers is less clear, which is another way of saying that parts can be placed on either the client or the server and that this is where your skill and judgement come into play.

1. Layer 2 — Input validation. SQL Server

allows for the control of data input into individual fields. In other words, this form of checking can be passed to the server.

For example, in the sample Access database (called UPSIZE.MDB) supplied on our PCW CD-ROM last month (and again this month), there is a table called Order Details. Within that table is a field called Quantity which has been given a validation rule of >0 (Fig 1). At first sight, this validation seems to have been removed during the upsizing process since it doesn't appear in the attached tables after upsizing (Fig 2). The rule is still being applied, though: the upsizing wizard has simply implemented it as a trigger in SQL Server (Fig 3). So this bit of input validation has moved to the server.

This is good because it means that the input is being controlled centrally. No matter

```

Object Scripting Preview
* VALIDATION RULE FOR FIELD 'Quantity'
*/
IF (SELECT Count(*) FROM inserted WHERE NOT (Quantity>0)) > 0
BEGIN
    RAISERROR(778258, 16, 1)
    ROLLBACK TRANSACTION
END
ELSE
*/
* PREVENT NULL VALUES IN 'Discount'
*/
IF (SELECT Count(*) FROM inserted WHERE Discount IS NULL) > 0
BEGIN
    RAISERROR 44444 'Field "Discount" cannot contain a null value.'
    ROLLBACK TRANSACTION
END
ELSE

```

Fig 3 (above) The validation rule is now handled as a trigger in SQL Server...

Figs 4 & 5 (right & below right)...which is good for overall control but bad for the elegance with which the error is handled

how anyone tries to enter data into your precious database, it will be protected from invalid data. That's the good news. The bad news is that the error is now handled very inelegantly (Figs 4 & 5).

One solution, which is demonstrated in UPSIZING.MDB, is to add additional input validation to the form (Fig 6). This results in much cleaner error handling (Fig 7) but it leaves us with a problem trying to decide exactly which is now performing the input validation; the client or the server? In fact, this is a slightly more difficult question than it first seems because of the different way in which these types of validation work.

The form's new input validation works as soon as the user moves the focus out of the text box, whereas the trigger (on the server) is only activated once an attempt is made to post the record. So it could be argued that, according to the definitions given above, the trigger is performing a

function more like a business rule than input validation. My interpretation of all this is that

input validation is still the prerogative of the client, since placing the validation there

ensures more timely and more elegant error trapping. But the upsizing wizard can't do this so it does the next best thing and moves the input validation to the server. The take-home message is that you are well advised to spend some time supplementing that validation and some on the client.

2. Layer 3 — Application tasks. You will be delighted to know that this is another grey area! An RDBMS like SQL Server effectively has no truck with anything as common as reporting. It is concerned with storing and manipulating the data, so reporting will remain the province of the client.

However, you might well use a "view" on the server to perform the data manipulation. In general, at the risk of sticking my neck out, I would say that most of the application

tasks remain on the client but you may well want to move parts to the server.

3. Layer 4 — Business rules. Ah, suddenly we have emerged from the gloom. The business rules are generally all implemented on the server, which makes reasonable sense when you consider that they are often only applied to the data once the user tries to send it to the server.

Holding the business rules centrally makes them easier to maintain and guarantees that

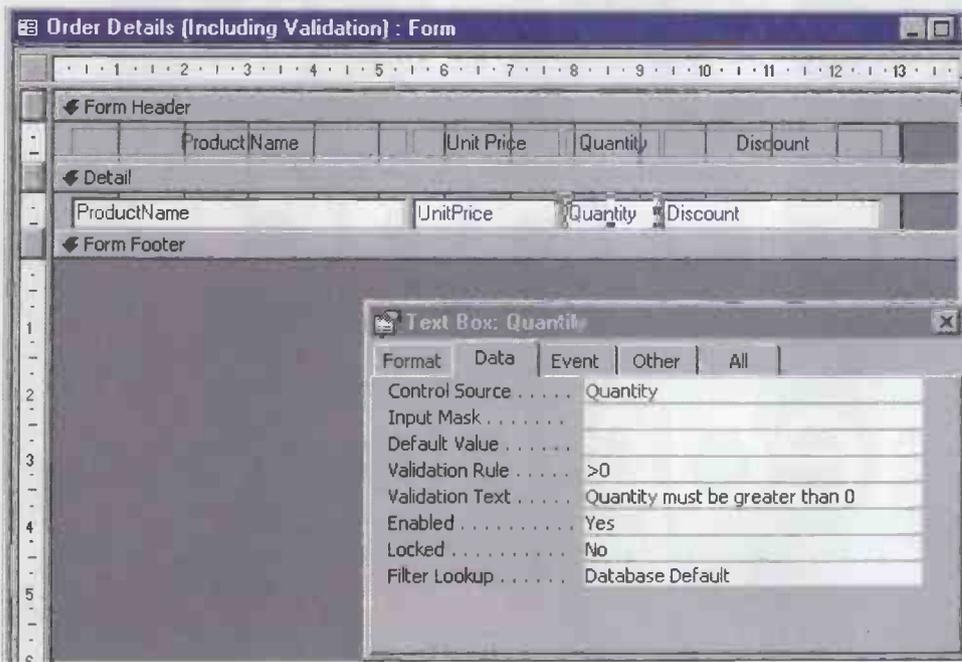


Fig 6 (above) Adding extra input validation to the form...

Fig 7 (right) ...which gives much cleaner error handling

they are applied globally. The sorts of tools used to implement them in SQL Server are triggers, stored procedures, column-level constraints and table-level constraints.

So, we have finally got to the stage where we can summarise where these layers generally end up (with the provisos outlined above):

Client

- Layer 1 User interface
- Layer 2 Input validation
- Layer 3 Application Tasks

Server

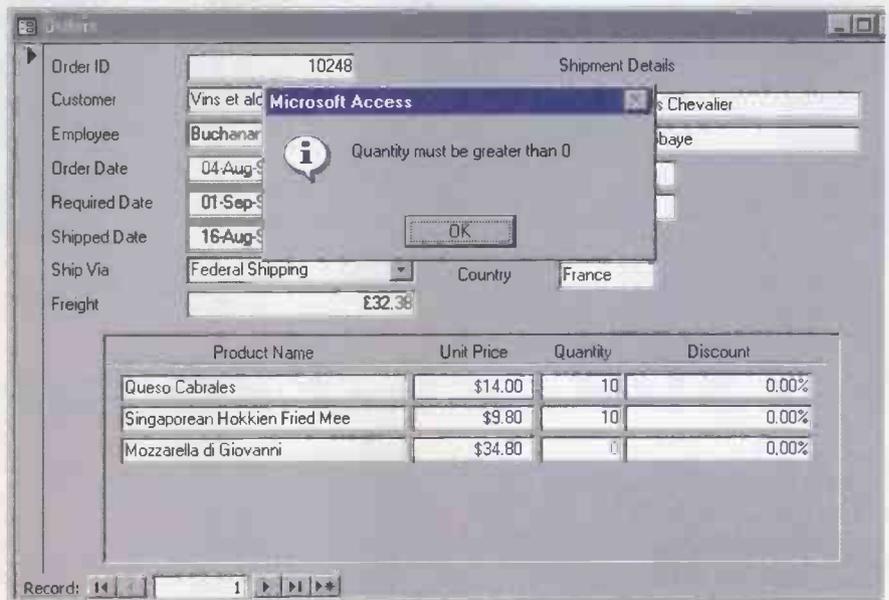
- Layer 4 Business Rules
- Layer 5 Data Integrity Rules
- Layer 6 Data Management
- Layer 7 Data Storage

The challenges are provided by Layers 2 and 3, and those are the ones wherein lie the most scope for tweaking by hand.

The reality

This may all have seemed a little dry, not to say abstract, so let's look at an example. You have an Access application which has some typical forms within it. One of these enables your users to enter information about new customers. It has a combo box that shows a list of cities and the users have to pick one city for each customer.

Let's assume that this combo box draws



its data from a table called (unimaginatively) CITIES. Clearly, this combo box is providing a type of input validation, so of course it needs to reside on the client. *Ah! But... er... where does the table called CITIES reside?* Well, on the server of course. That's where the upsizing wizard will have put it (unless you told it otherwise) and that seems right. After all, the table contains data and the server is where data is stored.

But suppose that the list of cities is fixed in stone. No new cities have been added in living memory. *So what? Who cares if the table doesn't change?* Well, suppose it is a big table. Every time one of your users pops down that combo box, the application on the client has to ask the server for the data and that data has to be shipped across the network.

Surely there is a case for storing this data locally on each client? I would certainly have thought so, but this is what many people would term a judgement call.

To return to my original thesis, judgement calls are precisely what we can't expect the upsizing wizard to make. It will simply place the CITIES table on the server because it has no concept of how the data is used nor how frequently it is updated.

Food for thought

To leave you with a brainteaser, what happens if the CITIES table is sometimes updated? Suppose it is updated once a year, or perhaps once a quarter, or once a month... once a week... once a day?

At what point do you decide to store the CITIES table on the server, or is there a third strategy you can employ? If so, what are

the elements that you have to balance in deciding which strategy you are going use?

Next month, I'll provide the answer to (or at least some discussion of) that question; and we'll focus on more specific issues where human fine-tuning is often required.

■ Thanks to Keith Burns, of Microsoft, for providing the UPSIZE.MDB.

PCW Contact

Email Mark Whitehorn at database@pcw.vnu.co.uk or write to him at the usual PCW address (p10)

■ Mark Whitehorn's book, *Inside Relational Databases*, is available through our Reader Offers section, see p318 for details.

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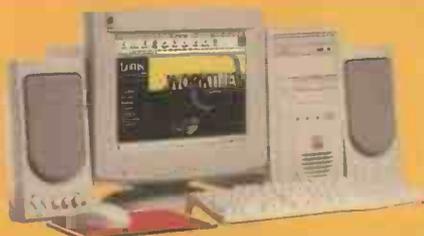
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The problem with **Explorer**

Microsoft seems determined, by hook or by crook, to get Internet Explorer onto your system as your default browser. Nigel Whitfield comments, while putting other net niggles to rights.

The Internet is very rapidly becoming an important part of the distribution mechanism for software, with more and more companies allowing the public to download trial software, or updates. The cynical might suggest that rather than being a means of ensuring wide beta testing and ironing out of bugs, the free betas are more likely a way to make sure your data is locked up in a new product before you have time to consider the competition.

Of course, another way of distributing software is by bundling it with other programs, and it's just that sort of practice that's causing Microsoft a certain amount of hassle, due to its attempts at bundling Internet Explorer with Windows. The excuse that it's so tightly integrated

into the operating system it can't be removed, doesn't exactly work with Windows 95, since it can actually be uninstalled in a trice.

Windows 98 may be a different matter, but that's only because it's been designed that way — and I'll leave aside the curious wisdom of a company that's been trumpeting its usability research for years, only to tell us now that it's better to launch everything with a single click than a double one, via the dubious usefulness of "desktop integration".

Whether or not Microsoft will finally have to succumb and remove its browser from the operating system is still a little uncertain. But it may well have alternative plans anyway, notwithstanding the current fines being levied.

Download dramas

Have you attempted to download Microsoft internet programs from the web site? How about Outlook 98? Or maybe you've been looking at IIS 4.0 for your NT box. In both these cases you'll have found something rather disturbing: the requirement, in order to run either the web server or, for heaven's sake, a contact manager and email program, is that you have Internet Explorer 4 cluttering up your system.

If there are components, like DLLs, they can be unbundled and supplied with Outlook. If Outlook actually calls upon something other than DLLs, it's badly written. More likely, however, is that Microsoft is simply finding other ways to foist its browser on us. And in the case of Outlook 98, that meant spending time on a

p244 >

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32Mb download (silly me, I only had the Demon edition of IE4, and that wasn't good enough) and freeing up 120Mb of disk space to run the installer — complete with Java virtual machine, Explorer fonts and Outlook Express.

I have a permanent net link so I can just sit back and wait. But Joe Punter cannot, and even if the software is delivered on CD, do we really need this insidious infiltration of our systems by a browser that we don't even want? There's no option about it — install Outlook 98, and Explorer appears on your system.

To me, that's almost worse than having a browser coming with the OS; at least you only have to junk it once, rather than having it re-installed each time you want to try out the latest Microsoft internet application.

Perhaps this is just an aberration. Maybe Microsoft won't try this sort of expensive (it's not cheap when it makes your download 32Mb) trick on other pieces of net-aware software that it makes available on the web. But isn't it funny how when Microsoft is having problems with one way of delivering a copy of Internet Explorer, another one comes along?

Questions & Answers

Q Many of the sites I've visited have buttons that change when the mouse moves over them. How can I create this effect on my web pages?

A The effect is called a JavaScript rollover and, as the name suggests, it's done using JavaScript. I'll cover it in more detail in a future column, but for now, there's a simple solution that you may care to use. The Web Review site has a rollover generator that allows you to fill in details of the images that you want to use, and will automatically create code that you can cut and paste into your own web page to create the desired effect. You can find out more at style.webreview.com/wr/pub/98/03/13/coder/rollover.html.

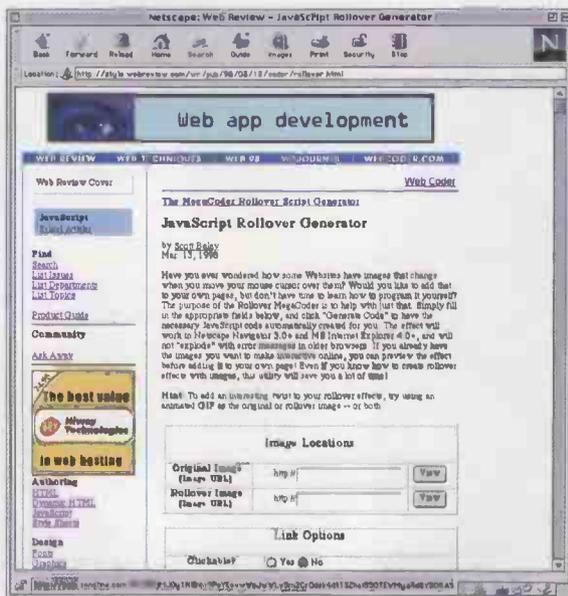
Q I use dial-up networking in Windows 95. I would find the Automatic Connection feature of IE4 (I assume this means you don't receive a window requesting a password) very useful, but it doesn't work. If I go to Internet Options, choose the Connection tab, then choose Connection settings and put in my password, then click OK, it promptly ignores it! Returning to Settings as soon as I have pressed OK reveals nothing in the Password box — no asterisks, nothing. Why?

A It's most likely that you have signed on to Windows without a password. Dial-up networking will not allow you to save the password unless you have signed on as a user with a valid

password. If you clicked the Cancel button when Windows asked you for a name and password, then you'll have this problem.

There are two solutions. The first is to sign in to Windows as a user with a password each time you want to use your system — and if you share the computer with other people, you can then have a separate desktop for each user.

The alternative is to sign on with no password. If you've always been in the habit of simply pressing Cancel



You can create a JavaScript rollover by filling in a web form then copying and pasting.

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Questions & Answers

(continued from page 244)

when Windows asks you for a name and password, and haven't created any users yet, then all you need to do is create a user by typing your first name, with no password. When you're asked to confirm the password, enter a blank one again, and press Enter. You won't be asked in future to sign on when you start Windows, and Dial-Up Networking should allow you to save the password.

Q My niece has asked me to print some of the images from the Titanic Movie web site. I saved the page so as to open it later in Corel Print House where I can choose only the image from the page, but the page saved as (.htm) extension without graphics. How can I save the page as an image?

A When you tell your web browser to save a page, it saves just that — the page itself. And an HTML page is simply a description of what's on the page, with references to other items held on the web server. In other words, the HTML file that you've saved doesn't actually include the pictures. It simply says: "This picture goes here on the page."

If you want to recreate the page on your hard disk, you'll need to save each image individually. How you do that depends on which browser you're using. You may have to click on the image with the right mouse button and choose Save, or hold down the mouse button on the Mac.

To recreate the page, you'll need to look at the HTML source and see where the pictures were originally stored in relation to the page itself. For instance, if all the images appear when you choose View Source with a reference like ../graphics/picture.GIF, and you've saved the file as c:\html\titanic\page1.htm, then you'll need to create a directory called c:\html\graphics and save all the pictures in there.

Q The cache directory in my Microsoft Explorer is gradually expanding. Will there be any adverse effects if I delete the files in the cache directory? What is it for, anyway?

A The cache directory is used to help speed up access to the web. You'll



You can empty the cache via preferences in Explorer, if you want to free up some disk space

typically find that many of the things in it are graphics files, though there may be some web pages too. When something that Explorer needs to display a page is in the cache, it can be used without having to fetch it from the web site. This speeds up access, especially if you have a slow link.

For example, a web site might have a corporate logo and a button bar at the bottom of each page. By cacheing these items, they only need to be fetched once, even though they might be displayed dozens of times during your visit to the site.

You can clear the cache out simply by deleting it, but the best way is through the options in Explorer. This will also let you say how long things are kept in the cache, and how often it should check to see whether there's a more up-to-date version of the item it needs.

Q I'm looking for some old college pals, but the email directories I have gained access to through Yahoo, BigFoot etc seem to be centred on the USA. Could you please give me the location of the UK ones, assuming there are any?

A There aren't any large UK email directories that I know of. Your best bet is to check with the main directory services such as Four11 and BigFoot for people in the UK.

It's also worth checking with college alumni associations, some of which may collect email addresses for their directories. Of course, many of these will only produce addresses for people who have asked to be included.



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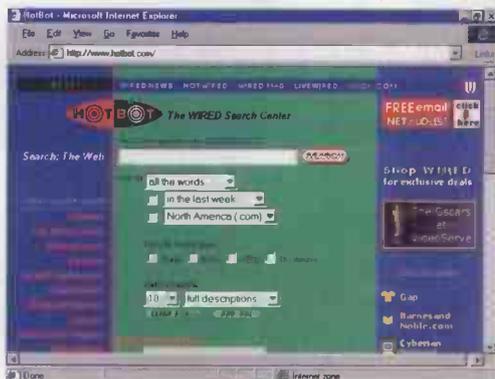
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Hands on technology



Questions & Answers



(continued from page 247)

You may be able to track some people down, regardless of whether or not they're signed up for directories, by using the Usenet name search system to see if they've ever posted to a newsgroup.

To do that, send a message to mail-server@rtfm.mit.edu with no subject and a line in the message body that says, for example:

send usenet-addresses/whitfield

and you'll receive a list giving you addresses and dates when that address last posted to a newsgroup. Remember that you need to use a whole name: you can't just enter a part of it.

Another possibility is the simple brute-force method of typing a name into a web search engine and seeing what you come up with. One of the best ones to use for that kind of search is HotBot www.hotbot.com which can be told that what you're looking for is a name, so if you ask for Nigel Whitfield, HotBot will look for "Whitfield, Nigel".

Q I have a P120 running Windows 95. When running a check using First Aid, it throws up an error in IE 3 — "File C:\WINDOWS\SYSTEM\JGDWMIE.DLL is missing". I've tried to download this file from the web, but there are no hits. I've been using IE 3 with no apparent problems, so can I safely ignore this apparent error?

A Yes, you can. The file can be replaced, if you wish, from win95_09.cab of Windows 95, OSR2, but it's not essential for Explorer. It appears to be a DLL for viewing a type of file called "JG," from America Online, and presumably won't be called upon unless you try to view that type of content. If you don't have the OSR2 release

HotBot has a special option to use when you're searching for names on the internet

of Windows 95, then you could try re-installing Explorer.

Q When I was configuring Netscape Communicator to fetch my mail, I noticed an option for accessing messages via IMAP instead of POP.

What's the difference, and why would I want to use IMAP instead?

A IMAP (the latest version is IMAP4) is a much more modern protocol than POP3, though both are, at their simplest, ways of retrieving information from a remote mailbox, like the way you collect your messages from an internet provider.

However, IMAP (Internet Message Access Protocol) provides many more features, including remote folders. In other words, you can organise your messages into folders, and still store them on the mail server. For many people that may not be an issue, since you'll only have one computer from which you want to access your mail. But for those who move around, it can be very useful indeed, since messages that have been filed on the server will be accessible from anywhere, as long as you have access to an IMAP mail program. IMAP also allows for shared folders, making it ideal for group working.

There are a number of IMAP servers available, both commercial and free, for different platforms. If you have a network in the office and want people to be able to access their mail from outside, it may be worth installing an IMAP server. At present, it's not a service that internet providers tend to offer — at least not for their standard domestic customers — so the majority of readers won't need to worry about it.

You can find out more by checking the web pages at www.imap.org.

PCW Contact

Nigel Whitfield is a freelance journalist, maintainer of several internet mailing lists and consultant to a number of non-profit organisations. Write to him via the PCW address (p10) or contact him at internet@pcw.co.uk

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The day the music died

Tim Nott likes music while he works but after installing a scanner, he discovered his CD audio disks wouldn't produce a squeak; here's how to prevent the same happening to you.

Music is important to me. So much so that when I first got a CD-ROM drive in 1992 I was so *unimpressed* with the crappy speakers on offer that I went out and bought a second-hand Sony tuner/amplifier and a pair of Mordaunt-Short bookshelf speakers.

A few months ago, I decided that fitting a second CD-ROM drive would be a good idea. All was fine and dandy until I installed a scanner. This entailed fitting a card into an ISA slot on the PC, which is, in effect, an extra parallel port and then installing the TWAIN drivers. (Just to go off at a slight tangent, I am told that this acronym stands for Technology Without An Interesting Name — does anyone know if this is true?). Anyway, all went fine and soon I was scanning away like billy-oh. Except that the next time I stuck a CD audio disk into the drive, no music was forthcoming.

OK, I know about all this stuff, don't I? The volume control wasn't turned down or muted. The CD audio tab in Control Panel/Multimedia was pointing at the right drive. The CD player applet was churning away, so it wasn't an autoplay problem.

WAV and MIDI files were playing loud and clear so I settled down for a good session of ferreting in System/Device Manager for possible conflicts. And then a



Fig 1 Snagit can capture text where the clipboard dares not go

Fonts folder. Some might call this stupid — I call it lateral thinking. Some are right, however, as the resolution was far too low.

I was just about to put this

little bell began to chime. It certainly was something to do with the scanner installation but the scanner hardware and drivers were Innocent and walked from the court. A quick exhumation order on the PC casing revealed the true culprit. It was foolish, clumsy Nott, who had dislodged the little cable connecting the CD-ROM audio output to the sound card!

Of fonts and files

Richard Baddiley wanted to create a list of TrueType font names alongside their DOS filenames. A perfectly reasonable request, I thought, but of course the Font folder won't print a list. Furthermore, the DOS DIR command won't display the font names — only the file names. The only solution I could think of was to OCR screenshots of the

out to tender when a tiny bell tinkled somewhere over the other side of the Chinese wall that divides Tim Nott (operating systems) from Tim Nott (application reviews). Yes, Snagit (Fig 1), which I looked at in the *View From The Desktop* column last October, does this very thing. It's a screen grabber that has two killer features in this context: it will grab a window's contents as text and it will grab the entire, vertical, scrollable contents in one swoop. Note that with "vertical" (with the column and window width suitably adjusted) you can optionally exclude the file size and date stamps.

Fonts go AWOL

While we are in the vicinity, here's a common problem: the Fonts folder losing its magical properties.

The latest report comes from Hitesh Jethwa. His "Install new font" command had gone AWOL from the File menu. The easy way to fix this is with TweakUI (part of Microsoft PowerToys) where there's an

Shutdown blues update

An update on shutdown blues, from Alan Wooley, who went through the procedures outlined in my February and March columns: "To add insult to injury, the problem was intermittent. Finally the finger pointed at FlexCD which will not shut down with a CD left in the drive..." And from Colin Spencer: "If you have an IDE drive, ensure that the master/slave jumpers are correctly set. If they are not, then the machine just displays the 'wait' screen and never displays the 'safe to turn off' screen. I found this by trial and error on my son's machine."

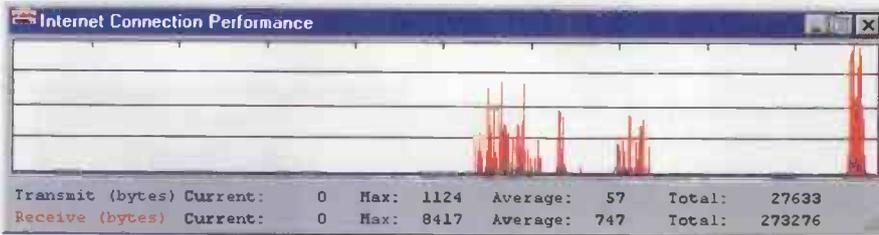


Fig 2 No beauty, but full of vital statistics

option to repair the fonts folder. If this doesn't work, or you don't have TweakUI, or would like to know why the problem occurs, there are three possibilities.

Starting with the simplest, it could be that the Fonts folder has lost its system attribute. To check this, right-click on the Fonts folder in Explorer, choose Properties and look in the Attributes panel: if System isn't checked, this is the problem. However, it will be greyed so you can't change it here. Instead, open a DOS window and, if not already in C:\Windows, type:

```
CD C:\Windows
ATTRIB +S C:\Windows\Fonts
```

If you're the kind of rugged individualist who doesn't keep Windows in C:\Windows or the fonts in C:\Windows\Fonts, alter the above lines to suit.

Restart the PC. If this doesn't do the trick then it's possible that the DESKTOP.INI file in the Fonts folder is damaged or missing. First, put the Windows installation CD (or second floppy) in the drive, open a DOS window and check out Listing 1. Replace <source> with the path to the CAB. If your CD-ROM drive is D: this will be D:\win95\win95_02.cab. If this doesn't do the trick, it may be that the Fonttext.dll file is missing or damaged. This should be in the Windows\System folder, so repeat the DOS stuff to rename the old and extract a new copy, altering the paths and filenames to suit.

Lighting-up time

In April's column, I mentioned Peter McGarvey's tip of getting the System Monitor to display modem transfer rates.

Thank you Stuart Taylor and Michael Medai for bringing Charles Turano's Netmon to my attention

Listing 1 — check out the desktop.ini

```
CD C:\Windows\Fonts
REN desktop.ini desktop.old
CD C:\Windows
extract /A <source> desktop.ini /L C:\Windows\Fonts
```

(Fig 2). This replaces LIGHTS.EXE (the flashing gizmo that appears in the system tray when your modem is online) and shows a graph with the average and maximum send and receive transfer rates. It's shareware, and it costs \$10 to register.

Foxy findings

Back in March, we discussed how to replace the Font viewer's "Quick brown fox..." with "Jackdaws love my big sphinx of quartz". This contains just five repeated letters. By June, Kevin Weedon had upped the ante to just two extra letters with "Quick-blowing zephyrs vex daft Jim."

Alan Cox matches this with "Waltz, bad nymph, for quick jigs vex" and goes on to try for the grand slam of 26 letters with "Jump, dogs, why vex Fritz Blank QC?" Well, if Jim is allowed then so is Fritz, but I'm not happy about the abbreviation QC.

Department of obscure tips

■ Icon with no name

Have you ever wanted to create a nameless icon? If so, you may have tried to use one or more spaces but spoilsport Windows won't let you use space characters on their own. What you can do is use the invisible character produced by holding down the Alt key and typing 0160 on the numeric keypad. Thank you, Laurie Caton.

■ Log-in leap

If your dial-up networking log-in seems to take forever, try the following tip, from Martin Richter. In the Properties of the connection in the Dial UP Networking folder, clear all "Allowed network protocols" except TCP/IP. I've no idea why this should make a difference but having tried it on both MSN and Wanadoo, France Telecom's ISP, it shaved over 20 seconds off the "Verifying user name and password" box.

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Questions & Answers

Q Is there any way of editing the Win95 shutdown routine: a sort of shutdown equivalent of autoexec.bat? My anti-virus software changed the routine to check the boot sector on my A: drive every time I shut down and I would like to make more useful changes.

Benjamin Garrison

A We've had this before but it was back in the mists of time. So, here we go again. You can run applications and then close down Windows with the batch file in Listing 2. The /W switch

Listing 2 — run apps and close

```
START /W MYPROG1.EXE <parameters>
START /W MYPROG2.EXE <parameters>
C:\WINDOWS\RUNDLL32.EXE user.exe,ExitWindows
```

ensures each task finishes before the next commences. However, this may interfere with your anti-virus software.

Q I have a huge file called w95undo.dat on my hard disk. What is it? Does it serve a purpose and can I delete it?

Alex K

A It's the "safety net" file left over when you install Windows 95 over a previous version; it leaves you with the option of returning to the previous version. If you've since installed and become reliant on Windows 95-specific software this won't be a viable prospect. But rather than delete it, get rid of it cleanly by using Add/Remove Programs from Control Panel. Take care that you "Delete Windows 95 Information" rather than "Uninstall Windows 95". As you're ostensibly "Removing Programs" the wording is rather ambiguous.

Q For weeks I have had a DOS notice when I switch on Windows 95 OS: "Invalid setting in the MSDOS.SYS file BOOTFAILSAFE=0". Despite having asked everyone I know, as well as several "experts", I have been unable to solve the mystery.

Richard Aylward

A This is the result of what we "doctors" call a cock-up. There is an

entry that can be put in the [options] section of MSDOS.SYS. If BootSafe=1 is present, the system will start in Safe Mode. If this is set to zero, or not present, Windows will start normally. The Windows 95 Resource Kit incorrectly reports the entry as being BOOTFAILSAFE=, so it looks like an over-zealous techy has configured your system.

The best bet is to find MSDOS.SYS in the root folder of your boot drive. It's a hidden file so make sure you have made these visible from View, Options. It's also read-only (i.e. you won't be able to save changes to it) so right-click and clear the read-only attribute from the Properties sheet. Now load it into Notepad and completely remove the BOOTFAILSAFE= line. Don't forget to reset the read-only attribute.

Q After roughly 30 minutes of use, my hard drive pages busily for two or three minutes, hanging applications and stopping work. This also happens straight from bootup, even if I leave the machine alone. I have tried re-installing Windows but it has made no difference.

Andreas Tawn

A I will bet you a hot chicken sandwich that this is the notorious FindFast at work. It comes with MS Office and sporadically creates indexes of your Office documents. I have yet to find anyone with a good word for this and, as noted last month, it can stop Defrag completing. Remove its shortcut from your Startup folder.

If you want to make a thorough job of it, open FindFast, delete all the indexes it has created, (otherwise Office may still try to use them) then Stop indexing and close it.

Q Is it possible to have more than one scrolling marquee screensaver under Windows 95? I have tried saving with different names and the latest overwrites the earlier, even when it has a different name.

Duncan Stewart

A No, the text is not stored in the .SCR file but in a file named CONTROL.INI. But there's a way around it with a hex editor and a sturdy anorak. Make a copy of Scrolling Marquee.SCR under a different



Fig 3 Yes, you can have multiple marquees with a little hackery

name (My Marquee.SCR, for example) in the Windows\System folder. Open this in a Hex editor and go to offset 4192 Hex and change the text of M a r q u e e taking care to preserve the zero-byte spaces between the letters and the length of the string — one letter change is enough.

Save the changes, and you will find that you will have both the original Scrolling Marquee and My Marquee available from Display Properties (Fig 3), each of which will accept its own text.

Q In Help, when I select Print Topic it prints in a bold condensed font that is almost illegible and probably uses tons of ink. Can I change this setting to something like Arial?

Edmund Potter

A In a word, no. According to the MS Knowledge base; although you can change the size of the screen font, all printing is done in 8pt MS Sans. This was never intended to be a printer font and, as you have discovered, looks awful. What you can do, however, is copy and paste the topic into a word processor, then format the text to your liking.

PCW Contacts

Email Tim Nott at win95@pcw.co.uk or write to him c/o the usual PCW postal address (p10).

NetMon pw1.netcom.com/~cturano/netmon20.zip
Snagit www.techsmith.com



Cosmetic surgery

Panicos Georghiades and Gabriel Jacobs discover Calmira, a program which gives you the functionality and look of Win95 without an upgrade or upsetting your system — it's on our CD.

In our May issue column we answered a letter from Chan Hoi Ching in which we showed how to change the default Windows 3.1 start-up logo to one of your own. David Bradley (bradleydn@aol.com) writes: "If Chan Hoi Ching's friend does not want the Windows logo to appear during the starting up of Windows, all he has to do is to insert WIN : (that's WIN plus a space plus a colon) in place of WIN at the DOS prompt, or amend his autoexec.bat file accordingly."

Yes, this will work if all you want to do is suppress the logo. Microsoft actually recommends that you type WIN plus a space and then F7. This sequence appears as WIN ^@ on the screen. Earlier versions of Windows (before 3.0) allowed you to suppress the logo screen simply by typing WIN followed by a space.

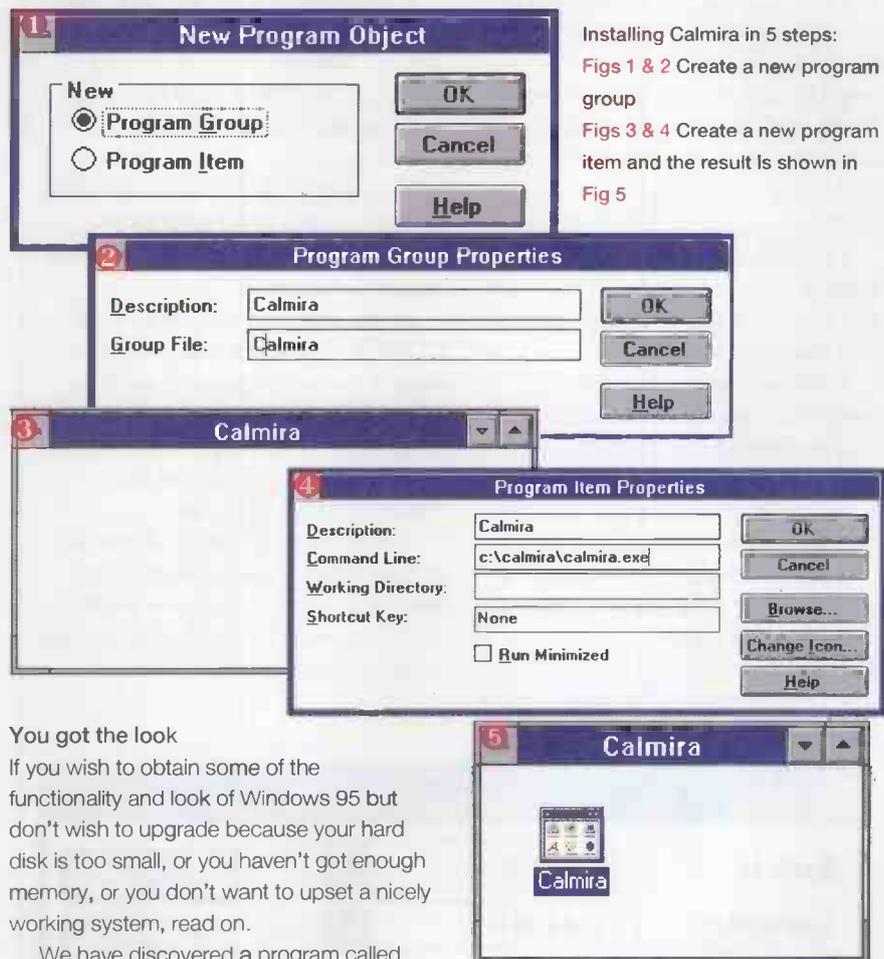
You can also suppress the logo screen by having Windows automatically execute a program at startup, by typing WIN plus the name of a program (this should include the complete path unless you will be starting a program that's in the Windows directory). For example:

```
win c:\msoffice\winword\winword
```

will automatically minimise Program Manager and load MS-Word.

Other things you can do to speed up Windows start-up time are:

1. Get rid of any programs in your Start-up group that you don't use at every session.
2. Defragment your hard disk.
3. If you are using more than one drive, ensure that Windows is installed on the fastest drive.
4. Get rid of any installed fonts which you don't use.
5. Simplify your desktop (get rid of backgrounds).



Installing Calmira in 5 steps:
Figs 1 & 2 Create a new program group
Figs 3 & 4 Create a new program item and the result is shown in Fig 5

You got the look

If you wish to obtain some of the functionality and look of Windows 95 but don't wish to upgrade because your hard disk is too small, or you haven't got enough memory, or you don't want to upset a nicely working system, read on.

We have discovered a program called Calmira (presently at version 2.1) which essentially gives you Win95 features with the minimum of fuss. It's available on this month's PCW CD-ROM under Utilities in the software library. It does not require any special setting up. Create a directory called Calmira on your hard disk, copy the ZIP file into it and unzip it. Among the files that will be uncompressed will be one called calmira.exe. You can either create an icon for Calmira and run the program whenever you wish, or if you want to use it all the time,

you can make it your default Windows interface by editing a single line in your system.ini file. To create an icon:

1. Choose New from Program Manager.
2. Select Program group.
3. Type Calmira in both boxes.
4. Click on OK. (This creates a new empty Windows program group).
5. Select New again and this time choose Program Item.
6. Click on the Browse button and select

p256 >

Questions and Answers

Q Thank you for your helpful article entitled *After the Lights Go Out* (page 310, *PCW*, April). I have tried your suggested method of creating a system disk but when I get to the C:\ prompt on exiting Windows 3.11 and type in your suggested "formula", my machine just returns to the C:\ prompt. I also have tried it by getting to the prompt from Program Manager but with the same result.

John Ainsworth

john.ainsworth@virgin.net

A You are in fact referring to Lynley Oram's article which was meant to prepare you for that unfortunate day when disaster strikes. This is the day when you switch on your machine and the hard disk will not start. You will be absolutely stuck and will not even be able to get to the hard disk to find out what the problem might be.

It is vital that you have a system disk ready for the dreaded day and so we will take the opportunity of re-iterating some pretty basic but important stuff.

There are three ways to create a system (start-up) disk for machines with DOS and Win 3.1 or 3.11 installations. You will, of course, need a floppy disk. If you have a formatted one that contains files you don't wish to erase, but still has some empty space, do the following:

From DOS (before you start Windows) at the C:\ prompt, enter:

```
c:\>sys a:
```

This should copy the system files from the hard disk to the floppy disk without re-

formatting it.

If this does not work, it can mean one of two things. Either the DOS directory is not defined in the PATH statement of the autoexec.bat file, in which case edit the autoexec.bat using DOS Edit, save the file, reboot the machine and try again. Or it could be that the sys.com file is missing from your DOS directory. This means you have a bad DOS installation and you should re-install your MS-DOS files from your original disks. If all works fine, you will get a message saying that the system has been transferred.

If you use an empty floppy disk, you can make it into a system disk when you format it. Do this from the C:\ prompt before you start Windows or from within Windows (from the MS-DOS prompt). Just enter:

```
c:\>format a: /s
```

Or, from the Windows File Manager, choose Disk/Format and select the Make System Disk option.

All the above methods copy five MS-DOS files to the floppy disk: two hidden ones (io.sys and Msdos.sys), and three which you can see (command.com, autoexec.bat and config.sys). The floppy disk can now be used to boot the machine if the hard disk fails.

The config.sys and autoexec.bat files created have standard settings, so the best thing to do is to copy your existing config.sys and autoexec.bat files onto the system disk you have just created.

the calmira.exe file from the c:\calmira directory.

7. Click on OK.

To set it up as the default Windows shell, choose Run from Program Manager, type:

```
c:\windows\system\sysedit.exe
```

and select the system.ini file. Then change SHELL=PROGMAN.EXE to SHELL=C:\CALMIRA\CALMIRA.EXE, save, close and restart Windows.

Which features get a makeover?

You get an icon-based File Manager which displays each directory in a free-floating icon window. Each file in a directory is shown as an icon and by clicking the right mouse button on a file you get a number of options, one of which is to attach a meaningful description to the file.

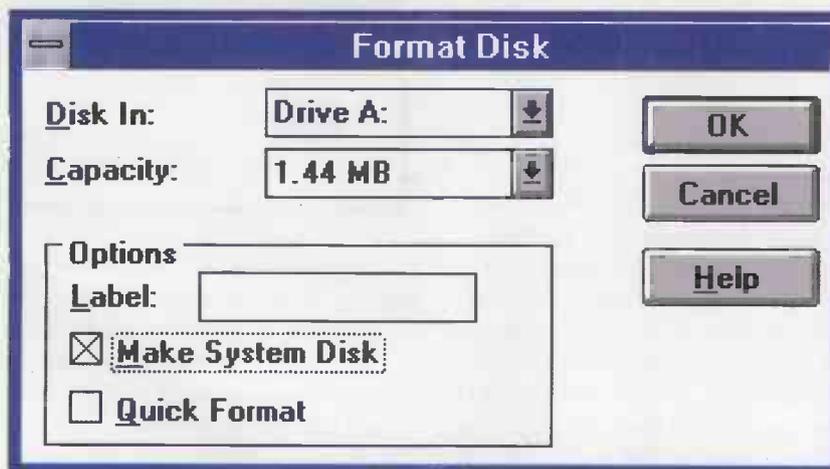
This description is instead of the long file names of Windows 95 — it does not replace the 8.3 DOS filename structure, but it does give you an additional (more meaningful) method of referring to files.

The directory/file tree structure is like Windows 95's Explorer and shows disk drives as well as folders. Calmira also shows user-defined icons for every file according to its type. The type is really its Association in File Manager. BMP files for instance, which are by default associated with Paintbrush, show the Paintbrush icon unless you've associated them with some other program, say Paintshop (in which case a Paintshop icon is shown). Text files (TXT) normally associated with Notepad show with a Notepad icon, and so on.

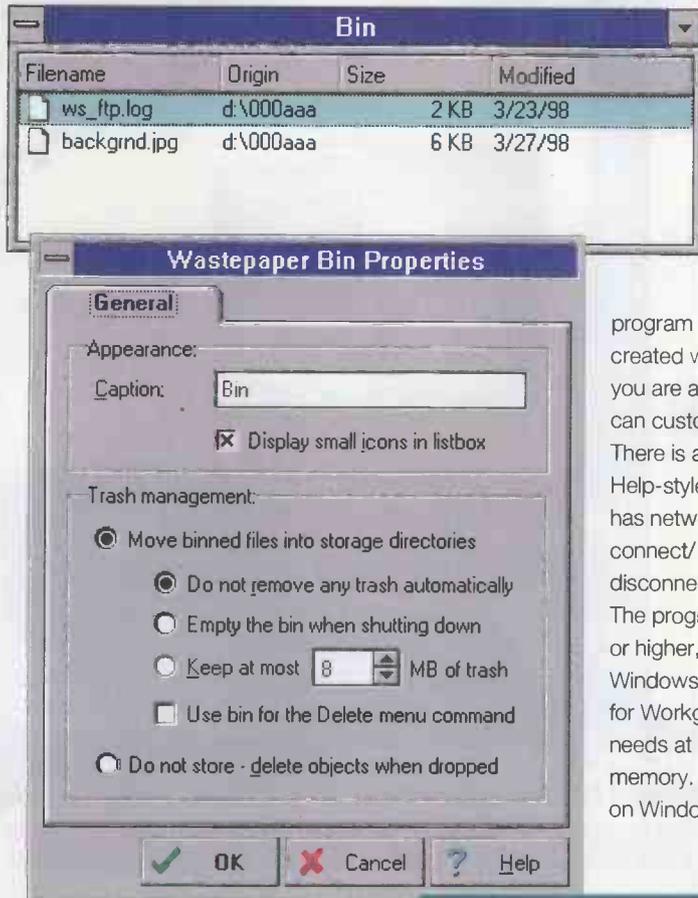
A very useful feature is the Wastepaper Bin (like the Windows 95 Recycle Bin). You can drag and drop icons into the bin to move files/folders to a hidden directory (a temporary delete storage space). You can have one Wastepaper Bin for every hard disk on your PC and you can set it up so that files get cleared (deleted permanently) when they're at the bottom of the bin and the bin's contents reach a certain size.

Shortcuts are available. If you drag any file icon from the pseudo-Explorer onto the desktop, an icon is created which starts the file/program. You can create alias files that point to other objects, and drag and drop objects into desktop shortcuts and aliases.

Of course, there is the Win95-style Taskbar at the bottom of the screen. This displays buttons for programs, icon windows and Explorer. The Clock, which is now constantly available, also shows free memory and resources. A system tray



It is important to have a System disk (boot disk) available in case your hard disk or your MS-DOS installation get corrupted



Left Calmira's Wastepaper Bin. Below, left Setting Wastepaper properties

program executables were created with Delphi and if you are a programmer you can customise it further. There is an 80-page online Help-style manual. Calmira has network support to connect/disconnect remote devices. The program requires a 386 or higher, works on Windows 3.1 and Windows for Workgroups 3.11, and needs at least 4Mb of memory. It does not work on Windows NT 3.51.

enables you to dock small utilities. From this, you manage program windows and terminate tasks. The Taskbar can stay on the screen or pop up when required.

The Windows 95 Start menu provides you with nested program groups and items to any level, it opens folders and dialog boxes and gives you a Shutdown dialog box to quit, reboot, or restart Windows — Calmira gives you the same facility.

You can choose any icon or bitmap file for each menu item and there is a tree-based drag-and-drop menu editor. You can also

customise and fine-tune the program to your own preferences with over 100 user-controlled settings: change screen colours, fonts and dimensions, assign icons and hot-keys for shortcuts, and so on.

In fact, the complete source (over 700Kb) is included in the package. The



Top Clicking the right mouse button opens a pop-up menu from which you can create shortcuts to documents, programs and even to the internet

Above Calmira's Taskbar

Open folder...
Run program...
Explore...
Find files...

New shortcut
Arrange
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Properties...

Internet
Folder
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PCW Contacts

If you have any queries or Win3.1-related topics to discuss, contact Panicos Georghiadis and Gabriel Jacobs at win3@pcw.co.uk

Further information about Calmira is available at www.tribbles.demon.co.uk/calmira/

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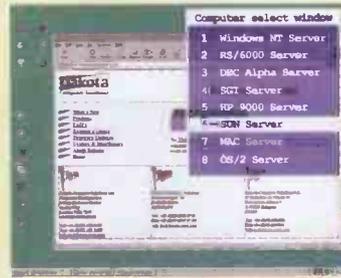
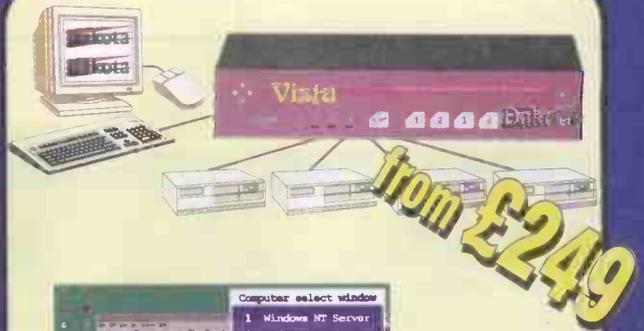
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Watch that space

Beware the space bar when NT boots, warns Andrew Ward. He advises on ways to avoid complete system shutdown. Plus, there's a workstation version of Seagate Backup Exec.

Readers Alan Telford raises a very common complaint: that the message stating "Press space bar now" which appears when NT boots, encourages users to do just that, and with dire consequences.

On one occasion, writes Alan: "This had the unfortunate effect of making the system unusable with the chromatography package we run on that PC. It meant calling out an engineer to fix the problem, at considerable expense." What happens is that pressing the space bar causes Windows NT to revert to a saved version of the registry. But on most systems, the saved version is very old owing to the fact that no-one has regularly updated it. As a consequence, much of the hardware and software on the machine will no longer function. There are several things you can do to prevent this happening.

First, you should regularly update the repair information. For example, after a new application has been installed and you are confident that the system is working properly, run the RDISK command and click on Update Repair Info. You should ideally make a new recovery disk at the same time using the same command.

Secondly, take regular tape backups of the registry using the supplied Backup utility, or something like Seagate Backup Exec for NT Workstation (see below).

Then, if anyone does press the space bar and overwrites the current registry with an old one, you can always recover it from tape.

Thirdly, you can install a second copy of Windows NT on the hard drive. By booting that version instead, you can manually take backups of the normal registry files simply by copying them. For instance, you could copy all the files in D:\WINNT\system32\config to

D:\WINNT\system32\config\backup. If a problem occurs, reboot with your spare copy of NT and copy the registry files back.

Finally, you can manually hack the file that produces the "space bar" message to remove or change it. Anyone who is competent with a hex editor ought to be

able to do it (but should first try it on a test system). The file to be modified is ntlldr and is hidden in the root directory of the system drive. Make one mistake and your system is unbootable, so keep a boot floppy and don't blame me if it ends in tears!

Keep in step

Readers Hugh Price and John Berbuto have pointed out that when using multiple processors with Windows NT, it helps to use the same stepping.

If in any doubt about which stepping you have, run WINMSD, select the System tab and look in the Processor(s) box (Fig 1). All should become clear. This requirement rules out the possibility of starting out with one processor and buying the second later, so to ensure getting the same stepping, you'd have to buy all processors at the same time.

I haven't heard from anyone who's tried

p260 >

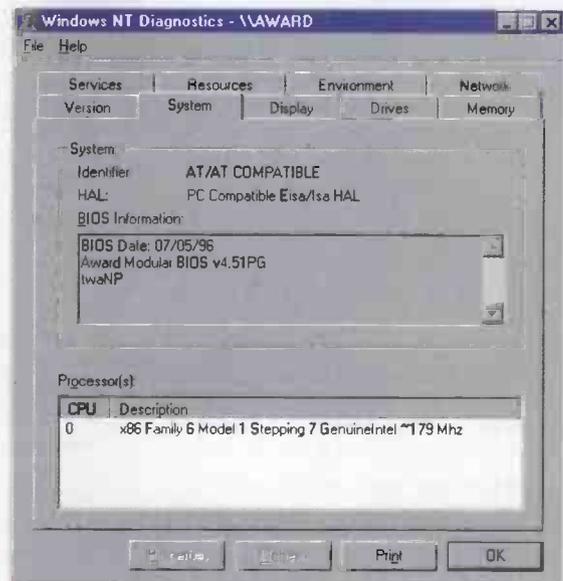


Fig 1 Check processor stepping level for multiprocessor systems

Year 2000 non-compliance

This is just a quick note to warn the unwary (and you may have difficulty believing this) that Windows NT 4 is *not* Year 2000 compliant — even in its latest incarnation with service pack 3.

Windows NT erroneously believes that the year 2000 is not a leap year. How anyone could make this mistake absolutely staggers me. It is almost beyond belief. Maybe the Microsoft programmers never went to school and so didn't learn the rules for leap years? Well, OK, some of them did: some routines in NT 4 do know that it's a leap year, yet others don't (clearly, Microsoft does not go in for code re-use, either).

Anyway, whether you like it or not, you will have to upgrade to service pack 4 (about to go into beta as I write) if you expect to keep Windows NT 4 systems running into the year 2000. And according to what various industry pundits are saying, most of us would be wise to do that, rather than rush into NT 5 when it appears next year.

● We will endeavour to put service pack 4 on the PCW CD-ROM, as and when it is released.

Book reviews

One are the days when computers were supplied with a couple of bookcases full of manuals, but the irony is that as Windows NT gets more sophisticated, it now exceeds the complexity of those mainframes of yesterday. As a result, purchasing additional documentation is unavoidable for the NT professional, so here are three trusty tomes for your consideration.

■ Mastering TCP/IP for NT Server

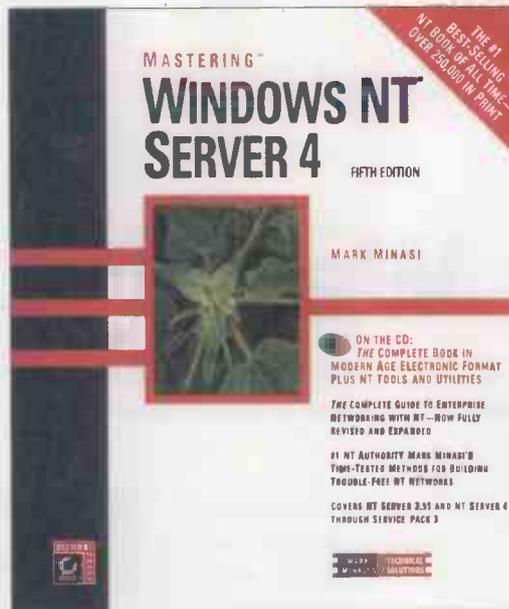
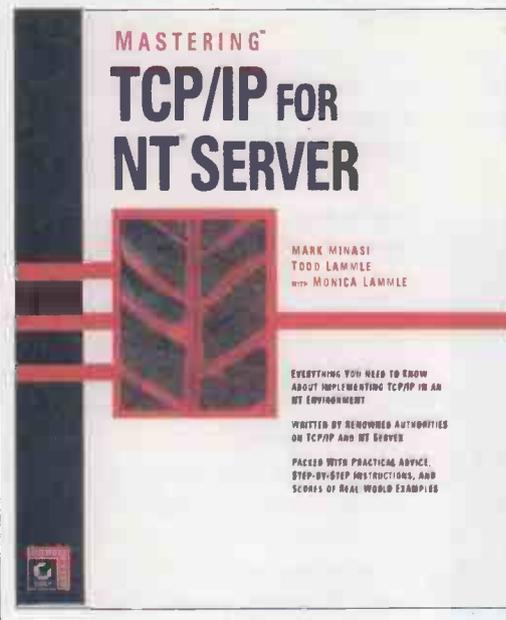
This ambitious volume aims to cover TCP/IP from its birth, right up to the Routing and Remote Access Service for Windows NT 4.0 (formerly "Steelhead") — and it succeeds.

There are the conventional sections on TCP/IP protocol layers and issues like subnet masks, and these are interspersed with hands-on examples of setting up TCP/IP networks under Windows NT 4.0.

It's pleasant to find a book that takes the trouble to explain how things work and why, rather than just taking you step-by-step through setup and configuration screens. And when it does explain how to set something up, it also takes you through testing the resultant configuration, with explanations as to what might have gone wrong if it doesn't work. Above all, this isn't a sycophantic eulogy of Microsoft's prowess: whenever the authors have found something dodgy or unpleasant, they tell you so you know what to avoid.

Intricacies of DHCP, WINS and DNS integration, and name resolution under WinSock and NetBIOS (there are gorgeous flowcharts) all receive diligent attention. Internet services like the FTP server, web server and proxy server get a mention but remember that these things change faster than anyone can print books!

This is an invaluable (but pricey) aid for anyone involved in Windows NT TCP/IP



networking, which these days means just about anyone who works with Windows NT.

■ Mastering Windows NT Server 4, Fifth Edition

It's hard to do a 1,600-page book justice in a couple of hundred words. Rest assured that Mastering Windows NT Server 4 covers pretty much all you'd care to know about NT, from Windows NT 3.51 to Service Pack 3.

The chatty style makes the book readable but does rather add to the page count. This is bedside reading, rather than a quick-dip reference work, but once you've read it, you'll have learnt your stuff. Everything is explained extremely clearly and the author takes you step-by-step through the understanding of complex issues. You'll remember the answer, because you've painstakingly gone through the whys and wherefores.

How about those things you often need to know how to do, but are impossible to find in any book — even when you are sure they're there? Well, this issue is addressed by a rather natty "How do I?" section at the back of the book, pointing you to the places that answer questions such as "How do I create a generic boot floppy?"

Unusually, the accompanying CD is not full of the cheap utilities you normally get but some really useful stuff, such as the Kane Security Analyst and Security Monitor, and Diskeeper Lite. Of course, most of the software is shareware, so you must register and pay for it if you decide you like it, and you'll probably want to go out on the web to obtain

the most up-to-date versions, anyway. But full marks for effort. Oh, and the full text of the book itself is on the CD, too.

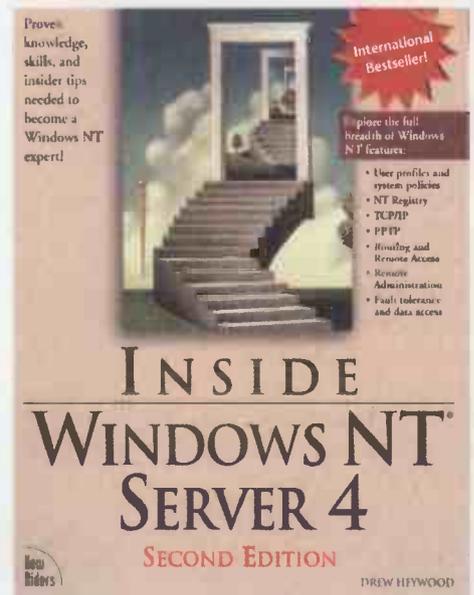
■ Inside Windows NT Server 4 Second Edition

Windows NT doesn't stand still. Although no new version since 4.0 has been launched by Microsoft, the service packs and other add-ons, such as the Windows NT Routing and Remote Access Server, have considerably enhanced and altered both the face and internals of Windows NT 4.0.

This second edition of *Inside Windows NT 4* addresses this with the addition of new chapters specifically devoted to the subjects of routing and remote access server, Microsoft proxy server and clustering Windows NT servers.

Furthermore, the chapter describing Microsoft Internet Information Service has been substantially revamped to reflect the release of IIS version 4.0 — but be warned, this is by no means a complete reference to setting up a web site.

To make room for the new material, gone from the book (thankfully) are some of the more basic chapters like Understanding Networks. And the CDs, with their collection of useless shareware, have been junked (did they



read my review of the original edition?).

The new chapters are very helpful. Routing problems such as "slow convergence" and "count to infinity" are clearly explained with useful diagrams. And the presence of hands-on tips reassures you that the author has done more than just read the manuals and actually uses some of this technology himself. A useful reference work to keep handy.

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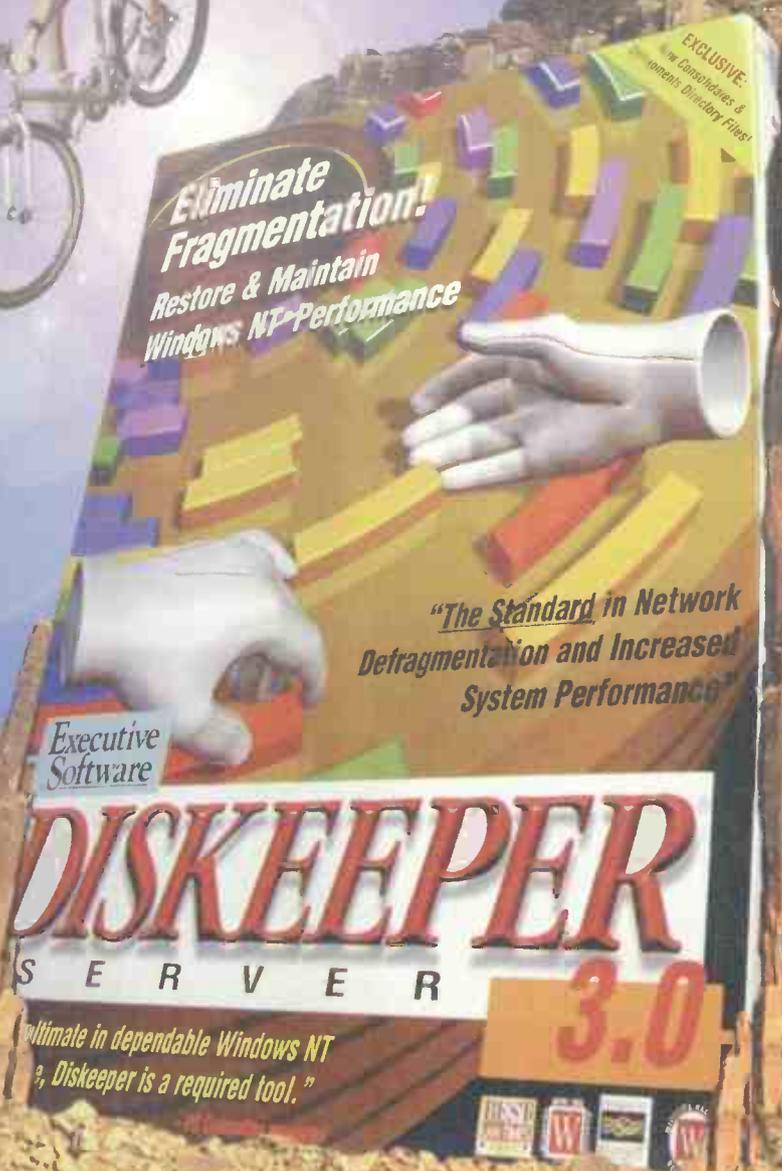
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different steppings and had a system fail to work as a result. So, is this just a sensible precaution or an absolute necessity? Has anyone out there experimented, and come to a definite conclusion?

New folder windows

Many thanks to Anne McCormick who wrote in with an answer for Matthew Willard on how to set the default views for a new folder to Details, while leaving the My Computer window with large icons.

Assuming you have multiple folder windows enabled, Anne says you should open the My Computer folder and arrange the View settings to suit your preferences. If you then hold down the Control key and double-click the C: drive, you should see a view of the C: drive within the same window and with the same settings. Close this window and re-open My Computer (which should still have your preferred settings), then repeat this process for each drive letter on your system.

The final step is to open the My Computer folder, reset it to large icons, turn off the toolbar and close it (assuming that's how you like it).

According to Anne, this procedure (actually gleaned from our *Hands On Windows 95* column some time last year) does work for Windows NT but the changed settings won't last forever; eventually they'll get reset, which could happen after a few days or a few weeks.

Backup Exec hits WinNT Workstation

You're sure to know of Seagate Software's Backup Exec for servers but there's now a workstation version. It really is a great deal more pleasant to use than the Microsoft-supplied Windows NT tape backup



Fig 2 Clearly the word unattended means something different in Seagate World

program and has substantially more versatility. It's also written for Windows NT 4, so it won't include the recycle bin directory when backing up, whereas Backup just treats it as a normal directory, requiring you to manually deselect it if you don't want it. And, you don't have to go through that irritating process of selecting hardware compression and registry backup every time.

I did find one "gotcha": you can configure Backup Exec for what is claimed to be an unattended backup. However, if it's the first time you've used that tape, when you return to your system after the obligatory four-hour lunch break, you'll be somewhat dismayed to find the dialog box (Fig 2) patiently waiting for you to give the tape a name before it starts copying.

Of course, Backup Exec offers everything you'd expect in the way of scheduled backups: overwrite or append, complete or incremental. And at the end of the job, there's a button to click to view the error log (and there always is at least one — people do seem keen on writing processes that hang on to open files to the very last). You can choose what you do and do not want logged.

Many users won't need to create and schedule back jobs at all: the one-button backup function uses default settings that will suit many environments. A full backup is performed the first time and thereafter differential backups are carried out until ten backups or seven days have passed.

Foreign Legion?

Remember "Legion — The Hosts Master" that I mentioned in the May issue? By populating your HOSTS file, it can speed web browsing by saving on DNS lookups. But there's a catch. If someone's IP address changes, your HOSTS file doesn't and you end up being unable to access their web site.

This happened to me with www.microsoft.com. In theory, it doesn't matter two hoots since I usually access www.eu.microsoft.com anyway. But if you're trying Active Setup for something like Outlook 98, you are in deep trouble and it can take a surprisingly long time to figure out why.

PCW Contacts

Andrew Ward can be contacted at NT@pcw.co.uk or write to him at the usual PCW address (p10).

Reviewed books are available from Computer Manuals 0121 706 6000, www.compman.co.uk
Inside Windows NT Server 4 Second Edition (reference 311530) £36.50
Mastering TCP/IP For NT Server (reference 282731) £41.50
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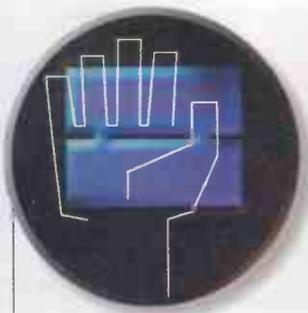
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Small but perfectly formed

Mark Whitehorn kicks off our new column about PDAs. He is prepared to hand out tips and tricks, and sort the software and peripherals. First off, he feels the form in the PDA market.

Welcome to this new *Hands On* column dealing with PDAs (Personal Digital Assistants) — those compact little computers that have become so popular. There has been a rapid proliferation of such machines, ranging from small-but-perfectly-formed laptops to tiny organisers for holding telephone numbers.

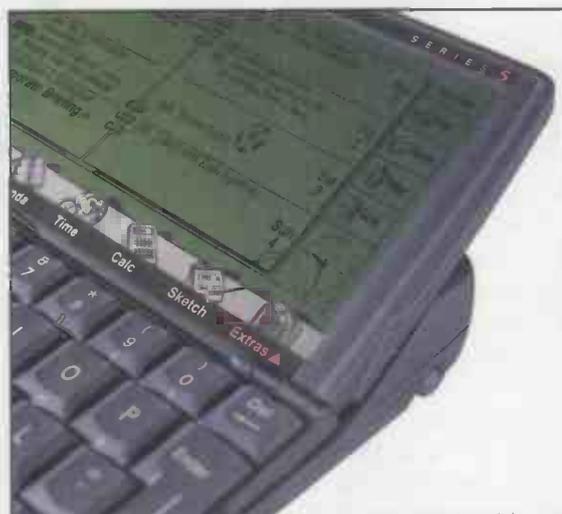
It is impossible to cover all corners in this broad spectrum of devices so I'll concentrate on the mid-range, leaving aside the laptops and electronic address books. In this range there is an enticing group of fascinating and diverse machinery, which is powerful enough to warrant discussion of tips, tricks and tweaks, and additional software and hardware.

Within this group there are three major players: the Psion range (Series 3 and 5); the Pilot series (the most recent version has been renamed Palm III); and Windows CE machines. These are the palmtops on which I intend to concentrate. This month, I'll look at the three basic palmtop types and their strengths and weaknesses.

Two brains are better than one

Despite being a daily user of a Psion, I am concerned not to be partisan about any particular device and I'll try not to fall into the two-brain trap. You know, the one that afflicts most users of palmtops (or indeed, most users of pretty much anything).

Before they buy a palmtop, most people use Brain Number 1. That brain looks at all the relevant sources of information, listens to all that's said and



The Psion Series 5 has a touch-sensitive screen

reads all that's written, about each of the machines under consideration. It carefully weighs up the pros and cons and, with a fully open mind, makes a choice. But as soon as the moolah has been handed over, Brain Number 2 snaps into gear. The chosen palmtop is suddenly elevated to the status of a minor deity: it is perfection personified; other machines are not even worthy of comparison; only total dimwits could possibly have selected any other machine. You may well recognise the condition!

I am a sucker for gadgets in general, so I genuinely do like all three of the machines we're considering here. Each has its strengths and weaknesses and what you buy depends on what you need. Since some readers may be still in the throes of choosing a machine, I'll try to outline the perceived strengths and weaknesses of various machines. So, here is a thumbnail sketch of each for prospective buyers or those considering an upgrade.

Psion of the time

When the Series 3 was launched it was startlingly innovative and remained so until it was eclipsed by the arrival of the completely overhauled 3a. The 3c that followed was not a major upgrade, although there were some notable differences. The most recent version is the Series 5 and it is on this and the 3c that I shall concentrate. However, much of what's said of the 3c will also be true for the 3a.

Psion 3c

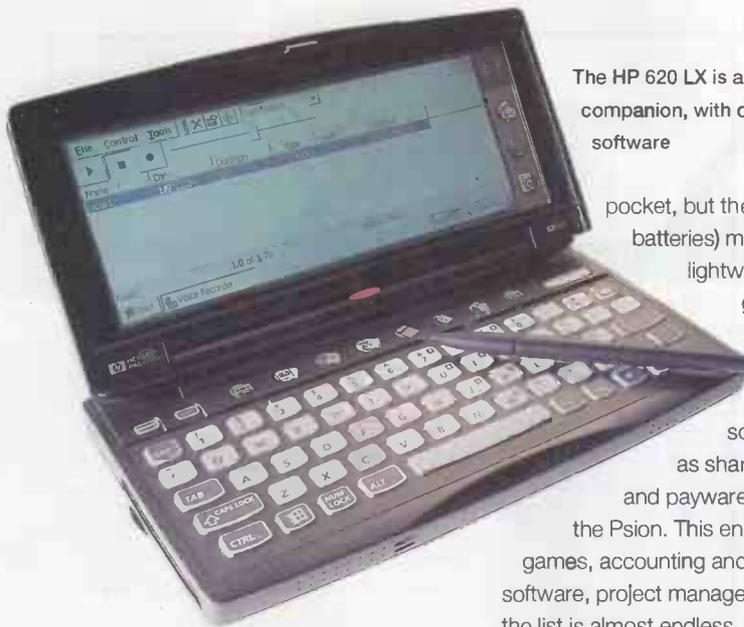
The Psion 3c is a natty palmtop measuring 16.5 x 8.5 x 2.3cm and weighing 275g (just over half a pound for non-EU compliant brains). It's a pleasant, elegant shape and fits neatly into most jacket pockets without being obtrusive.

The heart of the Psion is its proprietary operating system, the Psion EPOC 16, which is invisible behind the GUI interface. The interface is straightforward and I've never heard any complaints that the Psion is difficult or particularly unintuitive to use.

It has a small qwerty keyboard which touch-typists with tiny hands can use — I hunt and peck. The screen is so legible that the backlight is not often required but when used it is very effective. The battery life from two AA batteries is excellent (I get about 35 hours) and helped by the infrequent need for using the backlight.

The screen is not touch-sensitive so everything is keyboard driven. It comes with the usual range of applications, including a word processor, spreadsheet, contacts database, agenda, calculator and world/time features.

- The street price for the 3c is between £230-£250 (ex VAT).



The HP 620 LX is a more colourful companion, with cut-down Windows software

pocket, but the extra bulk (and batteries) might derange a lightweight "designer" garment.

A vast array of third-party software is available as shareware, freeware and payware for all flavours of the Psion. This encompasses games, accounting and expense tracking software, project management packages — the list is almost endless.

- The price of a Psion 5 is around £370-£400 (ex VAT) for the 8Mb version.

Psion 5

The Psion 5 gives an odd lurch in your hands when you open it as the keyboard slides forward to meet you. Its keyboard appears to be larger than that of the 3c but careful measurement shows that it is almost the same width, and only slightly deeper. The keyboard also seems different because the keys have sloping sides and are packed closely together, whilst those on the 3c sit as isolated islands in oceans of space. Most people find the 5's keyboard an improvement over that of the 3c.

The reason for the sliding action is not to make the keyboard bigger (despite reports to the contrary): it slides in order to move the centre of mass forwards, which ensures that the palmtop does not tip over when you tap the screen with the stylus. Yes, touch-sensitivity has arrived for the Psion.

The additional complexity of the sliding action and touch sensitivity are not without their drawbacks. On my first 5, the slide mechanism feels gritty and uncomfortable.

The readability of the touch-sensitive screen is definitely worse than that of the 3c. This poor visibility results in increased use of the backlight and a concomitant reduction in battery life. I get about five hours from two AAs, which is still much better (and more convenient) than you could expect from a laptop. Slip a four-pack of AAs into a pocket and you could use the Psion continuously on a flight to Los Angeles. Doing the same with a laptop would consume half your luggage weight allowance in spare batteries!

The operating system was entirely re-written for the 5 and re-named EPOC, but the range of built-in applications remains much the same. It still slips into a jacket

Don't Win CE, it's Windows

Windows CE is software rather than hardware and because different manufacturers have built palmtops to run it, a whole range of machines is available. Microsoft's Windows CE (often contracted to Win CE and pronounced, somewhat disparagingly, as "wince") is a cut-down version of the Windows 95 operating environment. You don't get all the functionality of 95 but you do get much the same look and feel from the menu system and the cut-down versions of applications that run under it.

Hewlett-Packard 620LX

The specific Win CE machine I'm looking at is the Hewlett-Packard 620LX with colour screen. It's very much at the top end of what's available but is a good example of what CE machines are aiming at, namely something that's as similar to Windows 95 as possible. The screen is touch-sensitive and the qwerty keyboard is fine. It has an excellent screen, a permanent backlight and runs off rechargeable lithium-ion batteries. These are neat and recharge whenever the HP is plugged into the mains. Figures for battery life are hazy and I have no specific measurements as yet because the machine is fairly new. The major advantage of the HP 620LX is instant familiarity for users of Windows. The hassle of learning something new is removed and this is likely to prove appealing to many.

Even a cut-down version of Windows and associated applications needs a reasonable hardware specification to run

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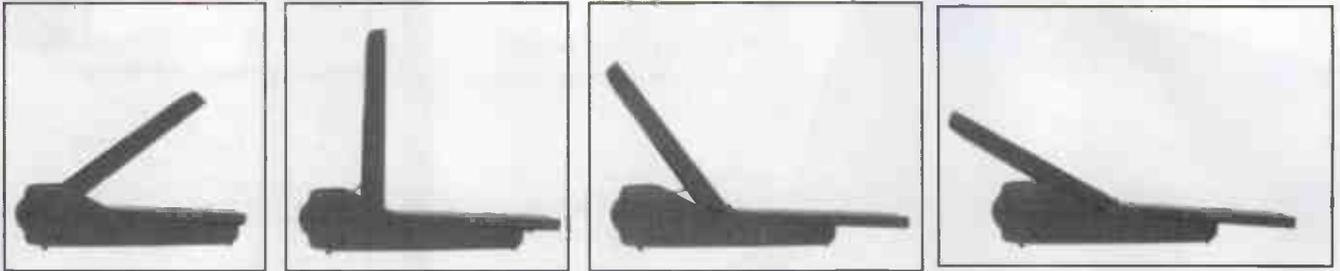
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The innovative keyboard hinge on the Psion 5 moves the weight forward so the machine doesn't tip over when you tap the screen

well and the HP is noticeably larger and heavier than the Psions. It measures 19.5 x 10.5 x 3.5cm, which doesn't sound much more until you do the volume calculation which reveals that the HP is well over twice as bulky (and about twice the mass).

In time, it is likely that the supply of third-party applications to run under Windows CE will expand in the same way as they did for the Psion.

- Costing between £550 and £600, the HP palmtop is an expensive purchase and VAT must be added to those prices, too.

Palm III

This is the latest in the series that began with the Pilot and moved on to the Pilot Professional. The Palm machines are totally different from the Psions and Windows CE machines. For a start, the Palm III has no keyboard. It looks more like a notepad. The majority of its face is taken up with a touch-sensitive screen with few buttons set out beneath. The main method of driving it, therefore, is with the stylus. It is a small, lightweight, machine measuring 12 x 8 x 1.5cm and weighing in as the lightest of all.

The Palm III is a lot less like a PC in other ways, too. There is no spreadsheet and no word processor and the memo writing facilities that are present are not geared towards heavy-duty text manipulations.

You cannot type text into the Palm III from a keyboard. Instead, it uses Graffiti character-recognition software. This translates characters, hand-written on the lower section of screen, into alphanumeric characters displayed in the upper section. Some effort is required to learn the way to form characters so they will be translated correctly by the Graffiti software but this isn't a major undertaking as most of them correspond with the natural way of writing (with a few exceptions).

Screen legibility is fair; improved with use of the backlight but subject to the usual battery drain when it is. Battery power comes from a pair of AAAs which last a *looong* time and are so tiny that carrying

Going the Win CE way

■ The main motivation for many people using computers in all their guises is to get things done. Time spent learning a new system, even one as straightforward as the Psion's or Palm III's, is perceived as a waste of productive time.

Therefore, given the choice of a new GUI, or a slimmer version of an already familiar GUI, taking the Windows CE route is, for some, the natural choice.

spares isn't arduous.

- At the time of writing, the Palm III is not yet on general release. Prices for its predecessor, the Pilot Professional, range from £215-£230 (ex VAT).

The main considerations

In general, each palmtop is best suited to a particular job or a particular way of working. Before deciding which to buy, consider your needs and look for the best match.

Both hardware and software should be considered. For instance, if your pockets already sag from carrying phones, pagers and the like, size and weight will be important. Or if you haven't the time or inclination to learn anything new, the Interface familiarity of Windows CE machines will be attractive.

The Psion is a good all-rounder, but could be seen as a compromise resulting in a jack-of-all-trades, yet the success of the Psion shows that it manages to be master of most. The keyboard, despite being tiny, is easy to use by hunt-and-peck typists and by touch typists with small hands. Over the years I have typed hundreds of thousands of words on my Psion keyboard (mainly while on trips abroad) so it is definitely an easy and robust way of entering text. As a personal organiser to manage phone numbers, addresses and appointments it is very competent and the spreadsheet and word processor have perfectly respectable functionality.

The major selling point for Windows CE machines is the similarity to Windows, which represents a non-trivial edge over the

opposition. Compatibility between the two operating systems extends to such things as file formats, and although the Psion has file conversion utilities, it does increase the complexity. A Windows CE machine is much more like a tiny laptop; it's more chunky than either of the other palmtops and is no longer so pocketable.

The Psion company researched the ideal size of a palmtop when prototyping the Psion 3 and found that the results showed bands of acceptable sizes. Too small, and it was impossible to type on. Too large, and it was voted too awkward to carry around on one's person.

In my opinion, the Hewlett-Packard 620LX just oversteps into the latter category. I have found myself sliding it into my briefcase for journeys, rather than slipping it into my pocket (the invariable resting place of the Psion). Your jacket would need to be stout and boast a poacher's pocket to house the HP safely, and with anything approaching elegance. Also, the HP620LX is an expensive option, costing as much as some laptops.

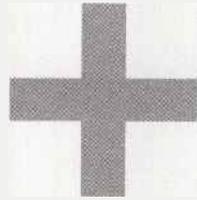
The Palm III is excellent but it is for a completely different type of task. Many people keep contact information and an agenda on their desktop PC. You can keep a copy of these on the highly portable Palm III, and with the software supplied it's an easy matter to keep the two copies synchronised. It's fine for making notes but it's not really kitted out for writing a novel, although even as I type, I am totally convinced that someone, somewhere, is no doubt engaged in proving me wrong.

- Next month we will start having a look at a few tips, tricks and useful URLs.

PCW Contacts

Mark Whitehorn welcomes suggestions from readers and can be contacted at the usual PCW address (p10) or via email at pda@pcw.co.uk

MJN

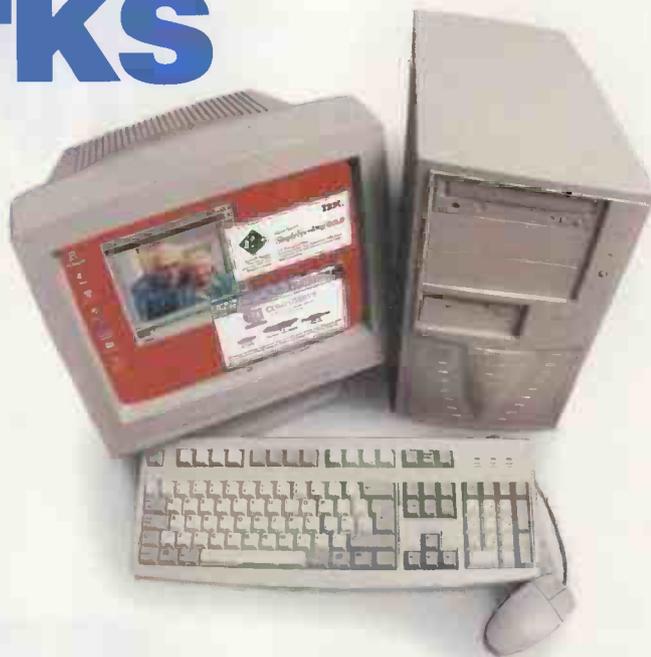


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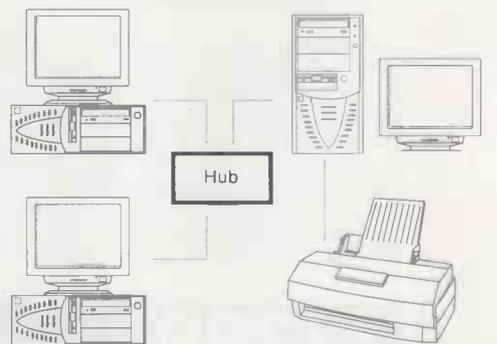
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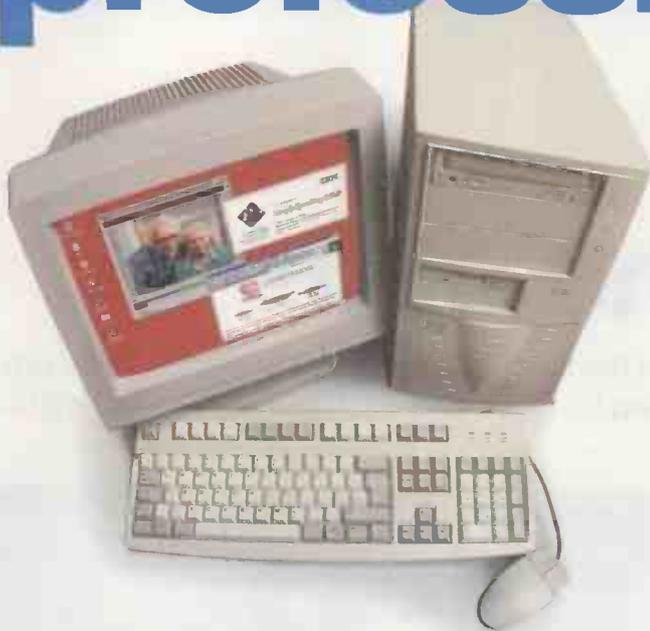
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TBPR01A



The tar's **the star**

"I'm a gnu. How do you do"... Chris Bidmead introduces you to gnutar, a nifty way round the problem of multi-PC backup. And for those hopelessly lost with Linux, help is at hand.

In the old days, when I had several computers to back up and only one tape device, I used to shift the backup machine from computer to computer. These days, I try to work smarter. As luck would have it, the people behind gnutar are ahead of me on this.

In previous months we've been exploring the use of tar with a local device, thus:

```
tar cvf /dev/nst0 <dir>
```

which backs up <dir> to the local tape device /dev/nst0. But what if the tape device is attached to another machine on the network? Gnutar allows you to describe the remote device directly. Instead of the command above, you type something like:

```
tar cvf bidmead@pc315:/dev/nst0 <dir>
```

where "bidmead" is a valid user on the remote machine. Obviously you choose a user who has permission to write to the tape device. I cheated and gave universal read-write access to /dev/nst0, but this would probably not be the best thing to do on a multi-user network.

Backing up from the Apricot LS550 running Caldera OpenLinux to the HP24DAT device attached to the IBM PC315 running RedHat 5.0, worked immediately. But when I tried the same thing from gnutar on the NeXT, I got the error message "/etc/rmt not found".

/etc/rmt was new to me, but the man page assured me it's the remote magnetic tape handler that uses interprocess communication (hairy, indispensable stuff: see "The Linux Programmer's Guide" at linuxwww.db.erau.edu/LPG). But when I looked in /etc, the rmt binary was there.

Then I realised my mistake. The NeXTStep implementation of gnutar was looking for it on the remote machine, the



Fig 1 (above)
My NeXTStep desktop supplemented by the LookingGlass desktop supplied with Caldera OpenLinux Lite
Fig 2 (left) It was the splendid online magazine Slashdot (slashdot.org) that drew my attention to Moonlight

IBM PC315. I tested this by using the "touch" utility to create the required file in the PC315's /etc directory, and when the

gnutar complaint changed to one about file permissions I knew I was on the right track. As it happened, a genuine rmt was already

Hit me with your emails — but not too hard

Thanks for your help. How you find the time to write your column and reply to questions by email is beyond me.

Gilgongo
gilgongo@phreak.co.uk

Me too, Gilgongo. I've discovered I'm writing about 5,000 words a week in response to your emails!

Your email queries are coming particularly thick and fast following the offer from Ben Partridge of Avalan a couple of months ago for free copies of Caldera OpenLinux Lite. Ben tells me that at one time, readers' requests were running at a rate of 250 a day.

His own stocks were fairly quickly exhausted, so if you weren't among the first in the scramble you may have had to wait for the new batch of CDs that were shipped direct from the US. (That should be sorted by now but, if any of you are still waiting, I'd like to know.)

Incidentally, I've been very impressed with Ben's efforts to promote Caldera over the past couple of years, so it came as something of a shock to learn that Avalan's relationship with the US company has now been terminated. No, Ben didn't throw in the towel because of the inundation from my readers — far from it. This is some sticky political stuff, I gather.

So Ben tells me that for UK readers seeking further news of Caldera, the best contact is Starstream Communications (sales@starstream.co.uk).

I relish these emails of yours, so do please keep them coming. But let me reiterate some ground-rules here. Let's try to comply with RFC 1855, which is an official(ish) document about how to do emails (and other things). I won't give you a URL for this as it's all over the internet — just use your favourite search engine. In summary, it says: "Be polite, and don't take up more bandwidth than you need to".

This second point invites you to prefer plain ASCII (not HTML or, Heaven forfend, mime-encapsulated Microsoft Word documents). It also suggests that you shun the mob of people who quote their correspondent's entire previous mailing back to them just to respond to a few simple points. Use quotes from the mailing you're answering to anchor down the context, but take some time to edit them down. A little care applying Occam's razor at one end of the correspondence saves a lot of time at the other.

I hope the advice I give, both in the column and by email, helps to get the job done. If it doesn't, I want to know about it, so that I can give better advice next time.

on pc315, but it was in the /sbin directory. So all I needed to do to stop gnutar whining was to create a symlink from /sbin/rmt into /etc, like this:

```
In -s /sbin/rmt /etc
```

After this, I found that tarring from the NeXT machine across to the remote tape drive worked perfectly.

Connecting to your ISP

Kanaley (kanaley@netinfo.com.au) has drawn my attention to something about which I get a lot of correspondence. I've been referring people to the PPP HOWTO to set up their machines for net connection (the document focuses on Linux, but like many of these HowTos is generally applicable). He points out that the tricky question of PAP/CHAP authentication is in the ISP-HOOKUP HOWTO. You can find these HowTos in many places, but I recommend going to www.linux.org and following the embedded "documentation" link you'll find there.

Looking for a desktop

Ed Ross (edross@pavilion.co.uk) has noticed that the LookingGlass desktop that comes with Caldera OpenLinux Lite only lasts for 90 days. He wonders if there are any free desktops he can install instead, preferably one that can be ordered, rather than downloaded (expensive).

On the disk already is fwm, a window manager and desktop. Yes, I'm afraid it is time-bombed, so you will need to buy the full OpenLinux Standard product if you intend to go on using LookingGlass (Caldera recently dropped its prices, I'm happy to report). But fwm is pretty good. It makes a great desktop and you've got all of 90 days to read up about how to set it up!

There is one very nice thing about LookingGlass — the way you can float it off across the network wholesale on to another machine (Fig 1, opposite). See www.plig.net/xwinman for a sample of various window managers and desktops that are available.

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Questions & Answers

Q As a relative newcomer to Linux, I am finding it difficult to find my way around the operating system. Would it be possible for you to write a section on the basics of the operating system, like ls and other commands?

Owen Kelly

cpx4@hotmail.com

A The column does keep cycling around these important entry-level questions, but I don't want to duplicate what people can find out by using the man pages and the info command (see man man and man info).

`man -k <something>`

can help to get you started, if <something> is, for instance, a word like "network" or "file". The "which" and "locate" commands (see man pages) are indispensable in getting your bearings.

I use ls with the -last switch a lot to inspect directories. If something like "locate" generates a lot of lines, it's helpful to know that in Linux, the <Shift>-<PgUP> key combo can usually scroll back the screen to see what's been lost off the top.

A more Unixy way to do this is to pipe the output through less: e.g. "locate doc | less". Incidentally, this is a useful way of finding out where the non-man and non-info documentation is lurking.

Q Like many of my friends, I find Linux very confusing. Having made the change from Windows 95 we would like to find out what the equivalent Linux commands and directories are: simple things like dir/w/p, del, move and copy.

A Yes, you've hit the problem right there. If you're looking for a switch to ls that pages the output, you won't find it (on the Unix systems I'm familiar with). Typically, if you want this, you'd pipe through less: "ls | less". A rough equivalent to /w is the -m switch to ls.

On many modern Unix systems, "dir" is a synonym of ls, but then I guess it's probably a mistake to think in terms of equivalences. Linux and Windows 95 do different things, and do (some of) the same things quite differently.

Q As someone who is extremely confident in DOS and all the features of Windows 95 such as the registry, it is very frustrating to have to get to grips with a new operating system. But then again, we all have to start somewhere!

A I know what you mean. And the man pages don't always help. For instance, I notice that the RedHat 5.0 man system seems to be broken, in the sense that "man -k move" throws up a lot of commands to do with moving, but mv doesn't happen to be among them. (See *Fixing the man entry...*, below.)

I'm also confused about what the various directories in the root contain, such as which has the operating system located in it.

The operating system file itself isn't very interesting. It will be called something like vmlinux and can often be found in /boot or directly under /.

The naming of the other standard directories is something I've covered in

the column in the past. You might want to take a look at the Linux System Administrator's Guide at sunsite.unc.edu/LDP/LDP/sag/node1.html and read the Overview of the Directory Tree you find there.

Fixing the man entry and refining hits

The way to fix the aforementioned man problem is by editing

`/usr/man/man1/mv.1`

(you'll need to be root), changing "mv - rename files" under the NAME heading to read "mv - rename or move files", and then running

`/usr/sbin/makewhatis`

which recreates the database that man -k works from.

Having done that, or on a system where mv shows up in response to man -k move, the mv entry will appear in the output buried in a lot of other dross you don't need to know about. Old Unix hands are used to this, and know there's an easy way to do an intersection between two key words in the whatis database.

The whatis search system is very unsophisticated, but you can apply external Unix magic by making use of grep (see — you guessed it — man grep) to do the following:

`man -k move | grep file`

This filters the man -k output to include only lines that have the word "file" in them. On my system, this gives just a single screenful of output and it's easy to see mv in there. With most GNU utilities like mv, you can type "mv --help" to get a quick screenful of stuff you can do with mv.

Mozilla meets Tux

The version of Netscape Communicator released as source code earlier this year is known as Mozilla. Tux, in case you didn't know, is the name of the patient penguin who sits in as a mascot for Linux on web sites around the world.

Marc Andreessen, the brains behind Netscape, thinks that Mozilla and Tux are a potentially unbeatable combination. "Everywhere I go," says Andreessen, "I find myself sitting across a table from someone who uses Windows at work and Linux at home." Me too, and so do you, as your emails to this column confirm.

The downside for newcomers to Linux

seems to be the relative lack of applications. I've never seen this point myself, although it often crops up in my emails. For me, Windows is like a small flat stuffed with sofas and not much room to move. Powering-up Unix puts me in mind of a French chateau — draughty, a little ramshackle, but full of treasures and with loads of space to explore.

Well, if it's comfy sofas for Unix you're after, there are now several of these around. I've talked about the Gimp (www.gimp.org). Recently joining this magnificent graphics package is Moonlight (Fig 2, p272), a 3D visualisation package you can find at www.cybersociety.com/moonlight.

One application I would like to see under Unix is something in the continuous voice recognition department. For fun, I've dictated this month's whole column into Dragon's wonderful NaturallySpeaking. Alas, the product only runs on Windows, although John Bridle, joint MD of Dragon UK, tells me his people use Linux extensively in their development of the core recognition engine. What did you expect...?

PCW Contact

Email Chris Bidmead at unix@pcw.co.uk



Fixes, updates, Warp and all

Terence Green has a fix for everything this month: fixes for Netscape, updates for Java, Epson drivers, support for TWAIN drives and more. It's a one-stop shop for all Warp customers.

Kicking off, some additional information regarding Warp 4 FixPak #6, Netscape for OS/2 and the OS/2 Java 1.1.4 kit from last month's cover CD.

The Netscape version is the Level 7 update which fixes problems identified in earlier 1998 updates. The secret way to identify Netscape for OS/2 versions is the NETSCAPE.PKG file which can only be seen after you extract the files from the package. Doh!

I didn't include any of the updates for Java 1.1.4 on the cover CD. This started off as an omission on my part, but I've since been advised it was a smart move. Smaller fixes appear regularly, but as the cover CD will always be a few months behind due to publishing schedules, it is best to get updates direct from IBM Hursley at

ftp.hursley.ibm.com/pub/java/fixes/os2/ or via the Hursley Java web pages.

This month's cover CD features Warp 3 FixPak #35. Please read the FixPak instructions in the various readme files carefully before plunging in. If you have a Cyrix 6x86-class CPU, *do not* install FixPak #35 as lockups have been reported. At the time of writing the situation is unclear and other Cyrix CPUs may be affected. Check online sources for up-to-date information.

Communicate and fortify

Coming back to Netscape, IBM says Communicator for OS/2 will be ready in October as a free download from IBM Software Choice. I found this information at the OS/2 WARP FM site at www.software.ibm.com/os/warp/warpfm.

WarpFM also says Fortify for Netscape, version 1.2.1 for OS/2, is now available. I've been using the Windows NT version of this Australian 128-bit encryption package with no untoward results. It enables the strong encryption that is disabled in versions of Netscape downloaded outside of North America. Visit the Fortify web site at www.fortify.net/ for more details.

WarpFM also says it is time to upgrade to Warp 4, since OS/2 version 2.11 and earlier will not be certified for Y2K compliance. Warp3 can

be made Y2K compliant with FixPak #32 and above, Warp 4 with FP #5 or higher.

Hard times

Gordon Gay wrote with a problem affecting a 4.3Gb SCSI hard disk that returned odd information on the size of partitions under Win-OS/2. I couldn't be sure of the exact problem because he fixed it by downsizing the partition with PartitionMagic.

Two issues arise. One is that PartitionMagic is an absolute beauty. The other is that post-FixPak #6 there were a number of comments on the OS/2 newsgroups about Adaptec SCSI adaptors.

Adaptec adapters can enable sector translation for drives over 1Gb. They do this by default. Since FixPak6 switches this on, if your adapter has translation set off, a problem could arise.

Check by pressing CTRL-A when the Adaptec BIOS message appears at boot time. Please *do not* change this BIOS setting unless you have a current backup and are prepared to FDISK and reformat your drive.

The quickest way to update support for large E-IDE or SCSI drives or removable drives is to download a fix from IBM Device Driver Online at service.software.ibm.com/os2ddpak/html/. Alternatively, install FixPak #6 for Warp 4 or #35 for Warp 3. The new removable drive support covers LS-120 and ZIP ATAPI drives, and also EIDE hard drives greater than 4.3Gb. A fix for drives larger than 8Mb which didn't make it into the FixPaks should be on the Device Driver Online site by the time you read this.

John Buckley writes to say that he considered a Zip Plus drive but decided to go for a Syquest drive. He chose the EzFlyer 230Mb because it is more than double the size of a Zip Plus for £30 less, access time is

p276 >

Easter eggs and global news

Erkki from Finland has finally discovered the Warp 4 Easter Egg. Search for AAAAA.EXE and run it to see a scrolling list of developers with a background appropriate to Texas where the OS/2 team is now based. AAAAA.EXE works in Warp 3 too.

Stephen Brereton writes to say he won a copy of OS2 Warp version 3 (3.5 disc version). I'll pass Stephen the email address of the first reader to send me an email requesting it.

The Global English version of Lotus SmartSuite for OS/2 Warp 4 started shipping Thursday, 26th March. The German, Global French and Danish editions follow mid-April, and Global Spanish, Brazilian Portuguese, Italian and Dutch editions in June. The Release Notes are available from the Downloads page of the SmartSuite for OS/2 Warp 4 web site at www.lotus.com/smartsuiteos2



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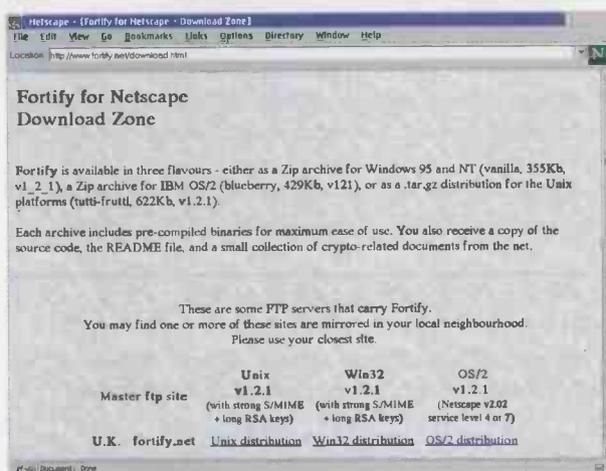
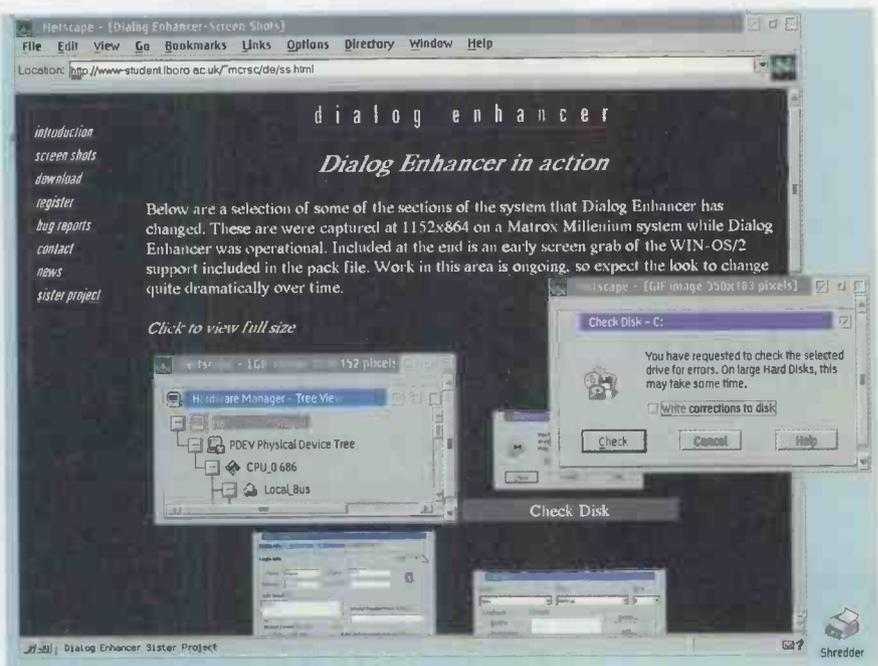
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Above Beautify Warp 4 with Dialog Enhancer from www-student.lboro.ac.uk/~mcrsc/ostrans.html

Left Fortify Netscape for OS/2 with 128-bit strong encryption from www.fortify.net

needs a PC with BIOS support for bi-directional or Enhanced Capabilities (ECP) printing.

as good if not better for the parallel port version, and "they are quite clear on the web that they *do* support OS/2".

Drivers on site
John McLeod searched the Epson Germany site in vain for the Epson Stylus 600 driver mentioned in a previous column. So did I, until I discovered that Epson Germany has put it up on the LEO site at www.leo.org/pub/comp/os/os2/leo/drivers/printer/epson1011.zip. The description says: "10 Feb 98, 4893759 bytes; Epson (color) OS/2 printer driver". And the LEO site is very neat because you can browse to the files and read the readme online to see if it meets your needs.

Alternatively, IBM has a new OMNI driver at Device Driver Online which is said to handle text well and colour passably well at lower resolutions but not at 720 x 720. And there is a new parallel port device driver, PAR1284.SYS, at Device Driver Online too. It

John is also looking for scanner support. BMT Micro has a CFM TWAIN driver pack. Check www.bmtmicro.com for a list of supported scanners and a demo download. The CFM TWAIN driver supports SCSI scanner adapter boards and ASPI-compatible SCSI host adapters. It can be ordered online, cost \$50.

Richard Castle, of Loughborough University, wrote to tell us about his Dialog Enhancer program for Warp 4.0. Have a look at the screenshot above to see how it improves many of the dialog boxes. More information at www-student.lboro.ac.uk/~mcrsc/ostrans.html.

PCW Contact

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Capital gains

Automatic capitalisation? Autocorrection of doubles? For some users it just doesn't make Intellisense. Tim Nott shows you an unusual and easy way around it, with an added bonus.

Readers James Roberts-Thompson and John Gray have both rapped my knuckles over giving the American URL for the Microsoft web site. All the free font stuff is also available from the European mirror site at www.eu.microsoft.com/typography/free.htm and you'll probably be able to get at it much more quickly.

The latest treat I've downloaded is the Font Properties extension. This tells you everything you could possibly want to know about a font: such as whether it can be embedded in a document, what languages are supported and how many glyphs are included. Some fonts have a paragraph of description (Fig 1) and even links to web sites: these two items aren't embedded in the font file but are actually from a mini-database inside the extension .DLL, so presumably you'd need to update the latter regularly.

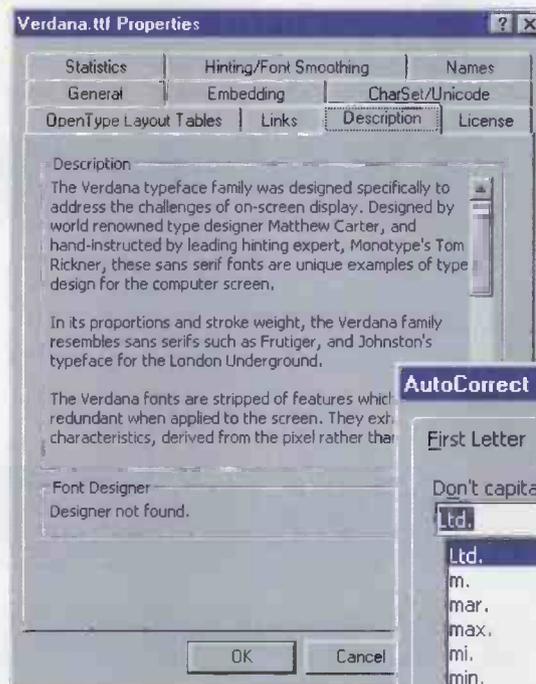
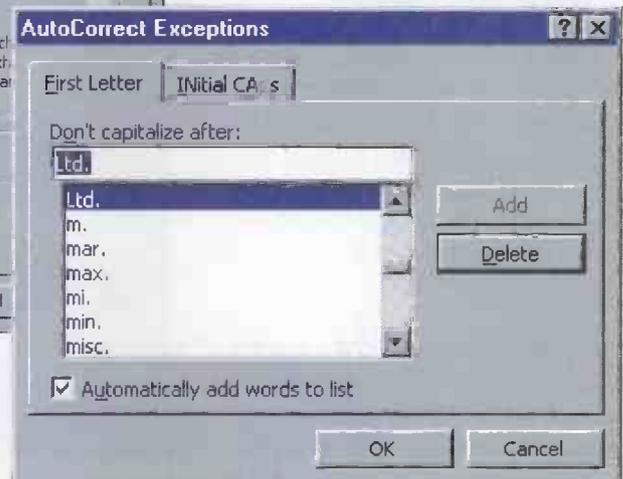


Fig 1 (above) All you wanted to know about Verdana

Fig 2 (right) Keeping IntelliSense sensible with the exceptions list

A rule for the exception

I've always had something of a love-hate relationship with Microsoft's Intellisense. Being heavy-handed on the shift key, I appreciate the correction of two initial capitals. But there are times you *want* two capitals: if, say, you write about PCs or MPs or Quark XPress. It used to drive me mad when it first came out in Word 6, but Word 7 and 97 are much better.



Similarly, the automatic capitalisation of sentences is fine unless you use full stops after terms like Ltd., or any other common business abbreviations. You can undo an autocorrection with an Alt + Backspace, or Control + Z, but there's a better way: if you click the Exceptions button in Tools, AutoCorrect, AutoCorrect, you'll see lists of exceptions for both categories. You can add to and remove from these (Fig 2). The clever bit is that if you backspace and manually correct an erroneous capitalisation or uncapitalisation, rather than just undo it as described above, it will get added to the exceptions list automatically.

AOTM (acronym of the month)

This month, I've been looking at acronyms used in personal online conversations or newsgroup announcements. Most are fairly international, such as ISTR (I seem to remember) or ROFL (rolls on floor laughing) but I think I've found a genuinely British example. When someone posted, for the umpteenth time, a variant on the bogus virus scare DO NOT READ ANY MAIL MESSAGE WITH "WIN A HOLIDAY" IN THE TITLE... another person commented that this was a DG.

Director General? Deo Gratia? No, what they meant was a Dead Granny. This wonderfully macabre expression means a modern myth — typically one of those "True... it happened to a friend of mine..." stories. It originates with the tale of the family who took Granny on holiday to Spain in their car. The granny passed away in the night and by morning rigor mortis had set in. So they wrapped her in blankets and tied her to the roof rack. They stopped for lunch, and when they came out of the restaurant, the car had been stolen. And I know that's a true story because it happened to this bloke in my local pub!

Questions & Answers

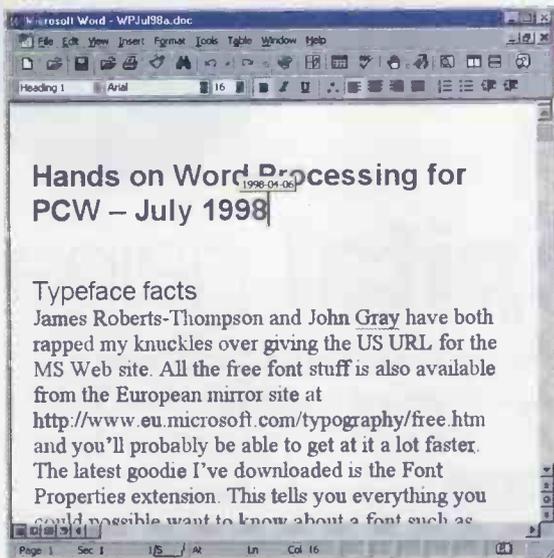


Fig 3 Autocomplete? Just say no

underscore — there should be spaces before the underscores. All these do is to inform VBA that the program line continues on the next written line, so alternatively you can leave out both the underscore and the carriage return following it.

Q What accidental key combination in the bottom left-hand corner

statement FileExit 2 will close word without saving or prompting. Double check the content of Tools, Macro... for all your templates. The other possibility is that something is causing Word to crash.

Q I was able to print labels with graphics in Word 7 by selecting the graphic, clicking on Tools, Labels, New Document, and there they were. When I try the same procedure in Word 97 the labels appear blank. Why is this happening and how I can print my labels with graphics in Word 97?

Michael Thompson

A It seems that this feature has been "improved" so that selected graphics

are no longer automatically incorporated into a label. But you can still import or paste graphics having created the blank label, just as with any other document.

Q I'm using Word 97 and I would like to paste the findings of word count directly to the last line of the document I'm checking without having

Q How can I stop Word 97 popping up a little yellow box offering to follow 1998 with the current month, then day? If I press return, as one normally does at the end of a heading such as "Report for May 1998", it puts these figures in... Aaaargh!

Jill Beswick

A Go to Tools, AutoCorrect, AutoText and untick the box labelled "Show AutoComplete tip..." This means you'll have to activate your real AutoText entries by pressing F3, but having suffered with this myself when putting the month and year at the top of this column (Fig 3), I think it's a small price to pay.

Q Reading through PCW, I saw the font listing macro. I typed it out and it works perfectly. All I want now is a font list that is in alphabetical order.

GK Law **Fig 4** Insert an instant word count

A The original macro was admittedly quick and dirty, so let's keep it that way. First, you need to modify the macro slightly. Replace the line that reads

```
.TypeText Text:=FontNames(n) & vbCr
```

with

```
.TypeText Text:=FontNames(n) & vbTab
```

Then run the macro. Then go to Table, Sort... (you don't have to create a table first) and, bingo!

By the way, there was a slight mistake in that macro but only one person has fallen foul of it. Two lines end in an

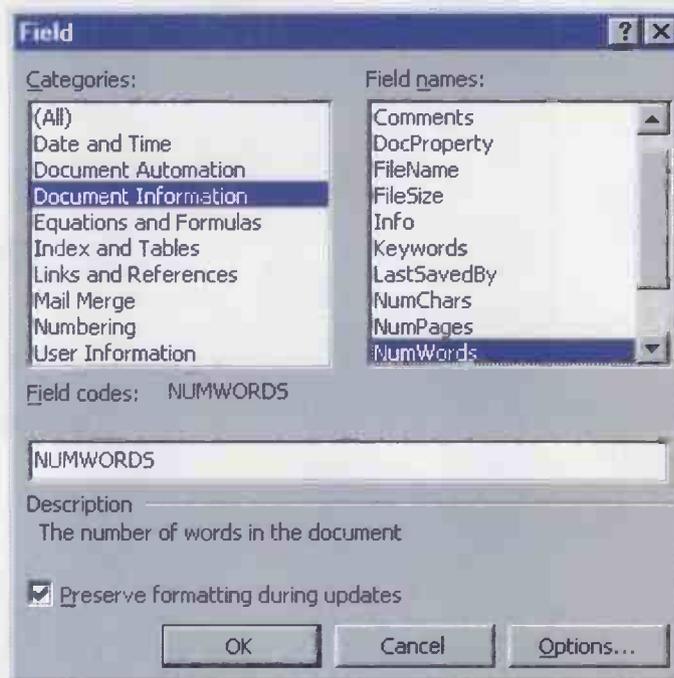


Fig 4 Insert an instant word count

of a Windows Keyboard causes Word 7.0a to close without confirmation and without saving the open documents? Mine is a Word 7 installation with no macros nor customisation. I cannot reproduce the effect deliberately, but it has happened at least a dozen times by accident! How can I stop it?

Tony Cattermole

A You've got me there, Tony. Or perhaps someone has got you, as I know of no standard Word command that will do this. There are, however, ways of doing this with a macro: the simple

to type anything out. Is this possible? Could it be done with a macro?

Robert Phipps

A The easiest way is with a field: Insert, Field, Document Information, NumWords (Fig 4). For instant gratification, record this as a macro and add it to a toolbar.

Q Welsh needs 28 accented vowels: the seven vowels "a e i o u y", each with grave, acute, circumflex and dieresis. Some of them rarely appear in words (e.g. w with dieresis "ŵ"), but any of

Questions & Answers (cont'd)

them can occur in both upper and lower case. And Welsh spellcheckers assume that we will "have configured our word processor accordingly". I know that \hat{a} is obtained in MS Word with Control + \wedge and then the letter, but this does not work with W and Y.

Duncan Stewart

A Good news and bad news. First you need Word 97 and need to be typing in one of the standard Windows fonts, or one of the other Unicode fonts available from the MS web site or with Office 97.

Go to Insert, Symbol, choosing normal text as the font. Scrolling through the available characters should reveal some, but not all, of the missing ones including Y and W circumflex tucked away in the Latin Extended-A section. Once you've tracked these down you can assign keystroke shortcuts, including "dead" keys, so Control + \wedge w can be set to produce w-circumflex, for example.

With regard to the Welsh spellcheckers, it depends if and how they recognise Unicode characters.

Q I have a lot of work on an ancient Amstrad PCW8512 with two 3in floppy drives. Is there any way of getting them onto a PC? The PCW is, unfortunately, dead. However, I do have a copy of Locoscript for DOS if it is useful for retrieving the files.

Chris Hegarty

A If you can get hold of a live PCW that has a serial port, you can transfer the files over a serial cable to a PC using the comms software that's tucked away on one of the PCW system discs. A more elegant approach is to buy a cable/software bundle from the Locoscript folks. Without a live PCW, your best bet is a firm which will convert disks to a PC-readable format (try Softco on 01306 740606).

Q How can I stop Word (and Excel) interpreting (c) as the copyright character ©? It's annoying in lists that

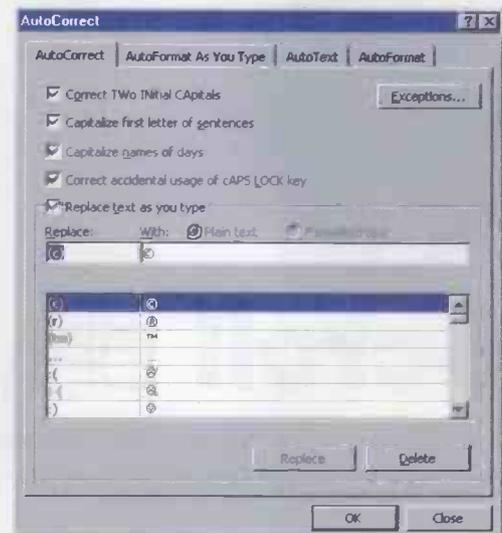


Fig 5 Delete gets rid of uninvited copyright symbols

go (a), (b), (c); the only way round it is to stick a space inside the brackets.

John Callaghan

A It's an AutoCorrect thing. You can undo it with Alt + Backspace on a one-off basis. But since you obviously need (c) more frequently than the copyright character, why not go to Tools, AutoCorrect, AutoCorrect and delete the entry (Fig 5)?

Mini macro

Tim Ball took the 13-line Word file list macro from February's column and polished it up into something very smart, with a custom dialog box for entering the folder path and filespec, together with options for searching sub-folders and looking for text strings.

The strange thing, though, was that if the user cancelled the dialog it would list the contents of C:\Windows. I won't go into the details of the macro as it's too long for the column inches available, but I hope to include it on next month's PCW CD-ROM.

However, this brings up a very important point of WordBasic programming etiquette. If you create a dialog box that includes a Cancel button, make sure you give that button something to do such as: go to the end of the macro and perhaps display a suitable message. If you don't, then the result of pressing the Cancel button will be unpredictable to put it mildly.

In this case, Tim Ball had started well with an OnError Goto errorhandler at the beginning of the macro and the label (errorhandler) at the end. Having set up his dialog box, he ran it with the following statement:

```
x = Dialog(dlg,1)
```

This function not only calls up the dialog onto the screen but also, as you might imagine, returns a value for x. This depends on the button clicked and it makes for more understandable programming to call this, say, "ButtonPressed" instead of x. In this particular case, if the Cancel button was pressed, a value of zero was returned. So appending the line

```
If x = 0 Then Goto errorhandler
```

made a tidy job of cancelling the macro.

Let your shortcuts do the climbing

Here's a handy tip from Storm Dunlop. It's really a general Windows tip but since Windows gets all the best tips anyway, and it's particularly relevant to WP documents stored in hierarchical folders, here goes.

To save climbing up and down the tree, create shortcuts to often-used but deeply-nested folders in the default Save/Open folder. You can do this in Explorer or in the standard Windows Save/Open dialog by right-clicking and choosing New, Shortcut. You'll need to type in the path, just this once, into the New Shortcut dialog, and if it contains spaces or long folder names enclose the whole thing in quotes. I can now get my hands on both of my Hands On

columns, straight from three levels up, which saves me a few clicks each month.

A related tip is that if your word processor doesn't have the facility to specify a default folder for opening and saving, you can get around this by specifying it in the "Start in" field of the shortcut properties. Windows 3.1 users can pull a similar trick with the Icon properties (Alt + Enter) in Program Manager.

Out to tender

Here's one I couldn't solve and neither could the members of a Lotus user group that I consulted. Mark and Lynn Johnson found that whenever they tried to add a word to the user dictionary in WordPro, the file had been set as Read-only. The only work-around seems to be to deselect the Read-only attribute from the file (in Explorer) each time WordPro is started. Have any Lotus-beaters out there cracked this one?

PCW Contact

You can contact Tim Nott by post via the usual PCW address (p10) or at wp@pcw.co.uk



Scroll playing

Thanks to an alert reader, Stephen Wells presents a method by which you can scroll two windows together. There's listing and sorting help, and formulas to make calculating a cinch.

I wrote in my April issue column about the option to synchronise or not

synchronise the scrolling of panes in Lotus 123 97, mentioning that in Excel 97 panes always scroll together. Neither spreadsheet lets you scroll two windows together (each with a different worksheet).

I have since received a letter from Hugh Coombe of Bristol: "About a year ago, I upgraded from a DOS machine running Lotus 123 Release 2.3 which allows the creation of extra windows with either synchronous or non-synchronous scrolling, vertically or horizontally.

"I had been using this facility for some time to run a spreadsheet (in which the titles and margins were locked) with vertical scrolling of the data but allowing it to be split again and the two sets of data to be synchronised in vertical scrolling. This enabled weekly results to be compared with quarterly totals. I wanted to upgrade the Lotus sheets into Excel 97, so I used the data import facility in Excel 97 and imported the already-split sheets.

"I was pleased to find that the new Excel sheets preserved these synchronising features. The sheets have the same file name as each other except they bear an additional code after the extension to show the copy number and a marker in parenthesis e.g. filename.xls (Vsynch) and filename.xls:2 (Vsynch). However, I have not been able to create the same effect with Excel 97 and, despite much reading, have never found any mention of this facility in Excel 97 Help files or books."

I'm grateful to Hugh for taking the trouble to share this with us and would like to point out that I welcome similar discoveries from other readers. I myself have found that



Fig 1 (left) You can sort a multi-column range of names in Excel simply by linking them in the sort column to positions on the print sheet

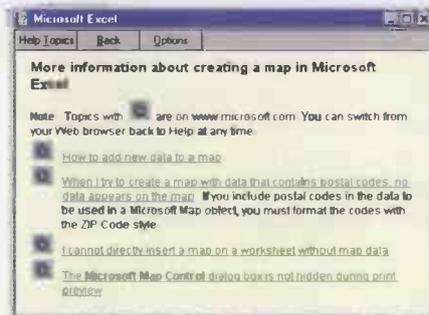


Fig 2 (below) Some examples of the many "Link to the Web" links which are added in Excel 97 Help files by the update provided on this month's PCW CD

some Lotus 123 functions not listed in Excel will nonetheless work if entered in Excel.

It's all sorted

A few months ago, someone wrote in with an interesting Excel alphabetical sorting problem. It seemed simple enough. The reader had a sheet of 200 names arranged in ten columns and 20 rows. He had them set up that way so he could print them onto one sheet of paper and cut them out to put in a hat for an office raffle.

Ignoring my own simple rule of never using an unnecessary macro, I asked for help from a long-time valued contributor to

this column. He wrote two completely different macros for sorting multi-column ranges and I am most grateful to him. Regrettably, through no fault of his, I'm sure, I could get neither of them to work and nothing goes in this column without my 100 percent, money-back personal guarantee.

Then it occurred to me how to do it. You enter your 200 names down one column (say column A) of one worksheet. We'll call this the Sort sheet. Then open another, called the Print sheet, and in cell A1 enter `=Sort!A1`. Drag this down to cell A20. In cell B1 enter `=Sort!A21` and drag this down to B20. Carry on doing this and cell J1 will have `=Sort!A181` and cell J20 will have `=Sort!A200`.

Now arrange the print setup so the range A1 to J20 of the Print sheet is centred on a landscape-orientated page and prints without gridlines. Anytime you want to change the names you do it only in column A of the Sort page. To sort them, click column letter A on the Sort sheet, then

Book review

■ Using Office 97: Word and Excel Editions (Special Edition)

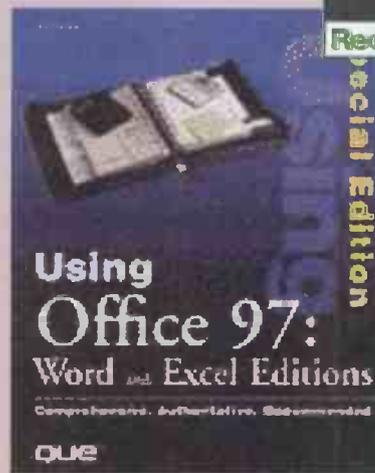
You might assume that a book which covers two applications would cover neither very well. But not a bit of it. This 1,280-pager weighing over 2Kg, is an encyclopaedic source for all the far corners of Excel 97. It makes sense to cover this and Word 97 in the same book because they are frequently used together; sharing address books, graphics, lists and tables. Anyone producing and distributing a report, for instance, is likely to need a combined document. I wouldn't recommend this book for a spreadsheet beginner but if you want an in-depth reference book for advanced features of Excel, like PivotTables, filtering databases, mail merges and mass mailings, and using the Analysis ToolPak for analysing data, then this is it.

There's an up-to-date section on using Excel for creating web pages, including publishing charts and data, and lots of troubleshooting tips. And if you've never understood the difference between controls in a worksheet

and those in a dialog box, you'll find all the answers here. There are not only explanations of when and how to use option buttons, scroll bars, spinners and list boxes, but the author shows you how to dim or blank controls and how to control recalculation.

You can save yourself a lot of macro-writing if you use Excel's automatic sub-totalling features correctly on filtered or unfiltered data. You can brighten up your reports if you understand all the possibilities for using pictures within charts and what is happening when Excel creates a geographic map.

If you've never used Excel's goal-seeking features, nor edited the standard functions, nor taken advantage of array formulas, you'll find this book invaluable.



Heaven knows why a product's features have to be explained by independent training service people, like the several authors of this book. After Excel 4, Microsoft continued to improve its product yet offered less explanation. You can acquire

this information in a well-written, well-illustrated form.

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choose Data, Sort, Ascending, OK.

The Print sheet is shown on the left in Fig 1; the Sort page on the right. This simple workbook is on our cover-mounted CD-ROM this month. Use Names5.xls if you have Excel 5 or Excel95. Use Names97.xls if you have Excel 97.

When help is easy to find

If you can't find what you're looking for in the Excel 97 Help file, the next logical place to check is the Microsoft Knowledge Base. But wouldn't it be useful if you could go straight from the topic in the Help file to the relevant article in the Knowledge Base? Well now you can, as they say in the ads.

Also on our cover-mounted CD-ROM, in The Hands On Spreadsheets Software section, there is a file named xl9701hlp.exe. To install it, close Excel 97 and click on this file. It will automatically unpack and put links into your regular Excel 97 Help files (see Fig 2). Assuming you have a browser and a modem, you can click on those links and theoretically you'll arrive at the right part of the Knowledge Base.

If you should ever wish to uninstall this feature, find and delete the following files from your hard disk: xlmain8.gid, xlnew8.gid and xl9701.hlp.

Listing position

Bob W. Mauk writes: "We are updating our network. On our old version we have a

computer running Excel 5.0 under Win 3.1 and we are using many custom lists in this program. On our new network, we are running Excel 97 under Win95. We can transfer the macros OK, but we cannot transfer the Custom Lists as we can't find what file they are in.

"The spreadsheet contains rows, by part number, which we use to make charts. To sort the imported data we use the custom lists which have been entered manually over the years. We could take a spreadsheet on the old system, enter the part numbers in a column from a database, then enter the custom list for each part number (which is time-consuming and error prone), save this file to a floppy, put the floppy in the new system and do the reverse (again, time-consuming and fraught with errors). There must be a better way. Where are the Custom Lists stored? And how can we transfer them to the new system?"

As I never personally use Custom Lists, I assumed that Bob was talking about the AutoCorrect feature and told him that those entries are stored in the user.acf and Mso97.acf files stored in the C:\Windows directory. By return, Bob explained he meant those under Tools, Options, Custom Lists. So, I entered an unusual word in the Custom List option and looked for it with an Advanced text search on all hard drive files and also (after restarting) in the Registry — no joy. I tried asking the Microsoft

Knowledge Base — ditto. Reporting this to him, I asked him to let me know when he found a solution from an informed source.

Much later, I heard back from him and he attached a copy of a brand-new entry in the Knowledge Base. This explains that there is, indeed, no simple way to share a Custom List in Excel 97. But it does clarify that Excel 5 stores them in the file, Excel.xlb. In Excel 7 (Excel 95) they are

EXCELent little formulas

■ If you paid A last year for an item, and you paid B this year, calculate the percentage price increase with

= (B - A) / A%

■ If you want to find the numbers of the days remaining in the year from 19th July, format the cell General and enter

"31/12/98" - "19/7/98"

■ If you want a large amount to display in a narrow column and not produce the usual ##### error signs, use the TEXT function. If you have £5,000,000 entered in cell G1 and you want to display it in column A, set with a small column width, then enter in A1

=TEXT(G1, "£#,###0")

This will also display £5,000,000 but run over into column B. You will still be able to treat it as a number entering, say,

=A1/365

in another cell.

Questions & Answers

Q If I copy an A4-sized form onto a new sheet, the column widths are not transferred. All other formats are. If I then set the column widths manually, the text does not fit the column width in the same way as on the original sheet. This is despite the font being the same size and type, and the column height and printer setup being the same. This is true of Excel 4 and Excel 97. Given this fact, it is unlikely to be a bug but a "feature". So what is the feature?

A They don't use A4 much in the US. They use good old inches and traditional paper sizes, which is also why all the templates Microsoft provides are set by default for 11 x 8.5in paper. If you fiddle with all the options manually and get your report in an acceptable form, then save this as a template and paste your new data into it, you'll be OK.

To make the column width fit the contents automatically, double-click the boundary to the right of the column heading. The advantage of not transferring column widths is that data imported into a template won't mess it up.

You might also like to check the default on your printer via Control Panel, Printer, Properties, and make sure it is set to A4.

Q I cannot find a way of formatting text as small caps in EXCEL 95. Can it be done?

A The only way I know of is to paste your worksheet into Word, and reformat there.

Q Could you start a movement to bring back full support for EXCEL 4 macros?

A In my opinion they are far more user-friendly and quicker to create than VBA, and should therefore be continued. I know Excel 97 will run existing versions but you can't write new ones, which is a big failing.

A I am not much of a one for perpetuating the past, but you can write Excel 4 macros if you want to.

Do not choose File, New, Workbook — instead, right-click on a sheet tab and choose Insert, Excel 4 macro. Then, on this new sheet, you can carry on as in days of old.

Q Why does my Excel 97 file take so long to load?

A Things can be speeded up if a preview of the document or workbook is not shown.

Look under File, Properties and make sure that the Save Picture Preview box is unchecked. If you have imported clipart, it's possible that it's not in the most efficient format. Cut and paste a graphic object from your worksheet into an application like Paint Shop Pro — you will find this utility on the PCW cover-mounted CD-ROM. Save in a compressed format and then import this new file. In this way, workbook sizes can be reduced dramatically.

Also, have as few applications as possible running at once. And do not have fancy wallpaper running on your desktop.

Q I recently discovered a template at the Office Developer Forum web site for running bulk mailings. I now find I do not have one of the two necessary system files. The file in question is COMDLG.OCX.

A This is a common dialog OLE library file. Maybe it has been omitted to ensure that you register your download? You are likely to have COMDLG16.OCX in your C:\Windows\System directory but you probably need the 32-bit version from a source such as support.microsoft.com/support/downloads/.

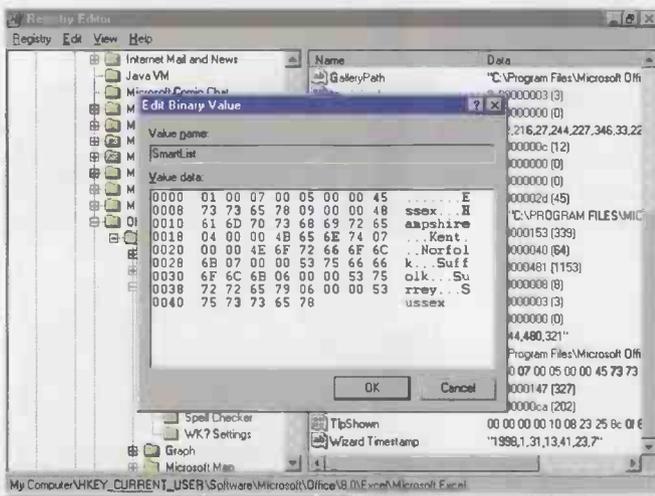


Fig 3 In Excel 97, Custom Lists are stored in binary form in the SmartList key of the registry, with a translation on the side

Microsoft Excel. Exporting this data and importing it into another registry is explained in the Knowledge Base article. To reach it via Excel, choose Help, Microsoft on the Web, FAQ. When the page appears, choose Search from the options, choose Excel in the list box, and enter Q155208 in the search box.

Personally, I think I'd prefer to import data using the facility offered under Excel's Tools, Options, Custom Lists. You could do this straight from the Excel 5 file. The list still becomes available to all Excel workbooks on any platform using that registry. But I want to underline my gratitude to Bob for getting back to me with the answer he was looking for, having found it six weeks later.

found in the file <username>.xlb. In Excel 97 they are stored in the registry, and unhelpfully called, SmartList.

Goodness knows, Microsoft means well. Its idea is that odds and ends which used to be spread around in configuration settings (.ini), and other files, should all be brought together in the registry. This would be a good idea if the registry were not so

frightening to dabble in.

As a test, I entered some English counties under Tools, Options, Custom Lists, closed Excel and then looked for them in the registry. They are stored in binary form but there is a text translation down the side (Fig 3). Double-click on the SmartList key in HKEY_CURRENT_USER\Software\Microsoft\Office\8.0\Excel\

PCW Contacts

Stephen Wells welcomes problems or solutions relating to spreadsheets. Write to him at the usual PCW address (p10) or email him at spreadsheets@pcw.co.uk

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Self-defence class

By popular demand, Mark Whitehorn reviews the requirements for maintaining database security, explaining the components on which most computer-based security systems rely.

I have been asked many times to take a look at the security system that comes with Access, so this month I'll cover the aspects of security which are common to most RDBMSs (but I'll throw in a few passing references to Access). Next month we'll move on to how security is actually implemented in Access.

Most PC-based RDBMSs started life as single-user systems. Some (like Access) offer multi-user capabilities when the tables are accessible over a network. Under these circumstances record locking is automatically applied but security isn't. So the multiple users of your database won't be able to edit the same record simultaneously (which is good) but all of them will have the same unrestricted access to the database; which is generally bad.

Why bad? Well for a start it means that users will be able to add, edit and delete data in any table. Do you really want users to have that power? In addition they will have a (frightening) level of access to the objects (such as forms, queries, reports, code and tables) in the database. So they can change and/or delete those as well. As the designer of the database you may feel that this level of power may be too much in the hands of inexperienced users.

So, you need to restrict what users can do but not all users need to be restricted in the same way. If you design a database that holds information about staff, the company may require you to control access to the salaries information; perhaps making it available only to the company directors and the "bean counters". Or the personnel department may need access to the sales data but not be able to alter that data. You may even be required to give some people

Fig 1 — Conversion code

```
Private Sub Materials_KeyPress(KeyAscii As Integer)
' Converts text typed into combo box to upper case
On Error GoTo Err_Trap
Dim strCharacter As String
' Convert ANSI value to character string.
strCharacter = Chr(KeyAscii)
' Convert character to upper case, then to ANSI value.
KeyAscii = Asc(UCase(strCharacter))
Exit Sub
Err_Trap:
strErrorMessage = Err.Description
DoCmd.OpenForm "frmError_Message"
End Sub
```

access to a summary of parts of the data if the detailed information is sensitive. For example, the bean counters may need to know *how many* employees have a criminal record, but it may be inappropriate for them to know who!

As soon as you need to control access to the data in this way, you will need to apply some sort of security system to the database. Most computer-based security systems rely on the following components:

- Users — the people who use the system, typically identified to the system by a name and password.
- Objects — things in the system. In Access terms, these are tables, forms and queries.
- Rights — the actions that users typically want to perform on an object. For instance, a table has a "Read Data" right and an "Update Data" right. These are granted to users, so if you have been granted the "Read Data" right you can see the data in the table but you need the "Update Data" right in order to be able to change that data. And you need the "Insert Data" right to add

more data. (In fact, Access uses the term "Permission" rather than "Right" but it amounts to essentially the same thing).

- Groups — collections of users bundled together. I wrote (above) that rights are granted to users but in fact they are frequently granted to *groups* of users, simply because it is easier to do so. If all the bean counters need "Read Data" access to a table, it is easier to grant it to their *group* (one operation) than individually (there may be hundreds of them).

OK, that's the background which applies to most security systems, so we'll cover how Access works specifically, next month.

Conversion tip

Ken Sheridan (KenSheridan@compuserve.com) writes: "I emailed you a while ago about forcing input of new terms in two-column combo boxes to uppercase where the bound column is a numeric data type and hidden. You helpfully suggested the `Ucase` function, which I incorporated in the `NotInList` event handler. This didn't

Fig 2 — Return the tax year from a date

```
Public Function FinYear(dDate As Date) As String

    Dim strCurrentYear As String, strStartYear As String, strEndYear As String

    strCurrentYear = Year(dDate)
    If Month(dDate) < 4 Or (Month(dDate) = 4 And Day(dDate) < 5) Then
        strStartYear = Trim(Str(Val(strCurrentYear) - 1))
        strEndYear = Trim(Right(strCurrentYear, 2))
    Else
        strStartYear = Trim(strCurrentYear)
        strEndYear = Trim(Str(Val(Right(strCurrentYear, 2) + 1)))
    End If

    FinYear = strStartYear & "/" & strEndYear

End Function
```

Fig 3 A form showing the use of the TaxYear Function

Fig 4 The same form open in datasheet view, showing the behaviour in the year 2000

Fig 5 Same again but with modified code to give different behaviour for the year 2000

ID	Date	Tax Year
1	12/05/67	1967/68
2	04/04/98	1997/98
3	03/05/23	2023/24
4	03/05/89	1989/90
5	03/06/78	1978/79
6	01/04/98	1997/98
7	02/04/98	1997/98
8	03/04/98	1997/98
9	04/04/98	1997/98
10	05/05/98	1998/99
11	03/04/99	1998/99
12	04/04/99	1998/99
13	05/04/99	1999/00
14	05/04/00	2000/01
15	05/04/01	2001/02
16	05/04/02	2002/03
17	05/04/09	2009/10
18	05/04/10	2010/11

ID	Date	Tax Year
1	12/05/67	1967/68
2	04/04/98	1997/98
3	03/05/23	2023/24
4	03/05/89	1989/90
5	03/06/78	1978/79
6	01/04/98	1997/98
7	02/04/98	1997/98
8	03/04/98	1997/98
9	04/04/98	1997/98
10	05/05/98	1998/99
11	03/04/99	1998/99
12	04/04/99	1998/99
13	05/04/99	1999/00
14	05/04/00	2000/01
15	05/04/01	2001/02
16	05/04/02	2002/03
17	05/04/09	2009/10
18	05/04/10	2010/11

convert the characters as they were typed in. I've now found that the solution was there in the help system all the time. The trick is to use the KeyPress event handler to convert the characters one at a time, as they are typed, and return the converted character to the control. The code is shown in Fig 1. It also works for memo fields where I had the same problem. Now I have the prospect of wading through all the forms in the database and pasting in the code."

The code in Fig 1 is for Access 95/97. I've

converted it to Access 2.0 and it is on the PCW CD in a file called DBCJUL98.MDB.

Getting your dates right

Here's another tip from Ken, shown in Fig 2, which is an Access function to return the tax year from a date. Note the problem with data literals and British date formats (dd/mm/yyyy). Although date literals in SQL have always been interpreted as US format (mm/dd/yyyy), up to version 2 Access accepted them in VBA according to the

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international date format in Windows. In versions 7 and 8, VBA interprets them as US format if the date is less than 13th of the month. This could cause problems if upgrading from version 2. Microsoft says it is "standardisation" — others say it's a bug.

This relates to the British tax year, which starts on 5th April. You can pass the date as the function's argument as a date or a string, or as a date literal for US format dates, but avoid date literals with British date formats. Any British date literal before the 13th of the month will be interpreted as US format in version 7 or 8. For the British public administrative financial year, starting on 1st April, just delete from the "If" line:

```
Or (Month(dDate) = 4 And
Day(dDate) < 5)
```

I have put the code into an Access 97 file which is on our PCW CD-ROM as TAXYEAR.MDB. In testing, I noticed that this works fine (Fig 3), except for an oddity around the dreaded year 2000 (Fig 4).

This format isn't "wrong" since it is still quite clear to which tax year this date belongs. But if the format offends you, it is easy to add a bit of code to turn it into whatever format you prefer. For example:

```
If strEndYear = "100" Then
strEndYear = "00"
End If
```

will give the result shown in Fig 5.

CTNAME	A2	A3	NUM
Afghanistan	AF	AFG	004
Albania	AL	ALB	008
Antarctica	AQ	ATA	010
Algeria	DZ	DZA	012
American Samoa	AS	ASM	016
Andorra	AD	AND	020
Angola	AO	AGO	024
Antigua and Barbuda	AG	ATG	028
Azerbaijan	AZ	AZE	031
Argentina	AR	ARG	032
Australia	AU	AUS	036
Austria	AT	AUT	040
Bahamas	BS	BHS	044
Bahrain	BH	BHR	048
Bangladesh	BD	BGD	050
Armenia	AM	ARM	051
Barbados	BB	BRB	052
Belgium	BE	BEL	056
Bermuda	BM	BMU	060
Bhutan	BT	BTN	064
Bolivia	BO	BOL	068

Fig 6 The format of the ISO country code data

Waving the flags

If you thought that writing about databases was boring, read the following (considerably shortened) which is a mine of information about (amongst other things) whether you can safely burn the American flag!

Questions & Answers

Q I am a newcomer to MS Access and databases. Is it possible to compile an Access database into an executable?

Will Luke
will.luke@fonix.org

A Yes, but you need the Access developer's kit which costs more money. However, it is well worth it if you intend to distribute multiple copies of the same Access application.

Q I am trying to set up a database for order tracking in Access 97. I need a query that selects the last record in the database so I can print only that record as a report. How would I do it?

Andrew Lishomwa
alish@zamnet.zm

A What you need to do is base the report on a query which extracts the "last" records from the table. "Last" in this case is presumably the record with the highest order number, so you could use the MAX function. An example of the sort of SQL that might be used for such a query would be:

```
SELECT ORDERS.ID, ORDERS.VALUE, ORDERS.DATE
FROM ORDERS
WHERE ORDERS.ID = (SELECT Max(ORDERS.ID) FROM ORDERS);
```

You can, of course, start playing around with variations on this using "Min", for example, to find the "earliest" record. You do, of course, have to be sure you understand your data well before relying on the fact that the highest value in a field does indeed always indicate the "last" record.

● I include this information for any other readers who may be interested because, before I could formulate a reply by email, Andrew came back with: "Apologies. Stupid me! I have solved it with sorted query and top value selection." This is, of course, an equally valid way of doing it.

cocked hat for speed!). (I'll let that one pass for now — MW). It has the country name, number and both 2- and 3-digit alpha codes. I also have information about country flags if you are interested."

markm@wdi.co.uk

I replied asking what an ISO3166 country code is? and Mark came back with: "I'm not 100% sure but the ISO is, of course, the world's standards body (International Standards Organisation), so I'm assuming that ISO3166 is the document that defines which countries have what abbreviation."

The ISO3166 country code files are on our CD-ROM in .DBF format since that can be imported into almost all RDBMSs. You can see what they look like in Fig 6.

Mark Machin writes "I have something you may be interested in: a (mostly?) complete list of the ISO3166 country codes. I've attached a zipped database in DBF format (yes, FoxPro, I know, but in my humble opinion it knocks Access into a

PCW Contacts

Mark Whitehorn welcomes readers' correspondence and ideas for the Databases column. Write to him at the usual PCW address (p10) or email him at database@pcw.co.uk

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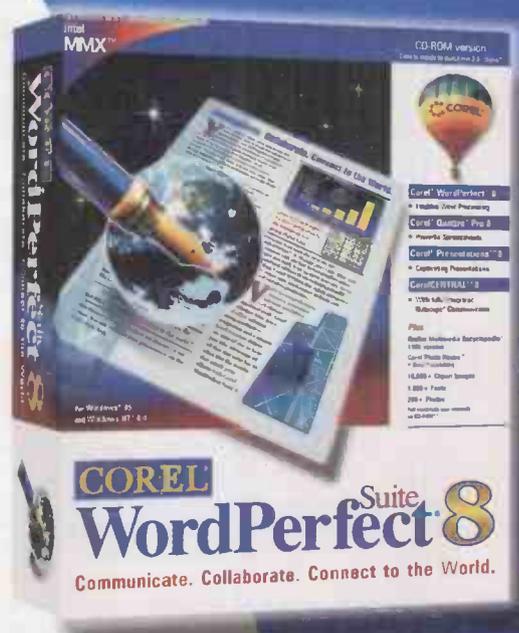
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Disaster recovery

Roger Gann knows the score: hardware horror always strikes at the most inconvenient moment, like when your VAT return is due. Sit back and gen up on what could be the culprit.

Just like flat tyres never occur on sunny days when you're not in a hurry but at night, in the rain when you're late, so PC hardware disasters always have the knack of cropping up at the most inconvenient moments. Maybe now is a good time to look at the various ways you can dig yourself out of a hole if your PC starts misbehaving. I'll deal with the possible problems peripheral by peripheral.

■ System unit

By this I really mean the motherboard, as I'll be devoting individual attention to the more important system-unit components later on. Often, the first indication of a problem with the motherboard is a succession of beeps, repeated at regular intervals and the PC refusing to do much else. These beeps are a kind of Morse code and they're trying to tell

you something, i.e. where the problem lies.

So, you hear some beeps: let's be charitable and assume it's not something serious. If you're lucky, your motherboard manual will list the beep codes and what they mean. But all too often, the "manual" is silent about these cryptic beeps.

In this case, the first thing I'd do is to remove and reinsert all the expansion boards to ensure a clean, fresh electrical connection between each component. I'd remove any SIMM or DIMM memory and reinstall it, and I'd gently press down on any socketed components on the motherboard that have tried to "creep" out of their sockets.

Some computers also have fuses you should check, especially in the power supply unit, but be wary of simply replacing them — the original fuse blew for a reason and replacement only cures the symptoms.

Loose external connectors are another problem, like the ones at the back of your computer for modems, networks, printers or CD-ROM drives. First, make sure everything is powered off and unplugged to protect the devices themselves. Then, wiggle those connectors, looking for one that seems loose.

Check It out

If you have an intermittent hardware fault you think is motherboard based, then this could be an opportunity to use some diagnostic software such as Touchstone's Check It. Last month, a full working version of Check It 4.0, one of the better PC hardware diagnostic packages, was included on the cover CD-ROM so it might be an idea to install it now and run it, while your PC is still running.

It's also a good idea to prepare a bootable system disk with all the relevant Check It files on it.

■ Floppy disk drive

Next to power supplies and hard disk low-level formats, floppy drives have the highest failure rate of any PC hardware. The most common message — "General failure reading . . ." — is usually the result of a poor-quality or improperly formatted floppy disk. But sometimes, the problems go deeper than this: it could be the drive that's at fault.

The first thing to do is to take a look at the drive. Open your PC and compare the drive select jumper settings of the problem drive with the drive documentation. Check to see that the data cables and power leads are properly connected at the drive and controller ends. If you see that the ribbon cable is snagged or crimped, it might be wise

Your monitor: how to get a perfect picture

Like the keyboard, the monitor is one of those devices that either works or it doesn't and when it doesn't, you soon get to find out. Make sure that the signal cable is plugged in properly to the VGA port. The pins inside a VGA plug are particularly thin and very easy to bend if you try and insert the plug at an angle. I know of one machine where one pin was so bent, the one carrying the red signal, it made the picture have a blue cast. If you have an odd colour cast, then check out the VGA plug and very (very!) carefully straighten any bent ones. Check that the brightness is turned up, too!

Everybody should get a perfect picture under character-mode DOS but if you boot up and get no picture, just a number of repetitive beeps, it could mean that the PC can't detect any video RAM, i.e. it can't "see" the graphics card. The answer here is to turn the PC off and try removing and re-inserting the video card.

If the image is otherwise OK but breaks up under Windows then you're either using the wrong video drivers or you're using the right video drivers but with the wrong settings. If you have a problem like this, run Windows 95 in Safe Mode. Once you've proved that Windows works in this mode, the next step is to make sure you're using the right video drivers so use the Add New Hardware Control Panel wizard to auto-detect your graphics card.

Sometimes, the refresh rate, the speed at which the image is redrawn from top to bottom, can be set too high for your monitor and this will also cause the picture to break up. Often choosing a lower refresh rate, such as 60Hz, may cure the problem, and this is often done via the screen driver though occasionally, you can adjust it via a small adjusting screw at the back of the display.

to replace it. If your drive fails to recognise a change of floppy, i.e. it thinks disk A is still in the drive even though you've put disk B in, unplugging the ribbon cable and plugging it in again can cure it. Maybe your CMOS setup is wrong: verify that it is properly configured to the drive type and size.

What's the diagnosis, doctor?

If the problems persist once you've determined that your software and hardware are set up correctly, run a diagnostic program, such as NDIAGS or Check It, on both the controller and the drive to rule out the possibility of your controller failing. If no errors are found, format a new, never-before-formatted floppy and try the operation again.

■ Hard disk

Is the computer refusing to boot up? Maybe you left a non-system floppy in the A drive? Some systems can be set so they won't boot from that drive, but in most cases A will override anything on the hard disk during the boot operation. Remove it, and press any key to continue.

On the other hand, it may be a boot-sector problem. Enter CMOS Setup first and make sure the drive settings (cylinders, heads and sectors) are correct for your hard disk. Some modern BIOSes have an auto-detection feature that interrogates the hard disk to determine its correct settings.

Try booting from a system floppy and see if you can go from there (in fact, that's why the A drive is allowed to override C). You'll need a bootable system floppy for this task, so it pays to have one already prepared. As well as the system stuff, copy useful utilities on to it, things like CHKDSK, SCANDISK, SYS, FORMAT, FDISK and so on. Don't forget that if you have a FAT32 partition and you boot up with a version of DOS that only recognises FAT16 partitions, then you won't be able to see even a healthy disk. Moral of the tale: make a bootable system disk under Windows 95.

Back for good

If you can't log on to the hard disk and you get an "invalid drive specification" error, then DOS thinks the hard disk isn't partitioned. It might be worth trying to rebuild the master boot record using the undocumented FDISK/MBR command, but it could be time to pay last respects to your data and partition/format your hard disk. Just as well you back up your data regularly.



Replacing the hard drive. It's easier to slide the new drive into one of your PC's forward-facing bays. But installing it inside the case, perhaps under the floppy drive, leaves room for extra devices

Occasionally old hard disks refuse to "spin up" to speed. I've sometimes been able to get a hard disk going by the simple expedient of extracting the drive and giving a sharp twist to spin the platters slightly, and then reinstalling the drive.

■ System files

If you can log on to the hard disk, Drive C:, from the floppy, and run programs that are on it, then all you've got is a booting problem which is probably curable by using the SYS command to re-transfer the system tracks. SYS C: should do the trick. You should also run SCANDISK to check for any problems with the directory or file structure.

Maybe the hard disk boots fine but hangs halfway through the startup files. With Windows 95 and MS-DOS 6, this is easy to diagnose thanks to the F8 interactive boot feature. Simply press F8 as soon as you see "Windows 95 starting..." and you can step through each line of CONFIG.SYS and AUTOEXEC.BAT, choosing whether to execute it or not. Answer "Yes" until it hangs, note the command line in question, then reboot, press F8, and this time round answer "N" when it comes to the line that hung before.

Once the PC has booted properly, check out the device driver or TSR in question, and, if necessary, recopy it on to the hard disk from its master floppy.

■ CD-ROM

CD-ROM drives are relatively complex devices and can be upset by relatively trivial faults. Windows 95 doesn't require specific drivers for ATAPI or IDE CD-ROM drives but DOS does, so make sure that the right driver is loaded in your CONFIG.SYS file. The driver names vary from make to make but the line will look something like this:

```
DEVICE=C:\ATAPI.SYS /D:MSCD0000
```

You also need to get DOS to recognise this extra drive, and this is done with the MS-DOS CD-ROM Extension utility, MSCDEX.EXE. It's loaded in AUTOEXEC.BAT, thus:

```
C:\DOS\MSCDEX.EXE /D:MSCD0000
```

I've known a CD-ROM drive to "disappear" from Windows 95 for no explicable reason, and no amount of hardware auto-detection will cause it to resurface. The only cure I've found is to remove/delete the hard disk controller from the Device Manager tree, and rely on Windows 95 to auto-detect it and reinstall it the next time you reboot. This sounds like a brutal solution, but I've never known it to fail!

PCW Contact

Roger Gann can be contacted by post c/o PCW at the usual address (p10) or via email at hardware@pcw.co.uk



To full effect

In part III of the VST masterclass, Steven Helstrip explains VST's most powerful features — real-time plug-in effects — showing you how to use insert, mixer and master effects.

Year after year, software has made it easier for anyone to create music with their PC. Even in the early eighties we saw the Commodore 64 being used as an eight-track sequencer, drum machine and sampler.

While I and the rest of the Amiga fraternity were making the most of noisy 8-bit recordings, MIDI sequencing was gathering pace on the Atari ST thanks to Pro 12, Cubase and Creator. We now have combined MIDI and audio sequencers, and multimedia has brought about countless music packages. We've come a very long way; you only have to spend a moment tweaking the dials of ReBirth to see that. But I never anticipated the stage at which I could sit a tone-deaf friend in front of a PC and say: "Here, have a go on this while I put the kettle on", only to return to find he'd knocked out a great dance tune. The software to which I'm referring is Dance eJay (see p294).

VST masterclass — part III

Amongst the most powerful features VST has to offer are its real-time plug-in effects. To kick-start your collection, VST ships with a basic range of tools that includes reverbs, delays and choruses. Since VST is entirely software driven, plug-ins rely heavily on resources, unlike sound cards which have dedicated DSPs to calculate effects algorithms. There are three basic types of effect that can be used in VST: insert, mixer and master.

1. An insert is an effect which is literally "inserted" into the signal path of an audio channel and remains dedicated to that channel — four inserts are available on each. The types of effect you would use on an insert would include compressors, noise



Fig 1 Dave Brown's plug-in for VST is free on the internet (see p294)

gates, EQs and those effects where you only want to hear the return of an effect without any "dry" signal.

2. Mixer effects are on the receiving end of virtual auxiliary sends from each channel strip. Four effects can be set up and are available to each audio channel. A signal is sent to a mixer effect using the send dials in the EQ/FX window. Clicking the Pre button enables you to send a signal level independent of the channel's fader position and mute status. The return of the effect is then either sent directly to mix, or to a bus (which we'll deal with later). The most common mixer effects are reverbs and delays, as it's likely they'll be used by more than one audio channel.

3. Master effects are essentially stereo inserts on the master mix, or output. Again, compressors and EQs are likely candidates in addition to stereo enhancers.

Using mixer effects

- Select Effects from the Audio menu to select and turn on the desired effect. Most plug-ins have preset patches which are selected using the program buttons. WunderVerb, for instance, has ten effects

algorithms, from large halls to gated reverbs. You can rename presets, or user settings, by double-clicking on the name.

- When routing a channel to an effect, be careful not to overload the effect otherwise clipping or distortion will occur. Bear in mind, also, that you may want to send additional channels to the effect, which will increase the input load.
- If you have a sound card with multiple outputs, or one that is capable of mixing multiple audio channels in hardware (such as the EWS64 XL), it is possible to send the return of the effect to a bus. This bus is a secondary output to mix that enables you to

New Steinberg release

3.551 has been released, which introduces Steinberg's EQ-1 EQ algorithms in the monitor section. At the press of a button, you can now toggle between standard and the new, high-quality EQ which is much cleaner and more precise with up to 24dB gain/attenuation. The driver architecture has also been optimised for better synchronisation of MIDI and audio. 3.551 is available for download from www.steinberg.net

p294 >

The electronic DJ

Dance eJay is an electronic DJ, although to regular readers of these pages it's best described as an eight-track sample-based sequencer.

With the techy bit out of the way, what we have here is the "Lego" version of Cubase, and it's suited to kids of all ages! The building blocks, or samples, are colour co-ordinated into various categories (loops, bass riffs, vocals, etc) and fit together in any combination of 1-, 2- or 4-bar loops. And because all the samples are in the same key and tuned to 140bpm, there really is no going wrong. Well, almost. All the loops fit to one of four chord progressions and if you try hard enough, you could layer two chords that don't work particularly well.

The arrange window enables you to drag and drop samples onto one of the eight tracks. Tracks 1-6 are mono, while tracks 7-8 make up a stereo pair. Bar numbers are indicated at

Here's a tune my mate knocked up while I wasn't looking

the top of the screen and samples automatically lock to the start of the bar. Holding down control allows you to shift sample positions by semi-quavers or sixteenths.

So what are the samples like? The overall style is definitely Euro and there are some respectable loops and synth riffs on which to lay hands. The vocals are similar in style to 2-Unlimited and, for want of a better analogy, are cheesier than a bag of Wotsits.

As for the raps, well, let's just say they're best avoided altogether. But that still leaves roughly 800 worthwhile samples with which to play around.



A full installation eats its way into 130Mb of hard disk, but that includes the full-complement of 1,350 samples. You can, of course, load up your own samples and export your opus to a wave file so that you can make a CD to send off to Pete Tong! Excellent fun and superb value. (See *Contacts*, below).



Fig 4 Get spiced up with this valve-like distortion effect plug-in

assign multiple channels or, in this case, effects, to a stereo fader. You can assign all your effects to the same bus for overall effect control, or to individual buses. These buses are activated in the Master section and assigned to outputs beneath each fader. Once activated, you can route effects to them from each effects rack. Note that activating buses will slow down the performance of VST.

- As the effects start to add up, your

system will inevitably grind to a halt. Keep an eye on the performance indicator as this will give you some forewarning. To take the weight off your processor, the export audio option enables you to write a new file with the effects added, including any automation. This can be found in the file menu. The newly-created file will be based on un-muted audio tracks between the left and right locators. The new file will be imported to a new audio track.



Fig 3 Use the Trancemitter for anything which needs a touch of movement

Get plugged in to VST on the net

You don't need to spend a fortune on third-party plug-ins for VST; there are literally dozens on the internet, for free. Check out those listed below.

- Dave's plug-ins: www.dbrown.force9.co.uk Dave Brown's plug-ins (Fig 1) consist of a tempo delay, sweeping delay and a tremolo. These delays are straight replacements for VST's delays, only they work out the delay times for you based on the tempo. The tremolo provides two independent modulators for tremolo and pan. Choose from sine, square, triangle and saw modulator waveforms.

- Trancemitter: www.steinberg.net Trancemitter is an LFO-controlled resonant filter that's superb for pads, bass-lines and drum loops. In fact, anything that needs a touch of movement. This one (Fig 3) is courtesy of Steinberg.

- Spice: www.netcologne.de/~nc-rehaagth/tr.htm

Here's something to, er, spice up your kick drums and guitar riffs. Spice (Fig 4) is a basic valve-like distortion effect with just two parameters; depth and mix.

Questions & Answers

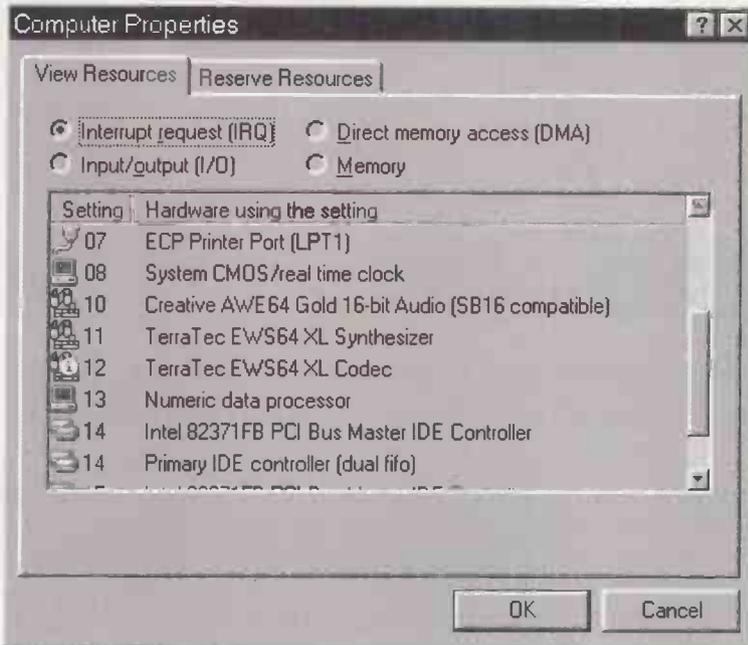


Fig 2 Under System Properties/Device Manager, click on computer to view IRQ usage

Q A friend of mine is blind and makes his living as a semi-pro musician playing keyboards. He bought a PC with an AWE-64 (last December) and uses it with a screen-reader device called HAL95 and navigates Win95 with the keyboard. He has a WinTV card with which he can convert teletext into text files and use Creative's Text Assist to read it. He also relies on a scanner to OCR letters. HAL95 on COM2 has its own speech but it's better when used via Text Assist.

His problems start when he wants to make good-quality recordings. The AWE-64 is positioned next to a modem, which I suspect is creating noise, but there are no free slots to which to move it, so I suggested changing the motherboard.

With his digital recording equipment my friend would like to manipulate sound in the digital domain. We know the AWE-64 has a digital output, but no input. The Maxi Sound Studio Pro has both and would seem to be a good choice. The problem is that he does not want to lose the use of Text Assist which helps him a great deal. Is it possible to have two sound cards in one machine? Can we find enough interrupts and will they conflict?

Ray Bradshaw

A I can't see any problems running two cards in the system you have mentioned, assuming you find a motherboard with more slots. I run an AWE-64 and a Terratec EWS64 XL in my PC, as well as SCSI and MIDI interfaces. If the modem and TV cards are the only cards using interrupts, there will be ways to overcome any initial conflicts.

First, check your System settings to ascertain how many IRQs are free at the moment (see Fig 2). It's quite possible there will be only one. Depending on the second sound card you choose (check out our group test on page 206), this could well be enough. However, in the event that two IRQs are required, you can set up two hardware profiles in Windows 95: one with the parallel port enabled for use with the scanner, the other with it disabled to leave an IRQ free for sound.

The noise problem is more likely to be a combination of the graphics and TV cards, about which you can do little.

However, you can remove some noise by muting the mic or line inputs (whichever is not used) in the sound card's mixer settings. Also, don't apply gain on the treble setting and avoid using 2x and 4x gain on the card's output.

PCW Contacts

Steven Helstrip can be contacted at the usual PCW address (p10) or via email at sound@pcw.co.uk

Dance eJay is £24.95 from FastTrack Software Publishing: 01923 495496 www.fasttrack.co.uk

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Flash in the plan

When you've seen one poor-quality web image too many and your own scanning sessions don't quite cut the mustard, you need Flashpix, PhotoCD and your local branch of Boots.

Now seems a good time to take a closer look at Kodak's Flashpix file format, which seems to be rapidly gaining favour with developers of image-editing applications.

What prompted my interest in Flashpix was a particularly disappointing scanning session. I was scanning in some 35mm transparencies for a web site, and while the quality didn't need to be brilliant — sharp and bright at 72dpi would have done — the Umax Vista S6E, which is great with reflective stuff, just wasn't up to the job.

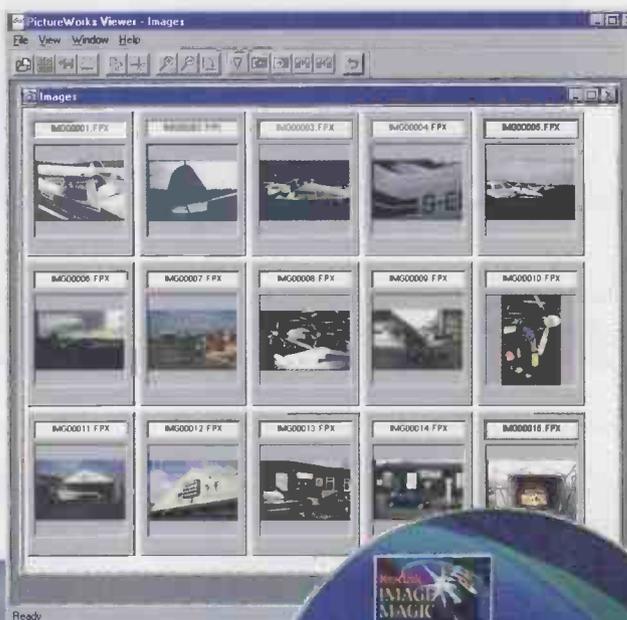
Boots to the rescue!

As I wasn't about to pay ten quid a throw for professional high-resolution drum scans, for a moment I was stumped, and even considered reshooting the pics on print film. Then I remembered PhotoCD, and shot down to Boots with my trannies in my hot little hand.

To put my 35mm transparencies on a CD cost 65p per image plus £4.99 for the CD. If you walk in with a 24-exposure film, Kodak will process the film, provide a standard set of prints, and transfer all the images to CD in Flashpix format for £17.99 including the cost of the CD. It's a multi-session CDR, so thereafter the cost is £13.99 per film and you can fit 300 images on one CD. The

Right The Pictureworks viewer, included in the CD with your scans in Flashpix format, allows you to view thumbnails of all the images, flip, rotate and make basic enhancements

Below One of my 35mm transparencies from the Flashpix CD. The quality is easily good enough for web use — and much better than my Umax Vista S6E with transparency hood could manage



images in a hierarchy of multiple independent resolutions. The hierarchy is created

turnaround time is one week.

The quality was more than adequate for web use, and on a tight budget I'd certainly consider using it for print, say at small sizes in a catalogue or something like that.

Flashpix is a resolution-independent format; or to put it another way, it stores

by starting with the highest resolution, which is determined by the scanner, digital camera or whatever the input source happens to be.

The next resolution level is created by halving the horizontal and vertical resolutions. This process is continued until

Questions & Answers

Q My wife needs to produce some maps to accompany articles on country walks that she writes for a local paper. Currently they are done by hand, by tracing over an OS map and adding various features and place names.

She would like to do this job on her PC, so I am looking for a fairly simple software package that would do the trick. I am assuming it would be best to get an inexpensive graphics tablet to do the input — there seem to be a number available. Mice always drive me up the wall when trying to do this sort of thing.

Can you suggest a suitable package? Also a possible recommendation for a good, inexpensive graphics tablet.

Ian Cargill

A You need a vector draw package which will allow you to import the map scan, then trace over it using a pen tool to draw paths, roads and add features. Most vector packages will do this, the most obvious choices being Adobe Illustrator, Macromedia Freehand and CorelDraw 7. These packages are neither inexpensive nor simple, but they do provide more sophisticated drawing tools, layer features, path editing and effects, and the option of colour-separated output.

A less expensive option would be to go for an earlier version of Draw. Draw 5 has all the features you need and is bundled with CorelTrace, which you could use to do some of the initial legwork tracing the scans.

As for the digitising tablet, it's not absolutely necessary but will make life easier. If you're tracing over a bitmap scan using a Bézier curve tool, it's actually very easy to precisely control the shape of the path using the mouse. What the tablet will allow you to do is dispense with the scan: you can just pop your map on the tablet and trace over it using the stylus.

Most digitising tablets have user-definable function pads so you can, for example, cut, paste and undo just by touching an area on the tablet with the stylus. At £99 the Wacom Artpad is pretty good value at the moment. It has a 4 x 5in area and comes with Wacom's Ultrapen

— you flip it over and the other end works like a pencil eraser. In choosing your software, make sure you pick an application which supports the Artpad's 256 pressure-sensitive levels.

■ Starting this month, in common with other *Hands On* contributors, I'm going to give away book tokens to readers who I think are deserving. So this month's book token goes to whoever can answer Kyle Lamb's question about apparent inaccuracies in CorelDraw 7:

Q I am a professional user of CorelDraw 7, with familiarity of all the suite range since version 3.

A client recently gave me over 100 graphical images of fish, which they want printing in similar sizes, maintaining proportion. This was only one part of the job, which is why my method might seem longwinded. I've worded the instructions so you can follow them:

1. Create a new A4 landscape page within CorelDraw 7. Open the Transform - Size box (making sure "Proportional" is ticked).
2. Insert a new, small JPG from a file, as an object (don't link it).
3. In the size dialog box, make a note of the image's dimensions. Change the Vertical length to 171mm. Make a note of the image's dimensions:
/* V: 14.39 H: 27.09
V: 171.0 H: 292.344 */
4. Click and unclick the "proportional" box twice.
5. Change the Vertical length to 171mm.
6. Make a note of the image's dimensions:

/* V: 14.39 H: 27.09
V: 171.0 H: 321.917 */

There is a difference between the two horizontal lengths. Why? If you calculate the difference using a calculator, the later dimensions are correct. I can't see any reason for this change, and the difference is considerable.

Corel, what do you think?

Two people are ineligible from earning a book token — Mr Lamb himself and anyone from Corel, though they are of course welcome to help out if they can.

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Book reviews

Web Sites That Work

Author Roger Black with Sean Elder

Publisher Adobe Press

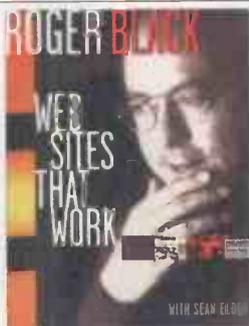
Price £41.50

As you'd expect from someone with a background in print design — Roger Black was art director of the *New York Times* and *Rolling Stone* magazine — *Web Sites That Work* is more about design than implementation. If you're looking for tips on how to produce Javascript buttons or animated gifs, you won't find them here. In fact, a cursory glance at *Web Sites That Work* could easily leave you with the impression you'd just read *Magazines That Work*, *Posters That Work* or *Covers That Work*. Which is not a bad thing, because of course web sites, like any other media that bring together words and pictures, benefit from the application of broadly similar design principles.

Web Sites That Work progresses from fundamental principles of design with a nod in the direction of the history of design and typography, through to online considerations like writing for the web, video and navigation, then on to broader issues like the web's suitability for commerce, how to build a web publishing team and handling clients.

The book is filled with hundreds of examples of design, from the covers of *Esquire* and *Rolling Stone*, book jackets, adverts and magazine spreads. As the content becomes more web-centric, so does the illustration, and we're treated to screenshots from the Discovery Channel, Infoseek, Pointcast, MSN and Hotwired to name but a few.

Accompanying these beautiful visuals, Black's text, supplemented by short sections from colleagues, friends and clients, provides a valuable insight on those important aspects of web-site design and production that most "how-to" manuals don't even touch on.



Drag and Drop Design

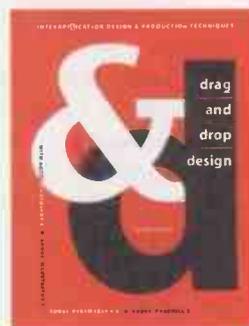
Author Clay Andres

Publisher Adobe Press

Price £36.50

While this book will undoubtedly be of some use to anyone who spends their working day hopping in and out of Photoshop, Illustrator and PageMaker, with the occasional visit to Pagemill, Dimensions and Acrobat, reading the evangelistic introduction you can't help raise an eyebrow here and there. Where, for example, it makes the claim for Photoshop, Illustrator and PageMaker "each... the leader in its product class, setting the standard by which all other programs are measured", you can't help but think, Photoshop, OK; Illustrator, maybe; PageMaker? Give it a rest. Once you make it past the introduction, there is a great deal (more than 300 pages) of information on things like how Adobe's applications utilise memory under MacOS and Windows, how the various file formats work, and when and how you can drag and drop between applications.

The trouble is that this book should be half the size and better organised. It's padded out with a pile of inappropriate little sections on everything from colour theory to pocket design tips (where to put drop caps, for example). Speaking as someone who enjoys reading technical manuals, I found this approach hard going. It would have been more accessible, and much more useful, as an indexed collection of tips.



you are left with one 64-pixel square tile.

Another fundamental feature of the Flashpix format is that it divides the image into 64-pixel squared tiles. Tiling allows Flashpix-optimised applications to work much more quickly as edits can be selectively processed — only those tiles affected by an edit need be read.

Flashpix records edits as "viewing parameters" — operations to be applied to the original file. It currently supports cropping, filtering, rotation, scaling, shearing, colour correction, contrast adjustment and stretching in the image view.

This approach not only saves you time, it

uses less disk space. This is because there is no need to save the original image in addition to any edited versions: In Flashpix the original image data and the edit are part of the same file. Flashpix employs Microsoft's OLE Structured Storage as a "wrapper" around Flashpix files, making them interoperable with OLE II and OpenDoc applications. Image views can be stored as separate, structured, storage "container" files and linked to the original image. So you can have as many image views as you like, but only one copy of the original image.

Multiple-resolution file formats that make

use of selective processing to speed image editing, are nothing new. Live Picture introduced the idea with its image editor of the same name in the early nineties, and it's clear that Flashpix has a lot more in common with the original Live Picture format than just the concept. Macromedia's Xres also uses a similar format. But while both these applications trashed Adobe Photoshop in terms of performance, the professionals decided their interests were best served by sticking with what had become the industry standard and packing their Macs with as much RAM and hard disk as they could get their hands on.

A friend indeed

Flashpix faces a friendlier future. For one thing, it's aimed at home users for whom ease of use is a bigger priority than it is for professionals. It also has the support of just about every application developer worth mentioning. Applications which currently support Flashpix include Adobe PhotoDeluxe 2 and Photoshop 5 (you can get a plug-in for Photoshop 4), Corel Paint 7, Debabelizer 4.5 and Kai's Photo Soap.

You can find out more about Flashpix on the Kodak web site at www.kodak.com. If you want to look at some Flashpix samples, check out www.kodak.co.uk/dalHome/flashPix/flashPixSamples.shtml. You will need a Flashpix-enabled application. The Kodak web site has a link to pictureworks.com where, it says, you can download a viewer, but in fact it just gives you a US toll-free number to call which won't be much use. Try downloading Paintshop Pro from www.jasc.com instead.

Feedback on fonts bundle

To all those eagerly awaiting my promised shareware fonts bundle, I can only say hang on, it's in the pipeline. Following the suspension of the waughzoo font archive while they sort out the copyright situation on some of the fonts they were offering free to all and sundry, I've come over all cautious about potential copyright infringement and am being scrupulously careful about what to include.

PCW Contacts

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Play the game

Benjamin Woolley gives advice on how to get your 3D graphics into a game without the arduous task of complicated programming. The techniques learned are useful for all 3D graphics work.

You are an artist, not a programmer. You work with 3D graphics to produce exciting imagery which you would like to be used as part of a game. However, the level of programming expertise required to develop a game goes way beyond your technical competence and, anyway, the idea of grappling with C++ leaves you cold.

If this is your view then you may feel that experimenting with graphics for games is strictly for the nerds. This month I want to show that it is not and that even if you never produce 3D content for arcade-style games, learning the techniques associated with creating it will provide you with useful disciplines for all sorts of 3D graphics work.

Techniques

What, then, are these techniques? They are related to the central problem of rendering 3D graphics in real time, which is speed.

When you want, say, a car to race round a circuit, swerving around vehicles and obstacles, you are effectively asking the computer to render a full-screen animation on-the-fly, frame by frame. This is a lot to ask of any consumer hardware. Games consoles have special graphics hardware built-in and are designed to speed up the process. Now, many PC graphics adapters have 3D accelerator chipsets like Permedia and Voodoo which enable Windows-based systems to compete with the game-playing power of the consoles. It is this hardware that needs the programming.

You could use DirectX, for instance, which provides a standardised interface to most 3D accelerated PC graphics cards, input devices like joysticks and other forms of output devices such as sound or force-feedback. Even if a game makes optimum

use of such hardware, it is still the 3D content, often created using conventional authoring tools, that can ultimately determine how smoothly the game runs and how good it looks. That is why the key to games graphics is recognising the compromises you have to make and understanding how you can meet them.

Using NetYaroze

Last month I mentioned Z2, a game produced by an aspiring game development company called Mobius Codeworks (www.codeworks.demon.co.uk) using the NetYaroze platform. The 3D meshes and textures used in the game were created by Andy Webb and the games engine was programmed by Jim Pitts. Andy sent me an email pointing out the challenges he faced in creating the game. I hope he will excuse me quoting him at some length, but he provides an authentic insight into the nitty gritty of working on these types of graphics:

"The main problem with creating the models is the polygon count. The hardware within the NetYaroze is powerful enough to manipulate fairly complex meshes, but the processor lags behind. Also, with a number of meshes on screen, as well as the polygons and textures needed for the 3D world, most models need to be about 200 polygons or less.

"The process of actually creating the mesh is simple. I decide on a rough idea of how I want the model (robots in this case) to look. I start adding the primitives into the modeller to create the mesh. The main problem areas occur with circular primitives (such as balls or cylinders): these can have a large number of sides and that wastes a lot of the precious polygons on a model. I

try and keep most circular objects to six or less facets or segments. This keeps the appearance of a round object but keeps the polygon count as low as possible.

"Further polygons can be saved by removing faces or areas that cannot be seen. For almost all the meshes, the undersides are deleted. Internal polygons can also be taken away, since they are never going to be seen, and small polygons are completely removed."

Although he is writing about his experience of using the NetYaroze, what he says applies to every platform there is, PC included. The key for all of them is keeping the polygon count down. Achieving this is essentially about clever modelling and texturing. Let us consider some examples.

Clever modelling and texturing

Suppose you want to build a car to race around a track. The car could be made using a box, one of the simplest primitives of all. You could use a big one for the main body, a smaller one for the cabin.

A box is made up of just 12 triangular polygons, so you could have your car for just 24. You could even reduce that number to 20 by removing the polygons (or "faces", as some packages call them) on the undersides of each box. It would not look very special but with a little texturing it might just look recognisable.

Suppose you wanted to add four wheels to this car? If you tried modelling a tyre (basically a torus) with 12 segments (imagine the segments of an orange) and a reasonably rounded cross section, you would add over 250 polygons for each tyre — and that's before you've included hubs, spokes and wheel arches!

So, a much better alternative is to model



These models are of a Ferrari. They are samples from Infografica's REM 3D Models Bank (www.infografica.com) supplied with 3D Studio MAX release 2, which I shall be looking at next month. Fig 1 is a high-detail mesh draped with high-resolution textures. The textures alone take up over half a megabyte of memory, while the model itself contains nearly 100,000 polygons. By contrast, the model in Fig 2 contains a tenth of that number, which is still too many for standard real-time rendered games, but getting there. Fig 3 is, as you can probably tell, low resolution: just 224 polygons and perfect for gaming. Figs 4 & 5 show the meshes used to create Figs 2 & 3. As you can see, the biggest loss in the model with the lowest level of detail is in the bodywork, which has lost most of its curves

you used an opacity map, you could even simulate spokes.

There is a general rule here: don't model it, texture it. Trees and buildings can be created by putting

The best way to create LOD meshes is to start with the highest detail you need and use that as the basis for creating the models with less detail. You might do this by deleting faces from the detailed model and saving the result under a different name, or by using the model as a template for creating simpler meshes from scratch.



Tiling is telling

Even if you can use textures rather than models, you still have to be frugal. They need to be able to fit in memory all at once, along with the geometry. To achieve this, they must usually be no more than 256

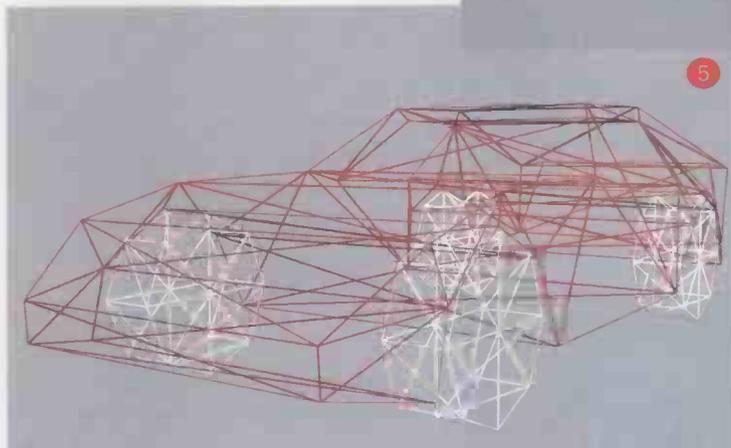
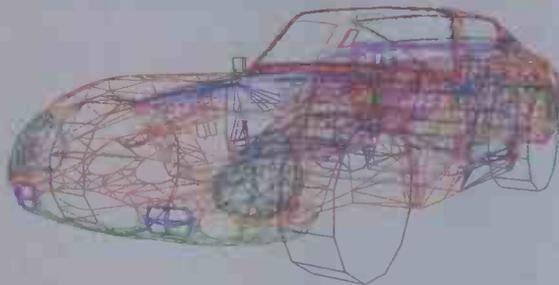


colours and wherever possible, tiled. For a building, you might have a tiny patch of stone or brick as your map, repeated over the building's surface, with windows as separate maps laid over the top (if layering is allowed).

Unfortunately, tiling is very telling. It is hard to give a convincing look to a brick building when every brick, or even every

third brick, is identical. It is advisable, then, to avoid realistic textures and use stylistic ones instead, perhaps with the cartoon quality you get from using a small number of saturated colours.

You can also use a clever combination of texturing and modelling to create shadows which are otherwise impossible to



each wheel as a cylinder with, as Andy suggests, six segments and one end missing (the end facing into the car), and then texture the closed end of the cylinder with an image of a tyre wall and a hub. If

different versions with varying Levels of Detail (LOD). Most games engines support LOD, loading in meshes with progressively higher levels of detail as the object gets closer to the current POV.

textures on flat planes, using opacity maps to ensure they have the right profile. If you must use meshes, consider creating

compute using a real-time renderer. For example, to create the shadow a moving object will cast on the ground, you create a silhouette of the object, soften the edges in a 2D paint program and then apply the result as a texture map to a plane placed beneath the object. By attaching this plane to the object, the shadow will follow it around but not in a way that truly reflects any change in the position of light sources.

PCW Contact

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The **Swing** thing

Tim Anderson takes a look at the full release of Swing for Java (which helps with building graphical interfaces) and gives an overview of version 4 of the Clarion development tool.

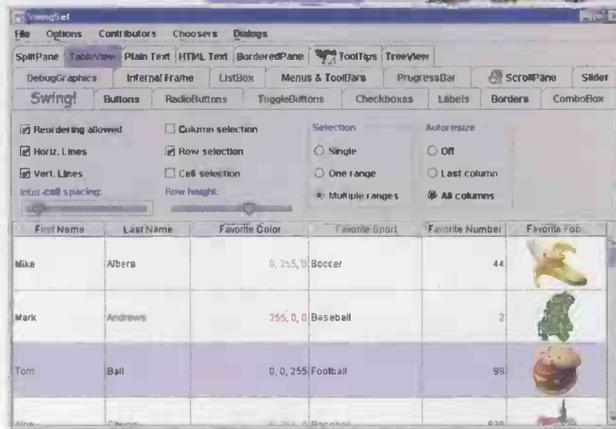
While Microsoft prepares for the launch of another version of Visual Studio, including the Windows-ready Visual J++ 6, Sun has upped the stakes with a full release of Swing, also known as the JFC (Java Foundation Classes).

Despite the hype, real-world Java suffers from several problems. One is compatibility, another is performance and a third is the weakness of the AWT (Abstract Windowing Toolkit) for building graphical interfaces.

Swing addresses the last of these. It extends the AWT with a new set of components offering many new features. Swing widgets also differ from AWT widgets in that they avoid using peer-based components. (These are objects created by the native operating system, but managed by the Java Virtual Machine). This is a simple way to imitate the look and feel of the host platform but has the disadvantage that you have little control over the appearance of the widget.



Left Floating Java windows? No problem with Swing. This also shows the new Metal GUI



Left, below Swing does tables, with click-and-drag resizing of columns

By contrast, the Swing components inherit from the AWT's Component and Container classes, via a new JComponent

class, and handle their own painting so that the JVM has full control of their appearance. The result is a feature called "pluggable look-and-feel" (PLAF) which lets you specify a graphical interface style. You can even switch between different looks at runtime.

Currently on offer are Motif, the leading Unix GUI, and Windows, familiar to everyone. Macintosh is in preparation. The system is not perfect because, whereas you can use the Motif look and feel on Windows, you can't use the Windows or Mac GUI other than on the platforms they imitate.

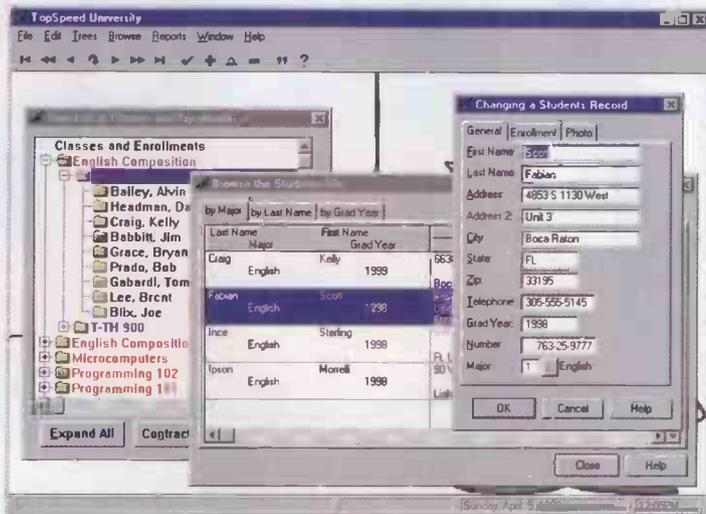
The official Java look-and-feel

More interesting than these copy-cat PLAFs are two new ones, unique to Java. The first is called Organic, and is used during development as Swing's default. The second is Metal, and JavaSoft has declared this to be the official Java look-and-feel.

Metal aims to give Java a unique appearance and identity as well as providing a clutter-free graphical interface suitable for cross-platform deployment. It



Choose your look: from left to right, Windows, Motif or Metal



This school management application has the typical Clarion look-and-feel

can click the Window button to open a visual form editor. Throughout the editing process, most of the work is carried out by making selections from dialogs, although you can also add your own Clarion code when necessary.

The application generator is template-driven and advanced users can modify the templates or create new ones, effectively creating their own programming Wizards.

Data access is carried out via a set of file drivers. The default is a TopSpeed driver that uses a proprietary data format. Other drivers handle Pervasive SQL (formerly BTrive), various older xBase formats (but neither the latest Microsoft nor Borland variants), SQL drivers for the most common client-server databases (including Oracle and Microsoft SQL Server) and ODBC.

Clarion 4's several new features include enhancements to the environment, the debugger, the language, the database drivers and the templates. The latter now generate code using the Application Builder Classes, taking advantage of the object-oriented language enhancements introduced in the previous version. Full OXC support is now provided and flat toolbars

will be an integral part of the JDK 1.2; the next major Java version.

Swing is significant because it offers a standardised way to create good-looking Java applications. As you would expect, it is well suited for use in visual programming and will show up in future versions of tools like Visual Café and JBuilder. It is also a shrewd political move, since Java now has a visual identity separate from the Windows environment in which it most often runs.

Exciting stuff, but do not wipe Delphi and Visual Basic from your hard disk just yet. Unless you go the Visual J++ route, you will not easily equal the graphical richness and performance of a native Windows application using Java. But if cross platform matters to you, or if you want an escape route from Windows, Swing is great news.

Clarion 4 Professional

Some products survive against the odds by building a core of loyal users. Clarion is an example of this. It is a database development tool for Windows and is therefore up against Visual Basic, Delphi, PowerBuilder and many other products.

What keeps Clarion developers loyal is that, unlike most tools, Clarion is an application generator. Its nearest equivalent is PowerBuilder but Clarion has an even greater degree of automation. This is not just a matter of wizards and templates, which generally produce shell applications that require substantial additional coding before they are useful. A Clarion application remains under the control of the generator, so in a sense it is also an application maintainer. Clarion also provides a complete business-orientated programming language and a native-code compiler. It can compile both 16- and 32-bit executables via a simple project option, so this is a good

choice if you want to target both environments from one set of source code.

Clarion has a more tightly structured development environment than most tools. Typically, projects start with a data dictionary which is a sophisticated affair. At the field level, you can specify a variety of options including validation rules, a default control to display the field, a formatting string, prompt text and column heading. You can also define index keys.

At the table level, the dictionary lets you define relationships and enforce referential integrity constraints. Once the data is set up correctly, the application generator can build a complete application with browse forms for each table and the ability to add, edit and delete records.

In the development environment, application components appear in a tabbed window, with each tab providing a different way to navigate the source.

For example, the Procedure tab shows the application's procedures in a tree view. A double-click opens the procedure for editing. This displays not the source code (although that is available if required) but a dialog with buttons for editing different aspects of the procedure.

If the procedure is linked to a window, you

Fig 1— Simple StringGrid printing

```
procedure TForm1.cbPrintClick(Sender: TObject);
var
  prnFile: TextFile;
  i, j: integer;
begin
  {set font}
  printer.canvas.font.assign(StringGrid1.font);
  printer.canvas.font.size := 12;

  {print text}
  AssignPrn(prnFile);
  Rewrite(prnFile);

  with StringGrid1 do begin
    for i := 0 to ColCount - 1 do
      begin
        for j := 0 to RowCount - 1 do
          Write(prnFile, cells[i,j] + chr(9));
          Writeln(prnFile, '');
        end;
      end;
  end;

  System.CloseFile(prnFile);
end;
```

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have appeared for an Office 97 look and feel. Available separately, an internet edition enables you to run a Clarion application through a Java front end.

Clarion is certainly a highly productive environment. Learning it is no trivial matter but skilled users will be able to quickly build standard business database applications, and generating code via templates prevents some categories of errors.

There are reasons, though, why Clarion remains a minority taste. First, it produces applications according to its own model

and will only be useful if there is a good match between your needs and the Clarion approach. While, with sufficient effort, most things can be done with Clarion, you will only get high productivity if you are happy to go with the flow of its tools and templates.

Second, to get the most from Clarion requires an investment of time learning the Clarion language, the templates and the class library. These skills will not translate particularly well to other tools, so you need to be sure that Clarion is the right choice.

Third, this is not as slick a product as the

latest from the bigger vendors. The environment itself is 16-bit. The interface is quirky, with an annoying tendency to produce layer upon layer of dialog, a tendency that is reproduced in typical Clarion applications, too. Occasionally you find a Help button which when pressed declares: "There is no help for this dialog".

Not everyone will get on well with Clarion but in the end you have to admire what it delivers; rapid maintenance plus rapid application development. Something must keep those users loyal.

Fig 2 — Printing a cell

```

procedure TForm1.cbPrint2Click(Sender: TObject);
var
fontheight: integer;
rect: TRect;
sText: string;

begin

if printdialog1.execute then begin

sText := 'Personal Computer World';

printer.begindoc;

with printer.canvas do begin

pen.width := 3;
font.size := 24;
font.name := 'Arial';

fontheight := trunc(textheight(sText) * 1.3);

rect.Top := trunc((printer.pageheight/2) - fontheight/2);
rect.Left := trunc(printer.pagewidth / 2 -
    textwidth(sText)/2 - 10);
rect.Right := rect.Left + trunc(textwidth(sText)) + 20;
rect.bottom := Rect.Top + fontheight;

MoveTo(rect.left,rect.top);
lineto(rect.right,rect.top);
lineto(rect.right,rect.bottom);
lineto(rect.left,rect.bottom);
lineto(rect.left,rect.top);

{draw the text}
textout(rect.left + 10,rect.top + 5,sText);

end;

printer.EndDoc;

end;

```

Printing a Delphi TStringGrid

R Simons is interested in the tips from previous columns on printing from a memo control. He asks: "Is it possible to print a TStringGrid?"

Of course it is possible. But first, an aside. Since printing is such an everyday task you may wonder why only a few Delphi components have a print method. The answer is that although printing is an everyday task, it is not a particularly easy one. To obtain good printed output you need to consider things like fonts, headers, footers, margins, word-wrap, page breaks, page numbers and page layout. In most cases, the user will want a degree of control over what is printed, so ideally you need to offer printer and page setup dialogs.

Including a print function in an application is likely to mean a fair amount of work. If you only need rough-and-ready printing and want an easy life, there are a few tricks you can use. The simple memo printing function shown in my March column relies on a feature of Delphi that lets you output to the printer as if it were a file. Therefore, you could use code like that shown in Fig 1. Note that you must include PRINTERS in the Uses clause of the unit. This iterates through the rows of the grid, writing the contents of each cell to the printer and adding a line break at the end of each row. A tab character separates each cell and if you are lucky you will end up with nicely spaced columns in the printout.

Unfortunately, "rough-and-ready" is the right description. This printout will misbehave if a cell contains a string longer than the default tab spacing and the columns will go out of line. It will also look bad if a row is wider than the page width. It will look bad anyway because it has no formatting to distinguish headers from other cells; you are trusting the printer to handle page breaks. If you want the lines of the grid

Fig 3 — Changing the desktop wallpaper in 16-bit Visual Basic

```
'Declarations section
Declare Function SystemParametersInfo Lib "User">
  (ByVal uAction As Integer, ByVal uParam As Integer,>
  ByVal lpvParam As Any, ByVal fuWinIni As Integer)>
  As Integer

'If in a module, declare as global constants
Const SPI_SETDESKWALLPAPER = 20
Const SPI_SETDESKPATTERN = 21
Const SPIF_UPDATEINIFILE = &H1
Const SPIF_SENDWININICHANGE = &H2

'Code to change wallpaper
Sub Command1_Click ()
  Dim iRetVal As Integer

  iRetVal = SystemParametersInfo(SPI_SETDESKWALLPAPER,>
  0, "C:\FISHING.BMP", SPIF_UPDATEINIFILE Or>
  SPIF_SENDWININICHANGE)
  'Use "(None)" for blank wallpaper

  If iRetVal = 0 Then
    MsgBox "Failed to change wallpaper"
  End If

End Sub
```

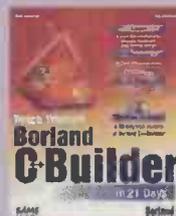
Key: > continued on next line

Book review

Teach Yourself C++ Builder in 21 Days

This is a chunky beginner's guide (by Kent Reisdorph) to C++ Builder, with over 800 pages taking you from the basics of C++ to the internet. The text is clear and the style is friendly but I have several concerns about this type of book. It is targeted at complete beginners, so there is a section on the fundamentals of C++ explaining what variables are, how to use loops and so on. At the same time, the scope of the book is enormous, covering database programming, debugging, DLLs, components, graphics programming and more. As a result, each topic is given only shallow treatment. For example, a chapter enticingly labelled "Building Internet Applications" does little more than explain how to put an ActiveX browser control on a form.

One area where this title is thorough is in its blow-by-blow tour of the C++ Builder interface. This may be handy if you find the official documentation intimidating or if you only have an online version and prefer a printed manual. The important thing is to be realistic and to realise that 21 days with this tutorial will not teach you to program in C++, nor how to develop database applications, nor carry out Internet development. Instead, it will get you comfortable with the IDE and you can learn the rest from other books or from online help. But if you are already well past the beginner stage, do not buy this book.



itself to print, you will never do it this way.

To do the job properly, use the canvas property of Delphi's global Printer object. You can draw text and graphics on the canvas, with full control over the results. But this involves a lot more code. To get you started the code in Fig 2 draws a box with

some text in it. Using the same principles you can extend it to draw a whole grid (over several pages if necessary). You can discover the dimensions of a page from the printer object's pagewidth and pageheight properties, and use the textwidth and textheight properties of the printer canvas

to discover how much space a portion of text will occupy. Naturally, this is dependent on the currently selected font. More detailed information about printer characteristics is available from the GetDeviceCaps API function. It is not difficult, but it is decidedly non-visual.

Experimenting with printer output is a sure recipe for wasting paper. A good tip is to write code that can draw either to the printer canvas, or to the canvas property of a form. Then you can test your layout by drawing to the form. Better still, you will end up with a print preview form with which to impress your users.

Both examples (Figs 1 & 2) are included in a 16-bit Delphi project on our CD-ROM.

Strange request

David Moore asks: "I know that this will probably sound like a strange request but do you know whether it is possible to set the Windows 95 background image from within an Excel 5.0 macro?"

The background image, technically known as desktop wallpaper, is set by an API function called SystemParametersInfo. Calling this from VB is no problem. I do not have Excel 5.0 installed here, but the code in Fig 3 works from Visual Basic 3.0.

The one thing this code does not do is to control the tiling of the wallpaper. It will respect the current setting in control panel. I cannot find a function for this so you would need to write directly to WIN.INI or to the Registry in 32-bit Windows. From 16-bit VB, you can use WriteProfileString to set TILEWALLPAPER in the Desktop section of WIN.INI to 1 for True or 0 for False. Even when you run this in Windows 95 or NT, the system is smart enough to make the requisite registry changes for you. You must do this before calling SystemParametersInfo with the SPI_SENDWININICHANGE flag set, so that the change actually takes effect.

PCW Contacts

Tim Anderson welcomes your Visual Programming tips and queries. He can be contacted at the usual PCW address (p10) or at visual@pcw.vnu.co.uk

Clarion 4 Professional is £405.38 (£345 ex VAT) from Contemporary Software 01344 873434, www.contemporary.co.uk. See also, www.topspeed.com. Swing (information and download) & the latest Java SDK; www.javasoft.com. Teach Yourself C++ Builder 3 in 21 Days (SAMS, £36.50) is available from Computer Manuals 0121 706 6000 www.compman.co.uk



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Outta space?

Bob Walder goes into orbit about capacity planning with NT. Whether or not you needed to upgrade your hardware was once a matter of guesswork but here is an NT tool to help you.

As I write this column roughly three months in advance of it appearing in print, you can understand why, on reading of Cisco's decision to refuse to loan its equipment to any European test labs or magazines for evaluation, I immediately thought "April Fool".

Well, there's definitely a fool here, and I don't think it is me. This bizarre decision comes hot on the heels of Microsoft's attempts to quash independent tests of its products when it does not care for the outcome of those tests. Apparently, it can do this because of a clause in the licensing agreement (by which we are all bound as soon as we open that envelope containing the CD-ROM) which states, in essence, that the software cannot be used for benchmarking purposes without Microsoft's express permission.

In other words, independent test labs cannot simply get hold of NT Server, test it against NetWare and tell you which is the fastest NOS. Nor can we test Exchange Server against GroupWise to say which is the most scalable messaging system — not without Microsoft's permission. By submitting its products for review, Microsoft is, in fact, giving its permission for them to be tested in this way but it leaves the opportunity for all sorts of censorship.

At least Microsoft is being evenly heavy-handed around the globe. Cisco's decision, however, seems to be more of a slur against European networking professionals in particular. Does it not think we are capable of providing a competent review of its products on this side of the Atlantic?

Or is it, perhaps, that it does not trust its own European staff to provide adequate support to labs over here during such tests? Either way, the only option for

Europeans interested in lab tests of Cisco kit is to rely on US magazine reviews or to send their own staff to Cisco's labs to work with its technicians using tests designed by Cisco itself.

The latter option doesn't sound too attractive, does it? As for the former, many European readers would rather see the kit tested by home-grown magazines and organisations. That is why so many US-owned publications spend so much money producing their own UK-specific copy rather than simply rewriting the work already done for the US parent magazine.

I make my living from testing network hardware and software. My company runs an independent test lab and I produce a fair amount of material for UK networking publications. Most of the major publishing houses over here have their own in-house labs, as well, but if the likes of Cisco have their own way, there will not be much for us to test in the future and that cannot be good for us poor "second class citizen" Europeans.

Do you not find it just a little bit annoying, this American assumption that they are the centre of the computing universe?

Tip of the month — have you ERD?

One of the worst things that can happen on an NT system is for the Registry to somehow become corrupted, since for many people the only way back from such a disaster is a complete system re-install. There are a number of precautions you can take to avoid this, though.

The first is to back up your system properly. Yes, I know I go on about this time and time again and I am sure I am teaching my granny to suck eggs here, but it is often those of us who ought to know better who end up trying to restore a system from six-month old backup tapes (I am admitting to nothing here!) Even if you back up your data on a daily basis, please make sure that your chosen backup software is also making sound copies of your NT (or Windows 95) Registry database.

Another good tip is to install two copies of NT (Server or Workstation) on your machine. This is not in contravention of any licensing agreements, since you are only ever going to use one copy at a time. The idea is to install a full copy as normal, with all the bells and whistles you require: this will go in the WINNT directory. Then install a second copy in another directory, say WINREPAIR, which is a minimal installation with just enough to get the machine up and running. If you ever damage any part of your primary NT installation you can always boot quickly and easily using the copy stored in WINREPAIR in order to get at your data on the NTFS partition.

Make sure you keep your Emergency Repair Disk up to date. It is tempting when first installing NT to skip right past the bit that asks: "Do you want to create an Emergency Repair Disk?", since it gives you the option to do it later, but how often have we installed NT and never gone back to create the ERD? The thing is, this disk contains a complete copy of your Registry along with a few other critical system files, and it is used during the repair process. This is where you boot into the install process, but instead of installing NT you choose to repair an installation.

Even if you created an ERD when you first installed NT, how many new pieces of software, new drivers, or new Service Packs have you installed since? Every update to your system potentially changes the critical system files stored on the ERD, so each time you make a major change to NT you should create a new ERD.

Go on, now... find that original ERD (if you created one at all), blow the dust off it, drop to the MS-DOS prompt and type RDISK -S. Go on... we can wait.

Capacity planning with NT

"How can I accurately predict how much load my NT Server can take? I am currently running file and print services together with MS Mail for about 50 users. I would like to upgrade to Exchange Server and put the remaining 40 users on the system but will my existing hardware be up to the task, or should I invest in a new machine?"

So writes P Hurley of Bristol, with a question which is echoed almost daily by various consultancy clients of mine. The other favourite is: "Can I run both Exchange Server and SQL Server on the same box?" Questions such as these are asked daily by network administrators up and down the country. Unfortunately, capacity planning is one of those areas where technology consistently falls foul of business requirements.

You know the problem. Your users expect sub-second response time for all their file retrieval and database query operations. They may get it when the system is first installed and there are relatively few users to thrash it. But time goes by and that sub-second response time creeps up to two, five, or even ten or more seconds as application functionality is increased, and more and more users compete for limited resources.

Determining if and when you need to upgrade your hardware is often a matter of pure guesswork and it is not always possible to be sure exactly which components require upgrading. Perhaps it

Book review

■ **Red Hat Linux Unleashed**
 Author David Pitts, et al
 Publisher Sams
 Price £37.50

Have you ever wondered what to do with those spare 386 and 486 machines with 8Mb or 16Mb of RAM that are lying around your office, no longer capable of running the latest and greatest Microsoft operating system?

Why not get yourself a copy of *Red Hat Linux Unleashed* and turn them into web servers, firewalls, mail servers or FTP servers? For those of you unfamiliar with Linux, it is a freeware Unix-like operating system that can run in as little as 150Mb of disk space and 2Mb of RAM! Red Hat Linux is simply a commercial distribution of the Linux OS, which considerably simplifies its installation and configuration.

For those of you completely unfamiliar with Linux (or Unix in general), however, this is not quite the book for you. It assumes a basic level of Unix knowledge (how to log on, move around the system, perform the more basic system administration tasks, and so on) and does not attempt to take you from scratch at any point. This ensures that Unix devotees will get the maximum from this volume (although I must confess to being a complete Unix novice, yet even I managed to install Linux and configure some services with few problems).

If you know a little Unix, however, this book covers Linux system administration and management and how to handle file systems and printers and all that good stuff. In other words, it contains all the information you will need to make a relatively painless transition from other brands of Unix to Red Hat Linux.

It even starts off with a chapter covering Linux installation, taking you through the whole procedure step by step. And in case you were wondering where to get the software, there is a CD-ROM included with version 4.2 of the operating system, together with a complete development environment and all the OS source code.

Also on the CD is software for network aliasing (virtual hosting), Perl, Python, Tcl/Tk, LISP, a high-performance web and FTP server, Sendmail SMTP server and client, and an X-Windows system. The majority of the book sets about telling you how to install, configure and manage these in a no-nonsense, easy-to-read kind of way. Buy it now, and make the most of all that hardware you were just about to throw into the skip!



p313 >

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Questions & Answers — can you help?

Q I read your column regularly and have seen articles on SAPS for modem sharing on an NT network. But I'd like to share a modem on a network running NetWare 3.12. There are 30 PCs running Windows 3.11 and 95, and five of the Win95 PCs have modems with dedicated lines. But as the number of users wanting access to a modem for email increases, so the cost of dedicated lines becomes prohibitive. Is there a version of SAPS

or another product which would allow sharing a modem and a line?

Peter Williams

A Sorry Peter, but I don't know of a product that will do this. I am sure, though, that there must be something out there that will do the job so I will throw it open to readers of this column. If anyone knows of a modem sharing solution for NetWare servers, drop me a line at the usual address and I will endeavour to review the software in a future issue.

is more memory you need, or a faster disk, or a more powerful processor, or perhaps you simply need an additional server?

Today's distributed network model is a far cry from the predictable centralised model of the mainframe era. Then, if you wanted to know how many users the box would support, or how much additional memory you would need to support a specific load, the IBM salesman would arrive with his big blue book and his calculator and tell you exactly how much money you would need to spend. Given the cost of hardware, capacity planning was an absolute requirement and the job title of Capacity Planner existed in every organisation that used IT.

The random adoption of PC hardware coupled with lower costs made the position of Capacity Planner seem superfluous in most companies. But today, many of the mission-critical systems of yesteryear have migrated down to the PC-based LAN and capacity planning is once again becoming a necessity. But where are the tools?

Oakland-based Bluecurve has developed a capacity and reliability planning tool for NT based on a technique which it calls "Active Measurement". Rather than rely on mathematical models which are difficult to create and maintain in a distributed environment, Dynameasure performs a controlled stress test on the actual NT system components. Current modules available include file and print services, SQL Server, Exchange Server and Oracle, with a web server version to follow.

Although any NT server (and even a NetWare one) can be the target of a simple file and print test, in order to run the others you will need to have the appropriate software (SQL Server, Exchange Server or Oracle) installed. Dynameasure works by creating test "data-sets" on the target

server using the chosen application. For file and print tests a whole load of different files are spawned: for SQL Server tests, a dummy schema for a sales order processing system (complete with test data) is generated; and for Exchange Server tests, a bunch of different mailboxes and dummy mail messages (with various types of attachments) are created.

The tests themselves then manipulate these data-sets in various ways in order to simulate the activities of real users. Each transaction performs a typical activity that might be performed by a user in a distributed system, such as: update a customer record in an SQL database, copy a file to a server, or send a number of mail messages with huge binary attachments.

The architecture of Dynameasure itself is distributed in nature, allowing the various components to reside on a number of different machines for maximum flexibility and scalability. There is a single Control Server responsible for the underlying functions and communication between components. This must reside on an NT Server and is configured by an intuitive GUI utility, from which tests can be created and controlled and the results analysed.

Below this in the hierarchy is the Resource Client, which provides the communications channel between Test Clients and the Control Server, as well as providing an intermediate repository for statistics collected by the Test Clients. A single Resource Client can handle a number of Test Clients, and the software can reside on a dedicated machine or can co-exist with either the Control Server or a Test Client.

At the bottom of the tree are the Test Clients, which can be either Win95 or NT machines and each client can run a number of "Motors" depending on processor speed

p314 >

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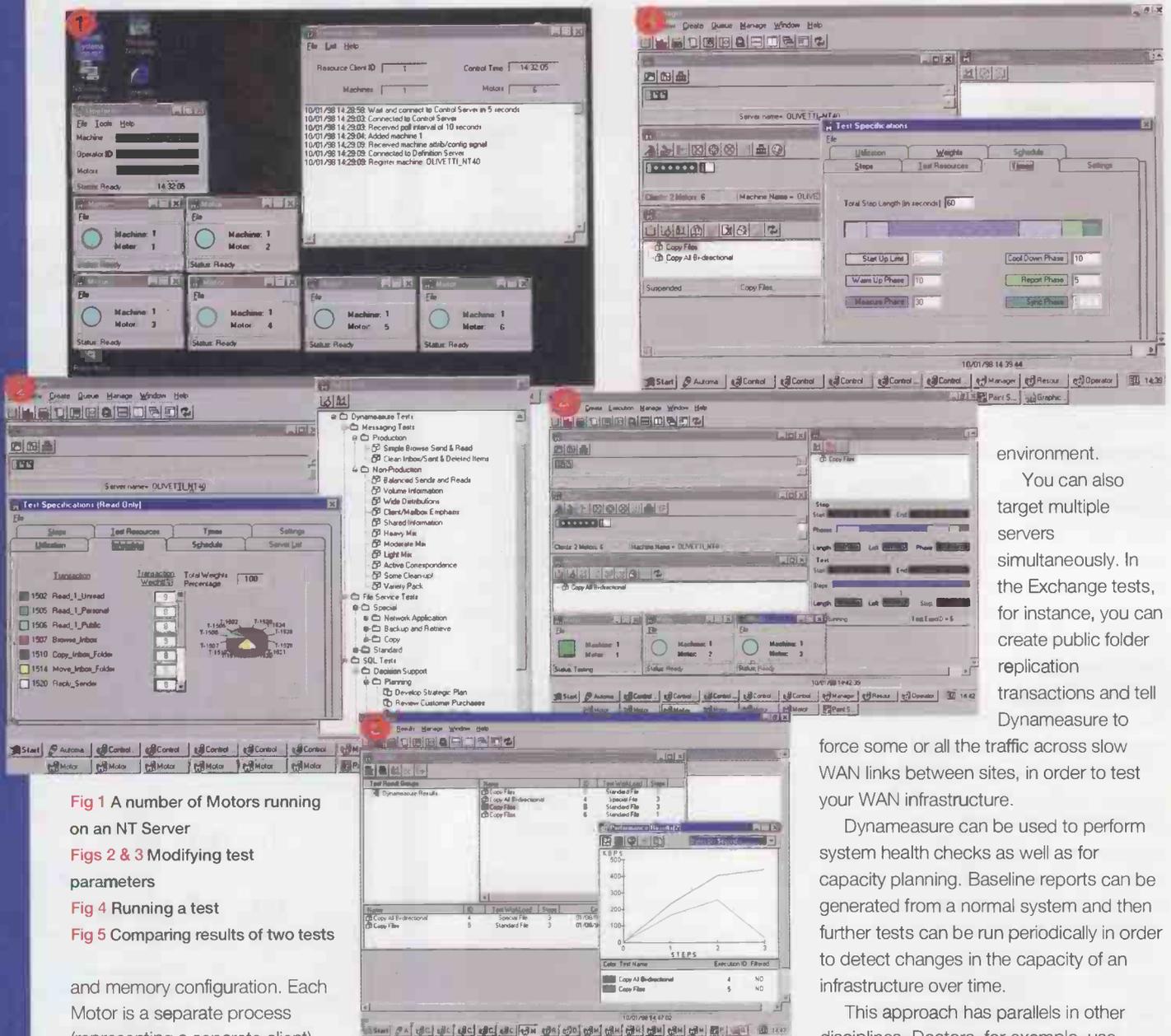


Fig 1 A number of Motors running on an NT Server
Figs 2 & 3 Modifying test parameters
Fig 4 Running a test
Fig 5 Comparing results of two tests

and memory configuration. Each Motor is a separate process (representing a separate client) and it is the Motors that execute the transactions against the target servers. Thus, with reasonably-specified clients and a high-speed LAN (100Mbps or more), it is possible to run tests involving hundreds of clients while only using a fraction of that number of PCs.

Each test consists of a number of steps. At each step you can add more Motors, thus allowing a controlled increase in the load, from a single user up to hundreds. At each stage in the test, the Motors collect statistics regarding data throughput, user response time and CPU utilisation and these are collated by the Resource Client and eventually passed to the Control Server. Once the tests are finished, the Manager Utility can be used to produce comprehensive text and graphical reports.

Although a huge number of standard

tests are included as part of the package, one of the key features of the Enterprise version is the ability to define your own schemas, data-sets and transactions. This is particularly useful when you need to do some capacity planning for an existing system. For instance, how many users can you add to your sales order processing system before it falls over?

In this situation, you could define your existing SOP data-sets and transactions to DynaMeasure and then perform the appropriate load testing against a real-life system to obtain your answer. The product could even be used to aid the database design process by running such tests against a system design which has been defined only in DynaMeasure, and which doesn't even exist yet in a production

environment.

You can also target multiple servers simultaneously. In the Exchange tests, for instance, you can create public folder replication transactions and tell DynaMeasure to

force some or all the traffic across slow WAN links between sites, in order to test your WAN infrastructure.

DynaMeasure can be used to perform system health checks as well as for capacity planning. Baseline reports can be generated from a normal system and then further tests can be run periodically in order to detect changes in the capacity of an infrastructure over time.

This approach has parallels in other disciplines. Doctors, for example, use stress tests to measure cardiovascular fitness. A treadmill test can detect severe problems immediately and repeated stress testing over time can provide comparisons which can identify potential problems before they become dangerous.

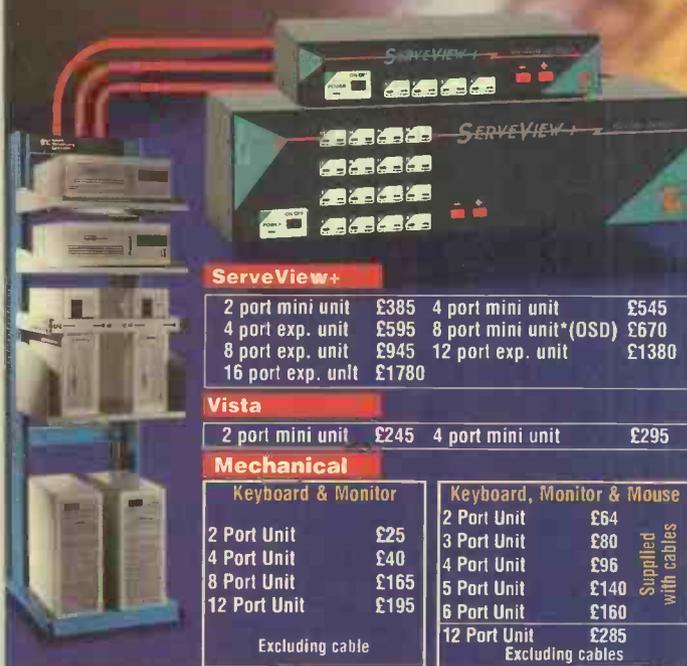
If you need to get a handle on your NT Server capacity and reliability planning, then DynaMeasure is worth a look. Contact the UK distributor, the Peapod Group on 0181 606 9990, for more information.

PCW Contacts

Contact Computer Manuals on 0121 706 6000 for Red Hat Linux Unleashed

Bob Walder is a journalist and networking consultant based in Bedfordshire. He can be contacted via e-mail at the usual address networks@pcw.co.uk

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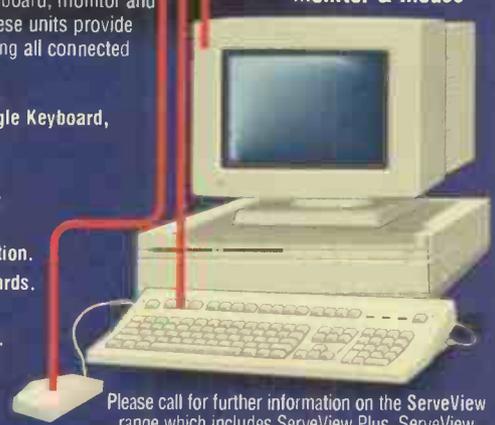
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HP C5648A	72GB	144GB	60MB	120MB	£1850
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MAMMOTH	20GB	40GB	180MB	360MB	£1950
SONY AIT	25GB	50GB	180MB	360MB	£1950
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DLT 4000	20GB	40GB	90MB	180MB	£1950
DLT JBOX4000	160GB	320GB	90MB	180MB	£4000
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RAID 5 PROTECTION

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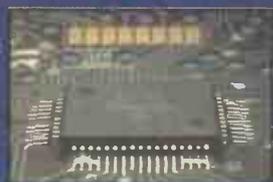


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Pentium II	No	Mhz	COST
	1 x	333	£2000
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FT-RAID

SERVER-INDEPENDANT

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CONFIGURATION

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Pentium II

No	Mhz	COST
2 x	333	£5000
4 x	333	£6000

Cost does not include FT-RAID which is required for operation.

PCW Reader Offers

Inside Relational Databases

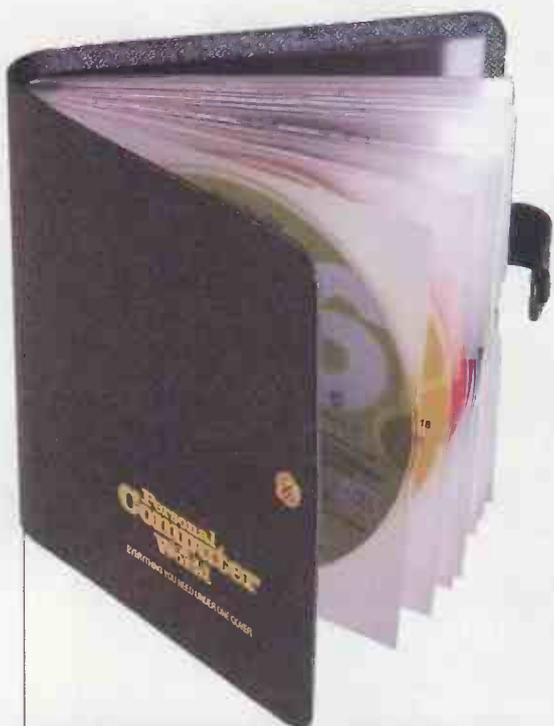
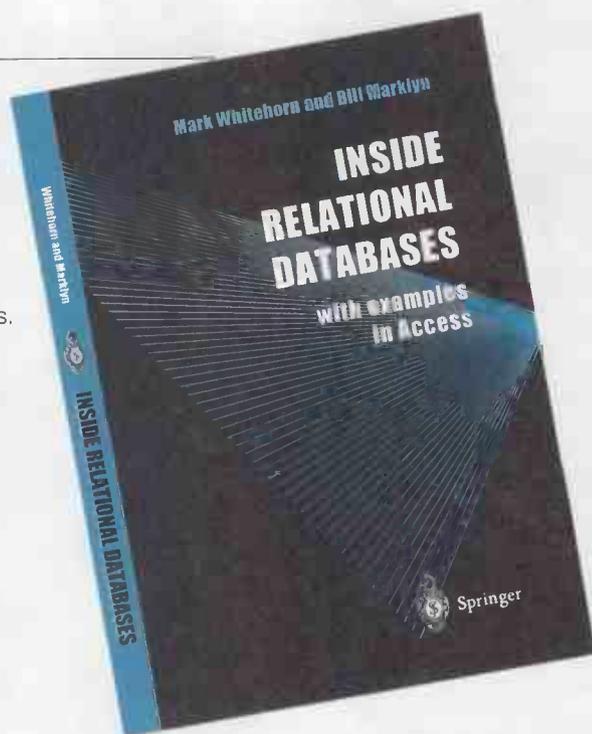
(reviewed in PCW November 97, p329)

- Written by Mark Whitehorn, who writes PCW's *Hands On Databases* column.
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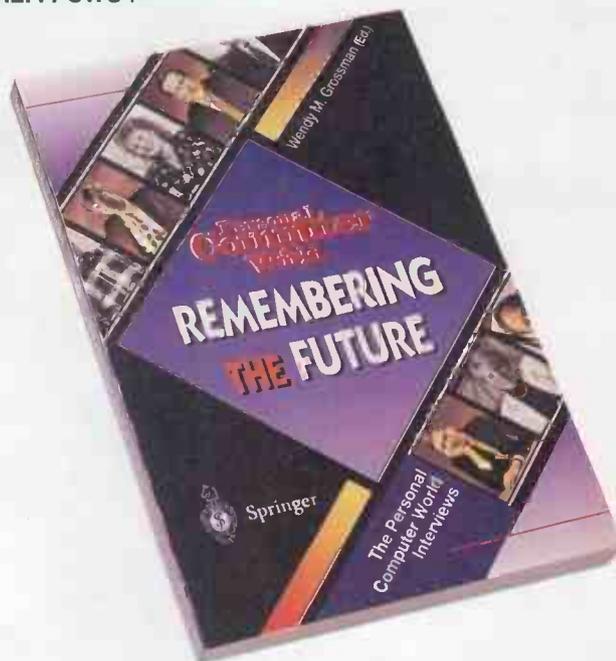
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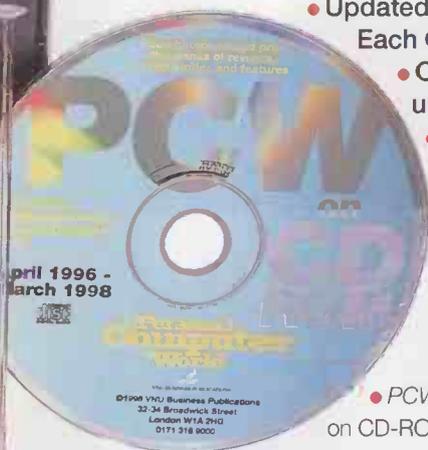
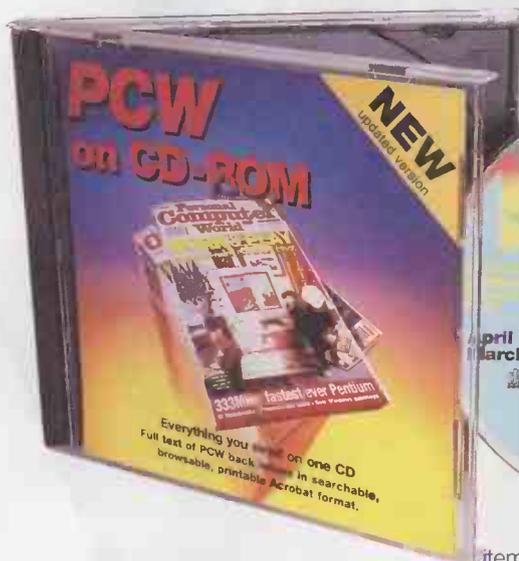
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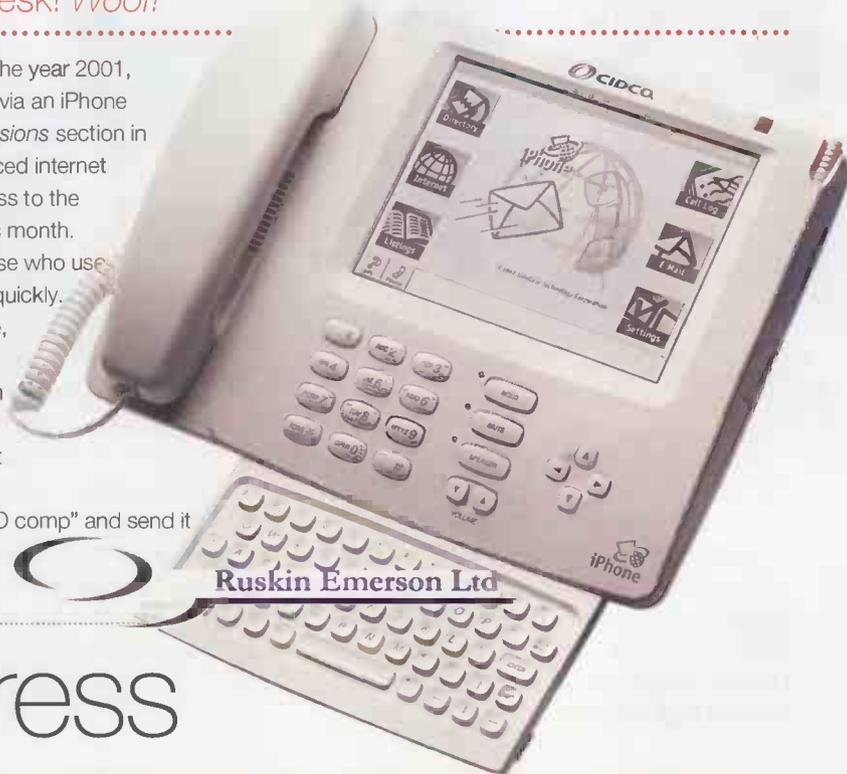
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According to research carried out by CIDCO, by the year 2001, forty-seven percent of all internet access will be via an iPhone device. The iPhone, reviewed in our *First Impressions* section in the April issue and worth £499, is the world's first advanced internet telephone, designed to provide easy plug-and-play access to the worldwide web. You can try your luck at winning one this month.

The iPhone is a great email client and browser for those who use the net in a transactional way, surfing to get information quickly. It looks like any other telephone except it has a greyscale, touch-sensitive, 640 x 480 screen that displays six large icons. When touched, the internet icon will dial up, log on and download the default or chosen page, and you can read, reply to and send email. A neat keyboard slides out for you to enter web addresses.

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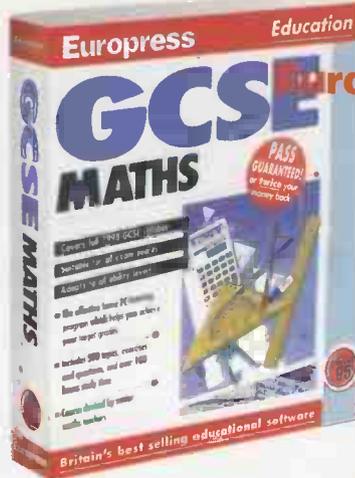
Europress' new range of educational packages includes Russian Language Labs and GCSE Maths. We are giving away five of each of these two products, individually retailing at £19.99.

GCSE Maths can help students improve their exam grades. There are 590 topics, exercises and questions, providing over 100 hours of study time. It covers all areas of the 1998 GCSE Maths curriculum and is relevant to all examining boards. Students can choose from foundation, intermediate or higher levels, and tailor the program to their individual needs. The Russian Language pack includes over 800 common words and phrases, plus 200 exercises. Tuition is based on the association of three elements: the spoken word, the written word, and a wide selection of colour pictures. Users can adapt the material to their own favoured learning style, using different combinations of the three elements. A dictation

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1. Via our web site at www.pcw.co.uk or
 2. Write your name, address and daytime telephone number on a postcard, or on the back of a sealed envelope. Mark your card with the name of the competition and send it to: P.O. Box 191, Woking, Surrey GU21 1FT.
- Entries must arrive by 31st July 1998
- State clearly on your entry if you do not wish to receive promotional material from other companies.

Rules of entry

These competitions are open to readers of *Personal Computer World*, except for employees (and their families) of VNU Business Publications, CIDCO, Ruskin Emerson and Europress. The Editor of *Personal Computer World* is the sole judge of the competition and his decision is final. No cash alternative is available in lieu of prizes.

Final Fantasy VII

PREVIEW

Following its amazing success on the PlayStation, Final Fantasy VII is soon to arrive on the PC courtesy of Eidos, creator of Tomb Raider II. Set in the classic RPG mould, the game tells the story of Cloud Strife and his battle against the evil Shinra Inc.

Shinra, a world-dominating power company, has discovered a way to mine and exploit the energy that creates the universe itself. The company is opposed by Avalanche, a small but effective



untwisted and solved. Cloud is armed with a double-handed sword, perfect for getting your point of view across, and each member of Avalanche has their own special abilities which must be exploited at just the right time if the planet is to be saved.

This Alpha preview version of Final Fantasy VII required a 3DFX card to run and the graphics look even better than the PlayStation original. I can't wait to get my

hands on the final release.

Chris Cain



resistance movement on a mission to save the environment at any cost. As hired mercenary and ex-Shinra employee, Cloud, you must join the resistance to try and stop Shinra draining the life from everything.

The plot is complicated but there's plenty of action to be had in the game's massive 3D world. There are many enemies to fight, spells to master, plots and puzzles to be

PCW Details

Price To be confirmed

Contact Eidos 0181 636 3000 www.eidos.co.uk

System Requirements Windows 95, P133, 4X CD-ROM, 16Mb RAM, DirectX 5.0 compatible sound and video card.

Star Rating Not applicable until final release.

Forsaken



The big 3D shoot-em-up of the summer looks set to be Forsaken, the ground-breaking new release from Acclaim. The year is 2113 and the Earth has been devastated by a fusion reaction caused by scientists playing with matter "at its most basic level". The explosion forces the Earth out of orbit and towards the sun. Soon it is nothing but a floating cemetery. The galactic council, the ominous Imperial Theocracy, steps in and



Forsaken boasts some of the most "intelligent" enemies ever seen in a shoot-em-up, and the killer robots left behind by the Imperial Theocracy rapidly develop their cunning and skill.

I cannot overstate how beautiful this game is to view: the artwork and texturing are breathtaking. So intoxicating are your surroundings, that you can find yourself simply admiring the scenery instead of shooting your enemies. Forsaken is

fast, compulsive and good-looking. You won't see a better game this year.

Paul Trueman



leaves robots stationed throughout the planet to prevent scavenging. This naturally attracts the scum of the galaxy — that's you!

Choose your alter ego from a cast of 16 mercenaries before heading off to pillage the Earth and pocket the proceeds. There are 16 labyrinthine levels in all, including sunken ships, the Mir III space station, and a beautifully-rendered Cities of Gold-type Aztec temple.

PCW Details

Price £39.99

Contact Acclaim 0171 344 5000
www.acclaim.co.uk

System Requirements Windows 95 with DirectX, P120 or better, 16Mb RAM, 4X CD-ROM, Direct3D compatible graphics card.

★★★★★

p322 >

Star Wars Supremacy

Last year Star Wars Trilogy was released and now here is Star Wars Supremacy, the definitive game from the same team. Drawing on their unique knowledge of the film series, Lucas Arts has created a work of art in its title sequences.

The story picks up where the first film left off. The Death Star has been destroyed and we find the Empire and the Rebels once again at each others' throats. What then follows is, unfortunately, a rather ordinary strategy game. Select your side, depending on your preference for good or evil, and you will be presented with a comprehensive and fairly lengthy briefing session detailing everything your team knows about the opposition.

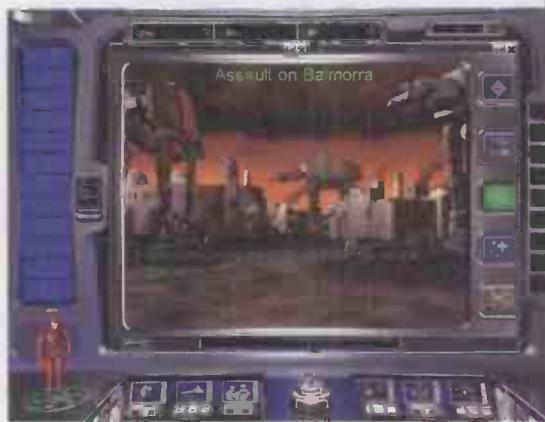
Once the briefing is over, it is up to you to strengthen your forces. Use the resources at your disposal to build mines and training camps. Send your

officers on espionage or fact-finding missions. Despatch your fighting ships to conquer neutral planets or those siding with your opposition.

With the growth of the net-connected population more and more games incorporate facilities to hook up with your friends, and Supremacy is no exception. But if you have nobody with whom to connect, never mind. You still

have the option of playing this real-time strategy adventure against your PC.

Nik Rawlinson



PCW Details

Price £39.99

Contact Lucas Arts 0171 368 2255

www.lucasarts.com

System Requirements Windows 95, P90 processor, 16Mb RAM, 4X CD-ROM, sound card.

★★★★★

Legacy of Time

In this third instalment of the sci-fi-tinged Journeyman Project you assume the role of Gage Blackwood, Agent 5 of the Temporal Security Agency (the TSA), who is

The game is sumptuous to look at and involves more than simple pre-rendered stills of each location. You are given the opportunity of a 360-degree panoramic

view at each point but can only follow a few set paths between each location. But this is where the problem with the game lies: even though the visuals are of the highest order, you never really feel in control. To add to this, there

is some awful acting, via full motion video clips, and a very annoying robot sidekick who cracks terrible jokes while educating you on your historical surroundings.

Nevertheless, the environments into which you are thrown are mesmerising. Fans of the adventure-game genre will lap it up, but to the rest of us it will feel like an excuse for Presto Studios to show off the talent of its artists, rather than delivering any innovative gameplay.

Andrew Robertson



desperately attempting to save the Earth's future by returning to its long-lost past. You must time-travel between the three mythical time zones of Atlantis, El Dorado and Shangri-La in a Myst-style adventure which involves much puzzle-solving and lateral thinking.



PCW Details

Price £34.99

Contact Broderbund Software 01784 431000

www.journeyman3.com

System Requirements For PC: Windows 95, P90 or faster, 16Mb RAM, 4X CD-ROM, SoundBlaster 16 or 100% SoundBlaster 26-bit compatible sound card, video and sound card compatible with DirectX.

For Mac: PowerPC, System 7.1.2 or higher, 80MHz or faster 16Mb RAM, 4X CD-ROM.

★★★★★

Micro Machines V3

Micro Machines V3 was a half-million seller when it was released for the PlayStation. Now, PC-owners have the chance to experience the thrills and spills of Micro Machines for themselves.

Essentially, it is a simulation of a car racing game the way children have



traditionally played it: racing tiny toy cars around household objects. Previous versions of the game took place in a 2D birds-eye view of the action, whereas this



new release races you and the other micro machines in a full 3D environment. The point-of-view camera swoops around the cars as they zoom round 48 different circuits, each more surreal and fiendishly difficult than the last.

The courses place you in various vehicles, each of which has a different level of traction and speed. You race around the course, picking up "add-ons" and trying to

sabotage your opponents. Household objects take on surreal proportions compared with the size of the tiny cars, and there are courses that race you around gardens, crossing ponds on giant lilies, or in kitchens where you jump over cereal boxes into cavernous sinks.

Gameplay is ideally suited to the young. It is madly colourful and bears no resemblance to real driving. There is no depth whatsoever to this lunatic, addictive, infuriating game, and it's all the better for it.

Paul Trueman

PCW Details

Price £34.99

Contact Codemasters 01926 814132

www.codemasters.com

System Requirements Win95, 16Mb RAM, 4X CD-ROM, DirectX 5 compatible. P166 + 2D card (640 x 480 res) or P120 + 4Mb 3D card (high res).

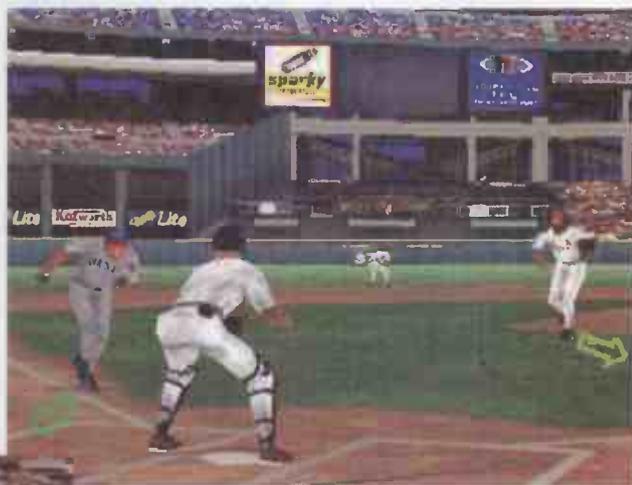
★★★★★

Triple Play 99

Take a bat and a ball. Stand in the middle of a stadium in front of a crowd of thousands and hit the ball with the bat. That, in essence, is the idea behind baseball, possibly one of the simplest games known to man. Simple ideas are always the best, and so it was only a matter of time before this CD arrived for your PC in the form of Triple Play 99.

You can play in any one of 30 baseball stadia across the US. Each stadium has been carefully modelled using photos of the actual buildings and the gameplay puts you right at the heart of the action. One moment you are bat in hand, hitting for the boundary and racing to make that home run. The next, you find yourself pitching at the opposing team or capturing a player between bases.

This is the ultimate baseball simulator, letting you play on both sides. And if you're after something a bit more meaningful and fulfilling than a one-off throw-away experience, you can play a whole season of games. For many UK players Triple Play 99 will be their first experience of baseball, and if this is just a patch on what the real thing is like, you'll



be itching to cross the Atlantic and play this rounders spin-off yourself.

Nik Rawlinson

PCW Details

Price £39.99

Contact Electronic Arts 01753 549442

www.ea.com

System Requirements Win95, Pentium 90MHz processor, 16Mb RAM, 4X CD-ROM drive.

★★★★★

p324 >

Brainteasers

Quickie

• A worm crawls around a garden roller from a point on the circumference at one end, to the corresponding points on the circumference at the other end. Had he crawled in a straight line he would have covered 3ft (the length of the roller). Instead, he chose to circumscribe the roller during the journey. If the roller has a circumference of 4ft, what is the least distance that the worm could have travelled?

This month's prize puzzle

Not too difficult. It can be done analytically, or if you feel really ambitious you could even solve the problem by making a full-scale model!

• Two strips of wood of equal length are graduated into 1,459 and 1,001 equal parts respectively. If they are placed side

with their ends together, which of the respective graduations would be nearest to each other?

Send your answers on a postcard, or on the back of a sealed envelope, to: PCW Prize Puzzle July 1998, P.O. Box 99, Harrogate HG2 0XJ, to arrive not later than 20th July, 1998. Do not send solutions on floppy disks, in emails, or in envelopes.

Winner of the April 1998 prize puzzle

A surprisingly low entry (only 60 replies) to our rather simple problem about the electricity and gas bills with the interchanged pounds and pence fields. Maybe it was so easy that many of you didn't think it was worth entering? Anyway, the answer is that the gas bill was £50.49 and the electricity bill was £49.50. The winning entry, chosen at

random, came from one of our regulars and a three-times previous winner — Andrew Simpson, of Perth. Mr Simpson first won in October '86, then again in October '87 and then in May '92.

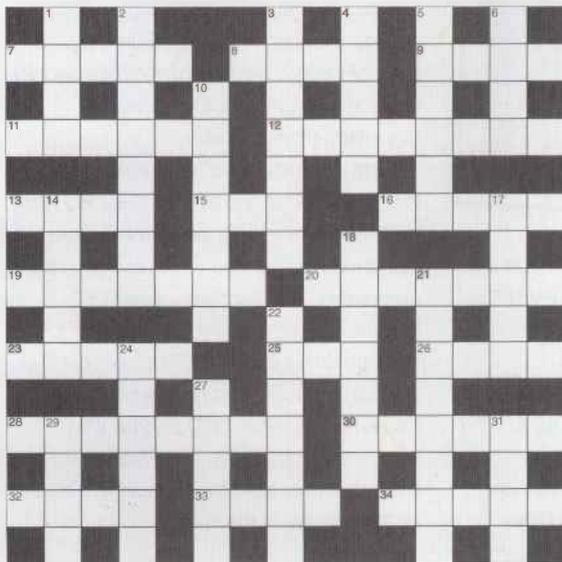
Congratulations yet again, Mr Simpson. Your prize will soon be with you. Meanwhile, to all the others — keep trying, it could be your turn next. And as you can see, there's no ban on multiple winners!

JJ Clessa

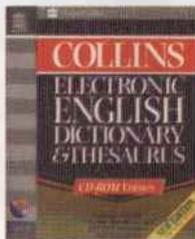
Brainteasers entries

Several of you must think that your puzzle entries will be used for a direct mailing database. I can reassure you that this is NOT the case. All entries come directly to me and are retained by me, JJ Clessa. After having selected the winner, all entries are destroyed.

Prize Crossword No. 9



Haven't got a clue? Maybe you could do with the help of the Collins



Electronic Dictionary & Thesaurus — every month, one lucky PCW crossword entrant wins a copy. Send your completed crossword to PCW June Prize Crossword, VNU House, 32-34 Broadwick Street, London W1A 2HG, to arrive by 26th June, 1998.

• Please state clearly on your entry if you do not wish to receive promotional material from other companies.

- 33 Any of these slots in a storm? (4)
- 34 Send it to the laserjet? (5)

DOWN

- 1 Deep sleep (4)
- 2 Unspoken (8)
- 3 Tepees (7)
- 4 Classic horse-race (5)
- 5 Thieved (6)
- 6 ___ Idle, comic actor (4)
- 10 Farm vehicle (7)
- 14 Tar (5)
- 17 Two-legged creature (5)
- 18 Thailand's capital (7)
- 21 Speaking very little (8)
- 22 Queen's husband (7)
- 24 Sword (6)
- 27 River mammal, in short (5)
- 29 Genuine (4)
- 31 Arm bone (4)

ACROSS

- 7 Digital communications, in short (5)
- 8 Dossier for a saved document? (4)
- 9 & 19 Business-like PC (11)
- 11 E-poster? (6)
- 12 Your own room on the internet (8)
- 13 Accurate description of the hardware, briefly (4)
- 15 Web site's business suffix (3)
- 16 Type of house for the acrobatic

illustrator? (5)

- 19 See 9 across
- 20 Go-anywhere portables (7)
- 23 & 32 Free-to-use utilities (9)
- 25 Web site's non-business company suffix (3)
- 26 Programmer's nuts and bolts (4)
- 28 Monitor's visual stuff (8)
- 30 Input's end result! (6)
- 32 See 23 across

June solutions

- ACROSS
 7 Networks 9 Laptop 10 Help 11 Megabytes
 12 Cache 14 Refresh 18 Sectors
 19 Cookies 22 Escapes 24 Syncs
 26 Eyestrain 28 Port 29 Server 30 Download
 DOWN
 1 Relegated 2 Swap 3 Crime 4 Slab
 5 Spites 6 Boss 8 Signed 13 Hut 15 Room
 16 Area 17 Mercurial 20 Key 21 Demand
 23 Shelve 25 Knows 26 Even 27 Turn 28 Pull

A case of Portfolio

Simon Collin's 1989 Portfolio is smaller than today's handhelds. It has an expansion slot, runs PowerBASIC and MS-DOS 2.11.

It has been a sad week here at Retro Towers. I dropped my trusty Psion and watched it explode into a thousand fragments. So, being PDA-less, I dug around in my attic for a replacement and unearthed what looked like a standard palmtop, similar in size and weight to the Psion, with a standard clamshell lid. The label read 1989 and it looked like one of the new HP handhelds currently on the market.

It was an Atari Portfolio, one of the best of the first-run handhelds, launched in late '89. Billed then as the smallest computer in the world, it is in fact smaller than many of today's miniatures.

DIP switching

But let's start with DIP, the designer of the Portfolio. It developed this clever piece of kit and used a CMOS version of the 8088 processor (as used in the IBM PC). DIP licensed the tiny computer to Atari, but apparently not exclusively since just a few months later DIP launched its own identical product, the Pocket PC. DIP then bought back finished units from Atari and rebadged them as its own. But while Atari aimed at the general public, DIP targeted the corporate sector. In fact, the DIP version was neater than Atari's and it bundled all you needed into a smart, plastic briefcase.

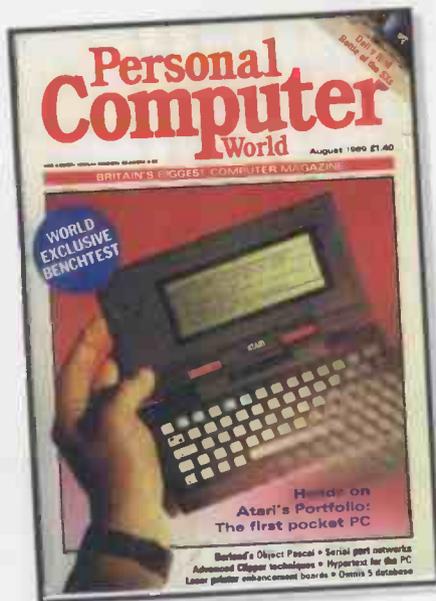
The Portfolio now looks a little dated, in an angular sort of way. It has a small LCD screen (40 x 8 characters that provides a view on a larger, virtual display) with a speaker/microphone grille taking up a quarter of the space in the left-hand corner. The keyboard is standard QWERTY layout (which is good) but with tiny, cramped calculator keys (which is bad).

On the left-hand side of the unit is an obvious slot. These days manufacturers hide PC Card slots, but back then Atari drew full attention to its expansion capabilities. The slot is proprietary (the PCMCIA standard was still being finalised) and takes an expansion RAM card. The Portfolio was fitted with 128Kb of RAM as standard and this could be divided between the RAM disk and application memory.

Once you had set the various options, the 128Kb soon disappeared, so the expansion slot became vital. Cards with 32Kb-1Mb were available from Atari or DIP.

Doing it with DOS

The Portfolio was unusual in its day because it ran standard MS-DOS (2.11). This was supplied on ROM, with a calendar, text editor, contact address book



and a Lotus 1-2-3 compatible spreadsheet. WordPerfect Jr, designed for the IBM PCjr, could also be run. There was a host of neat features: the address book could automatically dial a phone number by squawking the tones from the speaker (you had to place the phone's handset over the screen for this to work), and the calendar had alarms. Manufacturers at the time made strenuous efforts to promote alarms and this was always mentioned in reviews. It was a slower, less cynical world then!

Programmers and general techno-fiends were well catered for with the PowerBASIC interpreted language. This let you create your favourite application and, best of all, attempt to tame the graphics screen control. In addition, the Portfolio programmer could install a nippy Forth compiler, an assembler, or a version of

Pascal. And those developing Portfolio applications could use Borland's Turbo C.

As a splendid piece of reverse engineering, but of questionable relevance, the ComputerBooks company produced Portfolio emulators for the PC and Mac so you could turn your powerful desktop into a limited and cramped Portfolio environment. If you really wanted to use your Portfolio as a desktop, an add-on hard-disk unit was released from BSE and a 720Kb floppy drive was available too, although both were bigger than the computer.

Death duty

The Portfolio did have a few drawbacks. Although it ran DOS, it could not run all PC applications, but this is not a real problem in a handheld. It also had a few bugs in the operating system. The best of these, the shotgun bug, overwrote a byte of data at a random address when you switched on, causing all manner of agitation — Atari quickly provided a bug-fix. Commendably, if your Portfolio died in service, Atari would replace it for a modest fee. I wish all manufacturers did this.

The Portfolio's real problem was that it was launched at the end of 1989. So what? Well, this was exactly when the Poquet was launched and the two were always (unfairly) compared. The Portfolio was a £350 handheld organiser with neat touches. The Poquet was a £1,500 PC-compatible that also ran an 8088-compatible processor but had an 80 x 24-line LCD and full IBM software compatibility. The Poquet was overpriced yet stole the thunder in almost all the reviews of the time.

Role model

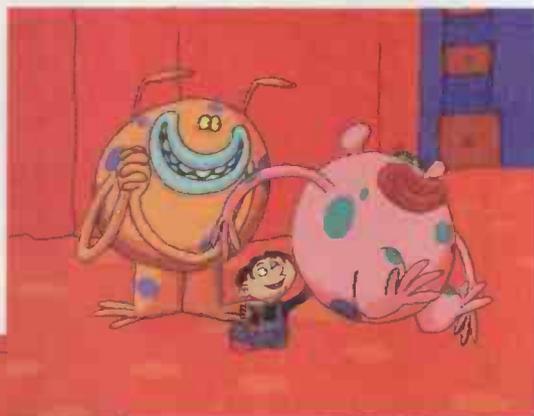
Nevertheless, the Portfolio amassed a large following. It still has an excellent presence on the web (search Yahoo! for Portfolio). Companies still sell accessories and supply masses of software and general hints and tips. This great little computer has lasted nine years in the cruel world of handhelds, and still offers plenty of features. It's a great role model for manufacturers. ■

Cosmic Family

An animated space-age family that combines learning with fun and love.

Take the dysfunction out of the Simpsons and you'll get the Cosmic Family, a cartoon clan where everyone loves each other, especially the family's cat and dog. The Cosmic family spends the winter travelling through space in a rocket. On board there are games, animations and music to enjoy.

This program has no written words so children can play whether or not they can read, and as the family speaks in cosmic bleeps there's no-one to boss you about or tell you what to do.



Above Have fun with the balloon monsters

Left Everybody will love the family cat and dog

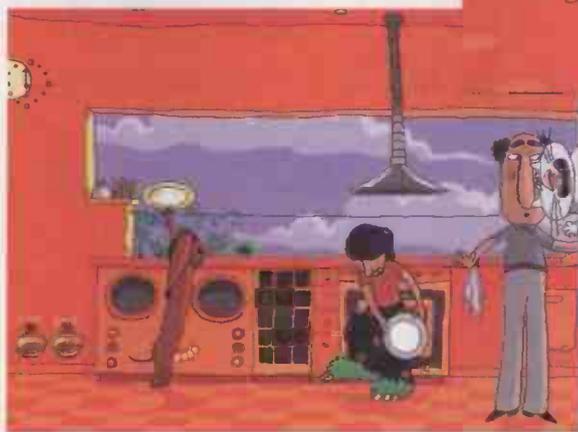
The elevator takes you to the floor of your choice, where you use the cursor to find games, animations and musical sounds. There are jigsaw puzzles and fun activities like sorting socks and shoes according to whether they

need mending on the sewing machine, polishing with the brush or washing in the machine. The program is full of home comforts, that young children will enjoy.

Although the animations in this package are very comical, there are a lot of them and our young testers would have preferred more games.

Considering the price, Cosmic Family is good value. As an introduction to the computer, children will find it more endearing than programs that remind them they must learn their ABC.

Debbie Davis



PCW Details

Price £14.99

Contact Ubisoft 0181 944 9000

www.ubisoft.co.uk

System Requirements Windows 95, P90 or higher, 16Mb RAM, CD-ROM.

★★★★★

Little Mermaid Print Studio

Design delight for children with this project package from Disney studios.

Following on from The Little Mermaid Story Studio, this package is one of many print studios designed by Disney. Children can choose from 20 projects such as designing party banners, greetings cards, picture frames and bookmarks. A simple click on an image or pattern will automatically transfer to the design, making each project easy to use. Icons like Print, Preview, Text and Exit are clearly labelled to avoid confusing young minds. This also means that you can allow children to play happily without adult supervision.

In five of the projects, including the calendar and certificate sections, kids can make use of the new photo-ready feature where personal snapshots can be imported from your own computer files and added to your creations. There are more than 150 different images, backgrounds and borders featuring Ariel, Flounder and Sebastian, each one drawn to Disney's standard.

The stationery would be better printed with a colour printer but I doubt whether children will complain about colouring-in the pictures. You can buy the CD-ROM but you can also get it free if you buy a Lexmark 100 Colour Jetprinter.

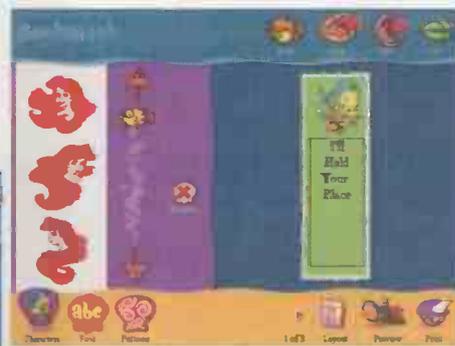
This package is certainly enough to keep your child entertained, and I guarantee it will be used over and over again.

Etelka Clark



Below Mark your pages with Ariel

Below, left Personalise a greetings card



PCW Details

Price £29.99

Contact Disney Interactive 0181 222 1571

www.disney.co.uk/disneyinteractive

System Requirements Windows 3.1 or higher, 486 PC, 8Mb RAM, 2X CD-ROM.

★★★★★

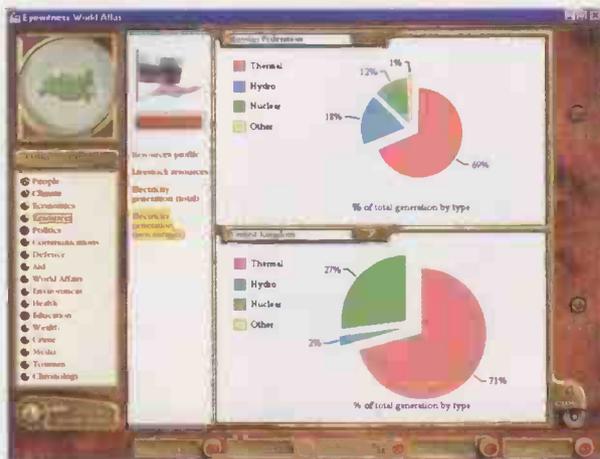
DK World Atlas

Spinning 3D globe, virtual flights, video clips... this is no run-of-the-mill atlas.

This atlas is different to any other I have seen. As well as a real-time spinning 3D globe, it also has a private web site with a vast list of selected URLs relating to your specified country.

Once you have entered your selected section you can learn anything, from economics to resources, environment, tourism, education and politics. In some sections there are pie-chart presentations that give you a clearer idea of figures, and you can compare these charts with those of other countries.

The Amazing Journeys section is fabulous. You select a country and take a narrated "flight" through the skies above the land. These flights are in fact just moving satellite pictures, but they are truly stunning. The video section is similar to this and shows you 30-second clips of prominent points or events that make countries or capitals famous (e.g. Australia has the Great Barrier Reef, while London has Trooping the Colour).



Left Pie charts compare countries' statistics
Below The video section shows you clips of the prominent features of countries or capital cities



Yes, this atlas does have maps and they are very impressive. Even more detailed than your ordinary map, the Eyewitness Atlas has keys that indicate figures for population and land height, and there is an interactive ruler that can measure exact distances between towns or countries.

This Atlas is education and map reading rolled into one. Adults and children alike can benefit from this pleasurable CD.

Etelka Clark

PCW Details

Price £29.99

Contact Doring Kindersley 0171 753 3488
www.dk.com

System Requirements Windows 95, IBM-compatible PC, 75MHz Pentium processor, 16Mb RAM, 16-bit sound card, 4X CD-ROM drive.

★★★★★

Dance eJay

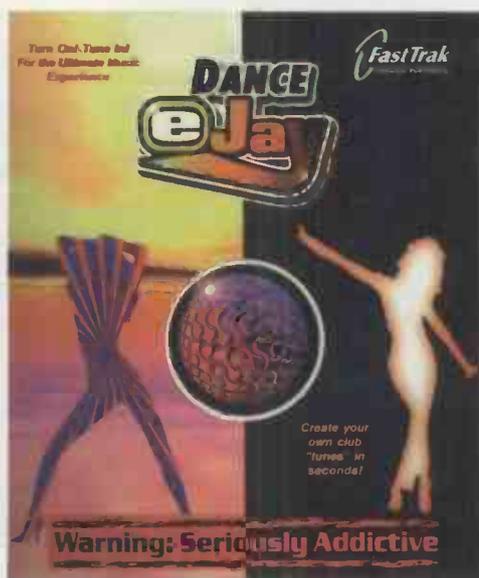
Get mix-master mania! Use this fun CD to make music, using your own PC.

Hey Daddy-o, lay me some skin (that's how us musicians talk, you know, or so someone with a violin once told me). I've got my baseball cap on back to front and us cool cats at PCW are laying down some fat tunes.

Oh, sorry! I don't know what came over me. I think it must be something to do with Dance eJay, the package that turns your PC into an 8-track recording studio. It is so deceptively simple to use that even a four-year-old could have a number one smash hit. The colourful interface is great for kids: bass, drums, voice clips and rap samples are colour coded for quick access.

By a simple process of dragging and dropping any of 1,350 original samples onto the screen, you can quickly and easily build up your own dance hit with little or no musical experience. You can record your own samples to increase the range and give it a personal touch, or download add-on packs from the internet.

Of course, if you just stick with the samples supplied you do risk making the same tune as everyone else who might be using it. But



Above, right Just drag and drop to create next week's number one in the pop charts!

having said that, Dance eJay is great fun and it only took me half a morning of noisy creativity to



make a prospective Christmas number one hit. Now where's that contact at Radio 1...?

Nik Rawlinson

● See the mini review in Hands On Sound, p293

PCW Details

Price £24.95

Contact FastTrack 01923 495496
www.fasttrack.co.uk

System Requirements Windows 3.1, 486DX33, 8Mb RAM, 2X speed CD-ROM, 16-bit sound card.

★★★★★

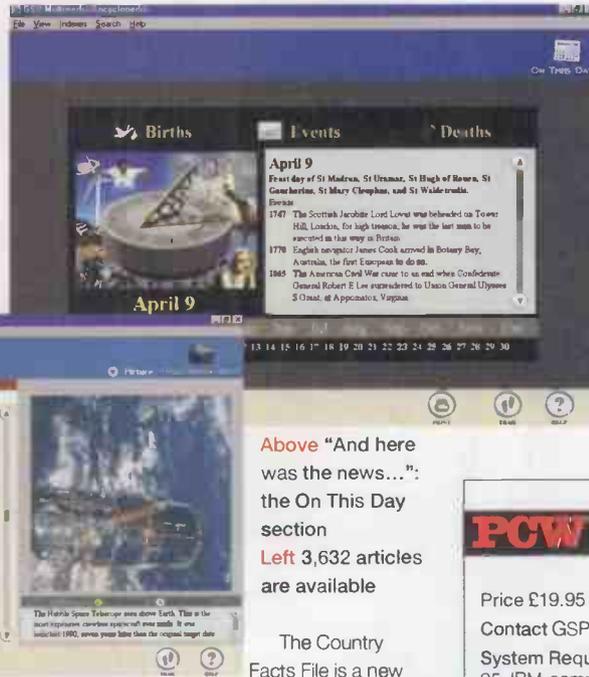
GSP Encyclopedia

Everything you wanted to know about... well, just about anything, really.

This is version two of the GSP Encyclopedia and it contains a wealth of information. It is ideal for fact-finding in schools or simply for general interest. There are over 36,000 articles and each can be printed in full colour using a desktop printer.

The Audio section gives users the chance to listen to a range of items; from music by Chopin to an account of the D-Day landings in Normandy. This is a particularly interesting section and you may find yourself spending hours on it.

If you are a student who is not good at handing your essays in on time, or maybe you can't even be bothered to write them, help is at hand. The Essay section archives around 150 pieces of written work by professionals and will no doubt prove extremely handy!



Above "And here was the news...": the On This Day section
Left 3,632 articles are available

The Country Facts File is a new addition to the World

Atlas section and provides information on 190 countries. The Atlas has three levels of zoom and

is linked to relevant articles about the country or region in which you are interested.

On This Day informs you of events that happened in the past: for instance, you can find out when a certain famous person may have died, or which well-known people share your birthday. The package also includes 45 video clips and 3,500 pictures.

This encyclopedia may be cheap, but you won't be disappointed.

Michael Murphy

PCW Details

Price £19.95 (upgrade £6.99)

Contact GSP 01480 496575 www.gspitd.co.uk

System Requirements Windows 3.1 or Windows 95, IBM-compatible PC, 8Mb RAM, CD-ROM drive, SoundBlaster audio card.

★★★★★

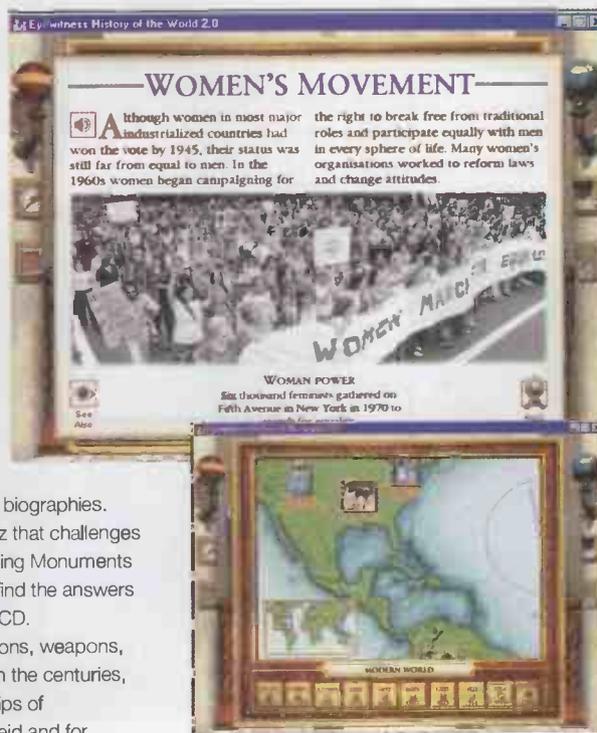
Eyewitness History 2

The 3D spinning globe is your link to people and places throughout history.

The new, fully revised version of Dorling Kindersley's (DK) History of the World has a new interface and includes information on events right up to 1997. Like the Eyewitness World Atlas, this package features a 3D spinning globe that leads you into the history of countries when you click in the correct places. Other sections include Country History, which provides an overview of 79 countries, from the earliest human habitation to the present day. There are also links to related articles and biographies.

There is a History Quest quiz that challenges you to explore six topics, including Monuments and Great Rulers. You have to find the answers that are hidden throughout the CD.

You can learn about inventions, weapons, transport and medicine through the centuries, and there are narrated video clips of demonstrations against apartheid and for



Left Watch the video of a demonstration for women's rights by clicking in specific places

women's rights. One section concentrates solely on war and, accompanied by video clips, tells the stories behind the Six Day war and the Gulf war, among others.

A Who's Who database has over 200 new biographies. Everyone from Pericles and Amenhotep III, to Boris Yeltsin and Benazir Bhutto, are included.

Another interesting and well thought out package by DK. An excellent reference for any child studying history at school.

Etelka Clark

PCW Details

Price £39.99

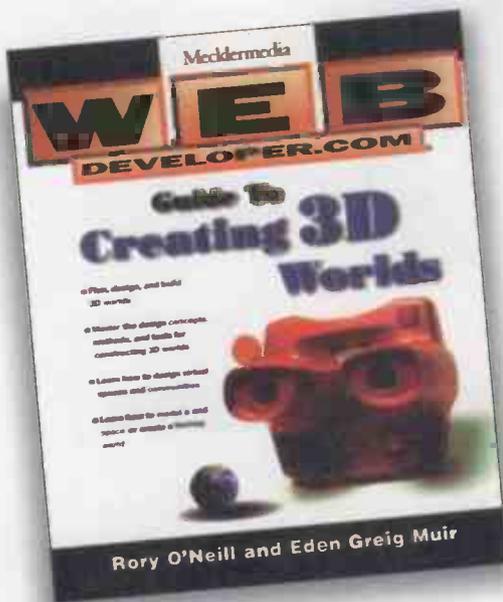
Contact DK Multimedia 0171 753 3488
www.dk.com

System Requirements Windows 95, 486 PC, 33MHz processor, 12Mb RAM, 8- or 16-bit sound card.

★★★★★

Books

How to make intelligent web pages or create a 3D world on your web site. And meet Ratbert and Asok in Scott Adams' new Dilbert book.



■ Creating 3D Worlds

Virtual reality is one of the hot topics on the web and many people would love to know how to enhance their web site, turning it into a three-dimensional space. *Creating 3D Worlds* boasts a lot on its covers: an innovative approach that dispenses with VRML, learn how to create and model spaces, and master design concepts and tools. And, like any self-respecting computer book, there's a CD included.

The book is something of a disappointment, however. Experienced site designers don't really need a tutorial on creating imagemaps, and even the

inexperienced are likely to notice that some sections of the book are repeated almost verbatim in successive chapters. It seems like padding.

Yes, you can learn something about CAD techniques and gain an understanding of how the different nodes of a world might interrelate, and the way in which different viewpoints can be used to varying effect. Although much is made of the authors' own RAVE engine, designed to take a lot of effort out of making a virtual space, the details actually merit just a short chapter towards the end of the book. Less repetition and more guts would have been better.

The promises made for the CD-ROM don't really hold up, either. Yes, you could use the images to make your own world — if you want it to look just like theirs. The HTML templates could conceivably come in handy, but they're limited in scope and will only save you a few hours' work. And the links to web sites don't all work. For a book that goes on so much about using CAD, a demo application might have been nice, rather than references to a "mid range" package costing \$1,500.

All in all, the amount of real, useful information contained in this book was a disappointment. If padding is what it takes to get a commission to turn out this sort of stuff, can I have one, please, Mr Wiley?

Nigel Whitley

■ Guide to Building Intelligent Web Sites with JavaScript

Have you ever wanted to make your web pages interactive? Are you sick of receiving unfiltered form-filled email back from your site and looking for a way of making sure that only those submissions matching a certain criteria reach your mailbox?

The *Guide to Building Intelligent Web Sites with JavaScript* could be the book that shows you how to overcome these irritating limitations of conventional web sites. Assuming no prior knowledge of JavaScript nor any type of programming experience, this book is ideal for the first-time JavaScript developer. The first chapter



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provides a useful definition of JavaScript: that it is a scripting language designed for smaller applications than those that would be written with Java; and that it is, for the most part, interpreted by the reader's browser in much the same way as everyday HTML commands.

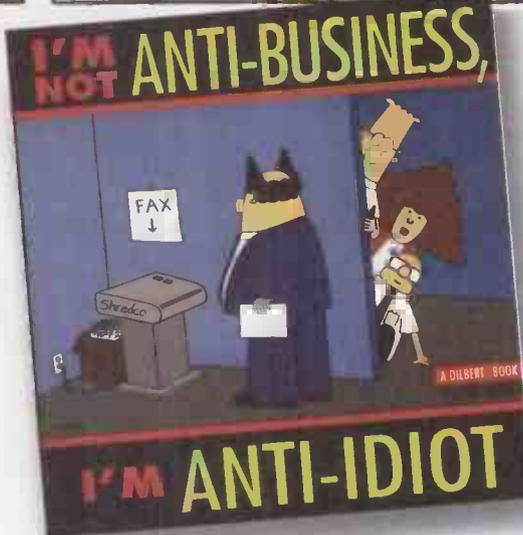
Screenshots are plentiful, more than adequately demonstrating the effects of the sample code. And for those who want to give their fingers a rest, each of the programming sections are available on an accompanying web site. Without the need to enter the code themselves, users can instantly interact with the book's content. This means that the applets can not only be examined but also saved to a local hard drive for incorporation into your own web sites. To make use of these resources you need nothing more than a copy of Netscape Navigator version 3 or above, while programming can be done in any standard ASCII text editor.

The hands-on approach of this book, in 11 easy-to-follow sections, makes it ideal for study over a short period of time. It gives the reader a comprehensive and easy-to-understand crash course in the basics of the language before working up to complex issues involving server-side applications.

Much of the book is compressed for quick reference into Appendix A. This useful chapter will help those who have already studied the remainder of the volume by refreshing the basic JavaScript concepts and running through a comprehensive list of objects, their methods, properties and event handlers.

Nik Rawlinson

■ **I'm Not Anti-Business, I'm Anti-Idiot**
Ah, the halcyon days of youth. Remember when you first confidently proclaimed to your mum and dad, "I am going to be Prime



Minister"? Or a writer, or a spy? The world was your oyster and everything was possible! Whatever happened, you had no doubt that the working world would prove to be just as exciting and satisfying as your current career of tormenting your siblings and barbecuing ants with a magnifying glass.

When the day finally came for your work experience, you excitedly set off with your packed lunch and bus fare. But it soon dawned on you that the working world consisted of little more than being forced to clean out stationery cupboards, stuff thousands of envelopes and hunch over the photocopier for eight hours a day. Never mind, you thought. You knew you would be the exception to the rule, that you would make a fabulous and fulfilling living solely from your tortured poetry and Brechtian Super 8s of your goldfish. Sadly, university only postponed the inevitable crushing realisation that there are very few lucky people who love what they do for a living. The rest just pay the bills and mark time.

Sound familiar? Then you're probably already acquainted with Dilbert, the patron saint of angst-ridden cube dwellers everywhere. Just as no office is complete

without its wilted hydrangea and irritating sales staff, it now also seems to be corporate policy to have a faintly mutinous selection of Scott Adams' cartoons displayed at each workstation. Adams' latest book continues in the same vein as previously, detailing the trials and tribulations of life at the bottom of the corporate heap. We are introduced to Ratbert, vice president of marketing, and the luckless new intern, Asok. You'll cheer as Dilbert narrowly escapes being sentenced to death by Catbert, the Evil Human

Resources Director! You'll tremble as Dogbert announces his candidacy for Supreme Ruler of the Universe! And you'll almost have to take comfort in the fact that, no matter how bad your job is, it can't be as bad as this.

Susan Pederson

PCW Details

Creating 3D Worlds

Author Rory O'Neill and Eden Greig Muir

Publisher John Wiley & Sons

ISBN 0-471-15944-1

Price £27.50

★★★★☆

Guide to Building Intelligent Web Sites with JavaScript

Author Nigel Ford

Publisher Wiley Computer Publishing

ISBN 0-471-24274-8

Price £24.95

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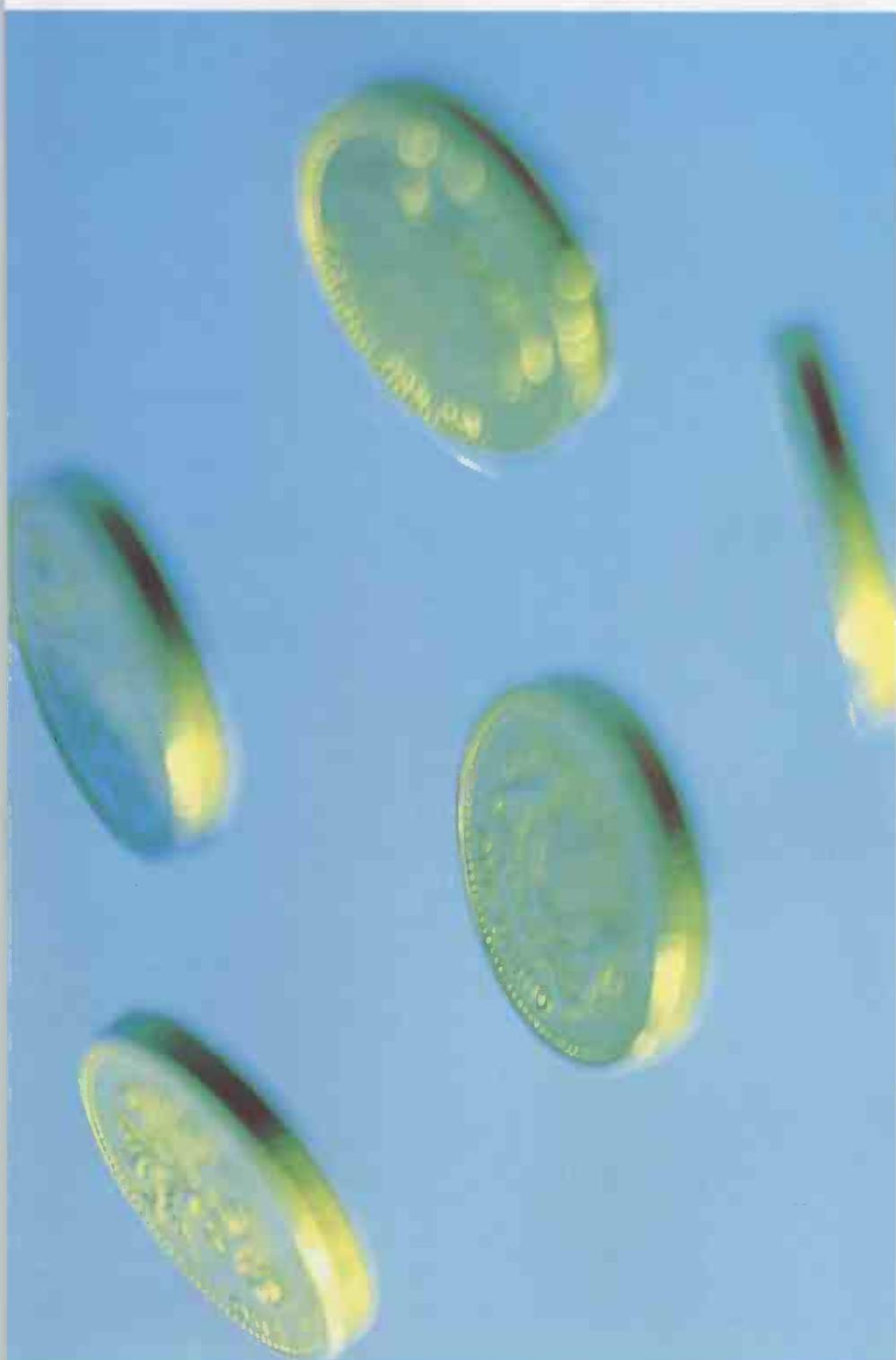


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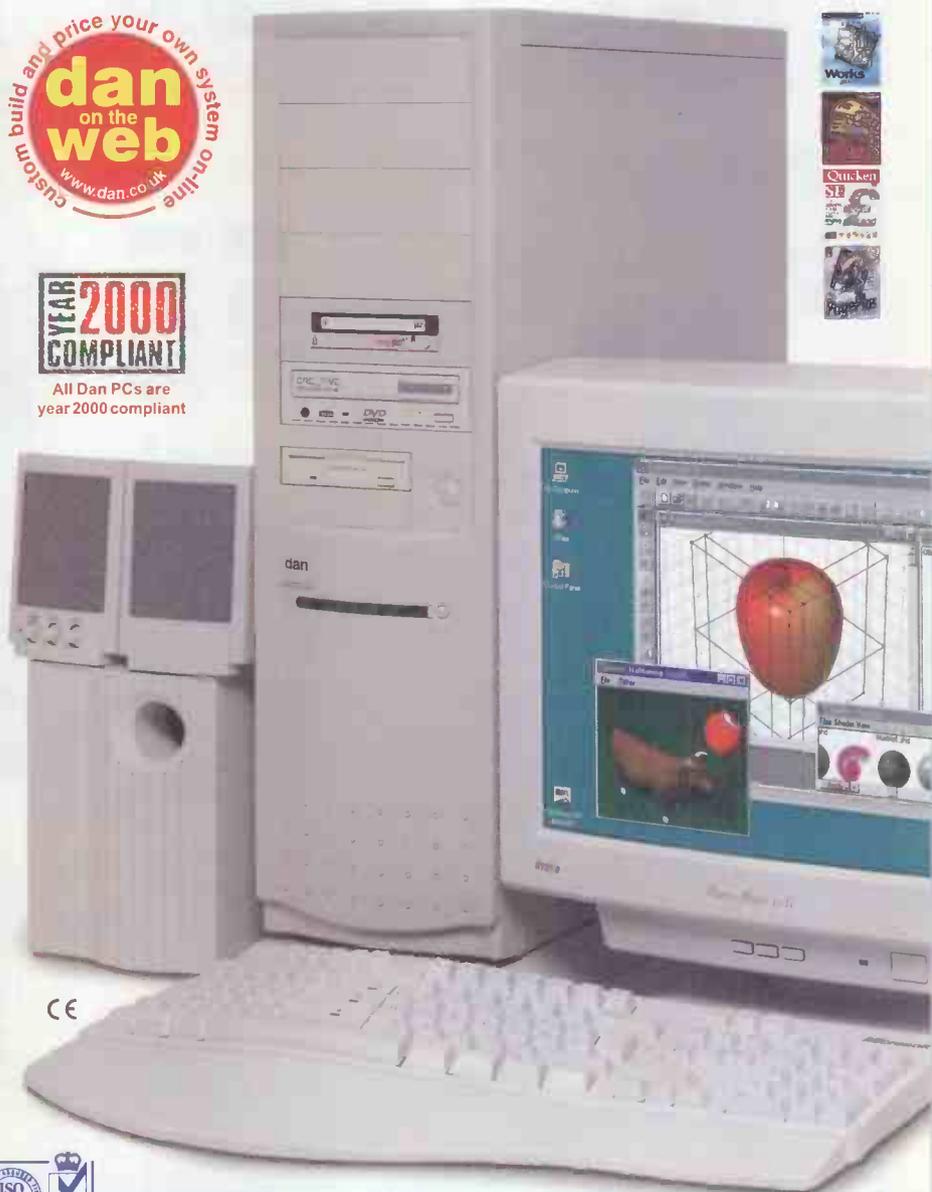
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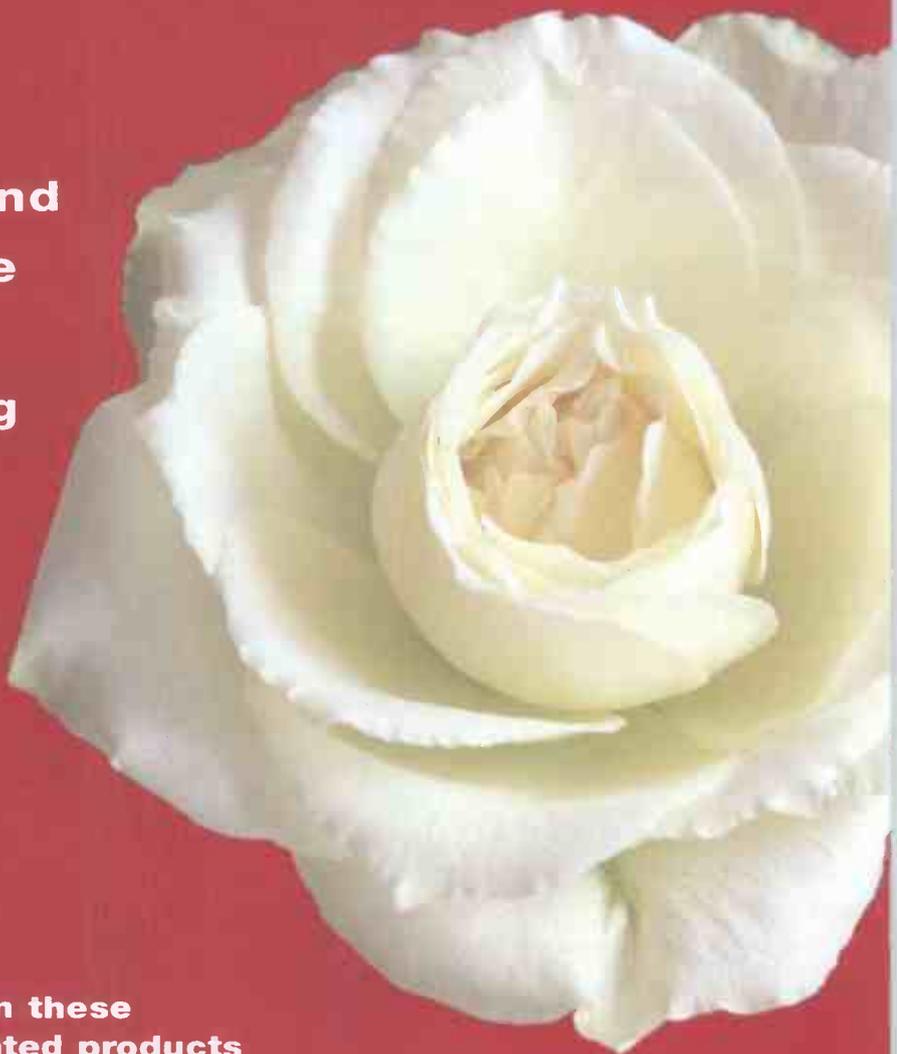


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CPUs

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Pentium I 266MHz	£ 154 (181)
Pentium II 300MHz	£ 237 (279)
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The Company



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FAX: 0181 830 1103

Opening Hours: Monday 10am-6pm

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PCI 32-bit 3COM905 Base-T Network Card	£ 45 (53)
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ATI 4MB All in Wonder Pro	£ 122 (144)
A new single PCI upgrade card with multiple functions, including:	
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2GB (4GB compressed) ext. DAT Streamer	£ 996 (1171)
4GB (8GB compressed) ext. DAT Streamer	£ 666 (783)
Seagate Tape Stor 8000 (IDE or SCSI)	£ 192 (226)
IOMEGA 2GB Floppy Tape Streamer + tape	£ 78 (92)
IOMEGA 3200 Internal Tape Drive + tape	£ 124 (146)
IOMEGA 100MB ZIP+ External ATAPI Drive	£ 150 (177)
IOMEGA 100MB ZIP Internal ATAPI Drive	£ 62 (73)
IOMEGA 100MB ZIP Cartridge	£ 8 (10)
IOMEGA 1GB JAZ Internal SCSI Drive	£ 179 (211)
IOMEGA 1GB JAZ Int. SCSI Drive+controller	£ 284 (334)
IOMEGA 1GB JAZ Cartridge	£ 60 (71)

Jaz Drives require SCSI Controller & backup software.

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Internal 56.6KBPS VoiceFax/Modem	£ 75 (89)
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All modems are BAPT Approved

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Microsoft IntelliMouse	£ 40 (47)
Joystick	£ 19 (23)

Prices in brackets include VAT @ 17.5% E.&O.E.

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17" iiyama 8617T SVGA Colour Monitor	£ 332 (391)
FST Tube, .26dot, 1600x1200 @ 69KHz	
17" iiyama 9017T SVGA Colour Monitor	£ 378 (445)
DiamondTron, .25ag, 1600x1200 @ 72KHz	
21" iiyama A102GTS SVGA Colour Monitor	£ 829 (975)
DiamondTron, .28ag, 1800x1440 @ 75KHz	
14" iiyama ProLite Flat Panel LCD Monitor	£ 889 (1045)
.26dot, 1024x768 @ 79KHz	

14" CTX SVGA Colour Monitor	
Shadow Mask, .28dot, 800x600 @ 72KHz	
£ 101 (119)	
15" CTX 1569UA FST Colour Monitor	£ 171 (201)
Trinitron, .25ag, 1024x768 @ 85KHz	
17" CTX 1769SE FST SVGA Colour Monitor	£ 230 (271)
Shadow Mask, .28dot, 1280x1024 @ 60KHz	
17" CTX 1792UA FST SVGA Colour Monitor	£ 330 (388)
Shadow Mask, .25dot, 1600x1200 @ 70KHz	
19" ADI MicroScan 6P SVGA Colour Monitor	£ 447 (526)
FST Tube, .26dot, 1600x1200 @ 75KHz	

TV & Teletext Cards

ATI 2MB EDO RAM Video Card and ISA Tuner Card

£ 66 (79) TV Card only £ 43 (51)

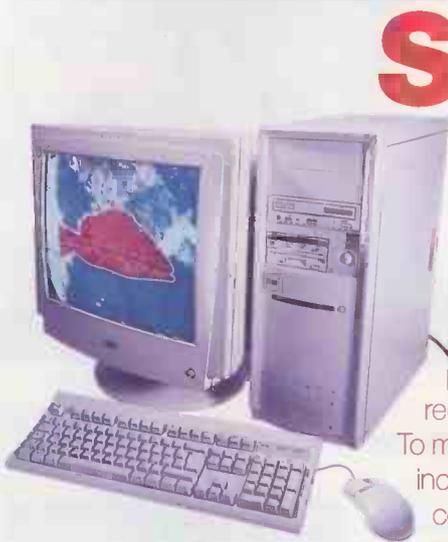
This two card combination enables your the PC to receive TV broadcast signals directly from an aerial or cable and display a live TV program on your standard VGA monitor. You can connect it to a VCR, laser disk player or camcorder to capture and save images or movie clips for use in other applications. In addition you can also display Teletext pages with Fast text.

Hauppauge PCI WinTV Card £ 64 (76)



The Hauppauge Win/TV PCI board is a single slot Plug and Play card with a 125-channel TV tuner and video digitiser and Teletext Decoder. Capture pro-quality stills or motion video in AVI format. Fully compatible with wide range of PCI VGA cards.

Buyer's Guide



Sometimes you just want to know the names of the best products, when they were reviewed, how much they cost and where you can get them. That's where our new, no-nonsense buyer's guide comes in.

Over the following four pages we've picked out the outstanding PCs, peripherals and software packages which we can recommend without hesitation. To make it even easier, we've included the current manufacturer's contact number and price (incl.VAT), as well as details about when and

where we reviewed the product.

For the full review, why not check out *PCW* on CD-ROM? Updated quarterly on a rolling basis, *PCW* on CD-ROM contains the full editorial from the last 24 issues, in searchable Adobe Acrobat format. It even comes with a copy of Acrobat for viewing, searching and printing.

Each CD costs just £9.95 including postage and packing, or £8.96 for subscribers. Call **01795 414870** to order your copy, or turn to the *PCW* Reader Offers on page 318 for further details.

Gordon Laing, Managing Editor

Personal Computer World Buyer's Charter

IF THINGS GO WRONG

● Mail order protection scheme

Anthony George, our Customer Services Manager, is here to help you if things go wrong or if you have a complaint about advertisements that have appeared in *Personal Computer World*. Write to him with details of the complaint and he will contact you.

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Customer Relations Department
VNU Business Publications
VNU House
32 - 34 Broadwick Street
London W1A 2HG



Anthony George

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When you order goods as a private individual reader from a UK supplier's advertisement in *Personal Computer World* and pay by post in advance of delivery to that Mail Order Advertiser who subsequently ceases to trade and goes into Liquidation or Bankruptcy prior to delivery of such goods, you may, under the "Buyers Charter", qualify for compensation, providing:

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3. Have taken all reasonable steps to effect delivery or refund.
4. You have retained proof of purchase, for verification purposes:
 - a) A copy of the original advertisement from which the goods were ordered.
 - b) A copy of *Personal Computer World's* "Details of Transaction Form" (on opposite page).
 - c) Comprehensive proof of payment.
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Claims must be submitted to the Customer Services Manager

IN WRITING, summarising the situation and lodged strictly within the time schedule stated.

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After a supplier who has advertised has become subject to either liquidation or bankruptcy proceedings, *Personal Computer World* guarantees to process as expeditiously as possible those private individual readers' claims made and submitted, in accordance with those procedures outlined, up to the following limits.

- a) £2,000 for any one advertiser so affected.
- b) £100,000 in respect of all advertisers so affected in any one year.

These sums define the Publishers maximum liability under the scheme, and any additional payments above and beyond these thresholds will be entirely at the discretion of the Publishers.

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Payments under the scheme will take into consideration the obligations and liabilities of other interested parties such as credit card and/or insurance organisations etc.

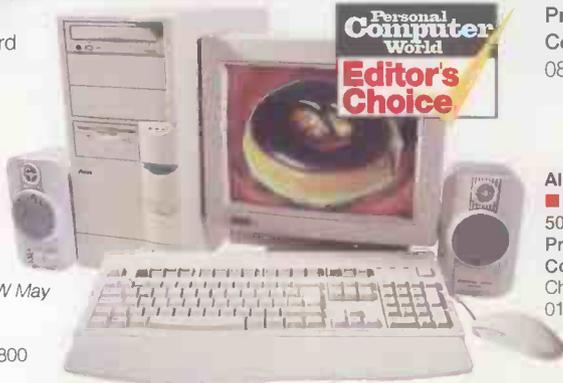
This guarantee only applies to advance postal payments made by private individuals in direct response for goods itemised/illustrated in display advertisements. It does not cover goods ordered from inserts, classified advertisements, or catalogues obtained from any advertiser.

The "Buyer's Charter" is designed to safeguard the PRIVATE individual reader. It does not provide protection to any companies, societies, organisations, unincorporated bodies or any other commercially orientated outlet of any description. Similarly, cover is not provided for orders placed from or to any overseas companies or for goods purchased for resale.

Entry-level PC: Watford Electronics Aries Multimedia Pro

A decent PC for £599 excluding VAT? Yes, it's possible with Watford's Aries Multimedia Pro. A fairly nifty Cyrix M2 P200 MX processor is accompanied by 32Mb RAM, which is more than sufficient for most tasks. 14in monitors are not normally anything to write home about, but Watford's give a sharp, flicker-free image. *PCW May 1998 p196.*

Price £703.82
Contact Watford Electronics
01582 745555

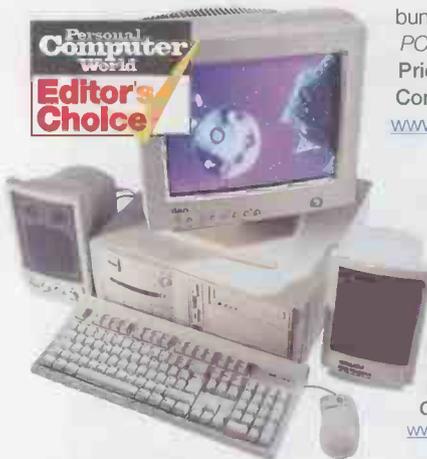


Also Recommended
■ Linear Computers
Linear Excel *PCW May 1998 p195.*
Price £603.95
Contact Linear 0800 622094

Mid-range PC: Dan Dantum II/W5

This issue's £999 Pentium II group test showed that decent PCs had become extremely affordable. Take our Editor's Choice, the Dan Dantum II, featuring a Pentium II 266MHz processor, 6.4Gb disk, 64Mb RAM, AWE-64 sound, ATI Xpert@Work 3D graphics, 56K modem, decent monitor and good software bundle. A bargain mid-range PC. *PCW July 1998 p145*

Price £1,175
Contact Dan 0181 830 1100
www.dan.co.uk

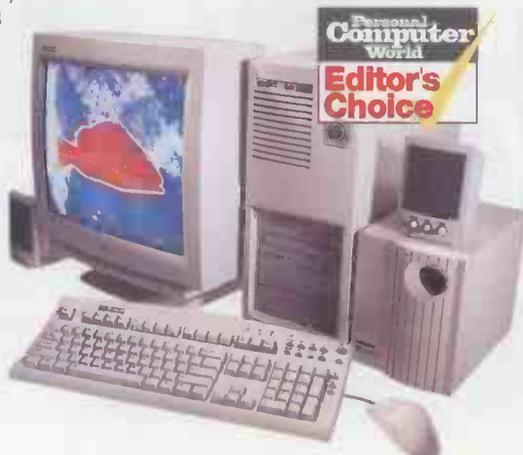


Also Recommended:
■ Mesh Elite Professional PII
PCW July 1998 p157
Price £1,145
Contact Mesh 0181 452 1111
www.mesh.co.uk
■ Viglen Contender II
(PCW July 1998 p159)
Price £1,175
Contact Viglen 0181 758 7000
www.viglen.co.uk

High-end PC: HP Vectra VL

For a truly high-end PC, look no further than one based on Intel's latest and fastest Pentium II processor, the 400MHz. Not only a fast mover internally, it also fits in the new BX chipset motherboards which run your cards and memory 50 percent faster than before. HP's Vectra VL 400MHz system caught our eye before it flew off. *PCW June 1998 p216.*

Price £2,353.53
Contact HP
0990 474747

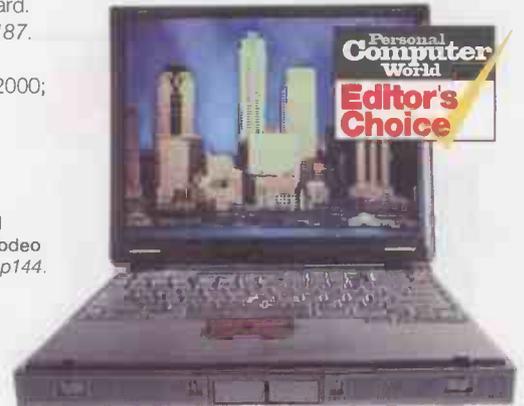


Also Recommended
■ Carrera Power Pro II *PCW June 1998 p212.*
Price £3,049.13
Contact Carrera 0171 830 0486

High-end notebook: Gateway Solo 9100

If you're looking for a notebook with all the features of your desktop, then the Solo 9100 from Gateway is your best bet. It has the latest 266MHz Mobile Pentium II chip, but also has 3D graphics, an optional DVD drive and a 14.1in screen, and comes complete with a 56K PC Card modem and MS Office SBE. We liked it so much, we gave it our Editor's Choice award. *PCW June 1998 p187.*

Price £3,876.33
Contact Gateway 2000;
0800 282000

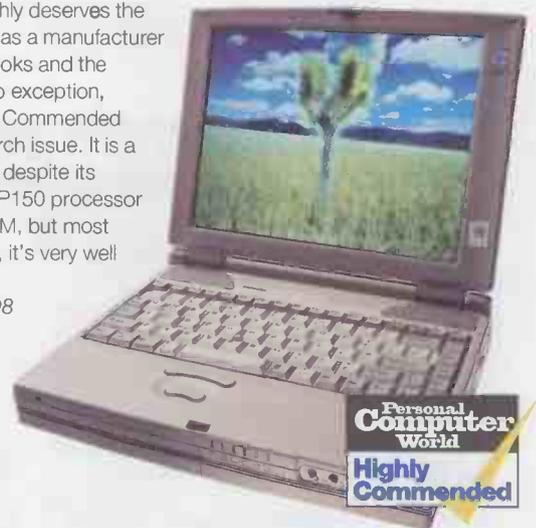


Also Recommended
■ Choice UltraLite Rodeo 5000 *PCW May 1998 p144.*
Price £3,876.33
Contact Choice Systems
0181 993 9003

Mid-range notebook: Toshiba Satellite Pro 4400CDT

Toshiba thoroughly deserves the reputation it has as a manufacturer of quality notebooks and the Satellite Pro is no exception, winning a Highly Commended award in our March issue. It is a good performer, despite its modest spec of P150 processor and 16Mb of RAM, but most importantly of all, it's very well built. *PCW March 1998 p183.*

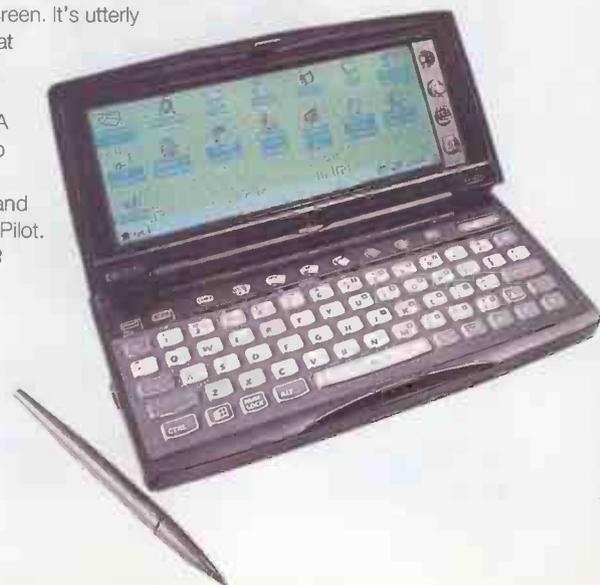
Price £2,226.63
Contact Toshiba
01932 828828



PDA HP 620LX

For cutting-edge technology in your pocket, Hewlett-Packard's 620LX has to be the only choice. It's based on the latest Windows CE2 operating system and is the first PDA we've seen with a colour screen. It's utterly gorgeous and, at £799, a serious threat to many notebooks. PDA fans should also check out the Psion Series 5 and the 3Com PalmPilot. *PCW May 1998 p262.*

Price £799
Contact HP
0990 474747



Colour inkjet: Canon BJC-80

Winning Editor's Choice in our last inkjet-printer group test, Canon's BJC-80 didn't fail to impress. Around half the size of a notebook, it's as happy on a desktop as it is on the move, with optional battery and wireless infra-red operation. Canon even offers a cartridge with a tiny (albeit slow) built-in scanner, offering still greater flexibility.

PCW January 1998 p147.

Price £233.83

Contact Canon 0121 680 8062

**Also Recommended**

- Canon BJC-4650 PCW April 1998 p80.
Price £327.83 Contact Canon 0121 680 8062
- HP DeskJet 720c PCW March 1998 p82.
Price £270.25 Contact HP 0990 474747

Budget laser printer: Panasonic KX-P6300

A decent laser printer at under £200 excluding VAT? That's Panasonic's KX-P6300, which not only turns out great results in fast time, but also boasts one of the smallest footprints of any printer. Its unusual vertical design, along with being a great-value all-rounder, earned it Editor's Choice in our last entry-level laser group test.

PCW February 1998 p194.

Price £217.38

Contact Panasonic
0500 404041

**Also Recommended**

- Kyocera FS-600 PCW February 1998 p189. Price £280.83
Contact Kyocera 01734 311500
- Minolta PagePro 6 PCW February 1998 p192.
Price £351.33 Contact Minolta 01908 200400

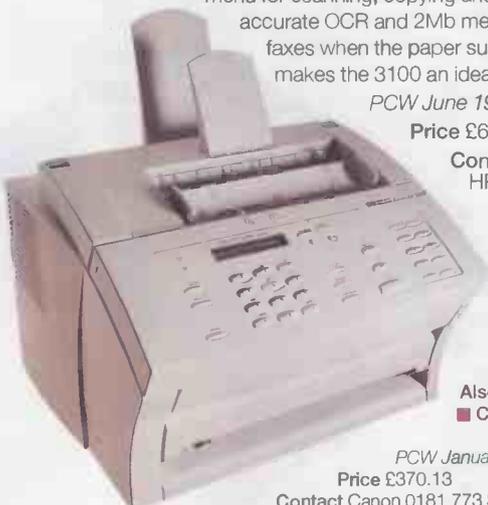
Multifunction device: HP LaserJet 3100

Good laser-print quality from this quiet machine. Intelligent enough to detect a document dropped into its feeder, it will launch an idiot-proof menu for scanning, copying and emailing. Fast, accurate OCR and 2Mb memory for incoming faxes when the paper supply is exhausted, makes the 3100 an ideal multifunction device.

PCW June 1998 p83.

Price £629

Contact
HP 0990 474747

**Also Recommended**

- Canon MultiPASS MPC20

PCW January 1998 p78.

Price £370.13

Contact Canon 0181 773 3173

Colour photo printer: Epson Stylus Photo

Specifically designed for printing photographic images although more than acceptable at text and business graphics, Epson's Stylus Photo is an undeniably impressive device. In addition to the standard CMYK cartridge, the Stylus Photo employs additional light cyan and light magenta ink, giving truly photorealistic output.

PCW September 1997 p145.

Price £233.83

Contact Epson 01442 61144

**Also Recommended**

- Alps MD-2300 Masterpiece
PCW September 1997 p142.
Price £645.08
Contact Alps
0800 973405

Business laser printer: HP LaserJet 4000TN

King of the laser printer, Hewlett-Packard has impressed us yet again with its latest office machine. Being 25 percent faster than the LaserJet 5, with 10,000-page toner cartridge, two 250-sheet input trays, network interfaces as standard and boasting superb output, the 4000TN should be the first choice as an office workhorse.

PCW February 1998 p77.

Price £1662.63

Contact HP 0990 474747

**Also Recommended**

- QMS DeskLaser 1400P PCW
March 1998 p82.
Price £938.83
Contact QMS 01784 442255

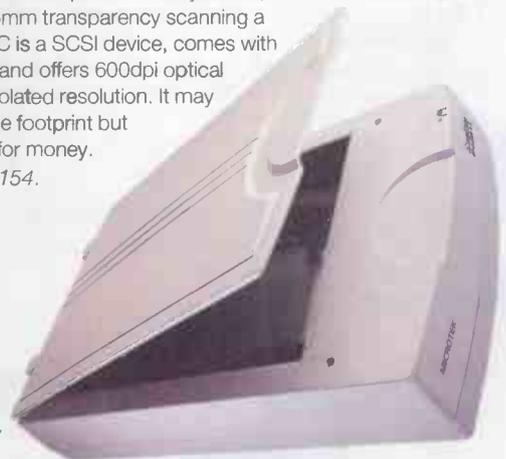
Flatbed scanner: HP ScanJet 6100C

The 6100C's software is quick and easy to use, while the bundled slide adapter makes 35mm transparency scanning a breeze. The 6100C is a SCSI device, comes with an interface card, and offers 600dpi optical or 2,400dpi interpolated resolution. It may have a slightly large footprint but offers great value for money.

PCW May 1998 p154.

Price £708.83

Contact
HP 0990 474747

**Also Recommended**

- Umax Astra 610P PCW February 1998 p115.
Price £98.70
Contact IMC 01344 871329
- Microtek Phantom 4800 PCW February 1998 p113.
Price £146.88
Contact Midwich Thame 01379 649200

p342 >

Digital camera: Agfa ePhoto 1280

Digital cameras have improved vastly over the last year and probably the greatest leap forward is in the introduction of mega-pixel cameras. The best of these is the Agfa ePhoto 1280, with its maximum resolution of 1,280 x 1,024 pixels and a 3x optical zoom lens equivalent to a 38 to 114mm lens on a standard 35mm film camera.

PCW February 1998 p85.

Price £650

Contact Agfa
0181 231 4906



Also Recommended

■ Kodak DC210 PCW December 1997 p82. Price £586.32

Contact Kodak 0800 281487

■ Sony DSC-F1 PCW January 1998 p221. Price £457.07. Contact Sony 0990 424424

Modem: BT Prologue K56EV Plus Modem

This smart little K56Flex modem features a headset, allowing it to be used as a hands-free telephone. Add a pair of speakers and you've got a full duplex speakerphone. The K56EV also supports AudioSpan

Simultaneous Voice and Data

(SVD) operation, allowing voice and data to be transmitted at the same time.

PCW July 1998 p80

Price £119.95

Contact Direct Source
0118 981 9960

www.btwebworld.com/tmd/



Also Recommended:

■ Pace 56 Voice (PCW November 1997 p219)

Price £139

Contact PMC 0990 561001

Sound card: Terratec EWS64 S

A cut-down version of the heavyweight EWS64XL, Terratec's S model still boasts much of the same sampling and processing capabilities and is also a great games card with accelerated DirectSound and positional 3D audio. There's a digital I/O option, upgradeable sample memory and the decent software bundle includes

Cubasis AV.

PCW July 1998 p210.

Price £149.23

Contact Terratec 01600 772111

www.terratec.co.uk



Also Recommended:

■ Creative Labs AWE 64 Gold, (PCW July 1998)

Price £129.25

Contact Creative Labs 01245 265265,

www.cle.creaf.com

Monitor: Nokia Multigraph 447Za

No matter what you do, it's vital to get a good monitor with a clean, flicker-free display. In April 1998's group test we looked at 17in models and found Nokia's Multigraph

447Za to be the best in our entry-level category. Those with more to spend should check out the Mitsubishi, below, which won Editor's Choice in the high-end section.

PCW April 1998 p204.

Price £440.63

Contact Nokia
01793 512809



Also Recommended

■ Mitsubishi DiamondPro 700 PCW April 1998 p208. Price £569.88

Contact Mitsubishi 01707 276100

Removable storage: Iomega Zip drive

Let's face it, your hard disk is never big enough and those files you want to copy to a floppy always end up being just over 1.5Mb. Enter removable-cartridge storage devices. We recommend Iomega's almost ubiquitous Zip drive, taking 100Mb disks which cost around a tenner each. Bigger thinkers should turn to the Jaz, below, which stores 1Gb on fast £70 cartridges.

PCW August 1997 p163.

Price £101.05

Contact Iomega
07000 466342



Also Recommended

■ Iomega Jaz PCW August 1997 p163.

Price £233.83

Contact Iomega
07000 466342

Graphics card: ATI Xpert@Play

For the best games performance you absolutely need a 3D graphics card. While the new 3DFX Voodoo 2 cards (see below) offer the best high-end performance, ATI's Xpert@Play card is a great entry-level choice. Note that at the time of writing, ATI only supplies Direct 3D drivers for Windows 95, so no Quake using OpenGL just yet.

PCW December 1997 p188.

Price £139.83

Contact ATI 01628 533115



Also Recommended

■ Creative Labs 3D Blaster Voodoo2 PCW June 1998 p85.

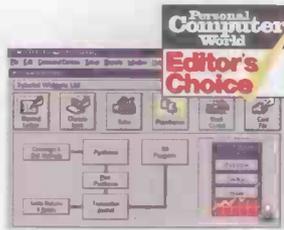
Price 12Mb £229, 8Mb £179

Contact Creative Labs
01245 265265, www.cle.creaf.com

Accounting: MYOB

Ideal for the owner-manager and good for bookkeepers too, Mind Your Own Business (MYOB) is our choice for accountancy software. We also recommend TAS Books which offers good bookkeeping and very powerful analysis. *PCW June 1998 p198. Price £229.13 Contact Bestware 01752 201901*

Also Recommended ■ **TAS Books** *PCW June 1998 p203. Price £116.33 Contact Megatech 01372 727274*



Personal Finance: Microsoft Money Financial Suite 98

Microsoft Money Financial Suite 98 is our choice for personal finance. It offers online banking and updating facilities, and Sage compatibility, at a bargain price. *PCW January 1998 p91. Price £49.99*

Contact Microsoft 0345 002000
Also Recommended ■ **Quicken 98** *PCW June 1998 p209 Price £39.99*

Contact Intuit 0181 990 5500

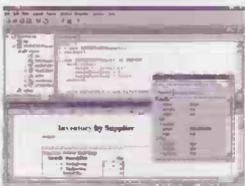


Database: Borland Visual dBase 7

The first 32-bit version of Borland's classic database manager is a significant upgrade from version 5.5, and a must-have for dBase developers so long as 16-bit compatibility is not required. Access is particularly good value when bought with Office 97 Pro. *PCW March 1998 p92 Price £292.58*

Contact Borland 01734 320022
Also Recommended ■ **Microsoft Access 97** *PCW October 1997 p196. Price £276.13*

Contact Microsoft 0345 002000



DTP: Serif PagePlus 5

Inexpensive, easy to use and surprisingly well equipped. PagePlus 5 offers extremely capable desktop publishing. Those wanting the choice of professional publishers will have to fork out more for Quark XPress 4.0. *PCW June 1998 p132. Price £99.95*

Contact Serif 0800 376 7070
Also Recommended ■ **Quark XPress 4** *PCW June 1998 p125. Price £1169*

Contact Quark 01483 454397

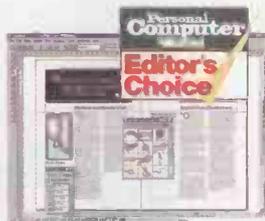
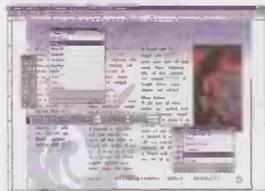


Image Editing: Adobe Photoshop 5

With version 5, Photoshop is better than ever, although some web designers will want a little more. The legendary Paintshop Pro and fun PhotoDeluxe cater at entry level. *PCW June 1998 p88. Price £763.75.*

Contact Adobe 0181 606 4001
Also Recommended ■ **Adobe PhotoDeluxe 2**, *PCW December 1997 p87. Price £57.58*

Contact Adobe 0181 606 4001 **Paintshop Pro 4** *PCW December 1997 p212. Price £58.69*
Contact Digital Workshop 01295 258335

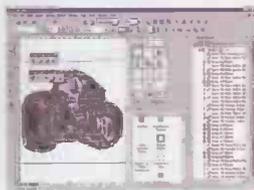


Drawing: CorelDraw 8

Not one of Corel's classic years, but still the Windows drawing package to own. Version 8 of the giant suite boasts better drawing and new interactive tools. Budget drawers should check out the Micrografx Windows Draw 6. *PCW January 1998 p88. Price £464.13*

Contact Corel 0800 973189
Also Recommended ■ **Windows Draw 6** *PCW December 1997 p89. Price £49.95*

Contact Micrografx 01483 747526



Information managers: Starfish Sidekick 98

The best personal information manager boasts wide customisability as its greatest strength. For heavyweight contact management, look no further than Goldmine 4 (*details below*). *PCW May 1998 p156. Price £39.99*

Contact Starfish 0181 875 4455
Also Recommended ■ **Goldmine 4** *PCW April 98 p88. Price £229.13*

Contact AVG 0171 335 2222

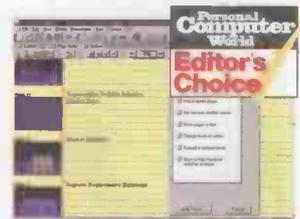


Presentation graphics: Lotus Freelance 97

Our choice for electronic presentations. It may also come down to which office suite you own or are considering. As part of Microsoft Office 97, PowerPoint won't let you down. *PCW March 1998 p200. Price £49.35*

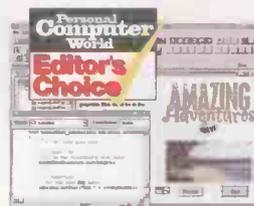
Contact Lotus 01784 445808
Also Recommended ■ **MS PowerPoint 97**, *PCW March 1998 p202. Price £325.47*

Contact Microsoft 0345 002000



Programming tool: Symantec Visual Café 2

Visual Café 2 is the most productive visual Java tool and has the option of native-code compilation for Windows. Windows developers should go for Borland Delphi 3 which, although more complex, comes into its own on larger applications. *PCW April 1998 p177. Price from £79*



Contact Symantec 0171 616 5600
Also Recommended ■ **Borland Delphi 3** *PCW April 1998 p183. Price from £95.18*

Contact Borland 01734 320022

Remote Access: Symantec pcAnywhere 8.0

Takes the lead in remote access software. Remote controllers should also consider the legendary LapLink, now on version 7.5. *PCW January 1998 p104. Price £166.33*

Contact Symantec 0171 616 5600
Also Recommended ■ **LapLink 7.5** *PCW November 1997 p126. Price £176.25*

Contact Traveling Software 01753 818282



Web design: SoftQuad HotMetal Pro 4.0

An excellent all-rounder, HotMetal Pro 4 gets our thumbs up for web design. For a slick interface and Office 97 integration, Microsoft's FrontPage 98 is worth a look. *PCW January 1998 p196. Price £123.38*



Contact SoftQuad 0181 387 4110.
Also Recommended ■ **FrontPage 98** *PCW January 1998 p195. Price £116.30*

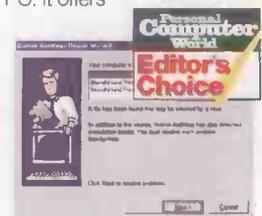
Contact Microsoft 0345 002000
■ **Adobe PageMill 3.0** *PCW May 1998 p158. Price £92.83*
Contact Adobe 0181 606 4001

Anti-Virus: Norton AntiVirus 4.0

AntiVirus 4.0 is our choice for protecting your PC. It offers the best combination of features and performance. *PCW April 1998 p124. Price £49*

Contact Symantec 0171 616 5600
Also Recommended ■ **Dr Solomon's HomeGuard** *PCW April 1998 p122. Price £29*

Contact Dr Solomons 01296 318700
■ **F-Secure 4.0 AntiVirus** *PCW April 1998 p122. Price £109.27*
Contact Portcullis 0181 868 0098



Reliability survey

Service and Reliability Survey 1998

PCW is conducting a study of how well your PCs and printers function in the real world. We know what the manufacturers say. We know what our lab tests reveal. But how do the various models perform in the trenches? And how satisfied are you with the hardware, and the

shops and manufacturers which sold them to you? How does the after-sales service live up to your expectations?

PCW has joined forces with Maritz Research, leader in the field of Customer Satisfaction testing, in an effort to compile and deliver the ultimate performance guide to computer equipment. Please fill in the questionnaire which follows. Share your experience with us, in confidence, and we will produce a comprehensive report on computer reliability and customer service. The results will appear in our November 1998 issue, so look out for them. Fill in the questionnaire and return it to the address on page 347, by Friday 3rd July, and the first 1,000 respondents will receive a free CD-ROM containing the 24 most recent issues of PCW (CD features April 96 - March 98 inclusive).



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10 Notebooks • Presentation tools • New Windows palette

NEW updated version

Everything you need on one CD
Full text of PCW back issues in searchable, browsable, printable Acrobat format.

How to fill in your questionnaire

There are a number of questions which ask you to indicate your satisfaction using a five-point rating scale, where 5 is very satisfied and 1 is very dissatisfied. Please feel free to use any number between 1 and 5.

To return your completed questionnaire, cut out the pages or photocopy them, and use the freepost address given at the end of the questionnaire or contact the VNU web site for online completion <www.vnunet.com>. Many thanks for your participation.

Maritz Research is an independent agency conducting research on behalf of VNU into finding out how reliable you think your PC products are. Your opinion would be appreciated in order to highlight the strongest and weakest areas of reliability. Maritz Research is bound by the Market Research Code of Conduct, guaranteeing respondent confidentiality.

(1) ABOUT YOUR DESKTOP OR LAPTOP

PC 1

What make is your PC? (See panel below)

- 1 Desktop 2 Laptop
3 Other

Model and processor spec.

Year purchased

Place of purchase

- 1 Mail order/direct from vendor
2 Superstore/high street retailer
3 Dealer/value added reseller
9 DK

Is this PC located at...?

- 1 Home
2 Work
3 Both
9 Other

What is it mainly used for?

- 1 Business & personal use
2 Personal use only
3 Business use only
4 Home-based business

(1b) Satisfaction — delivery and installation

How satisfied are you with the...?

	Very dissatisfied			Very satisfied	
	1	2	3	4	5
Availability of the product for delivery when desired					
Delivery date was met					
Condition when received					

PC 2

What make is your PC? (See panel below)

- 1 Desktop 2 Laptop
3 Other

Model and processor spec.

Year purchased

Place of purchase

- 1 Mail order/direct from vendor
2 Superstore/high street retailer
3 Dealer/value added reseller
9 DK

- 1 Home
2 Work
3 Both
9 Other

- 1 Business & personal use
2 Personal use only
3 Business use only
4 Home-based business

	Very dissatisfied			Very satisfied	
	1	2	3	4	5
Availability of the product for delivery when desired					
Delivery date was met					
Condition when received					

PCs 1 Compaq; 2 IBM; 3 Packard Bell; 4 Dell; 5 Gateway; 6 Hewlett-Packard (HP); 7 Toshiba; 8 Dan Technology; 9 Mesh; 10 Fujitsu; 11 Elonex; 12 Apricot Mitsubishi; 13 Digital; 14 OT Technology; 15 Viglen; 16 Evesham; 17 Atlantic Systems; 18 Northwood; 19 Simply; 20 Quantex.

Printers 1 HP; 2 Canon; 3 Lexmark; 4 Epson; 5 NEC; 6 QMS; 7 Oki; 8 Brother; 9 Fujitsu; 10 Panasonic.

PC1

Delivery completeness	1	2	3	4	5
Ease of installation	1	2	3	4	5
Compatibility with other hardware	1	2	3	4	5

(1c) Satisfaction — usage

How satisfied are you with the...?

	Very dissatisfied			Very satisfied	
Quality of the machine	1	2	3	4	5
Standard of features	1	2	3	4	5
Standard of software	1	2	3	4	5
Ease of use	1	2	3	4	5
Performance/speed	1	2	3	4	5
Ability to upgrade	1	2	3	4	5
Price/performance value	1	2	3	4	5
Manuals	1	2	3	4	5
Warranty	1	2	3	4	5

(1d) Reliability

How many problems have you had with your PC in the last 6 months which limited your use of it? (If more than 10 please write amount)

1 None
 2 1-5
 3 6-10
 4 10+
 5

Using the following comments please classify the type of problems you experienced (circle all that apply)

1 Dead on arrival
 2 Failure due to hard drive component
 3 Failure due to sound card component
 4 Failure due to video card component
 5 No display at all
 6 Failure due to virus
 7 Failure due to RAM
 8 Problems with insufficient memory
 9 PC would not boot up
 10 PC freezes or hangs for a long time
 11 Problems caused by the software
 Please give details of problems below:

How were the main problems rectified? (circle all that apply)

Provided by place of purchase
 1 Telephone/helpline support
 2 Electronic (email/web) support
 3 Fax support
 4 PC repaired on-site
 5 PC returned and repaired
 6 PC replaced
 Other:

Provided by manufacturer
 7 Telephone/helpline support
 8 Electronic (email/web) support
 9 Fax support
 10 PC repaired on-site
 11 PC returned and repaired
 12 PC replaced
 Other:

(1e) Repair service

If you had a repair performed on your PC, how satisfied are you with the...?

	Very dissatisfied			Very satisfied	
Repair service	1	2	3	4	5
Time taken for the repairs	1	2	3	4	5
Quality of the repairs	1	2	3	4	5
Cost of repairs	1	2	3	4	5

(1f) General aspects

How satisfied are you with the overall reliability of your PC?

Very dissatisfied Very satisfied
 1 2 3 4 5

What is the likelihood of you repurchasing the same brand in the future?

Definitely not Yes definitely
 1 2 3 4 5

What is the likelihood of you recommending this brand to your colleagues/friends?

Definitely not Yes definitely
 1 2 3 4 5

If you rated 1 or 2 to any of the last 3 questions, what are your main reasons for low satisfaction, not repurchasing and/or not recommending?

PC2

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

	Very dissatisfied			Very satisfied	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	

1 None
 2 1-5
 3 6-10
 4 10+
 5

1 Dead on arrival
 2 Failure due to hard drive component
 3 Failure due to sound card component
 4 Failure due to video card component
 5 No display at all
 6 Failure due to virus
 7 Failure due to RAM
 8 Problems with insufficient memory
 9 PC would not boot up
 10 PC freezes or hangs for a long time
 11 Problems caused by the software
 Please give details of problems below:

Provided by place of purchase
 1 Telephone/helpline support
 2 Electronic (email/web) support
 3 Fax support
 4 PC repaired on-site
 5 PC returned and repaired
 6 PC replaced
 Other:

Provided by manufacturer
 7 Telephone/helpline support
 8 Electronic (email/web) support
 9 Fax support
 10 PC repaired on-site
 11 PC returned and repaired
 12 PC replaced
 Other:

	Very dissatisfied			Very satisfied	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	

Very dissatisfied Very satisfied
 1 2 3 4 5

Definitely not Yes definitely
 1 2 3 4 5

Definitely not Yes definitely
 1 2 3 4 5

If you rated 1 or 2 to any of the last 3 questions, what are your main reasons for low satisfaction, not repurchasing and/or not recommending?

(2) ABOUT YOUR PRINTER

Brand
 1 HP 4 Apple
 2 Canon 5 Lexmark
 3 Epson 6 Panasonic
 Other:

Model specification

Year purchased

Type of technology
 1 Laser/LED
 2 Inkjet
 3 Dot matrix
 4 Dye sublimation
 5 Thermal
 6 Other:

Colour or mono
 1 Colour
 2 Mono
 3 Colour capable
 9 Don't know

(2a) Satisfaction — delivery and installation

How satisfied are you with the...?

	Very dissatisfied			Very satisfied	
Availability of the printer	1	2	3	4	5
Delivery date was met	1	2	3	4	5
Condition of printer	1	2	3	4	5
Ease of installation	1	2	3	4	5
Compatibility with hardware	1	2	3	4	5

(2b) Satisfaction — usage

How satisfied are you with the...?

	Very dissatisfied			Very satisfied	
Quality of the machine	1	2	3	4	5
Standard of features	1	2	3	4	5
Standard of software	1	2	3	4	5
Ease of use	1	2	3	4	5
Performance/speed	1	2	3	4	5
Print quality	1	2	3	4	5
Paper-handling capabilities (e.g. paper types, paper jams)	1	2	3	4	5
Price/performance value	1	2	3	4	5
Ability to upgrade	1	2	3	4	5
Manuals	1	2	3	4	5
Warranty	1	2	3	4	5

(2c) Reliability

How many problems have you had with your printer in the last 6 months

1 None	3 6-10
2 1-5	4 10+
5	(if more than 10 please write amount)

Using the comments below please classify the type of problems you experienced (circle all that apply)

- 1 Dead on arrival
 - 2 Failure due to printer driver
 - 3 Failure due to memory problems
 - 4 Would not print
 - 5 Unavailability of support/helpline
 - 6 Ribbons/cartridges fitted incorrectly
 - 7 Continual jamming of paper
 - 8 Significant variation in shades produced when printing in colour
- Please give details of the problems in the space provided.
-
-

How were the main problems rectified? (circle all that apply)

- Provided by place of purchase*
- 1 Telephone/helpline support
 - 2 Electronic (email/web) support
 - 3 Fax support
 - 4 Printer replaced
 - 5 Telephone/helpline support
 - 6 Electronic (email/web) support
 - 7 Fax support
 - 8 Printer repaired on-site
 - 9 Printer returned and repaired
 - 10 Printer replaced
- Other:

If you had a repair performed on your printer, how satisfied are you with the...?

	Very dissatisfied			Very satisfied	
Overall repair service	1	2	3	4	5
Time taken for the repairs	1	2	3	4	5

Quality of the repairs	1	2	3	4	5
Cost of repairs	1	2	3	4	5

(2d) Cost

How satisfied are you with the running costs of your printer?

	Very dissatisfied			Very satisfied	
Overall cost of ownership	1	2	3	4	5
Cartridges/toner/ribbons	1	2	3	4	5
Paper and other medias	1	2	3	4	5
Powersave features	1	2	3	4	5

What are your average monthly consumable costs?

1	Less than £20	4	£60-£80
2	£20-£40	5	£100+
3	£40-£60		
9	Don't know		

(2e) General aspects

How satisfied are you with the overall reliability of your printer?

	Very dissatisfied			Very satisfied	
	1	2	3	4	5

What is the likelihood of you repurchasing the same brand in the future?

	Definitely not			Yes definitely	
	1	2	3	4	5

What is the likelihood of you recommending this brand to your colleagues/friends?

	1	2	3	4	5
--	---	---	---	---	---

If you rated 1 or 2 to any of these questions, what are your main reasons for low satisfaction, not repurchasing and/or not recommending?

(3) INTERNET SERVICE PROVIDER

Name of provider

What is it mainly used for?

1	Web access	3	Both
2	Email	4	Other

(3a) Satisfaction — delivery and installation

How satisfied are you with the...?

	Very dissatisfied			Very satisfied	
Ability to connect when desired	1	2	3	4	5
Speed to access provider	1	2	3	4	5
Ease of setup	1	2	3	4	5
Proximity of 'local' access tel lines	1	2	3	4	5

(3b) Reliability

How satisfied are you with the...?

	Very dissatisfied			Very satisfied	
Overall reliability of provider	1	2	3	4	5
Ease of installation	1	2	3	4	5
Value for money	1	2	3	4	5
Quality of service provided	1	2	3	4	5
Connection speed	1	2	3	4	5
Response to problems	1	2	3	4	5

(3c) General aspects

How satisfied are you with the...?

	Very dissatisfied			Very satisfied	
Technical support offered	1	2	3	4	5
Quality of online content	1	2	3	4	5
Availability of search engines	1	2	3	4	5

What is the likelihood of repurchasing from this ISP in the future?

	Definitely not			Yes definitely	
	1	2	3	4	5

What is the likelihood of you recommending this ISP to your colleagues?

	Definitely not			Yes definitely	
	1	2	3	4	5

If you rated 1 or 2 to any of the last 3 questions, what are your main reasons for low satisfaction, not repurchasing and/or not recommending?

Please complete the following details and return the questionnaire to:

Maritz Research (VNU), FREEPOST SL1673, Marlow SL7 1BT

Name:

Address:

Postcode:

Email address: Tel no:

How often do you purchase PCW and/or What PC?

- 1 I am a subscriber to PCW
 - 2 I am a subscriber to What PC?
 - 3 Not a subscriber
- How would you best describe your professional role?
- 1 General Manager/MD
 - 2 IT Manager/Director
 - 3 Technical Support Manager/Executive
 - 4 Purchasing Manager/Executive
 - 5 Other non-IT position
 - 6 Home use

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Printers

	Exc Vat	Inc Vat
Canon		
BJC250 Colour	£70.00	£82.25
BJC4300	£91.00	£106.93
CAN-BJC80+Scan	£185.00	£217.38
Epson		
Stylus 400 Colour	£103.00	£121.03
Stylus 600 Colour	£147.00	£172.73
Stylus 800 Colour	£207.00	£243.23
Stylus Colour 850	£243.00	£285.53
Hewlett Packard		
DeskJet 670C	£111.00	£130.43
DeskJet 690+ Photo Cart	£126.00	£148.05
DeskJet 720C	£156.00	£183.30
DeskJet 690+E.P.Reader	£169.00	£198.58
DeskJet 890C	£202.00	£237.35
OfficeJet 1150C Scan/Copy	£491.00	£576.93
LaserJet 6L	£232.00	£272.60
LaserJet 6P	£461.00	£541.68
Kyocera		
FS 600	£218.00	£256.15
Oki		
4W Plus	£129.00	£151.58

Software

	Exc Vat	Inc Vat
Intuit		
Quicken 98 Deluxe	£34.00	£39.95
Microsoft		
Encarta 98 Ref Suite	£79.00	£92.83
Publisher 98	£68.00	£79.90
Win95 * Win3.1 Upgrade	£59.00	£69.33
Symantic (Norton)		
Anti-Virus V4 Deluxe	£41.00	£48.18
PowerQuest		
Partition Magic V.3	£38.00	£44.65

Scanners

	Exc Vat	Inc Vat
Epson		
GTX 5000 Parallel	£130.00	£152.75
GT5000 SCSI for PC	£187.00	£219.73
Hewlett Packard		
ScanJet 5100	£144.00	£169.20
Novatech		
Photomaker 3F A4	£59.00	£69.33
Photomaker 3E A4 Parallel	£59.00	£69.33

Graphics

	Exc Vat	Inc Vat
Hauptpage		
Win TV PCI NICAM	£85.00	£99.88
Win TV Radio	£89.00	£104.58
Matrox		
Mystique 220 4Mb Home	£65.00	£76.38
Novatech		
PCI S3 3D DXVirageMpeg 2Mb	£30.00	£35.25
PCI S3 3D DXVirageMpeg 4Mb	£40.00	£47.00

Storage

	Exc Vat	Inc Vat
lomega		
Zip Internal IDE	£59.00	£69.33
Zip Drive Parallel + SCSI	£111.00	£130.43
Zip 100Mb Disk	£9.50	£11.75
Syquest		
Sparq 1.0Gb Ext. Parallel	£114.00	£133.95

Motherboards

	Exc Vat	Inc Vat
Novatech		
TXPro 512Kb +16 Bit Sound	£45.00	£52.88
Gigabyte		
Intel 430TX Format T2	£63.00	£74.03

Monitors

	Exc Vat	Inc Vat
ADI		
Provista E30 14"	£95.00	£111.63
Provista E40 15"	£115.00	£135.13
Microscan 4P 15"	£129.00	£151.5
Microscan 5G 17"	£289.00	£339.58
liyama		
Vision Mast. 350 15G 15"	£160.00	£188.00
Vision Master Pro 17T 17"	£328.00	£385.40
Novatech		
14" 0.28mm DP Digital	£84.00	£98.70
15" 0.28mm DP	£119.00	£139.83
17" 0.28mm DP	£221.00	£259.68

Processors

	Exc Vat	Inc Vat
AMD		
K6 233	£59.00	£69.33
K6 266	£119.00	£139.83
Intel		
Pentium 233 MMX	£80.00	£94.00
Pentium II 233Mhz	£122.00	£143.35
Pentium II 266Mhz	£169.00	£198.58

Modems

	Exc Vat	Inc Vat
Hayes		
Accura 56K External	£85.00	£99.88
Novatech		
Novatech 33.6 Internal	£34.00	£39.95
Novatech 33.6 External	£47.00	£55.23
Novatech 56K Internal	£49.00	£57.58
Novatech 56K External	£59.00	£69.33
US Robotics		
Sportster Flash X2	£85.00	£99.88
Sportster Message + Ext	£125.00	£146.88

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	Exc Vat	Inc Vat
Fujitsu MPB3034AT-UDMA 4.3Gb	£113.00	£132.78
Quantum SE2160 EIDE 2.1Gb	£81.00	£95.18
SE3240 UDMA 3.2Gb	£109.00	£128.08
SE4300 UDMA 4.3Gb	£117.00	£137.48
Seagate ST32122A 2.0Gb EIDE	£80.00	£94.00
ST33232A 3.2Gb UDMA	£99.00	£116.33
ST34342A 4.3Gb UDMA	£113.00	£132.78
ST36451A 6.4Gb UDMA	£151.00	£177.43
Western Digital AC32300A 3.2Gb UDMA	£95.00	£111.63
AC34300 4.3Gb UDMA	£110.00	£129.25
AC36400 6.4Gb UDMA	£141.00	£165.68

Networking

	Exc Vat	Inc Vat
Kingston ISA Ether Combo 20BT	£22.00	£25.85
PCI Fast Ethernet Card	£42.00	£49.35

Sound Cards / Speakers

	Exc Vat	Inc Vat
Creative Labs SB 16 Value Non IDE	£27.00	£31.73
AWE 64 Value	£55.00	£64.63
AWE 64 Gold	£88.00	£103.40
Novatech 60Watt Speakers	£17.00	£19.98
16 Bit PNP Sound Card	£19.00	£22.33
Typhoon 25 Watt Speakers	£13.00	£15.28



CD Rom

	Exc Vat	Inc Vat
Novatech 32 Speed EIDE	£39.00	£45.83
HP Reader Writer 7200I 2xWrite 6 xReadEIDE	£239.00	£280.83
7200E 2xWrite 6xRead Par	£293.00	£344.28
Med. Rewrite CD's/C4431C	£18.00	£21.15



Memory

	Exc Vat	Inc Vat
30 Pin 4Mb 30 pin Simm	£9.00	£10.58
72 Pin Non Parity 8Mb Simm	£9.00	£10.58
16Mb Simm	£16.00	£18.80
32Mb Simm	£32.00	£37.60
72 Pin EDO 8Mb Simm	£8.00	£9.40
16Mb Simm	£14.00	£16.45
32Mb Simm	£28.00	£32.90
72 Pin Parity 8Mb Simm	£15.00	£17.63
16Mb Simm	£29.00	£34.08
32Mb Simm	£59.00	£69.33
168 Pin Dimms 16Mb 168 Pin Sync Dram	£20.00	£23.50
32Mb 3.3vSD Ram U/Buf TX	£29.00	£34.08
32Mb 3.3vSD Ram U/Buf VX	£34.00	£39.95
64Mb 3.3vSD Ram U/Buf LX	£69.00	£81.08
64Mb 3.3vSD Ram U/Buf TX	£75.00	£88.13

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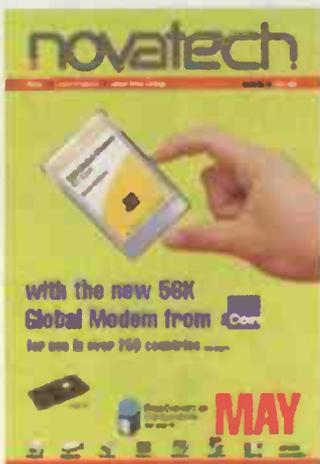
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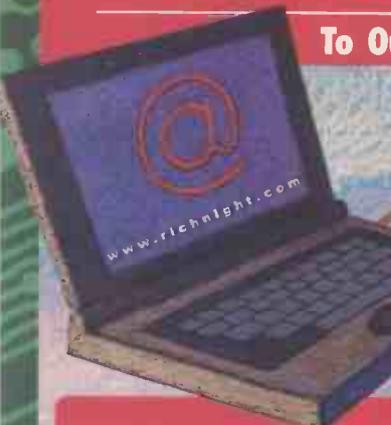
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AWS-825P	Workstation with 15" CRT Monitor ISA/PCI	£1350
AWS-842T	Workstation 10.4" TFT LCD Display ISA	£1550
AWS-842TP	Workstation 10.4" TFT LCD Display ISA/PCI	£1550
AWS-861	Workstation with 10" CRT Monitor ISA	£1600
AWS-861P	Workstation with 10" CRT Monitor ISA/PCI	£1600
MIPC-50CT	Mini Workstation 10.4" TFT LCD Display	£1075
MIPC-50M	Mini Workstation 10.4" Mono LCD Display	£785

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ALL SBC INCLUDE PROCESSORS

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PCM-4825L	486 SBC with SVGA/LCD DX5/133	£210
PCM-4825	486 SBC with SVGA and Audio DX5/133	£245
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PCM-5862	Pentium SBC with SVGA/LAN/Audio P233MMX	£375
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POS-560	Pentium Control Board P233MMX	£350

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PCA-6154	Half-size CPU Card P233MMX w/SVGA/LAN	£375
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PCA-6159	Full-size CPU Card Pentium 233MMX w/SCSI	£345

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ADAM-5018	7-Channel Thermocouple Input Module	£120
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ADAM-5056	16-Channel Digital Output Module	£49
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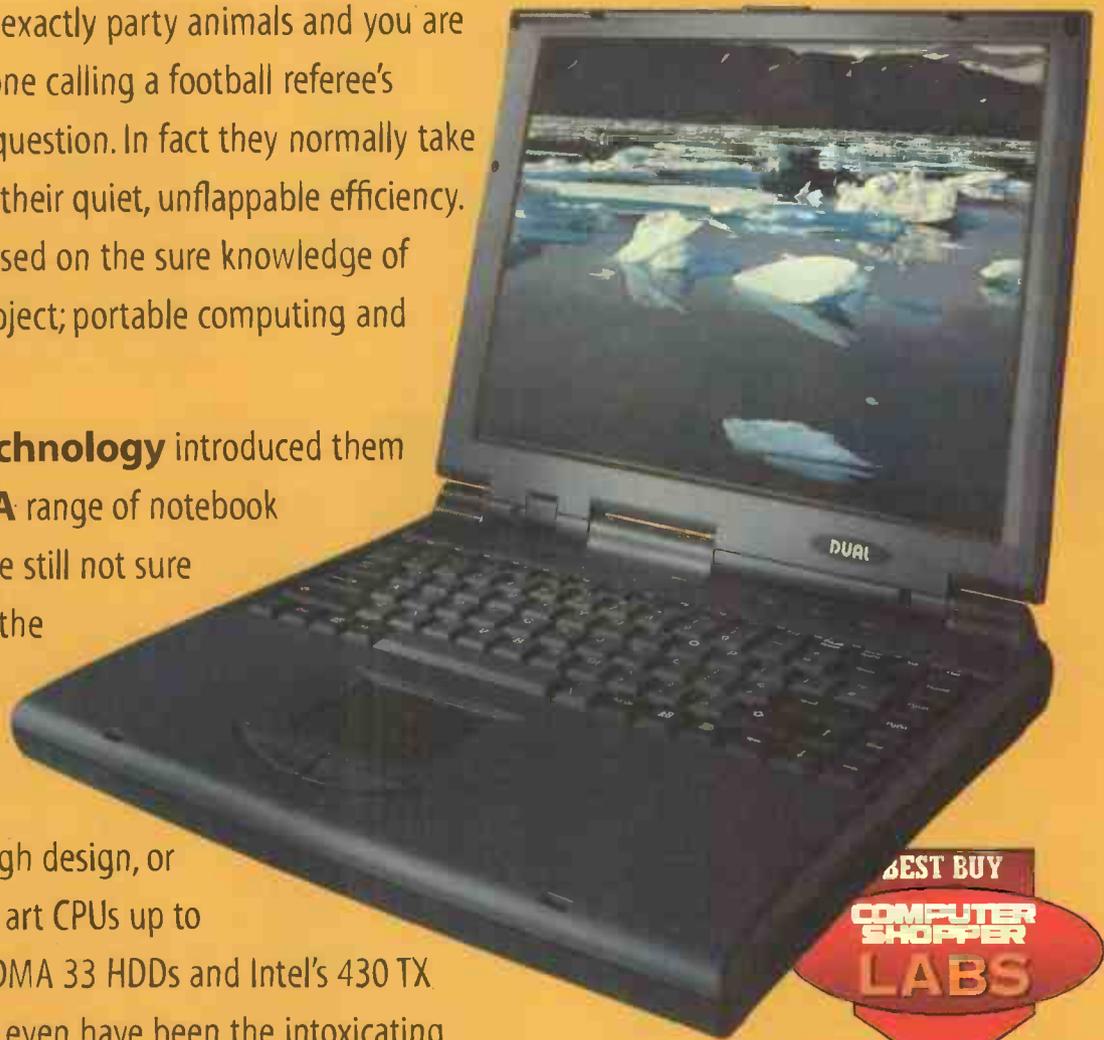


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How to get a POD

Pod Bods aren't exactly party animals and you are unlikely to see one calling a football referee's parentage into question. In fact they normally take a great pride in their quiet, unflappable efficiency. An efficiency based on the sure knowledge of their chosen subject; portable computing and its many facets.

Then **Dual Technology** introduced them to the *new ERA* range of notebook computers. We're still not sure whether it was the large bright 14.1" XGA displays, or the svelte 43mm high design, or the state of the art CPUs up to 300MHz, Ultra DMA 33 HDDs and Intel's 430 TX chip-set. It may even have been the intoxicating combination of all of the above that made it happen.



May 98

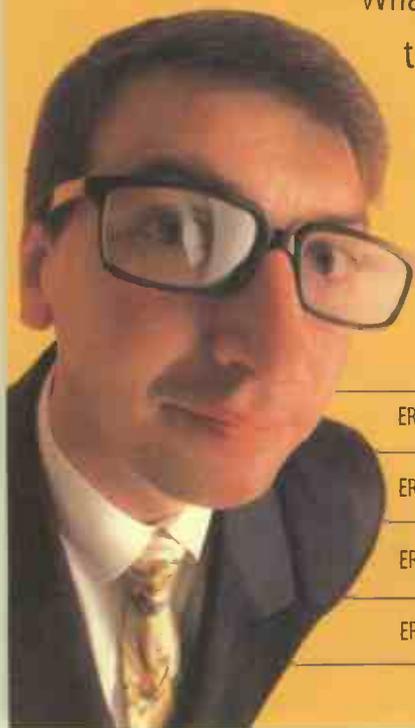
Whatever the reason, the **ERA** certainly caused a stir. There were calls for quiet as they tried to listen to the whisper quiet fan. Gasps of astonishment as Windows 95 loaded in half the time of previous models. Followed by an excited chatter of glee when they realised the **ERA** range was Windows 98 ready; and ACPI and APM1.2 compliant.

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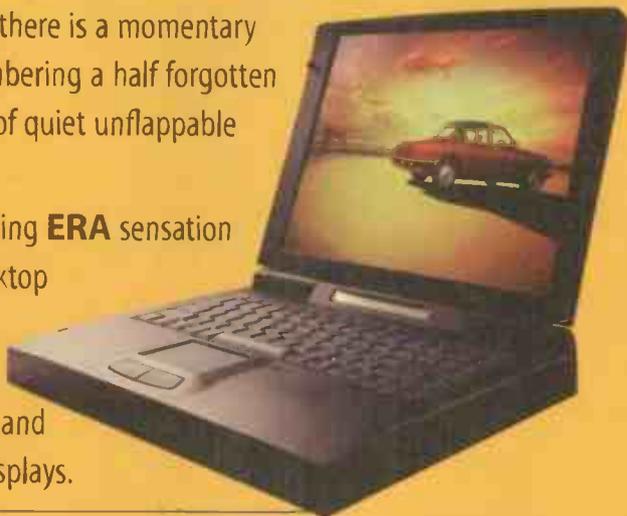
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Bod excited.

There seemed to be no end to the new and exciting discoveries the POD Bods were introduced to, and quite frankly they haven't been the same since. Now whenever you ask them about **Dual**, there is a momentary enigmatic smile, as if remembering a half forgotten pleasure, before the veneer of quiet unflappable efficiency reasserts itself.

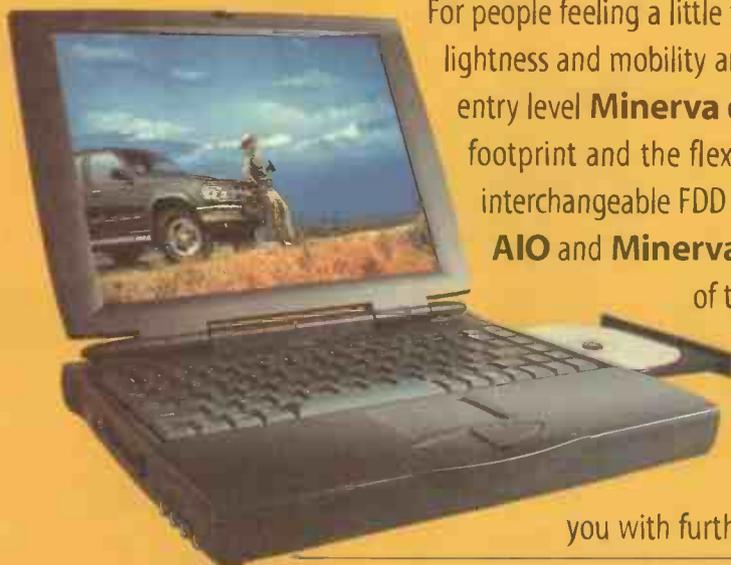
To compliment the outstanding **ERA** sensation the **AIO** is a mid range desktop replacement notebook offering both CD ROM and FDD fitted at the same time and a range of three excellent displays.



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For people feeling a little frisky, where lightness and mobility are a premium the entry level **Minerva** offers a smaller footprint and the flexibility of interchangeable FDD and CD ROM. The **AIO** and **Minerva** models offer many of the advanced features of the **ERA**, so please call the Pod Bods and they will be happy to provide you with further information.

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£362.00	£425.37																																																										
£369.00	£433.59																																																										
£409.00	£480.60																																																										

Ultimate Pro from only £369 + Vat



<ul style="list-style-type: none"> X Desktop or MiniTower Case X TX Pentium Motherboard DMA33 X 32MB RAM X 3.2 GB EIDE Hard Disk Drive X 1.44MB Floppy Disk Drive X 512K Pipeline Burst Cache X 2MB 64-bit PCI Video Card X Processor Cooled X AMD, IBM, Cyrix, SGS & Intel CPUs X Windows '95 Keyboard X 3 Button Mouse X 14" NILR .28 SVGA Monitor 1024x768 (3yrs onsite warranty) 	<p style="text-align: center;">Level 2</p> <table border="0"> <tr><td>SGS 166</td><td>£369.00</td><td>£433.61</td></tr> <tr><td>Cyrix 200MX</td><td>£379.00</td><td>£445.36</td></tr> <tr><td>Cyrix 233MX</td><td>£389.00</td><td>£457.11</td></tr> <tr><td>Cyrix 266MX</td><td>£489.00</td><td>£574.60</td></tr> <tr><td>AMD K6 200</td><td>£379.00</td><td>£445.36</td></tr> <tr><td>AMD K6 233</td><td>£399.00</td><td>£468.86</td></tr> <tr><td>AMD K6 266</td><td>£435.00</td><td>£511.16</td></tr> <tr><td>AMD K6 300</td><td>£495.00</td><td>£581.66</td></tr> <tr><td>Intel 200MMX</td><td>£399.00</td><td>£468.86</td></tr> <tr><td>Intel 233MMX</td><td>£419.00</td><td>£492.32</td></tr> </table>	SGS 166	£369.00	£433.61	Cyrix 200MX	£379.00	£445.36	Cyrix 233MX	£389.00	£457.11	Cyrix 266MX	£489.00	£574.60	AMD K6 200	£379.00	£445.36	AMD K6 233	£399.00	£468.86	AMD K6 266	£435.00	£511.16	AMD K6 300	£495.00	£581.66	Intel 200MMX	£399.00	£468.86	Intel 233MMX	£419.00	£492.32	<table border="0"> <tr><th>Ex. Vat</th><th>Inc. Vat</th></tr> <tr><td>£369.00</td><td>£433.61</td></tr> <tr><td>£379.00</td><td>£445.36</td></tr> <tr><td>£389.00</td><td>£457.11</td></tr> <tr><td>£489.00</td><td>£574.60</td></tr> <tr><td>£379.00</td><td>£445.36</td></tr> <tr><td>£399.00</td><td>£468.86</td></tr> <tr><td>£435.00</td><td>£511.16</td></tr> <tr><td>£495.00</td><td>£581.66</td></tr> <tr><td>£399.00</td><td>£468.86</td></tr> <tr><td>£419.00</td><td>£492.32</td></tr> </table>	Ex. Vat	Inc. Vat	£369.00	£433.61	£379.00	£445.36	£389.00	£457.11	£489.00	£574.60	£379.00	£445.36	£399.00	£468.86	£435.00	£511.16	£495.00	£581.66	£399.00	£468.86	£419.00	£492.32
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Ultimate PII Power Pro

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Ex. Vat	Inc. Vat											
£49.00	£57.58											
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£62.00	£72.85											

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C200AK6	£45.00	£52.65
C233A	£45.00	£52.65
INTEL	Exc. Vat	Inc. Vat
C166I	£45.00	£52.65
C166MMX	£45.00	£52.65
C200MMX	£45.00	£52.65
C233MMX	£45.00	£52.65
C233P2	£45.00	£52.65
C266P2	£45.00	£52.65
C300P2	£45.00	£52.65
C333P2	£45.00	£52.65
C350P2	£45.00	£52.65
C400P2	£45.00	£52.65
CYRIX	Exc. Vat	Inc. Vat
C200MX	£45.00	£52.65
C200MMX	£45.00	£52.65
C233MMX	£45.00	£52.65
SGS THOMSON	Exc. Vat	Inc. Vat
C166ST	£45.00	£52.65
C200W	£45.00	£52.65

	Exc. Vat	Inc. Vat
HD12S	£69.00	£81.08
HD17S	£69.00	£81.08
HD21S	£75.00	£88.13
HD21SU	£79.00	£92.83
HD32SU	£89.00	£104.58
HD43SU	£99.00	£116.33
HD64SU	£125.00	£146.88
HD21QFB	£85.00	£99.88
HD32QS	£95.00	£111.63
HD43QS	£105.00	£123.38
HD84QFB	£165.00	£193.88
HD43QBF	£89.00	£104.58
HD65QBF	£135.00	£158.63
HD64QS	£129.00	£151.59
NEW	£145.00	£170.58
NEW	£189.00	£222.08
HD1M	£67.00	£78.73
HD13M	£75.00	£88.13
HD21M	£85.00	£99.88
HD52M	£135.00	£158.63
HD64M	£119.00	£139.83
HD7M	£169.00	£198.58
HD84M	£169.00	£198.58
HD17F	£69.00	£81.08
HD21F	£75.00	£88.13
HD26F	£89.00	£104.58
HD35F	£89.00	£104.58
HD43F	£99.00	£116.33
HD52F	£115.00	£135.13
HD65F	£129.00	£151.58

	Exc. Vat	Inc. Vat
CD9M	£29.00	£34.08
CD16H	£29.00	£34.08
CD16G	£32.00	£37.60
CD24C	£35.00	£41.13
CD24P	£37.00	£43.48
CD24PI	£37.00	£43.48
CD24A	£32.00	£37.60
CD24G	£38.00	£44.65
CD24E	£45.00	£52.88
CD32G	£45.00	£52.88
CD32PI	£45.00	£52.88
CD32T	£42.00	£49.35
CD32PH	£38.00	£44.65
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CDRM26	£185.00	£217.38
CDRM28	£165.00	£193.88
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Motherboards from £19 + Vat

	Exc. Vat	Inc. Vat
M100-V	£19.00	£22.33
M101	£35.00	£41.13
M102	£37.00	£43.48
M103	£45.00	£52.88
M106A	£37.00	£43.48
M92-TXPA	£45.00	£52.88
M250	£65.00	£76.38
M111AA	£49.00	£57.58
M255LX-VC	£75.00	£88.13
M92-TXG	£59.00	£69.33
M130	£69.00	£81.08
M199	£79.00	£92.83
NEW	£159.00	£186.83
NEW	£99.00	£116.33
M150	£59.00	£69.33
M160	£69.00	£81.08
M200LXM	£229.00	£269.08
M300MLX	£99.00	£116.33
M200LX	£89.00	£104.58
M200LXA	£99.00	£116.33
ATREND	£55.00	£64.63
ATREND	£75.00	£88.13

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	Exc. Vat	Inc. Vat
VC09	£12.99	£15.26
VC16	£11.00	£12.93
VC21	£18.00	£21.15
VC20	£19.00	£21.33
VC22	£21.00	£24.68
VC40	£21.00	£24.68
VC41	£27.00	£31.73
VC45	£33.00	£38.78
VC-250	£69.00	£81.08
VC90	£99.00	£116.33
VC91	£75.00	£88.13
VC92	£69.00	£81.08
VC210	£85.00	£99.88
NEW	£35.00	£41.13
NEW	£Call	£Call
VC-101	£52.00	£61.10
VC-151	£79.00	£92.83
VC-158	£109.00	£128.08
VC-130	£99.00	£116.33
VC-135	£49.00	£57.58
VC155	£75.00	£88.13
VC160	£119.00	£139.83
VC82	£69.00	£81.08
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VC87	£69.00	£81.08
VC88	£89.00	£104.58
VC-180	£69.00	£81.08
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NEW	£139.00	£163.33
VC200OEM	£129.00	£151.58
VC200	£139.00	£163.33
VC201OEM	£149.00	£175.08
VC201	£159.00	£186.83
VC500	£49.99	£58.74
VC600	£119.00	£139.83
VC60	£35.00	£41.13
VC62	£35.00	£41.13
VC89	£79.00	£92.83
VC65	£115.00	£135.13
VC66	£125.00	£146.88
VC62	£105.00	£123.38
VC63	£115.00	£135.13

Fax Modems from £24 + Vat

	Exc. Vat	Inc. Vat
FM33GI	£35.00	£41.13
FM30	£42.00	£49.35
FM40	£49.00	£57.58
FM41	£49.00	£57.58
FM56	£45.00	£52.88
FM57	£69.00	£81.08
FM58	£69.00	£81.08
FM35	£35.00	£41.13
FM33MI	£24.00	£28.20

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	Exc. Vat	Inc. Vat
SP30	£6.99	£9.39
SP160S	£16.00	£18.80
SF200S	£16.00	£18.80
SPI20W	£14.00	£16.45
SP240W	£19.99	£23.49
SP300	£29.00	£34.08
SP25Y	£49.00	£57.58

Input Devices

	Exc. Vat	Inc. Vat
M102	£2.50	£2.94
M103	£3.50	£4.11
M110	£6.00	£7.05
M120	£14.00	£16.45
K50	£10.00	£11.75
K10	£5.99	£7.04
K15	£6.99	£8.21
K55	£44.00	£51.70
K33	£7.99	£9.39
K65	£19.99	£23.49
K70	£19.99	£23.49

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	Exc. Vat	Inc. Vat
UP40	£96.00	£112.80
UP50	£99.00	£116.33
UP60	£115.00	£135.13
UP70	£119.00	£139.83
UP80	£139.00	£163.33
UP90	£99.00	£116.33
UP100	£105.00	£123.38
UP110	£115.00	£135.13
PII Upgrade Kits - Motherboard CPU Heatsink & fan	Exc. Vat	Inc. Vat
UP200	£194.00	£227.95
UP266	£238.00	£279.65
UP310	£Call	£Call
UP330	£439.00	£515.83

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	Exc. Vat	Inc. Vat
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PR60	£105.00	£123.38
PR61	£144.00	£169.20
PR100	£179.00	£210.33
PR26	£75.00	£88.13
PR34	£109.00	£128.08
PR35	£129.00	£151.58
PR40	£149.00	£175.08
PR37	£189.00	£222.08

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	Exc. Vat	Inc. Vat
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MO15HO	£115.00	£135.13
MO15H	£125.00	£146.88
MO15HS	£129.00	£151.58
MO17HO	£225.00	£264.38
MO17H	£255.00	£299.63
ADI	Exc. Vat	Inc. Vat
MO14A	£99.00	£116.33
MO15A	£145.00	£170.38
MO17A	£229.00	£269.08
MO17AT	£305.00	£358.38
MO17XA	£339.00	£398.33
MO19A	£479.00	£562.83
MO21A	£729.00	£856.58
Targa	Exc. Vat	Inc. Vat
MO14T	£82.00	£96.35
MO15T	£109.00	£128.08
MO17T	£209.00	£245.58
TV Cards	Exc. Vat	Inc. Vat
TV10	£69.00	£81.08
TV11	£85.00	£99.88
TV20	£59.00	£69.33

Memory

	Exc. Vat	Inc. Vat
ME4-2C	£4.99	£5.86
ME8-4C	£9.99	£11.76
ME16-8C	£19.99	£23.52
ME32-16C	£39.99	£47.04
ME4-2CE	£4.99	£5.86
ME8-4CE	£9.99	£11.76
ME16-8CE	£19.99	£23.52
ME32-16CE	£39.99	£47.04
ME32SD	£25.00	£29.38
ME32SD	£27.00	£31.73
ME64SD	£55.00	£64.63
ME64SDE	£59.00	£69.33

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	Exc. Vat	Inc. Vat
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SO45	£14.00	£16.45
SO21	£12.00	£14.10
SO70	£25.00	£29.38
SO25	£12.00	£14.10
SO02	£9.00	£10.58
SO12	£22.00	£25.85
SO64V	£39.00	£45.83
SO64G	£105.00	£123.38

Network Products

	Exc. Vat	Inc. Vat
NC09	£12.00	£14.10
NC20	£15.00	£17.63
NET-T	£1.00	£1.18
NET-TP	£2.00	£2.35
NET-CABLE	£19.00	£22.33
NET-CABLE	£0.75	£0.88
NET-CP	£1.00	£1.18

Scanners from £49 + Vat

	Exc. Vat	Inc. Vat
SCAN20	£49.00	£57.58
SCAN50	£69.00	£81.08
SCAN51	£59.00	£69.33
SCAN60	£49.99	£58.74
SCAN70	£79.00	£92.83

Backup Devices from £59 + Vat

	Exc. Vat	Inc. Vat
ZIP200	£59.00	£69.33
ZIP100	£82.00	£96.35
ZIP300	£105.00	£115.13

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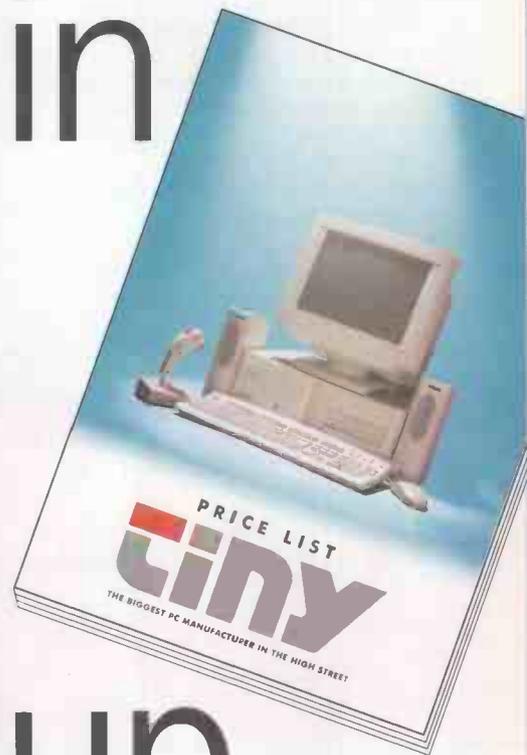


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- Midi Tower Case with 3 x 5.25" & 4 x 3.5" drivebays
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- Voice Fax /Modem 56Kbps (56k flex) with **Free** BT LineOne Internet Access
- 1.44MB FDD • 2 USB Ports • Joystick
- **New** PS2 Instant Access Keyboard
- Microsoft® Intellimouse™ with "Zoom & Scroll" button



SOFTWARE INCLUDED

MICROSOFT FAMILY '98:

- MS Works 4.5 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia) • MS CD Sampler
- MS Money '98 (Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

HOME ENTERTAINMENT SOFTWARE:

- Bodyworks • Kitchen Gourmet • Design IT! 3D
- The Oregon Trail • Home Gardener • Typing Teacher
- Reading Journey • Berlitz French

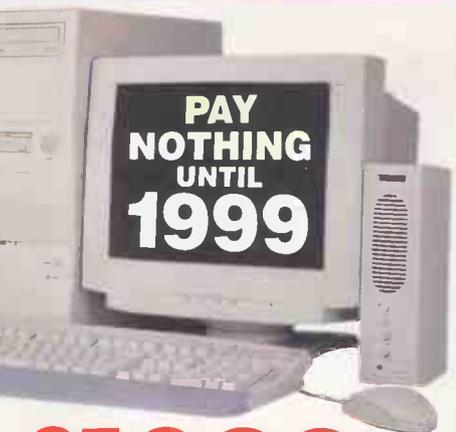
DORLING KINDERSLEY:

- Childrens Encyclopaedia • The Way Things Work 2
- Encyclopaedia of Science 2 • Encyclopaedia of Nature 2
- Childrens Dictionary

AGP GAMES:

- G Police • Redline Racer • Jazz Jackrabbit 2

- Windows 95 • Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £820 of Microsoft and Other Software to include:
 - Microsoft Family '98
 - Home Entertainment Software
 - Dorling Kindersley Educational Software
 - Arcade Quality Games
- 12 Months Collect & Return Parts & Labour Warranty



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REPAYMENT EXAMPLE

PC cash price £1314.82 (Inc. Delivery £20.00 + VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £64.21. Total amount payable £2311.56 APR 26.9%. Interest calculated from day one of the agreement. Written quotations upon request. Finance subject to status.

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17 Wellington Place (next to BT shop)

BIRMINGHAM
79 Smallbrook Queensway (Nr New Street BR)

BOLTON
The Gates Centre (Upstairs next to Boots)

BRIGHTON
40 London Rd, (opp Co-op Dept store)

BRISTOL
Union Gallery, The Galleries Shopping Centre, Broadmead

BROMLEY
185 High Street (2 mins from Cinema)

CAMBRIDGE
1 Emmanuel Street (Next to NatWest, opp Robert Soyle)

CANTERBURY
6 Iron Bar Lane (Thru pathway opp M&S)

CARDIFF
91 St. Mary St, (Heol Eglwys Fair) opp Morgan Arcade

CHELMSFORD
3 Market Road, (opp County Hall)

CHELTENHAM
Regent Arcade, Regent Street

CHESTER
82 Northgate Street (opp Odeon Cinema)

COVENTRY
19 Shelton Square (nr Market Hall)

CRAWLEY
County Mall (next to Robert Dyas)

CROYDON
15 St. Georges Walk, Croydon (opp Winfields)

EALING
4 Central Buildings (opposite Ealing Broadway Station)

EDINBURGH
Cathedral Mall, St. James Centre

EXETER
22 Bedford Street (opp Main Post Office)

GLASGOW
52 Queen Street (beside St. George's Sq)

GLOUCESTER
12 Bell Walk, Eastgate Centre

GUILDFORD
The Friary Shopping Centre (rear of HMV)

HUDDERSFIELD
14 The Shambles (opp BHS)

HULL
Princes Quay Shopping Centre

ILFORD
Mid Level, The Exchange Centre (nr C&A)

IPSWICH
Tower Ramparts Centre (next to Top Man)

KINGSTON
8 Castle Street (off Clarence Street)

LAKESIDE
Lakeside Shopping Centre (opp Midland Bank)

LEEDS
Theatre Walk (Top Floor), The Headrow Centre

LEICESTER
9 Belgrave Gate, (nr Clock Tower) Haymarket Centre

LINCOLN
Waterside Shopping Centre (next to Partners)

LIVERPOOL
71 Bold Street (opp Forbidden Planet)

LONDON W1
Sonic Foto Centre, 256 Tottenham Court Rd

LONDON SW10
300 Fulham Road, Chelsea (nr Finborough Rd)

LONDON EC2
Liverpool Street Arcade, Liverpool Street (opp BR)

LUTON
Ardale Centre

MANCHESTER
Piccadilly Plaza (nr Mosley Street Tram stop)

MANCHESTER
Ardale Centre (Voyager's Walk)

MILTON KEYNES
Silbury Boulevard (next to Games Workshop)

NEWCASTLE
High Friars, (next to WH Smith) Eldon Square

NEWPORT
Kingsway Centre

NORTHAMPTON
42 Princes Walk (near Morrel's Cafe)

NORWICH
15 Westgate (opp McDonald's)

NOTTINGHAM
Upper Mall, (Next to Boots), The Victoria Centre

OXFORD
2 King Edward Street (off High Street by Oddbins)

PETERBOROUGH
Rivergate Centre (Rivergate Arcade, nr Asda)

PLYMOUTH
106 Cornwall Street

READING
Broad Street Mall, (Upper Level - opp Food Court)

ROMFORD
Liberty Shopping Centre

SHEFFIELD
31 Market Street, Meadowhall (opp. C&A)

SHREWSBURY
Pride Hill Centre

SOLIHLULL
23 Drury Lane (in Mell Sq)

SOUTHAMPTON
The Bargate Shopping Centre (Ground Floor)

STOKE
49 Parliament Row, Hanley (corner of Old Hall Street)

SUTTON
St. Nicholas Centre

SWANSEA
48 Kingsway

SWINDON
Brunel Centre (Above + opp M&S)

TUNBRIDGE WELLS
18 Camden Road (behind Royal Victorian Centre)

WATFORD
42 Charter Place (Upper Level - opp C&A)

WOLVERHAMPTON
Mander Centre (off Mander Sq)

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† Industry standard practice is to measure monitors using CRT size. Actual viewing area can be approx 1.2" less.

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- Intel Pentium 430TX PCiset with AGP and MMX technology 200MHz
- 32MB High Performance SDRAM
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- 1.44MB Floppy Disk Drive
- 17" Colour SVGA Monitor
- 4 PCI and 3 ISA
- 24X CD-ROM Drive
- 16-bit Sound Card and Speakers
- Mid-Sized ATX Tower Chassis
- 56KB Internal Modem

From **£699** (Inc. Delivery & VAT)

- Intel Pentium 430TX PCiset with AGP and MMX technology 233MHz
- 32MB High Performance SDRAM
- 4.3GB Ultra DMA HDD
- 3D GX 64-bit PCI Graphics Card with 4Mb
- 1.44MB Floppy Disk Drive
- 17" Colour SVGA Monitor
- 4 PCI and 3 ISA
- 24X CD-ROM Drive
- 16-bit Sound Card and Speakers
- Mid-Sized ATX Tower Chassis
- 56KB Internal Modem

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- Cyrix AMD 430TX PCiset with AGP and MMX technology 233MHz
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- 1.44MB Floppy Disk Drive
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- 4 PCI and 3 ISA
- 24X CD-ROM Drive
- 16-bit Sound Card and Speakers
- Mid-Sized ATX Tower Chassis
- 56KB Internal Modem

From **£1059** (Inc. Delivery & VAT)

- Intel Pentium II Processor 440LX with MMX technology 300MHz
- 32MB High Performance SDRAM
- 4.3GB Ultra DMA HDD
- 4Mb AGP Graphic Card
- 1.44MB Floppy Disk Drive
- 17" Colour SVGA Monitor
- 4 PCI and 3 ISA
- 24X CD-ROM Drive
- 16-bit Sound Card and Speakers
- Mid-Sized ATX Tower Chassis
- 56KB Internal Modem

From **£1250** (Inc. Delivery & VAT)

- Intel Pentium II Processor 440LX with MMX technology 333MHz
- 32MB High Performance SDRAM
- 4.3GB Ultra DMA HDD
- 4Mb AGP Graphic Card
- 1.44MB Floppy Disk Drive
- 17" Colour SVGA Monitor
- 4 PCI and 3 ISA
- 24X CD-ROM Drive
- 16-bit Sound Card and Speakers
- Mid-Sized ATX Tower Chassis
- 56KB Internal Modem

From **£1449** (Inc. Delivery & VAT)

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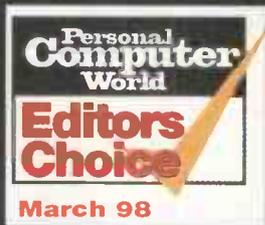
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From the people who have been at the forefront of mobile and handheld technology for the last decade, PICO Laptops are packed with the latest technology offering unbeatable value backed by exceptional support services. Spec for spec, you won't find better. We do this by talking to you directly - no resellers, no dealers and no distribution channels.

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THE LEADING LIGHT IN MOBILE TECHNOLOGY

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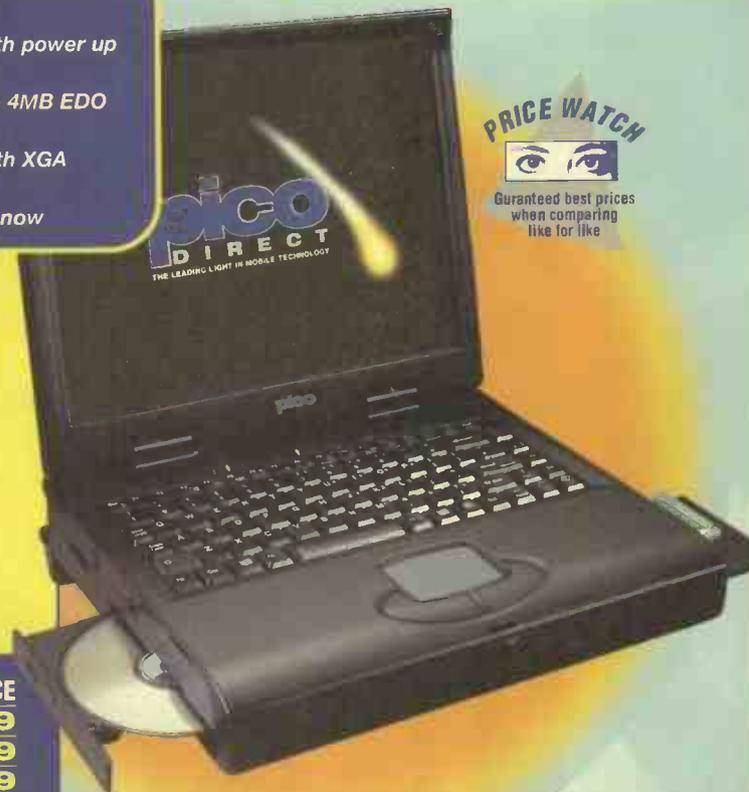
- Upgradeable to Intel Pentium 233 MMX
- XGA, TFT 13.3"/14.1" Active matrix screen up to 1024x768 resolution
- 32MB EDO RAM upgradeable to 128MB, 512 KB cache
- 3.5" (1.44MB) floppy disk drive
- Removable interchangeable 2.1GB Hard Disk
- 4MB EDO graphics card
- External Monitor Port, Supports 1280x1024
- A4 size Windows 95 keyboard
- Built-in 20 Speed CD ROM
- 16Bit Wavetable Sound System with Stereo Speakers and Microphone
- IrDA and FIR Infrared technology
- Built-in Trackpad for ease of use

- 512KB cache, 20 speed CD-ROM for instant response
- Quicker processing with power up to 233MHz MMX
- Amazing graphics with 4MB EDO video
- Crystal clear image with XGA resolution
- 14.1" Screen available now

- Lilon Battery for additional battery time
- MPEG for live video and CDI as standard
- Delux carry case with additional compartments for accessories
- 2 x PCMCIA slots, 2 x Type II or 1 x Type III
- TV Output, Video and ZV port
- 3 Year support plan
- Line in jacks, headphone jack
- Serial Port, Parallel Port MIDI and dual USB Ports
- 323(w) x 263.5(d) x 58mm
- Weight 4.1Kg

Machines come configured with 2.1GB Hard Disk, 32MB EDO RAM, MPEG and Litium Ion Battery

MODEL	PROCESSOR	SCREEN	PRICE
76200	Intel P200MHz MMX	13.3" TFT XGA	£1299
76233	Intel P233MHz MMX	13.3" TFT XGA	£1329
76200	Intel P200MHz MMX	14.1" TFT XGA	£1399
76233	Intel P233MHz MMX	14.1" TFT XGA	£1429



PRICE WATCH

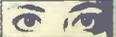


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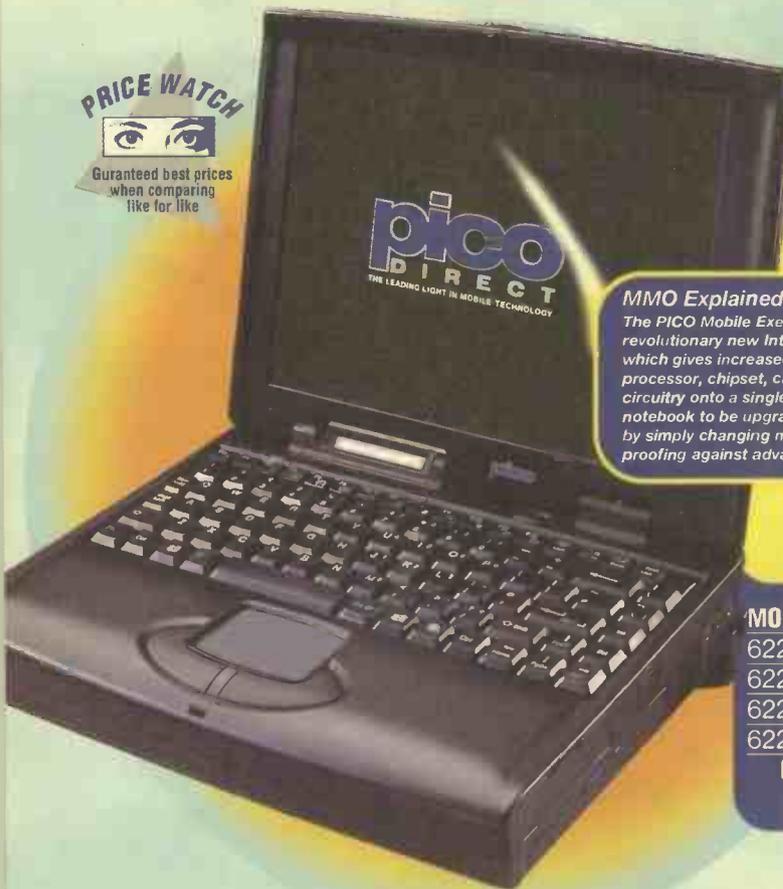
PAY NOTHING TILL DECEMBER 98 ON ALL PICO NOTEBOOKS

SEE FINANCE SECTION FOR DETAILS

PRICE WATCH



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pico MOBILE EXECUTIVE

On-Site



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MMO Explained

The PICO Mobile Executive now features the revolutionary new Intel Mobile Module (MMO) which gives increased longevity by integrating a processor, chipset, cache and other electrical circuitry onto a single chip. This allows the notebook to be upgradeable to a faster processor by simply changing modules which ensures future proofing against advances in technology.

- Upgradeable to Intel Pentium 233 MMO
- SVGA 12.1" TFT OR 12.1" DSTN colour screen
- 32MB EDO RAM upgradeable to 72MB
- Built-in 20 speed CD ROM & 3.5" Floppy Disk Drive
- 512KB Cache
- 2MB Graphics card, Windows accelerator
- TV output, Serial/Parallel port
- Built-in sound card and speakers
- IRDA port, supports 1280x1024 to external monitor
- 3 year support plan
- Carry case

Machines come as standard with 2.1GB Hard Disk, 32MB EDO RAM, MPEG and Rechargeable Smart Battery

MODEL	PROCESSOR	12.1" TFT
62200MMX	Intel P200MMX	£949
62233MMX	Intel P233MMX	£979
62200MMO	Intel P200MMX MMO	£1299
62233MMO	Intel P233MMX MMO	£1349

Please call for PICO Mobile Professional and Executive accessories and options

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MOBILE DIPLOMAT

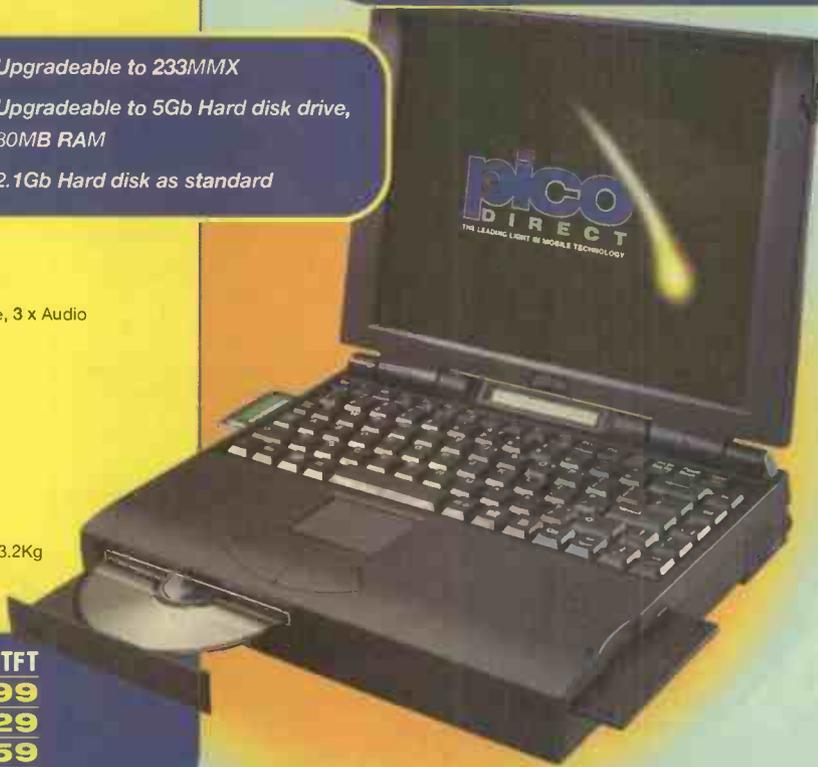


A brand name notebook, top quality components, ergonomic design with Intel CPUs from probably the largest notebook manufacturer in the world.

- Intel MMX Pentium upgradeable processor
- 48MB EDO RAM expandable to 80MB
- 256KB Level 2 Pipeline Burst Cache RAM
- 2MB EDO Video RAM
- 2.5" 2.1GB removable HDD
- 3.5" 1.44MB Floppy
- 20 speed CD-ROM
- Built-in 16-bit stereo sound system, Soundblaster Pro compatible
- PCMCIA slots: 2 x Type II or 1 x Type III & 1 x Type II
- Built-in Trackpad mouse module
- Smart rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- Serial Parallel & PS2 Ports
- Monitor & MIDI Ports
- Docking station port
- IrDA Port
- Windows 95 keyboard
- Carry Case
- 299mm x 232mm x 54.4mm. 3.2Kg

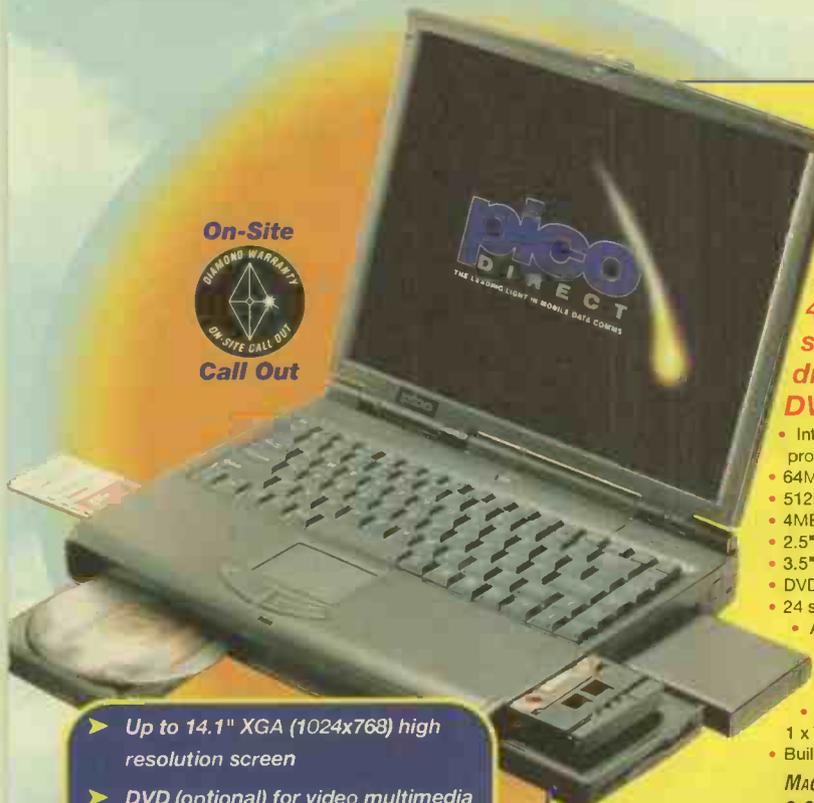
Machines come as standard with Intel MMX Processor, 2.1GB Hard Disk, 48MB RAM and 20 speed CD-ROM

- Upgradeable to 233MMX
- Upgradeable to 5Gb Hard disk drive, 80MB RAM
- 2.1Gb Hard disk as standard



PICO NOTEBOOKS

MODEL	PROCESSOR	12.1" DSTN	12.1" TFT
87-166	Intel P166MMX	£799	£899
87-200	Intel P200MMX	£829	£929
87-233	Intel P233MMX	£859	£959



PGA or MMO Intel processors, designed with Intel 430TX core logic chipset. Large and comfortable 13.3"/14.1" TFT LCD screens, 4MB SGRAM and 512KB cache with Dual video support, 20/24 CD-ROM drive with optional DVD drive. Second battery option or Zip drive. ATAPI DVD Interface and ACPI BIOS support.

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MOBILE ENVOY

- Intel PGA or MMO upgradeable processors
- 64MB SDRAM expandable to 128MB
- 512KB Level 2 Pipeline Burst Cache RAM
- 4MB SGRAM, Dual view
- 2.5" 3.2GB removable HDD
- 3.5" 1.44MB Floppy
- DVD/Zip drive options
- 24 speed CD-ROM drive
 - ATAPI interface, ACPI BIOS support
 - Built-in Wavetable stereo sound card, Supports 3D Audio, Windows compatible
 - PCMCIA slots: 2 x Type II or 1 x Type III
- Built-in Trackpad mouse module
- Smart rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- Internal TFT screen 1024x768 resolution
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- 1 x Serial 16C550, Parallel & PS2 Ports
- Monitor & MIDI Ports
- USB - Universal Serial Bus Port
- Docking station port
- IrDA Port version 1.1
- Windows 95 keyboard
- Carry Case
- 324mm x 258mm x 52mm. 3.2Kg

- Up to 14.1" XGA (1024x768) high resolution screen
- DVD (optional) for video multimedia applications
- MPEG II module allows DVD movies to come alive

MACHINES COME AS STANDARD WITH INTEL MMX PROCESSOR, 3.2GB HARD DRIVE, 64MB RAM, & 24 SPEED CD-ROM

MODEL	PROCESSOR	12.1" TFT	13.3" XGA	14.1" XGA
90-166	Intel P166 MMX	£1099	£1199	£1299
90-200	Intel P200 MMX	£1129	£1229	£1329
90-233	Intel P233 MMX	£1159	£1259	£1359
90-200	Intel P200 MMO	£1359	£1459	£1559
90-233	Intel P233 MMO	£1399	£1499	£1599

Please Call for DVD with MPEG II Version Pricing



TEL: 01483 402 111 FAX: 01483 402 112

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MON - FRI 8:30AM - 6PM, SAT 10AM - 1PM Shop On-Line, 24 Hours at: www.picodirect.co.uk

pico MOBILE PRESIDENT

- Incorporating Intel's MMO & Pentium II CPU options
- 16 bit crystal audio chip with 3D stereo sound
- Increased battery life with Lilon 45W battery

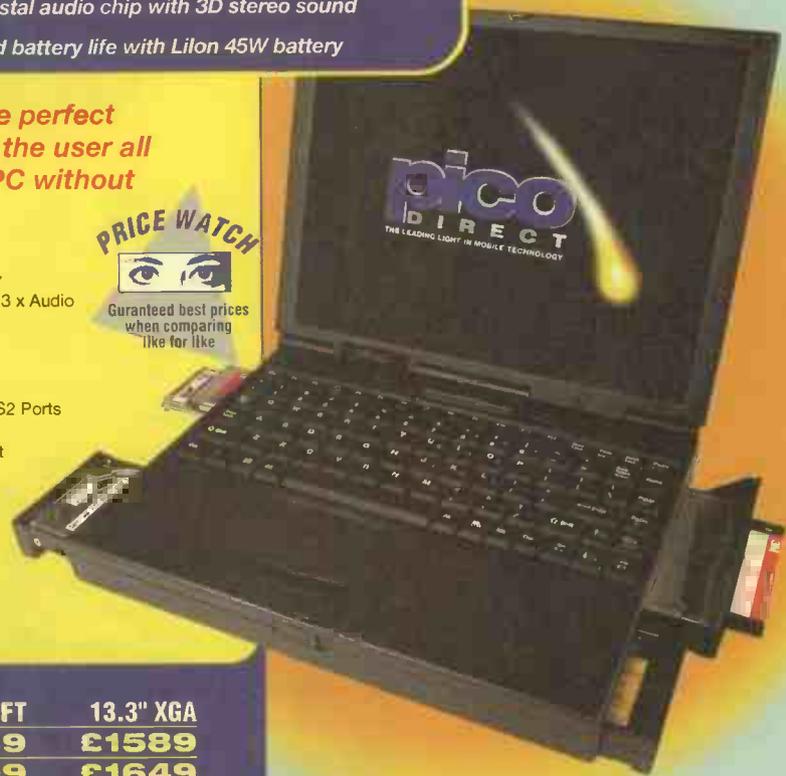
The PICO Mobile President is, in our opinion, the perfect solution for the executive on the move. It offers the user all the performance they demand from a desktop PC without compromise.

- Intel MMO or Pentium II processor options - upgradeable to 266Mhz
- 48MB SDRAM expandable to 144MB
- 512KB Level 2 Pipeline Burst Cache RAM
- NeoMagic (2160) 128bit graphics card
- 3.2GB removable HDD
- 3.5" 1.44MB Floppy
- DVD/Zip drive options
- 24 speed CD-ROM drive
- Built-in 16bit crystal (CS4237B) wavetable audio chip with SRS 3D stereo sound
- PCMCIA slots: 2 x Type II or 1 x Type III, Card bus ready
- Built-in Synaptic Trackpad mouse module
- Lilon 45W rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- 1 x Serial 16C550, Parallel & PS2 Ports
- Monitor & MIDI Ports
- USB - Universal Serial Bus Port
- Docking station port
- IrDA Port version 1.1
- Windows 95 keyboard
- Carry Case
- Windows 95

PRICE WATCH



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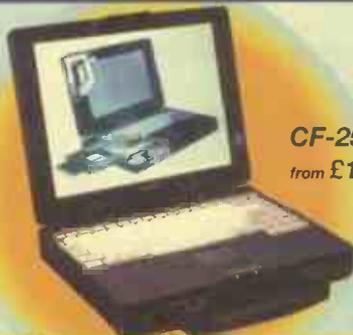
MACHINES COME AS STANDARD WITH 3.2GB ULTRA DMA HARD DRIVE, 48MB SDRAM, & LITHIUM ION BATTERY

MODEL	PROCESSOR	12.1" TFT	13.3" XGA
1200	Intel P200 MMO	£1439	£1589
1233	Intel P233 MMO	£1499	£1649
1266	Intel P266 MMO	£1599	£1749
1233P2	Intel PII 233	£1649	£1799
1266P2	Intel PII 266	£1799	£1999

**PAY NOTHING TILL
DECEMBER 98
ON ALL NOTEBOOKS**

SEE FINANCE SECTION FOR DETAILS

PANASONIC



CF-25 MKIII
from £1979+vat



CF-35 from
£1949+vat



CF-63 from
£3449+vat

Built for the mobile environment; dust proof, splash proof, shock proof and a magnesium alloy case.

- Max RAM 72MB
- 1 or 2 MB VRAM
- PC-Card - 3 x II or 1 x Type II and III
- Optional internal 10 speed CD ROM

Uncompromised performance at only 4.9lbs and 1.5" height.

- Max RAM 80MB
- 9 MBits VRAM
- Optional internal 10 speed CD ROM
- TouchPad
- Li-ion Battery
- Optional Hardware MPEG
- PC-Card - 2xII or 1x Type III

The ultimate multimedia notebook.

- Max RAM 80MB
- 2MB VRAM
- Integral FDD and CD-ROM
- TouchPad
- Li-ion Battery
- Optional Hardware MPEG
- PC-Card - 2xII or 1x Type III

MODEL	PROCESSOR	RAM	HDD	SCREEN	PRICE
CF25 LGC4	166MMX	16MB	1.4GB	10.4"	£1885
CF25 LJF8	166MMX	32MB	2.1GB	12.1"	£2459
CF63DVD	166MMX	32MB	3.2GB	13.3" XGA	£2869
CF35 PJJ8	266MMX	32MB	3.0GB	12.1" TFT	£2295

OPTION AND UPGRADE PRICES FOR PICO NOTEBOOKS

2.1GB HDD to 3.2GB HDD	CALL	Upgrade 32MB to 128MB RAM	CALL	Diplomat docking station	£299	Zi-Fi amplified speakers	£29
3.2GB HDD to 4.2GB HDD	£100	External 102 style keyboard	£20	Executive docking station	£299	External SVGA monitor	£129
4.2GB HDD to 6.1GB HDD	£199	MS Office Pro 97	£149	Executive port replicator	£95	Additional battery	£75
Upgrade 32MB to 64MB RAM	CALL	Windows 95 manuals and disks	£50	Car adaptors	£45		

pico MOBILE AMBASSADOR

For the power user who wants to be one step ahead of the rest, this range of notebooks combines the latest notebook technology and design, this notebook is the most portable 13.3" version in our range yet still provides a completely upgradeable system that will provide years of use and great value for money.

- Intel MMX Pentium upgradeable processors
- 48MB EDO RAM expandable to 144MB
- 256KB Level 2 Pipeline Burst Cache RAM, 128bit PCI
- 2MB EDO Video RAM
- 2.5" 2.1GB removable HDD
- 3.5" 1.44MB Floppy
- 20 speed CD-ROM drive
- Built-in 16-bit stereo sound system, Soundblaster Pro compatible
- PCMCIA slots: 2 x Type II or 1 x Type III
- Built-in Trackpad mouse module
- Smart rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- Serial Parallel & PS2 Ports
- Monitor & MIDI Ports
- USB - Universal Serial Bus Port
- Docking station port
- IrDA Port
- Windows 95 keyboard
- Carry Case
- 314mm x 244mm x 59.5mm. 3.7Kg

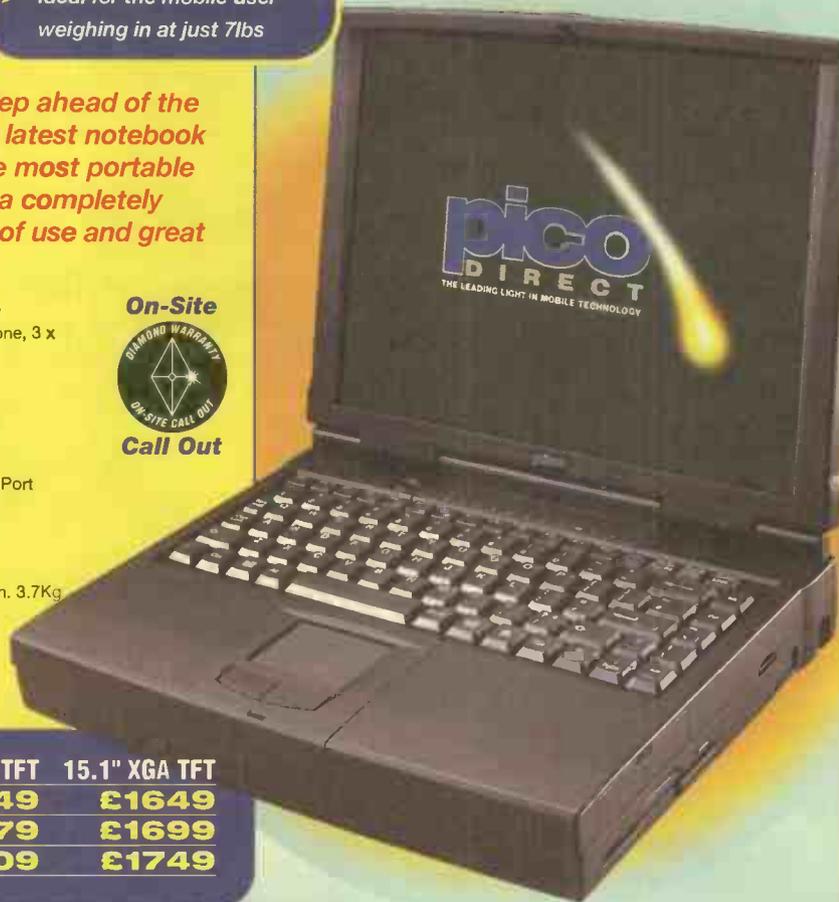
MACHINES COME AS STANDARD WITH INTEL MMX PROCESSOR, 2.1GB HARD DRIVE, 48MB RAM, & 20 SPEED CD-ROM

- 13.3" XGA (1024x768) high resolution screen
- Excellent value for money
- Ideal for the mobile user weighing in at just 7lbs

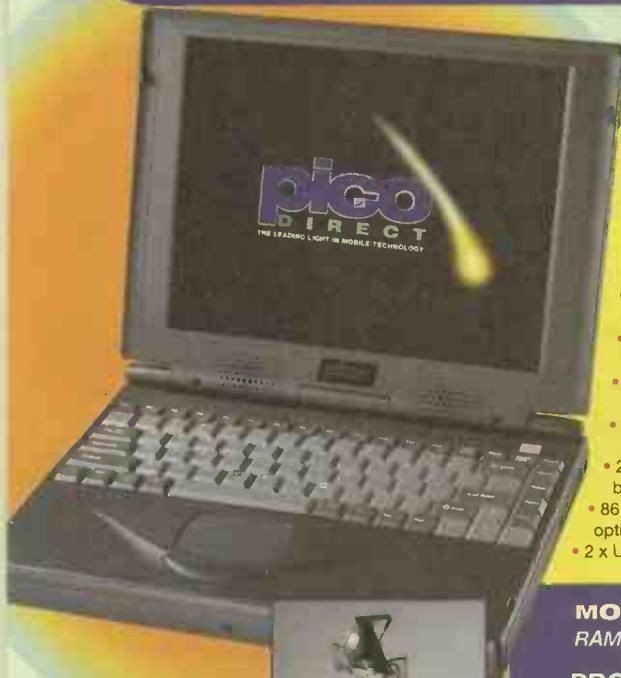
On-Site



Call Out



MODEL	PROCESSOR	12.1" TFT	13.3" XGA TFT	15.1" XGA TFT
88-166	Intel P166 MMX	£999	£1149	£1649
88-200	Intel P200 MMX	£1029	£1179	£1699
88-233	Intel P233 MMX	£1059	£1209	£1749



Take your presentation on the road! A notebook incorporating a built-in panel for overhead projector presentations

pico SHOWMAN PRO

- In-built TFT overhead projector tablet with 12.1" SVGA
- Intel CPU upgradeable from P133 to P233MMX multimedia
- 128bit Video graphics with MPEG as standard for full screen video presentation
- 32MB SDRAM as standard expandable to 128MB
- 20 Speed CD ROM built-in with 3.5" 1.44MB floppy drive
- 2.1GB Hard Drive upgradeable to 3GB and beyond
- 86 key Win '95 keyboard with multi language options
- 2 x USB, serial, IrDA, CRT, parallel ports
- PS2 KB & mouse port, docking slot, ZV port & card bus
- 512KB L2 Pipeline Burst Cache RAM
- PCMCIA slots: 2 x Type II or 1 x Type III
- 16 bit Crystal sound card with SRS 3D surround audio and speakers, headphone microphone line in & line out
- Autoswitching mains charger
- Smart battery
- Built-in touch pad
- Firm carry case with fan & stand
- TV NTSC output
- Slimline design: only 245 x 315 x 50mm & 3.3Kgs
- Full 3 year support plan
- Optional remote control device

MODEL 9600 - Prices for configurations of: 2.1GB Hard Drive, 32MB EDO RAM, CD ROM (INCLUDES BUILT-IN PROJECTION PANEL, FAN, STAND AND DELUX CARRY CASE)

PROCESSOR	12.1" TFT
Pentium 166MMX	£1699

PROCESSOR	12.1" TFT
Pentium 200MMX	£1749
Pentium 233MMX	£1849

ACCESSORY	PRICE
Logitech Infra Red Remote Control	£69
Portable 400W OHP Inc. Carry Case	£459
RAM Upgrade Per 32MB	£75
Extended Warranty per Year	£99
120MB Floppy Disk Drive	£199

ACCESSORY	PRICE
Port Replicator	£99
Lithium Battery	£99
Windows '95	£55
Car Adaptor	£45
Upgrade to 3GB HDD	£50



AUDIO VISUAL

CTX EZ SHOW



The 5 data & video projectors in the CTX range only weigh 4.5Kg, offering the simplest solution for the travelling executive and mobile presenter. They project at a brightness of 300-550 ANSI lumens for 'Lights On' presentations producing a 2 metre image at 2 metres distance. CTX EzShow projectors provide great resolutions & high definition images. The units will arrive 'ready-to-go' with hard carry case and a fully featured remote control.

ONLY 4.5KG

CTX EzShow 500 (640x480) 300ANSI 4.5Kg	£1115
CTX EzShow 550 (800x600) 300ANSI 4.5Kg	£1545
CTX EzShow 550M (800x600) 350ANSI 4.5Kg	£1975
CTX EzShow 700 (800x600) 550ANSI 5.5Kg	£3025

CTX 600

CTX have now released this high brightness 550 ANSI lumens data projector. Being very lightweight (12lbs) is supplied with a carry case and 2 year RTB warranty. 800x600 resolution it is the excellent companion for the brightest of mobile presentations.



200:1 CONTRAST RATIO

CTX600 (800 x 600) 550 ANSI 5.4Kg	£2735
CTX 680 (1024x768) 550 ANSI 5.4Kg	£4000

INFOCUS 720

The Infocus 720 is very portable at only 5kg. It has all the features for the future with 450 ANSI Lumens and true 800x600 resolution and the facility to compress to 1024x768 resolution. July 97 Editor's Choice PC Magazine.



Infocus 720 (800x600) 500 ANSI 5Kg	£3595
Infocus 730 (1024x768) 5Kg	£4595

INFOCUS 420

Lightweight at only 3.1Kg offering no compromise. 500 ANSI lumens and 800x600 resolution, it cannot be matched for portability and brightness and capable of running at 1024x768 resolution (intelligently compressed)



ONLY 3.1KG

Infocus 420 (800 x 600) 500 ANSI 3.1Kg	£3545
Infocus 1280 (1280x1024)	£13,995

PROXIMA DS1

The Proxima DS1 brings high brightness, 600 ANSI lumens, only 4.8Kg and 800x600 resolution, 16.7 million colours with the added benefit of a power zoom and Proxima's laser FX remote



NEW

DS1 (800x600) 600ANSI 4.8Kg	£3295
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HITACHI CPL850

The CPL850 (800x600 resolution) and CPL950 video data projectors have stunning brightness at 650 ANSI lumens, they are incredible in bright rooms. With polysilicon technology, both projectors will astound and add to every corporate presentation and training session. The other unique feature about these models is that they include 2 video and 2 VGA outputs.



650 ANSI

Hitachi CPL 850 (800x600) 650ANSI 7.5Kg	£2745
Hitachi CPL 950 (1024x768) 650ANSI 7.5Kg	£3795

EPSON

Epson offer a complete range of quality projectors - the new EMP5100 has an amazing brightness of 750 ANSI Lumens and can compress to 1024x768. The EMP7100 has true 1024 x 768 resolution providing high quality images at 650 ANSI lumens.



NEW EMP7300 1200 ANSI

Colours	16.7 million colours
Video	NTSC/PAL/SECAM
Weight	6.4Kg
Dimensions	24cm x 38cm x 15cm
Accessories	Remote mouse & soft carry case

EMP7300 (1024 x 768) 1200 ANSI	£7495
EMP5100 (1024x768) 650ANSI	£3575
EMP7100 (1024x768) 500ANSI	£4495

PICO PROJECTOR

With FREE 10MB Flash Card, this 500 ANSI Lumens, 5.5Kg, 800x600 resolution projector requires no computer for presentations! With 2000 hour lamp life it is the ultimate lightweight presentation solution delivered by PICO Direct.



PICO Projector (800x600) 500ANSI	£2495
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NEC MT820/1020

The NEC MT820 and MT1020 LCD projectors provide highly portable display solutions, sophisticated images and customizable controls, with high brightness.



200:1 CONTRAST RATIO

MT820 (800x600) 750 ANSI 7Kg	£3395
MT1020 (1024x768) 650ANSI 7Kg	£4695
LT80 (800x600) 600 ANSI 4.5Kg	£3195

HIRE OPTION for projectors starting from £75.00 per day

Up to 1 week of hire charges fully refundable against any projector purchase - The ultimate in try before you buy.

ASK A4+ & A6+

300:1 CONTRAST RATIO



5Kg

ASK have just upgraded the ASK A4 and A6 to the A4+ and A6+, continuing in their mission to produce the brightest and lightest projectors. The projectors now come with a massive 700 ANSI Lumens of power light and still have an incredibly high contrast ratio of 300:1 leaving your audience with a lasting impression. The ASK A4+ and A6+ include a power zoom, PC mouse control, reveal functions, 4 high output speakers and smooth video play.

ASK A4+ (800x600) 700 ANSI 5Kg	£3495
ASK A6+ (1024x768) 700 ANSI 5Kg	£4545
ASK 1280 (1280 x 1024) 5Kg	£8295

PROXIMA

The new Proxima 5800, 5900 and 9200 video and data projectors (6.4Kg) combine polysilicon technology with SVGA (800x600) resolution and 700 ANSI lumens to produce razor sharp images in well lit rooms. The 5800 comes with a motorised zoom lens giving you the flexibility to place it at almost any distance in the room. The Proxima models come with a 2000 hours lamp life.



POLYSILICON TECHNOLOGY

Proxima 9200 (1024x768) 500ANSI	£4395
Proxima 5800 (800x600)	£3095
Proxima 5900 (800x600) 700 ANSI	£3395

SANYO 5605

The Sanyo 5605 video and data projector combines polysilicon technology with 800x600 resolution and 700 ANSI lumens to produce razor sharp, brilliant images in well-lit rooms. The unit comes with a power focus zoom lens giving you flexibility to place it at any distance in the room.



POLYSILICON TECHNOLOGY

Sanyo 8805 (1024x768) 500 ANSI	£4245
Sanyo 5605 (700 ANSI)	£3395

OTHERS

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GSM Only £119



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GSM+33.6 £179

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- Type II PCCard

FirstFone £349



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Stores thousands of addresses, phone and fax numbers, hundreds of To-Do lists and personal notes and dozens of e-mail messages. The backlit screen lets you see it all easily.

- Seamless synchronisation with a desktop
- Find information instantly
- Long battery life
- Intuitive easy-to-use interface with accurate pen recognition
- Optional SnapOn GSM adaptor enables you to update your schedule, access your e-mail and synchronise all your data wherever you are



Slim Leather Case - £1
Delux Leather Case - £49
GSM Modem - £99
PSTN Modem £79

Professional - £165
Personal - £109

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Argosy CD-ROM	
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10 Speed	£204
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Actiontec SCSI	£89
APEX Data 33.6 Fax/Data modem	£99
Option 56.6 Fax/Data modem	£149
Socket Serial Card	£129
Greycell V.34 + Ethernet	£159

PSION SERIES 5

- Full VGA-width touch sensitive screen
- Backlight. Multiple zoom
- 2 x AA batteries give 1 month typical usage
- Connect to PCs, printers, modems and mobile phones
- Laptop style touch type keyboard
- Digital recording and playback of voice memos
- Compact Flash slot for extra memory
- Infra-red for wireless comms
- Wordprocessor, spreadsheet, time manager, database, sketch, calculator, world information.



BUNDLE OFFER
Series 5, 8MB
+ PSIWin +
8MB CFFlash
£419

Series 5 4MB with PsiWin -£319
Series 5 8MB with PsiWin -£349
3C 2MB Backlit -£219
3C 2MB -£249
3C 1MB -£225

Compact Flash 4MB	£49	Chess	£26
Compact Flash 8MB	£59	Beritz Interpreter	£39
Compact Flash 12MB	£64	Aluminium Desk Stand	£15
Compact Flash 16MB	£69	1MB Flash	£54
AC Adaptor	£20	2MB Flash	£79
128KB RAM	£39	4MB Flash	£159
512KB RAM	£99	Data View	£49
1MB RAM	£125	PalWin	£82
Leather Wallet	£20	Autroute	£57
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Mac Comms Link	£52	Telenote	£59
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- £129 of free software bundled



£179

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- Inclusive 3 year support plan
 - 1st year full parts and labour
 - 2nd and 3rd year labour free
- Optional 2nd & 3rd year full parts and labour
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 - £90/year
- Diamond warranty
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 - 2nd year Diamond Warranty. On-site call out with parts and labour £165
 - 3rd year £199



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- 1st year - 4.5% of invoice value
- 2 years - 9% of invoice value
- 3 years - 12.5% of invoice value

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PEDIGREE

Part of the DIP Group of Companies, a multi million pound research and development IT Group established over 11 years. Products developed include the Atari Portfolio and Sharp 3000 PDA's

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- Designed and developed Atari Portfolio and Sharp PC3000
- Specialists. We know our products
- Match products to your requirements
- Software development for handheld corporate applications
- Independent advice

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- Consultants to UK corporates
- PCMCIA member
- Providers to the public and educational sectors
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with Windows CE version 2

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MODEL	360LX	620LX
Display	640x240 LCD, 16 Grey Levels, Touch Panel, White backlight	640x240 LCD, 256 colours, Backlit, Auto dimming
Memory	8MB RAM, 16bit Bus, 60Mhz CPU	16MB RAM, 75Mhz CPU
Expansion Slot	1 x PC Card Type II, Compact Flash	1 x PC Card Type II, Compact Flash
Dimensions	7.2 x 3.67 x 1.1"	7.8 x 4.1 x 1.4"
Power	Two 1.5V AA NiMH batteries	Lithium-ion rechargeable battery pack
Interface	1 x RS232C, 1 x IrDA. Includes	1 x RS232C, 1 x IrDA. Includes
Applications	Word, PowerPoint, Excel, Internet Explorer, bFAX Pro	Word, PowerPoint, Excel, Internet Explorer, bFAX Pro
Price	£359	£549

Optional VGA Card - £89



620LX
16MB FLASH
£639

PERIPHERALS

Compact Flash - See Below
Compact Flash PC Card Reader - £79
Leather Case - £49
3 Year Warranty - £66
Chess - £49

SHARP HC-4500A

with Windows CE (v.2)

Sharp's unique image editor allows you to draw and edit image files as well as capture images from the internet or with the optional digital camera card.

- 7 one-touch application keys
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- Colour VGA screen
- Image editor. Create/edit images.
- Voice recorder
- Multimedia E-mail
- Seamless connectivity
- PC Card slot Type II
- CE Windows Version 2
- Optional docking station



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£275
Colour Screen
£559
Mono Screen
£389

LG PHENOM

Includes Modem

You can send and receive e-mail or faxes, sort out those spreadsheets at 35,000 leet, surf the net or even play games. With the LG Phenom, it's all in the palm of your hand.

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- Colour VGA out port
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- Quick launch keys
- Internal software as CE2
- Soft modem 21.3bps



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Ericsson Phone' software
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- 640x240 display
- Touch screen
- Unique 'My Ericsson Phone' software
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- CE2
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MC12
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MC16
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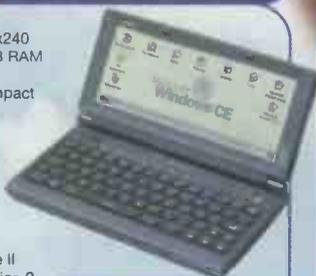
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- Monochrome FSTN screen
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- RS232C serial port
- Weight: 156g
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- Weight: 156g
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CASIO CASSIOPEIA

WITH 80MHZ CPU AND 8MB RAM

- Wide display 640x240
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- Sound speaker
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- PC Card slot Type II
- CE Windows Version 2
- Optional docking station



£369
Docking cradle £25

SIMPLE COMPACT FLASH

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32MB Compact Flash	£199.00

For ACT! for CE software add £10 to CF prices

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OP4-3	JAZZ 2GB DISK 3 PACK	£269.00	£316.08

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DM30	DITTO MAX PRO 106B - INT	£139.00	£163.33
DM40	DITTO MAX PRO 106B - EXT	£169.00	£198.58
DM10	DITTO MAX 36B MEDIA	£15.00	£17.63
DM20	DITTO MAX 36B MEDIA	£18.00	£21.15
DM30	DITTO MAX 106B MEDIA	£22.00	£25.85
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TM160	750Mb Int. SCSI	£152.00	£178.60
TM170	750Mb Int. SCSI & Card	£215.00	£252.63
TM180	750Mb Media	£35.00	£41.13

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PD225	INT. PD IDE DRIVE KIT (BX)		
LF1196AB		£189.00	£222.08
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CD924	PANASONIC 24X	£39.00	£45.83
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CD64	TOSHIBA 24X	£40.00	£47.00
CD939	TOSHIBA 32X	£45.00	£52.88
CD934	PHILIPS RETAIL KIT 32X	£55.00	£64.63
CD923	GOLDSTAR RETAIL KIT 24X	£37.00	£43.48
CD932	GOLDSTAR RETAIL KIT 32X	£55.00	£64.63
CD923-5	GOLDSTAR SLOT LOADING 24X	£45.00	£52.88
CD941	SAMSUNG 32X	£46.00	£54.05
CD1211	C/LABS WITH ACTUA SOLICER24X	£49.00	£57.58
CD1212	C/LABS 24X	£35.00	£41.13
CD930	PIONEER SLOT LOADING 24X	£39.00	£45.83
CD938	PIONEER 32X	£47.00	£55.23
CD111	DYSAN R/KIT (multi-read) 32X	£59.00	£69.33
CD112	DYSAN R/KIT (multi-read) 36X	£75.00	£88.13
CD945	ACER 24X	£40.00	£47.00
CD942	MEDIAFORCE 24X	£33.00	£38.78
CD935	MEDIAFORCE 32X	£43.00	£50.53

SONY CD-R MEDIA £1.34
VAT

CD-WRITERS

HEWLETT PACKARD

CDR-720	SureStore 7200: CD-RW/24X-INT.	£229.00	£269.08
CDR-730	SureStore 7200: CD-RW/24X-EXT.	£278.00	£326.65

YAMAHA

CDR-410	CDR400i-v4 4x6 EXT DRIVE VALUE KIT	£339.00	£398.33
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ALL ABOVE VALUE KITS COME WITH WINON CD, Photo, Pack CD, UDF v1w, audio & idt cable, 2 x Yamaha c/s, manual & screws.

CDR-440	4x26 INTERNAL IDE CD-RW VALUE KIT	£309.00	£363.08
CDR-460	CRW4260T24x6 INT. SCSI CD-RW KIT	£315.00	£370.13
CDR-470	CRW4260T24x6 EXT. SCSI CD-RW KIT	£345.00	£405.38
CDR-480	CRW260V24x6 INT. SCSI CD-RW KIT	£255.00	£299.63
CDR-490	CRW260V24x6 EXT. SCSI CD-RW KIT	£289.00	£339.58
CDR-450	Yamaha CD Media	£1.50	£1.76

RICOH

CDR-50	REWRITEABLE CD CUTTER & S/W	£265.00	£311.38
CDR-65	AS ABOVE IDE	£249.00	£292.58
CDR-60	AS ABOVE & SCSI CARD + S CD/R AND 1 CD/RW MEDIA	£285.00	£334.88
CDR-60	AS ABOVE & SCSI CARD + S CD/R AND 1 CD/RW MEDIA	£11.50	£13.51

CDW-10

CDW-10	NOMAI Re-writeable CD Media	£11.50	£13.51
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NOMAI

CDR-220	CD-RW-Internal Drive IDE+S/W	£269.00	£316.08
CDR-225	CD-RW-Internal Drive+S/W	£274.00	£321.95
CDR-200	CD-RW-External Parallel Port	£339.00	£398.32
CDR-205	CD-RW-EXT BARE DRIVE & S/W	£299.00	£351.33
CDR-210	CD-RW-Ext SCSI & Card & S/W	£339.00	£398.32
CD165-N	NOMAI CD Media	£1.50	£1.76
CDW-10	NOMAI Re-writeable CD Media	£14.00	£16.45

TRAXDATA

All kits come with software & 1 CD-R. Kits which include a SCSI card come with software & 2 CD-R's

CDR370	CDRW2260+	£239.00	£280.83
CDR372	CDRW2260ELPRO	£228.00	£267.90
CDR373	CDRW2260ELPRO Ext SCSI	£279.00	£327.83
CDR342	CDR4120EL PRO INT. SCSI	£244.00	£286.70
CDR343	CDR4120EL PRO EXT. SCSI	£274.00	£321.95
CDR356	CDRW4260EL PRO INT. SCSI	£273.00	£320.78
CDR357	CDRW4260EL PRO EXT. with SCSI	£309.00	£363.08
CDR358	CDRW4260PLUS 4X26 INT. IDE	£299.00	£351.33
CDR380	PressIt Label Kit	£18.00	£21.15
CDR717	50 pack CD LABELS	£10.00	£11.75
CDR390	Traxdata CD-R 74 min.	£1.50	£1.76
CDR395	Traxdata CD-RW MEDIA	£13.00	£15.28
CDR711	JUST AUDIO RECORDING STUDIO	£35.00	£41.13

Panasonic 32X CD ROM



CD936
£43
£50.53

CPUS

AMD

C65	K6x86 - 233	£59.00	£69.33
C67	K6x86 - 266	£109.00	£128.08
C68	K6x86 - 300	£169.00	£198.58

IBM

C200-I	PR200MMX*	£45.00	£52.88
C233-I	PR233MMX* (75MHz Bus)	£59.00	£69.33
C233-I2	PR233MMX* (66MHz Bus)	£59.00	£69.33
C266-I	PR266MMX*	£109.00	£128.08

WINCHIP

C180-DT	180MMX* WINCHIP	£39.00	£45.83
C200-DT	200MMX* WINCHIP	£55.00	£64.63

INTEL PENTIUM MMX™ CPUS -

C200-MAX	Intel Pentium MMX* 200	£69.00	£81.08
C233-MAX	Intel Pentium MMX* 233	£89.00	£104.68
C166-MAX	Intel Pentium 166 MMX*	£65.00	£76.33

includes heatsink/fan, 3yr warranty

INTEL PENTIUM II CPUS -

C233-2	Intel PII 233MHz 512K cache	£129.00	£151.58
C266-2	Intel PII 266MHz 512K cache	£165.00	£193.88
C266-C	Intel PII Celeron 266MHz	£109.00	£128.08
C300-2	Intel PII 300MHz 512K cache	£245.00	£287.88
C333-2	Intel PII 333MHz 512K cache	£319.00	£374.83
C350-2	Intel PII 350MHz 512K cache	£369.00	£433.58
C400-2	Intel PII 400MHz 512K cache	£529.00	£621.58

EVERGREEN OVERDRIVE CPUS -

OD400	486SXDX - 586/133MHz	£89.00	£104.58
OD405	5-PACK as above	£395.00	£464.13
OD410	MMX*PRO 180 - from 75MHz	£109.00	£128.08
OD412	5-PACK as above	£495.00	£581.63
OD415	MMX*PRO 200	£109.00	£128.08
OD420	5-PACK as above	£495.00	£581.63

HEATSINKS AND FANS

H530	Heatsink and fan for 686	£8.00	£9.40
H535	Heatsink & fan for 233	£15.00	£17.63
H540	K6 heatsink & fan AMD appr.	£9.00	£10.58
H550	Pentium II heatsink & fan	£15.00	£17.63
H525	Pentium Pro heatsink & fan	£3.00	£3.53

DIGITAL CAMERAS

DC40	£459	£539.33	
DC6-2	Casio QV-200	£280.00	£329.00
DC44	Casio QV-700	£349.00	£410.08
DC4	Kodak DC50	£259.00	£304.33
DC40	Kodak DC210	£459.00	£539.33
DC5	Kodak Power Adaptor-DC50	£55.00	£64.63
VCTS	Viewmate Conf. Camera	£99.00	£116.33

MICE

M112	MITSUMI: HIGH QUALITY SERIAL	£5.00	£5.88
M160	MICROSOFT INTELLIMOUSE	£31.00	£36.43
M170	MICROSOFT HEDGE	£15.00	£17.63
M115-R	MICROSOFT ERGONOMIC	£24.00	£28.20
M110	M/FORCE2 BUTTON SERIAL	£2.00	£2.35
AC70	HIGH QUALITY MOUSE MAT	£2.00	£2.35
M01	PRIMAX ECHO	£4.25	£4.99
M02	PRIMAX MASTER	£17.01	£19.99

JOYSTICKS

J66	MS SIDEWINDER FORCE FEEDBACK	£79.00	£92.83
J64	MS SIDEWINDER PRECISION PRO	£36.00	£42.30
J62	MS SIDEWINDER GAME PAD	£24.00	£28.20
J60	MS SIDEWINDER PRO	£36.00	£42.30
J58	F1 SIM COMPACT with F1 97	£75.00	£88.13
J04	TRUST JOY FIGHTER 100	£10.00	£11.75
J80	PRIMAX ULTRA STRIKER	£18.71	£21.99
J03	PRIMAX GAMEPAD	£5.95	£6.99

KEYBOARDS

COMPUTERS, HARDWARE AND PERIPHERALS



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SEAGATE - 3.5"

HD44-SS 2.1GB	£74.00	£86.95
HD20-SS 2.5GB	£79.00	£92.83
HD320-SS 3.2GB	£86.00	£101.05
HD430-SS ST343424 4.3GB	£95.00	£111.63
HD431-SS ST34321A 4.3GB	£102.00	£119.85
HD41-SU ST36531A 6.4GB	£127.00	£149.23
HD860-S 8.6GB	£169.00	£198.58

Maxtor Diamond Max 2880 series
HD431-M 4.3GB
£102 +VAT

MAXTOR diamond MAX 2880 series

HD280-DM 2.8GB	£84.00	£98.70
HD431-DM 4.3GB	£102.00	£119.85
HD570-DM 5.7GB	£125.00	£146.88
HD841-DM 8.4GB	£169.00	£198.58
HD115-DM 11.5GB	£229.00	£269.08

WESTERN DIGITAL CAVIAR BARE DRIVES

HD200-W 2.0GB	£76.00	£102.23
HD320-W 3.2GB	£85.00	£113.98
HD431-W 4.3GB	£99.00	£133.95
HD640-W 6.4GB	£129.00	£151.58

WESTERN DIGITAL IDE RETAIL KITS
- Inc. Software, Mounting Rails, & Installation Guide

HD310-RW 3.1GB	£113.00	£132.78
HD400-RW 4.3GB	£119.00	£139.83
HD510-RW 5.1GB	£139.00	£163.33
HD640-RW 6.4GB	£159.00	£186.83

Quantum Fireball SE3 2GB
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£89 +VAT

Quantum
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HD210-SE 2.1GB	£77.00	£90.48
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HD430-SE 4.3GB	£102.00	£119.85
HD640-SE 6.4GB	£144.00	£169.20
HD840-SE 8.4GB	£179.00	£210.33

QUANTUM BIGFOOT TX 5.25" IDE DRIVES

HD400-TX 4.0GB	£95.00	£111.63
HD600-TX 6.0GB	£125.00	£146.88
HD800-TX 8.0GB	£145.00	£170.38
HD1200-TX 12.0GB	£189.00	£222.08

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HD640-I 6.4GB	£135.00	£158.63
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WESTERN DIGITAL - ENTERPRISE 3.5" SCSI

HD210-W 2.1GB ULTRA	£205.00	£240.88
HD210-WW 2.1GB UW	£218.00	£256.15
HD430-W 4.3GB ULTRA	£304.00	£357.20
HD430-WW 4.3GB UW	£314.00	£368.95
HD910-W 9.1GB U	£469.00	£551.08
HD910-WW 9.1GB UW	£479.00	£562.83
HD910-WA 9.1GB UW	£569.00	£568.58

SEAGATE SCSI

HD221-S BARRACUDA 2.2GB ULTRA	£209.00	£245.58
HD222-S BARRACUDA 2.2GB UW	£215.00	£252.63
HD456-S BARRACUDA 4.5GB UW	£295.00	£346.63
HD461-S CHEETAH 4.5GB UW	£349.00	£410.08

QUANTUM SCSI 3.5"

HD211-SE FIREBALL ST ULTRA 2.1GB	£111.00	£130.43
HD212-SE FIREBALL ST ULTRA 3.2GB	£119.00	£139.83
HD431-SE FIREBALL ST ULTRA 4.3GB	£145.00	£170.38
HD641-SE FIREBALL ST ULTRA 6.4GB	£198.00	£232.65
HD841-SE FIREBALL SE ULTRA 8.4GB	£259.00	£304.33

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HD60-I USTAR ES 4.3GB	£161.00	£189.18
HD60-IW USTAR ES W 4.3GB	£165.00	£193.88
HD450-I ULTRA STARY XP 4.5GB	£331.00	£388.93
HD450-IW ULTRASTAR 2XP WIDE 4.5GB	£331.00	£388.93
HD910-I ULTRASTAR 2XP 9.1GB	£467.00	£548.73
HD910-IW ULTRASTAR 2XP WIDE 9.1GB	£477.00	£560.48

SPECIAL OFFERS

QUANTUM CYCLONE 5.25" IDE

HD210-CY 2.1GB	£69.00	£81.08
HD640-CY 6.4GB	£105.00	£123.38

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ADI MONITORS

MOA01 PROVISTA V30 14"	£90.00	£105.75
MO24E PROVISTA E30 14"	£95.00	£111.63
MO34E PROVISTA E40 15"	£115.00	£135.13
MO525 MICROSCAN 4P 15"	£129.00	£151.58
MO527 MICROSCAN 5P 17"	£229.00	£269.08
MO522 MICROSCAN 5G 17"	£289.00	£339.58
MO528 MICROSCAN 5GT Trinitron 17"	£319.00	£374.83
MO19 MICROSCAN 6P 19"	£439.00	£515.83
MO524 MICROSCAN 66 21"	£699.00	£821.33

ADI 15" ProVista E40
MO34E
£115.00
£135.13

CTX MONITORS

MO610 1451 ELR14"	£99.00	£116.33
MO614 1555E 15"	£119.00	£139.83
MO602 1569 SE 15"	£129.00	£151.58
MO611 1569 UA Trinitron 15"	£189.00	£222.08
MO609 1569 MS 15" INC SPEAKERS	£169.00	£198.58
MO616 1769 SE 17"	£229.00	£269.08

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MO102 PRO17
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MO105 MF 8515G 15"	£169.00	£198.58
MO108 MF8617ES 17"	£365.00	£428.88
MO102 MT9017T 17"	£349.00	£410.08
MO112 S901GT 19"	£499.00	£586.33
MO105-W VISION CARE 15 3 YEARS ON SITE	£15.00	£17.63
MO102-W VISION CARE 17 3 YEARS ON SITE	£39.00	£45.83

MEDIAFORCE MONITORS

MO914 MEDIAFORCE 14" VALUE	£80.00	£94.00
MO915 MEDIAFORCE 15" VALUE	£110.00	£129.25
MO917 MEDIAFORCE 17" VALUE	£215.00	£252.63
MO910 MEDIAFORCE 14" 3 YEARS ON SITE	£95.00	£111.63
MO911 MEDIAFORCE 15" 3 YEARS ON SITE	£125.00	£146.88
MO912 MEDIAFORCE 17" 3 YEARS ON SITE	£255.00	£299.63

NOKIA MONITORS

MO315 449XPlus 15" 0.25DP	£200.00	£235.00
MO316 449XPlus 15" 0.25DP	£210.00	£246.75
MO311 4472A 17" FST 0.26DP	£320.00	£376.00
MO312 447XPRO 17" TRINITRON	£430.00	£505.25

BELIERA MONITORS

MO745 104010 14" MONITOR	£89.00	£104.58
MO747 105035 15" MONITOR	£110.00	£129.25
MO749 107020 17" MONITOR	£205.00	£240.88

SAMSUNG MONITORS

MO200 SM500P15"	£169.00	£198.58
MO201 SM500P15"	£155.00	£182.33
MO204 SM700P17"	£265.00	£311.38
MO205 SM700P17"	£355.00	£417.13

TAXAN
ERGOVISION 750 TC095
MO505 750 TC095 17"
£449.00 £527.58

TAXAN MONITORS

MO512 ERGOVISION 430LR LR 14"	£113.00	£132.78
MO502 ERGOVISION 530 TCO 15"	£179.00	£210.33
MO511 ERGOVISION 550 TC095 15"	£169.00	£198.58
MO503 ERGOVISION 730 TCO 17"	£285.00	£334.88
MO504 ERGOVISION 740 TCO 17"	£349.00	£410.08

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MO38-P PRECISION VIEWER 15"	£110.00	£129.25
MO48-P PRECISION VIEWER 17"	£220.00	£258.50
MO48-V VISUALSOUND 17"	£195.00	£229.13
MO56 PRO VISUAL 17"	£305.00	£358.38

VIEWSONIC MONITORS

MO800 E641 14"	£99.00	£116.33
MO801 E655 15"	£145.00	£170.38
MO33-2 P655 15"	£165.00	£193.88
MO47 GRAPHIC 1705 17"	£299.00	£351.33
MO48-1 E771 17"	£245.00	£287.88
MO36 MULTIMEDIA 156A 15"	£175.00	£205.63
MO49 MULTIMEDIA 176A 17"	£365.00	£428.88
MO33-1 G771 17"	£309.00	£363.08
MO810 G773 17"	£345.00	£405.38
MO44-1 P775 17"	£379.00	£445.33
MO809 P1775PRO 17"	£429.00	£504.08
MO808 G775 17"	£385.00	£452.38

CONTROLLERS

Adaptec
IC46 2940UW KIT
£162 +VAT

ADAPTEC

IC25 1542 ISA CARD ONLY	£112.00	£131.60
IC30 1542 ISA FULL KIT	£149.00	£175.08
IC40 2742T EISA KIT	£215.00	£252.63
IC41 2920 CONTROLLER KIT	£84.00	£98.70
IC2910 2910 ULTRA SCSI KIT	£64.00	£75.20
IC45-U 2940 ULTRA KIT	£139.00	£163.33
IC46 2940 ULTRA WIDE KIT	£162.00	£190.35
IC2940 2940 U2W	£235.00	£276.13

NETWORKING

Business Solutions 3Com
Fast Ethernet XL 3C905-TX
N158 E/ink XL 3C905-TX PCI 10/100 RJ45
£54.00 +VAT

3COM Network Cards

N103 E/ink III 3C509B ISA Combo Bare Card	£38.00	£44.65
N151 E/ink III 3C509B-TPO ISA RJ45 Card Retail	£32.00	£37.60
N104 E/ink III 3C900 PCI Combo Bare Card	£65.00	£73.38
N140 E/ink III 3C900-TPO PCI RJ45 Card Retail	£63.00	£74.03
N141 E/ink III 3C900 PCI Combo Card Retail	£72.00	£84.60
N158 Fast E/ink XL 3C905-TX PCI 10/100 RJ45	£54.00	£63.45

KINGSTON TECHNOLOGY

N202 EtherX Pro ISA Combo Card	£22.00	£25.85
N205 EtherX Pro Combo Card	£39.00	£45.83
N205-100 EtherX Pro 10/100 Combo Card	£59.00	£69.33

PCI COMBO CARD
M MEDIAFORCE
N40 Yes Network Approved
£14.00 £16.45

MEDIA FORCE

N08 ISA Pro Combo card	£12.00	£14.10
N09 PCI RJ45 only	£11.50	£13.51
N40 ISA Combo card	£14.00	£16.45
N100 4 Port Hub (4x RJ45)	£29.00	£34.08
N105 8 Port Hub (8x RJ45 + 1x BNC)	£32.00	£45.83

NETWORK CABLES AND ACCESSORIES

N71 BNC T-Piece	£1.00	£1.18
N73 BNC Terminator 500hm	£1.00	£1.18
N90-2 2M UTP Patch Cable Cat. 5 Grey	£2.50	£2.94
N55-2 2M RG58 BNC Fly Lead	£5.00	£5.88
N55-5 5M RG58 BNC Fly Lead	£7.00	£8.23
N55-10 10M RG58 BNC Fly Lead	£10.00	£11.75
N97-7 7M UTP Patch Cable Cat. 5 Yellow	£6.00	£7.05
N55 100M Reel Coax Cable	£21.00	£24.68
N90 1000m UTP Cat. 5 Cable Box Grey	£60.00	£70.50
N70 BNC Crimp Plug	£1.00	£1.18

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NM120 ISA PNP E/Ad. NE2000 compatible BNC/10BaseT ENW-2400P-1T	£15.00	£17.63
NM110 PCI 10/100 E/Ad. 10BaseT/100BaseTX + DECT1240 ENW-9501	£49.00	£57.58

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M221 TX PRO 1Mb PLB cache AT + AGP	£47.00	£55.23
M300-S Intel TX 512K PLB cache baby AT	£45.00	£52.88
M230 Intel 440LX PII + AGP ATX	£74.00	£86.95

PC Chips TX Pro Motherboard
WinChip 180 MMX CPU
2MB MediaForce S3 Trio0X
Heat Sink & Fan
Individual Costs
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£39.00
£18.00
£8.00
£112.00

PC CHIPS
Total Bundle Cost
£99
£116.33

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M203-5 QDI JUMPERLESS LEGEND V - ATX SINGLE PII INTEL LX + AGP - 233-333	£87.00	£102.23
M202 QDI JUMPERLESS TX CHIPSET	£57.00	£66.98

GIGABYTE MOTHERBOARDS

M92-TX TX2 512K TX CHIPSET	£68.00	£79.90
M92-TX3 TX3 512K TX CHIPSET	£63.00	£74.03
M92-ATX TX2 512K TX CHIPSET (ATX)	£66.00	£77.55
M92-LX GA68BLX PENT II LX (ATX)	£99.00	£116.33
M92-BLX GA68BLX PENT II LX BABY AT	£86.00	£101.05
M92-DLX GA68BLX DUAL PENT II LX ATX	£189.00	£222.08
M92-BX GA68BX PII BX 100MHz ATX	£109.00	£128.08
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HUGE VALUE BUNDLE
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M820 P5-TX-A Pro 430TX - ATX - 512K	£69.00	£81.08
M897 P5S1A S155582 ATX-USB UDMA 33-512K	£75.00	£88.13
M870-1 P6LX A + PII 440LX-ATX + AGP	£99.00	£116.33
M880 P6LX-A ULWCS3 PII S/Slot 440LX-ATX	£229.00	£269.08
M890 P6LX-A ULWCS3 PII Dual Slot 440LX - ATX	£289.00	£339.58
M840 P5TX-AR 430TX - ATX - 512K	£139.00	£163.33
M850 TX-B-512 430TX 3/4Baby AT - 512K	£69.00	£81.08

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M400 TX97-E 430TX-512K-Baby AT	£79.00	£92.83
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M415 TX97-XE + C/Labs sound on board	£99.0	



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 Powered by the S3 Virge 3D processor, this card features: 2Mb of EDO video memory expandable to 4Mb. • 135MHz RAMDAC • PCI Bus Mastering

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+VAT

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DMS16	16MB 64Bit 168 Pin 10ns	£15.50	£18.21
DMS32	32MB 64Bit 168 Pin 10ns	£26.50	£31.14
DMS64	64MB 64Bit 168 Pin 10ns	£61.00	£71.68
DMS128	128MB 64Bit 168 Pin 10ns	£131.00	£153.93

168 PIN DIMM MEMORY 3.3v SDRAM UNBUFFERED - for 100MHz motherboards

DMS321	32MB 64Bit 168 Pin 10ns	£39.00	£45.83
DMS641	64MB 64Bit 168 Pin 10ns	£82.00	£96.35
DMS1281	128MB 64Bit 168 Pin 10ns	£179.00	£210.33

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ME18	4MB 1 X 32 72 Pin 60NS	£6.00	£7.05
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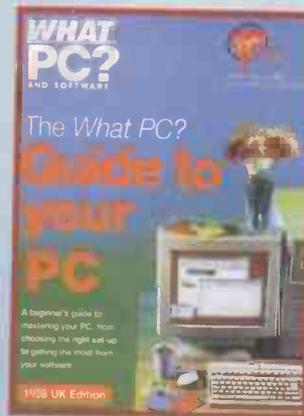
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W = Always |
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C = Never
W = Always |
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W = Always |
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C = Never
W = Always |
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ISSUE 98/6

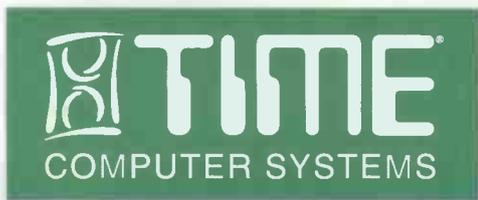


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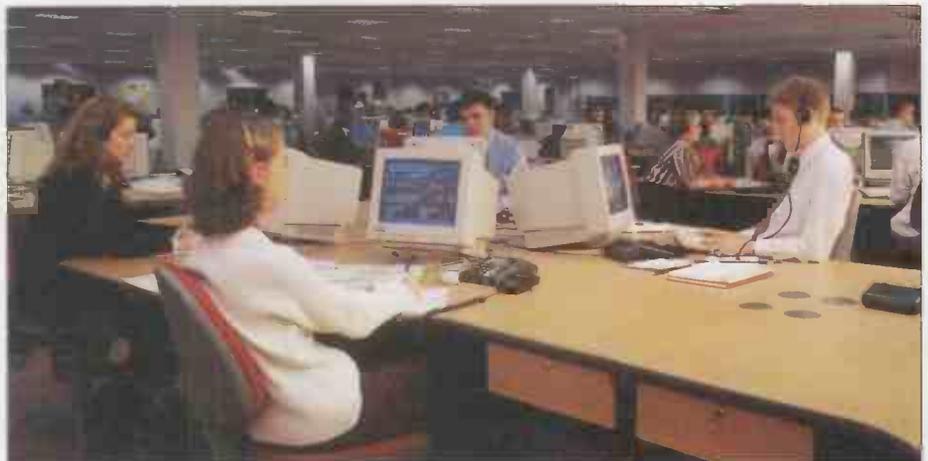
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- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17" optional)
- ATX PC'97 motherboard year 2000 compliant
- IBM speech recognition
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- 4Mb SIS Advanced Graphics using 4Mb System RAM with MPEG & Microsoft direct 3D
- 512k Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17" optional)
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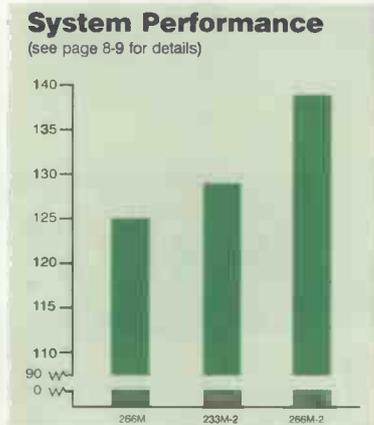
All Systems Include

Software: SmartSuite 97, Lotus e-mail, Pressworks, Designworks, Homewise, Microsoft Internet Explorer 4, IBM AntiVirus, IBM Simply Speaking GOLD (microphone optional), EZ Language 2 and Pacioll Accounts.

Standard system features: Windows® 95 with manual & CD (voucher included for free upgrade to Windows 98 when launched by Microsoft), 105 keyboard, 1.44Mb floppy drive, PS/2 mouse, advanced PC'97 motherboard with all standard ports (2 USB ports, games serial, parallel etc) and year 2000 compliant BIOS, full support and 12 months warranty extendible to 5 years.

Popular Options

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- 15" screen Models £69 +VAT = £81.08 extra to 14"
- 17" screen Models £218 +VAT = £256.15 extra to 14"
- OfficeStation™ Models with Microsoft Office 97 (see page 20-21 for details)
- Media M Models with Microsoft 98 Family Pack (see page 22-23 for details)
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Included Software



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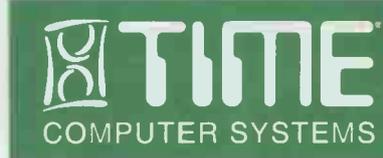


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266M-2

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- 32 Speed LG Max CD-ROM
- 3D ESS wavetable stereo sound
- 4Mb SIS Advanced Graphics using 4Mb System RAM with MPEG & Microsoft direct 3D
- 512k Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 15" SVGA NI 0.28dp colour screen (17" optional)
- ATX PC'97 motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- Microsoft Windows 98 voucher
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Product Codes: 266M-2 15" 399-30-474
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300M-2

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- 8.4Gb Seagate Ultra ATA hard disk
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- 3D Creative Labs wavetable stereo sound
- ATI 3D Rage II + DVD graphics with 4Mb video RAM, MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17" optional)
- ATX PC'97 motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
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- Software bundle and standard features as shown below

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Inc VAT

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£1021.08
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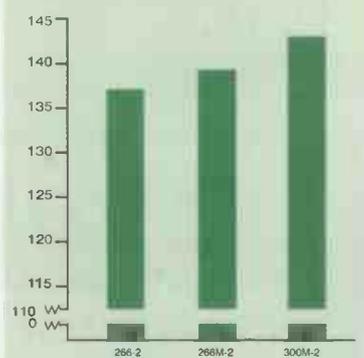
Standard system features: Windows® 95 with manual & CD (voucher included for free upgrade to Windows 98 when launched by Microsoft), 105 keyboard, 1.44Mb floppy drive, PS/2 mouse, advanced PC'97 motherboard with all standard ports (2 USB ports, games serial, parallel etc) and year 2000 compliant BIOS, full support and 12 months warranty extendible to 5 years.

Popular Options

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- 15" screen Models £69 +VAT = £81.08 extra to 14"
- 17" screen Models £218 +VAT = £256.15 extra to 14"
- 17" screen Models £149 +VAT = £175.08 extra to 15"
- OfficeStation™ Models with Microsoft Office 97 (see page 20-21 for details)
- Media M Models with Microsoft 98 Family Pack (see page 22-23 for details)

System Performance

(see page 8-9 for details)



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included
Windows 98
 Upgrade

Included Software



EXEC Models include

PC joystick, PC headset microphone, 5 top games and over 13 superb multimedia titles at only £79 +VAT = (£92.83 Inc. VAT) extra.

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- 32 Speed LG Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- ATI AGP 3D graphics with 4Mb video RAM, MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen
- ATX PC'97 LX chipset motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Microsoft Windows® 98 voucher
- Software bundle and standard features as shown below

Product Codes: 300-2 14" 399-30-604
300-2 15" 399-30-346
300-2 17" 399-30-347

300M-2

ProfessionalPC

- IBM 6x86MX PR300 processor with MMX™ technology
- 64Mb EDO RAM
- 8.4Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- 32 Speed LG Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- ATI 3D Rage II + DVD graphics with 4Mb video RAM
- 512k Pipeline burst cache
- Premium mains speakers
- 15" SVGA NI 0.28dp colour screen
- ATX PC'97 motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Microsoft Windows 98 voucher
- Software bundle and standard features as shown below

Product Codes: 266M-2 15" 399-30-596
266M-2 17" 399-30-597

300M-2x

ProfessionalPC

- IBM 6x86MX PR300 processor with MMX technology
- 128Mb EDO RAM
- 8.4Gb Seagate Ultra ATA hard disk
- 56k Voice modem
- PC-TV system with Teletext and video capture
- 32 Speed LG Max CD-ROM
- 3D ESS wavetable stereo sound
- 4Mb SIS Advanced Graphics using 4Mb system RAM
- 512k Pipeline burst cache
- Premium mains speakers
- 15" SVGA NI 0.28dp colour screen
- ATX PC'97 chipset motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Microsoft Windows 98 voucher
- Software bundle and standard features as shown below

Product Codes: 300M-2x 15" 399-30-600
300M-2x 17" 399-30-601

£1138.58 Inc VAT
£969 + VAT

£1173.83 Inc VAT
£999 + VAT

£1291.33 Inc VAT
£1099 + VAT

The new 300-2 ProfessionalPC™ system with Intel® 300MHz Pentium® II processor includes 64Mb RAM, fast 6.4Gb hard disk, 56k modem, speech recognition and advanced ATI 3D AGP graphics at just £969 +VAT! Our best buy advanced 300M-2 system provides even more power due to the amazing

IBM MX processor with MMX™ technology, larger 8.4Gb hard disk, 15" screen and faster bus speeds. It is available at an amazing £999 +VAT. The 300M-2x model includes a massive 128Mb RAM and PC-TV system with Teletext.

All Systems Include

Software: SmartSuite 97, Lotus e-mail, Pressworks, Designworks, Homewise, Microsoft Internet Explorer 4, IBM AntiVirus, IBM Simply Speaking GOLD (microphone optional), EZ Language 2 and Pacioli Accounts.

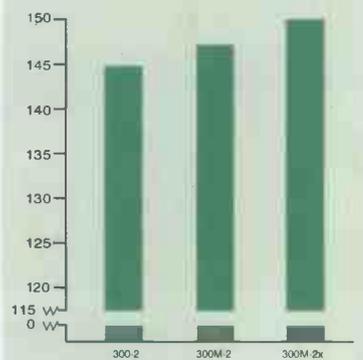
Standard system features: Windows® 95 with manual & CD (voucher included for free upgrade to Windows 98 when launched by Microsoft), 105 keyboard, 1.44Mb floppy drive, PS/2 mouse, advanced PC'97 motherboard with all standard ports (2 USB ports, games serial, parallel etc) and year 2000 compliant BIOS, full support and 12 months warranty extendible to 5 years.

Popular Options

- Exec Models £79 +VAT = £92.83 extra
- 15" screen Models £69 +VAT = £81.08 extra to 14"
- 17" screen Models £218 +VAT = £256.15 extra to 14"
- 17" screen Models £149 +VAT = £175.08 extra to 15"
- OfficeStation™ Models with Microsoft Office 97 (see page 20-21 for details)
- Media M Models with Microsoft 98 Family Pack (see page 22-23 for details)

System Performance

(see page 8-9 for details)



Buy Now... Pay Nov 98

Interest Free Credit

Only when purchased with EXEC models

Example: Total PC system price £1000 inc. VAT and delivery purchased from 8th May 98:
6 Months Interest Free Option
Pay just 10% deposit (£100) and the rest (£900) within 6 months interest free. Total price = cash price = £1000. APR 0% only if loan fully repaid within 6 months.

Finance also available over longer period of 2.5 years at APR 26.8%. See detailed example on Page 3 Finance is subject to status. Written details are available on request

0%
APR

TMPPS1A

MONEY BACK GUARANTEE
BUY WITH CONFIDENCE



300M-2 Exec model shown

included
Windows 98 Upgrade

Included Software



EXEC Models include

PC joystick, PC headset microphone, 5 top games and over 13 superb multimedia titles at only £79 +VAT = (£92.83 Inc. VAT) extra.

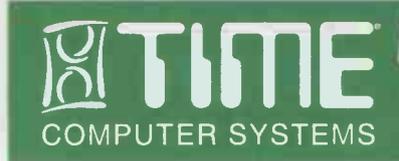
Product Codes: 300-2 14" 605; 15" 348; 17" 349; 300M-2 15" 598, 17" 599, 300M-2x 15" 602; 17" 603



All offers must end 30th June

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Saturday 9am - 5pm, Sunday 10am - 4pm
See page 3 for how to order and conditions of sale



UltimatePC™

From
Around **£1350+**

The most powerful systems you can buy

333-2

UltimatePC

- Intel 333MHz Pentium® II processor
- 64Mb SDRAM
- 8.4Gb Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- ATI AGP 3D graphics with 4Mb video RAM, MPEG and microsoft direct 3D
- 512k Pipeline burst cache
- Premium mains speakers
- 15" SVGA NI 0.28dp colour screen (17" optional)
- ATX PC'97 motherboard year 2000 compliant
- VideoPhone receive
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Microsoft Windows 98 voucher
- Software bundle and standard features as shown below

Product Codes: 333-2 15" 399-30-354
333-2 17" 399-30-355

350-2 As above but with 350MHz processor and 100MHz bus motherboard **£1229 +VAT = £1473.45** Total Price (Excludes PC-TV & VideoPhone receive) Product Codes: 15" 463 17" 464

400-2s

UltimatePC

- Intel 400MHz Pentium II processor
- 128Mb SDRAM (100MHz)
- 8.4 Gb Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed Max CD-ROM
- 3D PCI 64 Crystal hardware wavetable stereo sound
- 4Mb ATI AGP x2 Rage Pro 3D graphics with 4Mb video RAM, MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Premium main speakers
- 15" SVGA NI 0.28dp colour screen (17" or 19" optional)
- ATX PC'97 BX 100MHz chipset motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Microsoft Windows 98 voucher
- Software bundle and standard features as below

Product Codes: 400-2s 15" 399-30-606
400-2s 17" 399-30-607
400-2s 19" 399-30-608

400-2sx

UltimatePC

- Intel 400MHz Pentium II processor
- 128Mb SDRAM (100MHz)
- 8.4 Gb Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- DVD ROM drive also functions as a fast CD-ROM
- 120Mb LS120 floppy drive
- 3D PCI 64 Crystal hardware wavetable stereo sound
- 8Mb ATI AGP x2 Rage Pro 3D 'ATI all-in-wonder' graphics with 8Mb video RAM, MPEG and Microsoft direct 3D Includes TV-out
- 512k Pipeline burst cache
- Executive subwoofer system (shown)
- 15" SVGA NI 0.28dp colour screen (17" or 19" optional)
- ATX PC'97 BX 100MHz chipset motherboard year 2000 compliant - New look 'General' case
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Microsoft Windows 98 voucher
- Software bundle and standard features as below

Product Codes: 400-2sx 15" 399-30-467
400-2sx 17" 399-30-468
400-2sx 19" 399-30-469

£1350.08
Inc VAT
£1149 + VAT

£1761.33
Inc VAT
£1499 + VAT

£2055.08
Inc VAT
£1749 + VAT

Our 333-2 UltimatePC™ system with Intel® 333MHz Pentium® II processor includes 64Mb RAM, fast 8.4Gb hard disk, TV and Teletext, 56k modem, VideoPhone receive, speech recognition, and advanced 4Mb ATI AGP graphics from just £1149 +VAT!

Our best buy advanced 400M-2s system includes a massive 128Mb SDRAM and Intel® 400MHz processor at just £1499+VAT. The 400-2sx provides the ultimate performance and specification!

All Systems Include

Software: SmartSuite 97, Lotus e-mail, Pressworks, Designworks, Homewise, Microsoft Internet Explorer 4, IBM AntiVirus, IBM Simply Speaking GOLD (microphone optional), EZ Language 2 and Pacioli Accounts.

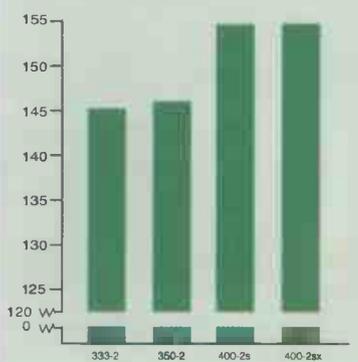
Standard system features: Windows® 95 with manual & CD (voucher included for free upgrade to Windows 98 when launched by Microsoft), 105 keyboard, 1.44Mb floppy drive, PS/2 mouse, advanced PC'97 motherboard with all standard ports (2 USB ports, games serial, parallel etc) and year 2000 compliant BIOS, full support and 12 months warranty extendible to 5 years.

Popular Options

- Exec models £79 +VAT = £92.83 extra
- 17" screen models £149 +VAT = £175.08 extra to 15"
- 19" screen models £349 +VAT = £410.08 extra to 15"
- OfficeStation™ Models with Microsoft Office 97 (see page 20-21 for details)
- Media M Models with Microsoft 98 Family Pack (see page 22-23 for details)
- 5 Top Games bundle alone £38 +VAT = £44.65 (RRP £145, included with Exec models)

System Performance

(see page 8-9 for details)



Buy Now... Pay Nov 98

Interest Free Credit

Only when purchased with EXEC models

Example: Total PC system price £1000 inc. VAT and delivery purchased from 8th May 98:

6 Months Interest Free Option
Pay just 10% deposit (£100) and the rest (£900) within 6 months interest free. Total price = cash price = £1000. APR 0% only if loan fully repaid within 6 months.

Finance also available over longer period of 2.5 years at APR 26.8%. See detailed example on Page 3 Finance is subject to status. Written details are available on request

0%
APR

MONEY BACK GUARANTEE
 4 DAY MONEY BACK GUARANTEE
 BUY WITH CONFIDENCE



400-2sx Exec model shown

included
Windows 98
 Upgrade

Included Software



EXEC Models include

PC joystick, PC headset microphone, 5 top games and over 13 superb multimedia titles at only £79 +VAT = (£92.83 inc. VAT) extra.
 Product Codes: 333-2 15" 356; 17" 357; 350-2 15" 465, 17" 466, 400-2s 15" 609; 17" 610, 19" 611, 400-2sx 15" 470; 17" 471, 19" 472



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TMUPC1A

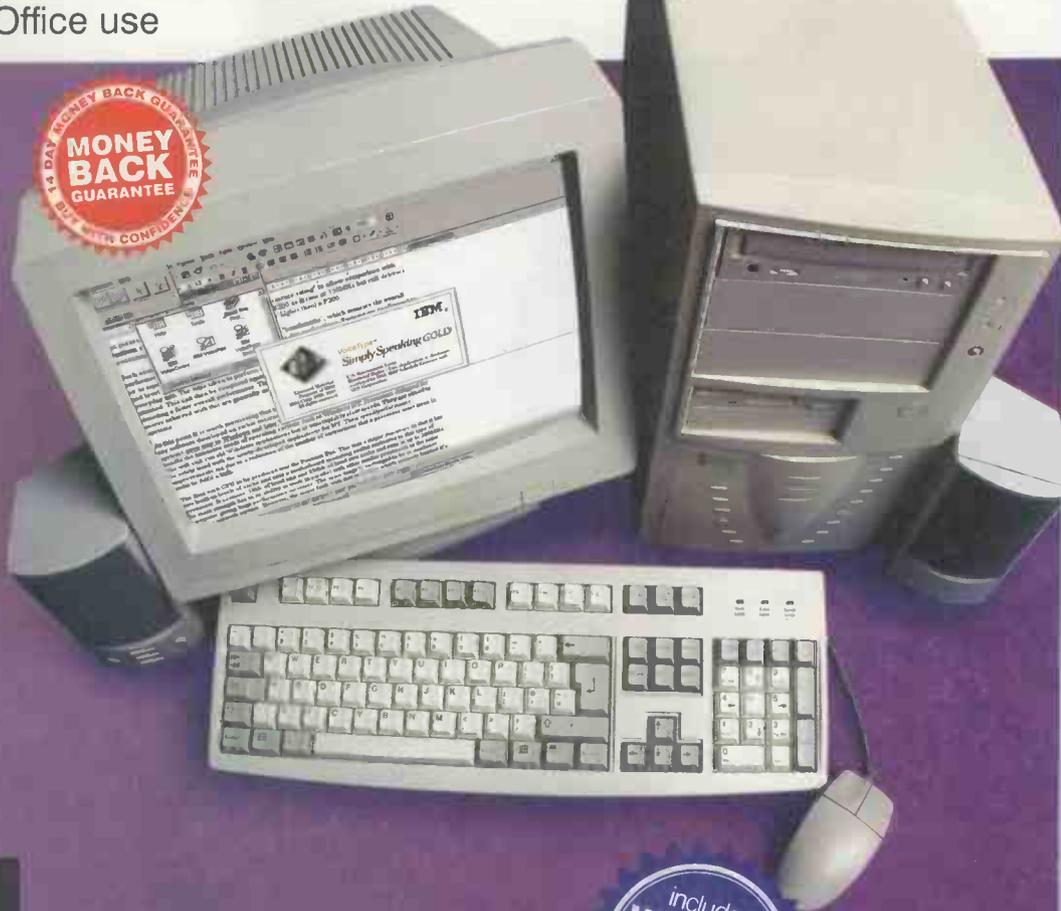
300M-2 HomeOffice PC™

Ideal for the Home and Office use

300M-2

HomeOffice PC

- IBM 6x86MX PR300 processor with MMX™ technology
- 64Mb EDO RAM
- 8.4Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- 32 Speed LG Max CD-ROM
- 4Mb ATI 3D Rage II+DVD graphics with 4Mb video RAM with MPEG and Microsoft direct 3D
- 3D Creative labs wavetable stereo sound
- 512k Pipeline burst cache
- 525 mains speakers
- 14" SVGA NI 0.28dp colour screen
- ATX PC'97 motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Microsoft Windows 98 voucher
- Software bundle and standard features



£1091.58 Inc VAT
£929 + VAT



The new 300M-2 HomeOffice™ PC system includes 64Mb RAM, fast 8.4Gb hard disk, 56k modem, 4Mb ATI 3D Rage II+ graphics, speech recognition and superb software.

It provides even more power than our 300-2 Pentium® II processor based system due to the amazing IBM MX processor with MMX™ technology and faster bus speeds.

All models are year 2000 compliant

Included Software

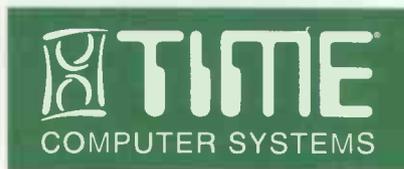


All offers must end 30th June

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 Saturday 9am - 5pm, Sunday 10am - 4pm
 See page 3 for how to order and conditions of sale



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TIMBACCA

"Best PC Manufacturer for 1997"

PC Plus

"Best PC Ever"

PC PRO

FreePhone Technical Support

On-site Maintenance as Standard*

* Notebook PCs are covered by a two year return to base warranty that includes accidental damage cover.

What more could you ask for...

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NOW OPEN**
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Leeds LS12 2ER
Tel: 0113 203 2000

EveshamVale Platinum:

- Intel 266Mhz Pentium® II processor
- 64Mb SDRAM • 4Mb AGP graphics
- 32x CD-ROM • 6Gb HDD • AWE64 Value
- 17" Taxan Ergovision 760 TC095 monitor
- 2 yrs On-site Maintenance

£999^{+VAT}

(£1173.83) see page 6



All models include
voucher for free
license upgrade to
Windows98



Evesham Micros

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or visit our website: www.evesham.com

EveshamVale

The best service and support...

Freephone Technical Support



Wendy Paul
Telesales

(Left to right) Pete Dugmore, James Jackson, Jim Walker, Kelly Parslow and David Banting
Technical Support

At Evesham Micros we understand it isn't enough to just build an award winning PC range like EveshamVale, we must have the right people to support it. We believe in taking care of our customers, from friendly sales advice to unrivalled technical support.

Our EveshamVale technical department is manned by friendly & knowledgeable staff, who have a full history and build schedule of each individual PC. You can now reach them via a Freephone number, Monday to Saturday.

"I've always been dubious of mail order purchasing but my fears have proved unfounded in dealing with Evesham Micros. The equipment and backup service surpass all expectations!" P. D., Shepperton

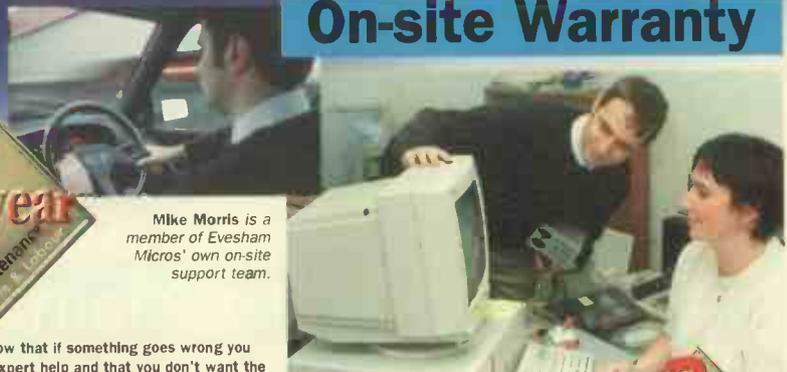
We know that if something goes wrong you need expert help and that you don't want the inconvenience of despatching your system back to the manufacturer. We have our own nationwide team of skilled engineers ready to support you. Such is our confidence in the quality of our systems that we are able to make this industry leading offer: Prestige and Platinum systems are now covered by two years parts and labour on-site warranty as standard. Fileservers and DesignStations come with three years cover. Compare this with our competitors - you could pay a lot of money for such peace of mind.

"As usual, excellent - decisive, expert support gets my business every time. Showroom pre-sales always objective and informed." I. C., Cheltenham

"An excellent, no quibble, fast service. Thank you." G. D., Bristol

"Much better service than I had expected! Thanks." C. S., Evesham

On-site Warranty



Mike Morris is a member of Evesham Micros' own on-site support team.



Quantity Business Buyers

Evesham Micros are represented in the UK by five major branches with showrooms, and a further Business Sales Centre at Glasgow.

All of our branches have a Business Sales team with a wealth of experience and enthusiasm, and whether your needs are large or small they are ready to discuss your requirements and advise on the ideal

solution. They also host a full complement of installation and support staff, ready to commission and support even the most challenging system.

If your company has 10 or more PCs please call the Business Sales FREEPHONE number which will route you through to your nearest branch.

FREEPHONE BUSINESS SALES: 0800 765500



Far right
North
Oxfordshire
College

Right and below
our new Leeds
showroom



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Leeds LS2 9JL
Tel: 0113 203 2000



Business Sales Centres
Glasgow
Leeds
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Evesham
Milton Keynes
Cambridge



Evesham FINANCE

Evesham Finance is a facility specifically set up to meet the needs of business customers, offering a comprehensive range of finance

facilities to meet the needs of the most demanding clients. To find out how you can get 3 months free use of any EveshamVale computer system see page 12/13.

For further information call now on: 0800 496 0600

Flexible Personal Finance Options

Buy now - pay December (6 months interest free).

Buy any PC and you can defer payment for 6 months. How the scheme works: You enter a credit agreement at time of purchase, but pay nothing for 6 months. After this time you have the choice to either:

- Settle in full (at the original cash price - interest free), or
- Start a 3 year repayment plan with 36 equal monthly payments - APR 24.9% (and you still pay no interest on the first 6 months).

No deposit personal finance.

Flexible credit agreement to spread payment over 12, 24 or 36 months. No deposit. APR 16.7%. Available with any purchase over £500. Credit available subject to status. Written details available on request.

Please note that actual products (including screen displays) may not exactly match the photographic representations. On-site maintenance applies to UK mainland only. Industry standard practice is to quote a monitor's CRT size - the actual viewing area is approximately 1" less. Bundled versions of video cards, sound cards and software are not full retail packs, and the software features on-line documentation. Occasionally we may supply vouchers for software titles which need to be redeemed with the manufacturers. Note that we are unable to offer a 14 day money-back guarantee on any software, or on any special order item which is not featured in the advertisement. The Intel Inside logo, Pentium Processor, the MAX, and Celeron are trademarks of Intel Corporation. Microsoft is a registered trademark and the Office logo is a trademark of Microsoft Corporation. All other trademarks acknowledged. All orders are subject to Evesham Micros' standard Terms and Conditions of trading - these are available on request.

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Evesham Micros

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EveshamVale

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SEE PAGE 2 FOR DETAILS

Solution

Solved - Your purchase dilemma.

You want a PC for home or business with lots of features, good performance, loads of software, great support and you want it Internet ready. We have three Solutions and what is more if you want help we will send an engineer to your premises to commission and demonstrate it, including connecting to the Internet and setting up your Email.

Solution 1:

- ◆ Intel® Celeron™ processor 266MHz
- ◆ Intel Slot One for processor upgrades
- ◆ 2x Universal Serial Bus (USB) ports
- ◆ 32Mb RAM
- ◆ 4Gb hard disk
- ◆ ATI 4Mb 3D Charger AGP video card
- ◆ 14" SVGA monitor
- ◆ K56flex modem
- ◆ 3 months free unlimited Internet access with Global Internet*
- ◆ 24x CD-ROM drive
- ◆ SoundBlaster 16 compatible sound
- ◆ Zy-Fi amplified speakers
- ◆ 14 day moneyback guarantee
- ◆ 2 year on-site maintenance for parts and labour
- ◆ Lifetime technical support hotline

only (£680.00+VAT)

£799 inc VAT

Solution 2 features the following enhancements to Solution 1:

- ◆ 15" SVGA monitor
- ◆ Lexmark 1000 Colour Jetprinter
- ◆ Media98 software bundle

only (£850.21+VAT)

£999 inc VAT

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

Solution 3 features the following enhancements to Solution 2:

- ◆ Intel® Pentium® II processor 300MHz
- ◆ 512kb Pipeline-Burst cache
- ◆ 64Mb RAM
- ◆ 6Gb Ultra ATA hard disk

only (£1062.98+VAT)

£1249 inc VAT

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

Want to Surf the Internet?



**GLOBAL
INTERNET**

The PC is configured for quick and convenient connection to Global Internet widely praised for the quality of its packaging.

- Three month's free use* with unlimited access to the World Wide Web
- No hourly charges
- 100% UK local rate call access
- Unlimited Email
- 3Mb free webspace

*You need to provide a telephone line, and pay for (local rate) call charges

The Solution

- Knowledgeable pre-sales advice
- ValeStart set up and demonstration
- Freephone technical support
- 2 years on-site warranty
- Internet ready
- 3 months unlimited Internet access

ValeStart

If required we will send an engineer to your home or business premises. He will set up and configure the system, connect it to the Internet and set up your Email account, and give a short introductory demonstration on using the equipment.



FREE license upgrade to Windows98 when available (£20+VAT (£23.50) handling charge for CD and shipping)



EveshamVale Solution 2

All Solution models also feature:

- ◆ Year 2000 ready BIOS
- ◆ 3xPCI & 3x16-bit expansion slots
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 3.5" 1.44Mb floppy disk drive
- ◆ Mini-tower case
- ◆ TÜV approved power supply with low noise fan
- ◆ 'Windows95' keyboard
- ◆ Mouse
- ◆ Windows 95 installed, with full manuals and disks supplied

Solution upgrades

32Mb to 64Mb RAM.....£40+VAT (£47.00)
15" to 17" monitor.....£100+VAT (£117.50)



Media98

A huge bundle of high quality Microsoft software is part of the package: (with Solution 2 and 3)

- Microsoft Works – for Windows 95. Leading word processor, spread sheet and database package.
- Microsoft Encarta 98 – the world's leading encyclopaedia (International Edition)
- Microsoft Monster Truck Madness – down and dirty racing.
- Microsoft Money – the easy way to manage your money.

- Microsoft Magic School Bus Rainforest – a fun filled, fact packed science adventure in the Costa Rican rainforest.
- Microsoft 3D Moviemaker – create and direct your own 3D movies.
- Microsoft Golf 3 – the top selling golf game for Windows.
- Microsoft Football – experience all the atmosphere of world class football.
- Microsoft Cinemania – interactive movie guide with all the information on current movies.
- Suncom Joystick

This bundle is available with any EveshamVale PC – see the following pages

Software boxes shown for illustration only. Please note that the software is not supplied in retail packaging



LEXMARK
1000 Colour Jetprinter



Included with Solution 2 and 3



The family colour printer with Disney's Print Studio CD-ROM featuring Hercules

MILTON KEYNES
01908 230898
Fax: 01908 230865

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EveshamVale

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SEE PAGE 2 FOR DETAILS

Prima

We have set out to build a quality PC and sell it at a keen price, whilst still offering a standard of equipment that allows us to maintain our award winning level of service and support. The Prima is the result and is now established as a standard setting entry level PC, as confirmed by winning Computer Shopper's "Best Buy" award when pitted against computers from 13 leading suppliers.

Prima Standard models:

- ◆ 512kb Pipeline-Burst cache (WinChip models)
- ◆ Intel Slot One (Celeron models) for processor upgrades
- ◆ Socket 7 (WinChip models) for processor upgrades
- ◆ 16Mb RAM (WinChip 200 models)
- ◆ 32Mb RAM (other models)
- ◆ 2.1Gb hard disk (WinChip 200 models)
- ◆ 4.0Gb Quantum hard disk (other models)
- ◆ ATI 2Mb PCI video card
- ◆ 14" SVGA monitor
- ◆ 14 day moneyback guarantee
- ◆ 1 year on-site maintenance for parts and labour
- ◆ Lifetime technical support hotline
- ◆ Year 2000 ready BIOS
- ◆ 3xPCI & 3x16-bit expansion slots
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 3.5" 1.44Mb floppy disk drive
- ◆ Mini-tower case
- ◆ TÜV approved power supply with low noise fan
- ◆ 'Windows95' keyboard
- ◆ Mouse
- ◆ Windows 95 installed, with full manuals and disks supplied

Prima MULTIMEDIA models and Media98 models also have:

- ◆ 24x CD-ROM drive
- ◆ SoundBlaster 16 compatible sound
- ◆ Zy-Fi Compact amplified speakers

From
£429 +VAT (£504.08)



A Prima Multimedia PC (case style may vary)

EveshamVale Prima

Processor:	Standard	MULTIMEDIA	Media98
idt WinChip™ 200 MMX, 16Mb RAM, 2.1Gb HDD	£429 +VAT (£504.08)	£499 +VAT (£586.33)	£569 +VAT (£668.58)
idt WinChip™ PR233 MMX, 32Mb RAM, 4.0Gb HDD	£479 +VAT (£562.85)	£549 +VAT (£645.08)	£629 +VAT (£739.08)
Intel Celeron™ 266, 32Mb RAM, 4.0Gb HDD	£549 +VAT (£645.08)	£599 +VAT (£705.83)	£679 +VAT (£797.83)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See page 3 for details of Media98 pack.

See p 3 for details of Media98 software.



FREE license upgrade to Windows98 when available
£20 +VAT (£23.50) handling charge for CD and shipping

Reviews



"Its quality and breadth make the Evesham well worth its asking price." EveshamVale Prima



"Good specification, good performance and a good price." EveshamVale Prima



"If we were choosing the machine that combined performance, presentation and configuration then our choice would be narrowed down to the Evesham...we fully approve of its documentation, setup and choice of components" EveshamVale Prima



"There is little doubt that the Evesham is the winner as far as performance goes. It raced ahead of the competition." EveshamVale Prima



"the main components for which you're likely to buy are all sound and well coupled together. A good, base level PC." EveshamVale Prima

Prima Upgrades

16Mb to 32Mb RAM	£40 +VAT (£47.00)
32Mb to 64Mb RAM	£40 +VAT (£47.00)
15" EveshamVale monitor (as Prestige)	£30 +VAT (£35.25)
17" CTX monitor	£120 +VAT (£141.00)
K56flex EveshamVale modem	£49 +VAT (£57.58)
Second year on-site maintenance	£40 +VAT (£47.00)

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1 Gloucester Terrace
Leeds LS2 2ER
Tel: 0113 203 2000

Microsoft software bundles

Available with any EveshamVale Multimedia or Media98 PC

Microsoft

Office 97

Professional Edition

For the home user we offer Office97 Professional Student Edition:

- ◆ Word 97
- ◆ Excel 97
- ◆ Outlook 97
- ◆ Publisher 97
- ◆ AutoRoute Express
- ◆ Access 97
- ◆ Powerpoint 97

£99 +VAT (£116.33)

To qualify you or someone in your family needs to be aged 5 or over and in full or part time employment on a Dept for Education & Employment Training recognised course, as either a student or teacher. Product supplied via voucher redemption.

Microsoft

Office 97

Small Business Edition

- ◆ Word 97
- ◆ Excel 97
- ◆ Outlook 97
- ◆ Publisher 97
- ◆ AutoRoute Express

£149 +VAT (£175.08)

Product supplied features on-line documentation.

Microsoft

Office 97

Professional Edition

- ◆ Word 97
- ◆ Excel 97
- ◆ Outlook 97
- ◆ Access 97
- ◆ Powerpoint 97

£239 +VAT (£280.83)

Product supplied is Office97 Upgrade Pack, plus a suitable product to upgrade from.

EveshamVale

**BUY NOW
PAY LATER**
SEE PAGE 2 FOR DETAILS



Prestige

Amazing new prices on Pentium® II processor models

Prestige Standard models:

- ◆ Intel 440BX PCIset (Pentium II 350/400 models)
- ◆ Intel 440EX PCIset (other Pentium II and Celeron models)
- ◆ SIS chipset (WinChip models)
- ◆ 512kb Pipeline-Burst cache (Pentium II and WinChip models)
- ◆ 32Mb SDRAM, expandable to 256Mb
- ◆ Quantum 4Gb hard disk
- ◆ ATI 4Mb 3D Charger AGP video card (Pentium II and Celeron models)
- ◆ ATI 2Mb PCI video card (WinChip models)
- ◆ 15" EveshamVale monitor
- ◆ 2x Universal Serial Bus (USB) ports
- ◆ 14 day moneyback guarantee
- ◆ 2 years on-site maintenance for parts and labour
- ◆ Lifetime technical support hotline
- ◆ Year 2000 ready BIOS
- ◆ 4xPCI & 3x16-bit expansion slots (one shared)
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 3.5" 1.44Mb floppy disk drive
- ◆ Choice of desktop or midi-tower case
- ◆ TÜV approved power supply with low noise fan
- ◆ Windows95 keyboard & mouse
- ◆ Windows 95 installed, with full manuals and disks supplied



FREE license upgrade to Windows98 when available £20+VAT (£23.50) handling charge for CD and shipping



A Prestige Multimedia PC with optional 15" Taxan monitor (PC case style may vary)

Prestige Office models also have (in addition to Standard):

- ◆ 24x CD-ROM drive
- ◆ Microsoft Office97 Small Business Edition (see page 4)

Prestige MULTIMEDIA models and Media98 models also have (in addition to Standard):

- ◆ 24x CD-ROM drive
- ◆ SoundBlaster 16 compatible sound
- ◆ Zy-Fi amplified speakers



EveshamVale Prestige - Pentium® II processor models: 32Mb RAM, 4Gb HDD

Processor:	Standard	Office	MULTIMEDIA	Media98
Intel Pentium® II 266	£639 -VAT (£750.83)	£819 -VAT (£962.33)	£689 -VAT (£809.58)	£769 -VAT (£903.58)
Intel Pentium® II 300	£719 -VAT (£844.83)	£899 -VAT (£1058.33)	£769 -VAT (£903.58)	£849 -VAT (£997.58)
Intel Pentium® II 350	£949 -VAT (£1115.08)	£1129 -VAT (£1326.58)	£999 -VAT (£1173.83)	£1079 -VAT (£1267.83)
Intel Pentium® II 400	£1099 -VAT (£1291.33)	£1279 -VAT (£1502.83)	£1149 -VAT (£1350.08)	£1229 -VAT (£1444.08)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See page 3 for details of Media98 pack.

See p3 for details of Media98 software.

EveshamVale Prestige: 32Mb RAM, 4Gb HDD

Processor:	Standard	Office	MULTIMEDIA	Media98
idt WinChip™ PR233 MMX	£529 -VAT (£621.58)	£709 -VAT (£833.08)	£599 -VAT (£703.83)	£679 -VAT (£797.83)
Intel Celeron™ 266	£569 -VAT (£668.58)	£749 -VAT (£880.08)	£619 -VAT (£727.33)	£699 -VAT (£821.33)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See page 3 for details of Media98 pack.

Prestige upgrades

- 32Mb to 64Mb RAM.....£40+VAT (£47.00)
- 15" Taxan Ergovision 550 TCO95 monitor.....£25+VAT (£29.38)
- 17" CTX monitor.....£90+VAT (£105.75)
- 17" Taxan Ergovision 760 TCO95 monitor.....£150+VAT (£176.25)
- K56flex EveshamVale modem.....£49+VAT (£57.58)

see pages 8/9 for



The space saving solution from Evesham Micros and Taxan:

EveshamVale SpaceStation

Prestige Pentium® II 266 MULTIMEDIA PC with Taxan Crystalvision 640 TCO95-S flat panel LCD monitor

- ◆ 14.1" LCD panel with 1024 x 768 resolution
- ◆ Perfectly flat square display with no distortion
- ◆ Similar screen area to a 17" conventional monitor
- ◆ Only 170 mm overall depth including stand



£1399-VAT (£1643.83)

Reviews



"The Prestige is a good machine at a very competitive price. If you're working to a tight budget, this machine must be at the top of your short list" EveshamVale Prestige November 1996



"A good, well-designed machine offering superb value for money." EveshamVale Prestige May 1998



"very well future-proofed." "Fastest of all was the Evesham... It doesn't even have a 266MHz processor, but beats those that do." "with the Evesham reputation, we reckon this machine would be a good budget choice, so recommend it." EveshamVale Prestige P-II 233 February 1998



"Evesham is just as capable at entry level machines as at big network servers. Performance is a particular strong point of this machine." "At £1000, like all the others and with markedly superior performance, the Vale Prestige PII-233 deserves and earns a PC Plus Performance Award." EveshamVale Prestige March 1998



"Superb value in a machine which doesn't compromise on speed either...comes with such a good selection of peripherals and software that it scoops our Value award." EveshamVale Prestige March 1997



"an excellent starter pack of software... Internally there is plenty of space to plug in any extra bits and pieces... I feel I'd have to recommend this machine to the beginner." EveshamVale Prestige Media97 December 1997



"The Evesham uses quality components throughout which help maximize the potential of its powerful CPU...faster than some Pentium 200s! One of the first MMX machines we tested, the Evesham is a great example of the technology's potential." EveshamVale Prestige April 1997

EveshamVale

**BUY NOW
PAY LATER**
SEE PAGE 2 FOR DETAILS

Platinum

"THE BEST PC EVER"

EveshamVale Platinum PC Pro, December 1997

EveshamVale Platinum PCs have always been a favourite with reviewers - in fact *PC Pro* recently described one as "the best PC EVER". The current Platinum is an enhanced version of that review specification, with more hard disk space and 17" Taxan monitor (instead of 15"). Despite the improvements, we have managed to reduce the price.

Platinum models

- ◆ Chaintech 6BTM motherboard with Intel 440BX PCiset, 100MHz bus, and SeePU and APTC technologies (350 and 400 models)
- ◆ Chaintech 6LTM motherboard with Intel 440LX PCiset (other models)
- ◆ 512kb Pipeline-Burst cache
- ◆ 64Mb SDRAM, expandable to 256Mb
- ◆ 2x Universal Serial Bus (USB) ports
- ◆ 6Gb Quantum Ultra ATA hard disk
- ◆ 4Mb ATI Xpert@work AGP 2X 3D graphics accelerator
- ◆ 17" Taxan Ergovision 760 TCO95 monitor
- ◆ Panasonic 32x CD-ROM drive
- ◆ Microsoft Intellimouse
- ◆ 14 day moneyback guarantee
- ◆ 2 years on-site maintenance for parts and labour
- ◆ Lifetime technical support hotline
- ◆ Year 2000 ready BIOS
- ◆ 4xPCI & 3x16-bit expansion slots (one shared)
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 3.5" 1.44Mb floppy disk drive
- ◆ Keytronic PS/2 "Windows 95" keyboard
- ◆ Choice of high quality ATX style desktop or midi-tower case
- ◆ TÜV approved power supply with low noise fan
- ◆ Windows 95 installed, with full manuals and disks supplied

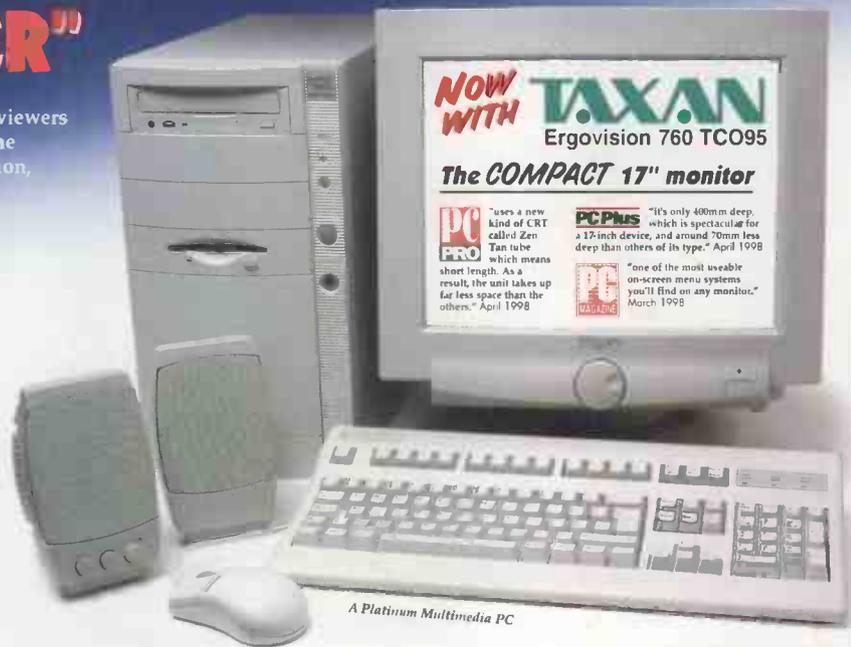
Platinum Office models have:

- ◆ Microsoft Office97 Small Business Edition (see page 4)



Platinum MULTIMEDIA models and Media98 models have:

- ◆ Creative Labs SoundBlaster AWE64 Value wavetable sound card
- ◆ Zy-Fi amplified speakers



A Platinum Multimedia PC

Now with 6Gb hard disk and 17" monitor - and £400 less than the review price!



BEST PC

"The best PC ever."

"You'll be amazed at how much power you can buy for £1500. We put 18 machines through their paces. Only two come up trumps, and one is the best PC we've ever seen."

"Evesham has created a lightning-fast PC at a really low price point. If you want cutting-edge technology, without taking out a second mortgage, look no further. This is a worthy speed award winner." EveshamVale Platinum December 1997



FREE license upgrade to Windows98 when available £20+VAT (£23.50) handling charge for CD and shipping

See p3 for details of Media98 software.

EveshamVale Platinum 64Mb SDRAM, 6Gb hard disk

	Office	MULTIMEDIA	Media98
Pentium® II 266	£1079+VAT (£1267.83)	£999+VAT (£1173.83)	£1079+VAT (£1267.83)
Pentium® II 300	£1159+VAT (£1361.83)	£1079+VAT (£1267.83)	£1159+VAT (£1361.83)
Pentium® II 350	£1339+VAT (£1573.33)	£1259+VAT (£1479.33)	£1339+VAT (£1573.33)
Pentium® II 400	£1489+VAT (£1749.58)	£1409+VAT (£1655.58)	£1489+VAT (£1749.58)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

Intel 440BX PCiset

offers a huge performance benefit over the previous 66MHz bus.

Pentium® II 350 and 400 models use Intel's new 440BX PCiset - the first to support a 100MHz bus. This determines the rate at which the processor talks to main memory, and



Platinum SE

Platinum SE models have the following enhancements to Platinum models:

- ◆ 8Gb Quantum Ultra ATA hard disk
- ◆ 8Mb ATI Xpert@work AGP 2X 3D graphics accelerator
- ◆ 17" Taxan Ergovision 750 TCO95 monitor with DiamondTron tube
- ◆ Zy-Fi 2 Pro speakers (MULTIMEDIA and Media98 models)
- ◆ K56flex modem

EveshamVale Platinum SE 64Mb SDRAM, 8Gb hard disk

	Office	MULTIMEDIA	Media98
Pentium® II 300	£1429+VAT (£1679.08)	£1349+VAT (£1585.08)	£1429+VAT (£1679.08)
Pentium® II 350	£1609+VAT (£1890.58)	£1529+VAT (£1796.58)	£1609+VAT (£1890.58)
Pentium® II 400	£1759+VAT (£2066.83)	£1679+VAT (£1972.83)	£1759+VAT (£2066.83)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

See p3 for details of Media98 software.

Platinum upgrades

128Mb RAM	£90+VAT (£105.75)
256Mb RAM	£300+VAT (£352.50)
17" iiyama Vision Master monitor	£100+VAT (£116.33)
17" Iiyama Vision Master Pro monitor	£130+VAT (£152.75)
17" Taxan 750 TCO95 monitor	£150+VAT (£176.25)
19" Taxan 975 TCO95 monitor	£230+VAT (£270.25)
21" Taxan 2150 TCO95 monitor	£650+VAT (£763.75)
SoundBlaster AWE64 Gold sound card	£90+VAT (£105.75)
Panasonic LS-120 120Mb drive instead of 1.44Mb floppy drive	£60+VAT (£70.50)
K56flex EveshamVale modem	£49+VAT (£57.58)

Platinum SE upgrades See Platinum models for other upgrades

128Mb RAM	£90+VAT (£105.75)
256Mb RAM	£300+VAT (£352.50)
17" iiyama Vision Master Pro monitor	£30+VAT (£35.25)
19" Taxan 975 TCO95 monitor	£70+VAT (£82.25)
21" Taxan 2150 TCO95 monitor	£500+VAT (£587.50)
SoundBlaster AWE64 Gold sound card	£90+VAT (£105.75)
Panasonic LS-120 120Mb drive instead of 1.44Mb floppy drive	£60+VAT (£70.50)
No modem	deduct £49+VAT (£57.58)

Microsoft software bundles Available with any EveshamVale Multimedia or Media98 PC - see page 4 for details

Evesham Vale

**BUY NOW
PAY LATER**
SEE PAGE 2 FOR DETAILS

Platinum Wonder

"THE BEST" GETS BETTER

The Platinum Wonder is the affordable 'ultimate' PC. Like the rest of the Platinum range it is based on our proven formula of the very best components, solid and reliable build quality, and award winning customer care.

Platinum Wonder key features:

- ◆ Intel 440BX PCIset (100MHz bus)
- ◆ 128Mb RAM
- ◆ ATI 8Mb All-in-Wonder Pro AGP video card
- ◆ 19" Taxan Ergovision 975 TCO95 monitor with DiamondTron tube
- ◆ Panasonic DVD-ROM drive (also works as CD-ROM drive)
- ◆ Yamaha YST-MS25 speaker system with sub-woofer
- ◆ 8Gb Quantum Ultra ATA hard disk
- ◆ Iomega zip drive
- ◆ Microsoft Natural keyboard

Other features as standard Platinum models



FREE license upgrade to Windows98 when available £20+VAT (£23.50) handling charge for CD and shipping



All-in-Wonder Pro April 1998

"All in all, this is an extremely impressive package... when you bear in mind the price you could expect to pay for all those extra bits on board, it's something of a bargain... Just for once, this is a product that does everything it sets out to do, and it does it all well."



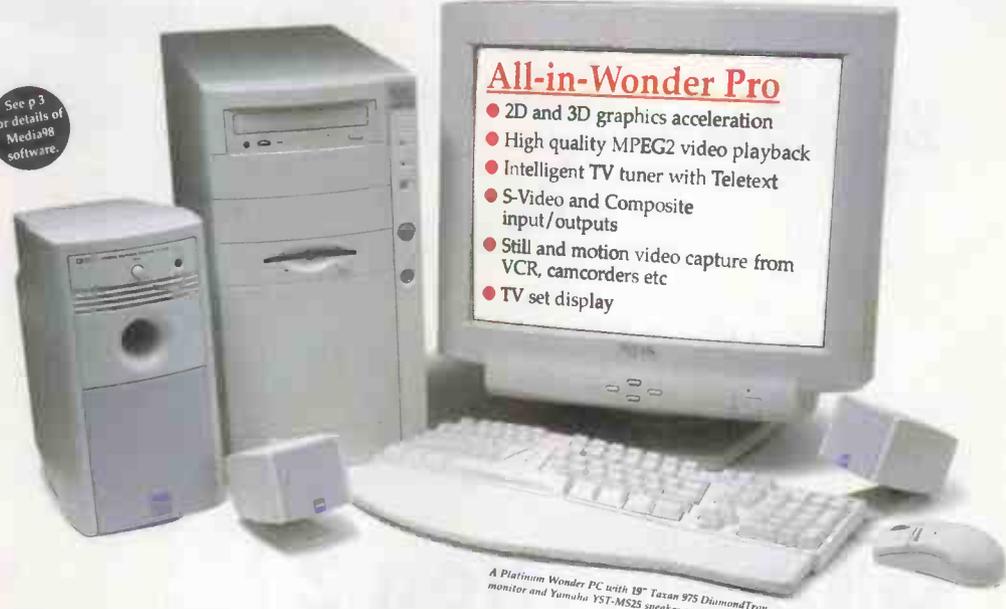
All-in-Wonder Pro December 2 1997

EveshamVale Platinum Wonder
128Mb SDRAM, 8Gb hard disk

	MULTIMEDIA	Media98
Pentium® II 350	£1749+VAT (£2055.08)	£1829+VAT (£2149.08)
Pentium® II 400	£1899+VAT (£2231.35)	£1979+VAT (£2325.35)

Prices Highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.
Upgrade to 21" Taxan 2150 monitor.....£400+VAT (£470.00)
32x CD-ROM drive instead of DVD drive.....deduct £50+VAT (£58.75)
HP Surestore CD-RW 7200 CD-ROM writer.....£260+VAT (£305.50)
SEE PLATINUM MODELS FOR OTHER UPGRADES

See p 3 for details of Media98 software.



A Platinum Wonder PC with 19" Taxan 975 DiamondTron monitor and Yamaha YST-MS25 speaker system

All-in-Wonder Pro

- 2D and 3D graphics acceleration
- High quality MPEG2 video playback
- Intelligent TV tuner with Teletext
- S-Video and Composite input/outputs
- Still and motion video capture from VCR, camcorders etc
- TV set display

ATI All-in-Wonder Pro
The 7-in-1 TV, graphics and multimedia board
The heart of the incredible video capabilities of the Platinum Wonder is ATI's new All-in-Wonder Pro card. This combines the acclaimed 3D Rage Pro graphics accelerator found in the Xpert@work with a host of multimedia functions

Reviews

Platinum & Platinum SE

100% 50
"This is a well thought-out home system. It's quick, well built... the software, modem and joystick provided are of high enough quality to be genuinely useful."
EveshamVale Platinum November 1997

Personal Computer World HIGHLY COMMENDED
"A well built machine that was a joy to use..."
"the Microsoft Intellimouse and Vale-branded KeyTronic keyboard were both a joy to use. The stylish Zydec Zy-Fi speakers with a maximum output of 120W provided excellent sound"
"The Taxan Ergovision 760 monitor offered a clear, sharp display... The simple push-and-twist-control was intuitive and easy to use."
EveshamVale Platinum SE May 1998

Build Quality	★★★★
Performance	★★★★
Value for Money	★★★★
Overall Rating	★★★★

PC GAMER
"Evesham Micros have built themselves up into one of the most cost effective PC suppliers in the country. This new Platinum pulls together a stream of good components, including one of the fastest current processors available... clear crisp picture, it's unusual to get a 17" unit at this price point and the extra couple of inches gives a more absorbing experience. The keyboard and mouse are from KeyTronics and Microsoft respectively, and are as good as you're going to get... with a two-year on-site warranty, this must be one of the best £1750 worth of PC kit currently on the market."
Verdict: 92% EveshamVale Platinum January 1998

PC Plus
"Fastest PC on the Planet"
"Evesham has put together a 'no expense spared' system, which shows what the 266MHz Pentium II can do - it's breathtaking"
"Evesham must know something others don't about heat generation - there's certainly little to support the 'hot running' rumours here"
"What distinguishes this machine beyond doubt is its Windows NT performance. Turning in a PC Plus index of 4.24, the highest we've ever seen, earns it a Performance award"
EveshamVale Platinum SE August 1997

Personal Computer World
"It's easy to set up and the user manual is informative, well written and illustrated. Performance-wise the Platinum did well, coming in third ahead of two SCSI-based machines: not bad, considering it carries a price tag that's £600 less than the cheapest of the SCSI computers tested"
"The insides of this PC are a tribute to good housekeeping"
"Evesham Micros gets a special mention for future-proofing its PC with a DVD-ROM drive"
"GOOD POINTS: Performance, ease of use and installation, warranty, monitor, DVD-ROM drive"
EveshamVale Platinum June 1998

PC HOME AWARDS
"Once the lid was off, this gained the most points for upgrading potential... Sound quality was excellent... a really good pair of speakers... One of the best things about this is the software suite, which is a real treat... the performance in this machine across all criteria is very good, and would make an excellent family PC for those with a variety of purposes."
EveshamVale Platinum Media98 February 1998

PC Plus
"We can always rely on Evesham to come up with something good..."
"The Platinum is an unpretentious machine with a lot under the hood."
"Add in a two year, on-site warranty to the machine and you have a high value bundle which few suppliers can touch. This is a machine which should last you well to the millennium and is a sound buy for serious home use and the odd game. It's well worth a PC Plus Gold."
PC Plus Verdict: 10/10 EveshamVale Platinum January 1998

PC GAMER
"I thought you might like to read about the fastest PC I've ever tested"
"All this cutting edge hardware adds up to a machine which goes faster than a greyhound on Lassie Vindaloo Chunks."
"PC Gamer Verdict: 88%" EveshamVale Platinum SE July 1997

PC Plus
"Evesham's latest Pentium II machine is not so much a Vale as a high plateau... Performance of the Platinum PII-333 was very strong... With a two year, on-site warranty thrown in, this Vale Platinum PII-333 wins a deserved Value for Money award."
EveshamVale Platinum April 1998

PC MAGAZINE EDITORS' CHOICE
"consistently among the best performers in PC Labs' tests, with notably good graphics and disk WinMark results... outstripping the others on price and features, was our Editors' Choice, the EveshamVale Platinum SE Pro."
EveshamVale Platinum SE November 1996

BEST BUY COMPANION LABS
"This is a well specified system... and is configured appropriately for both home and games usage, delivering very good performance."
"Evesham's Vale gets our vote for it's overall level of presentation."
EveshamVale Platinum December 1997

computer arts
"As always, we tried hard to be critical - but this time around, we have to hold our hands up and admit that the Platinum SE is a great system. So, is there anything negative to say? We could try and claim that the casing is plain and ugly, but then, they all are aren't they?"
Rating: ★★★★★ EveshamVale Platinum SE November 1997

Personal Computer World HIGHLY COMMENDED
"the machine excelled in our benchmark tests, benefiting from a speedy hard drive."
"The Vale came with a 17" Taxan monitor offering a clear, steady, flicker-free image."
"A machine to suit most business needs."
EveshamVale Platinum, February 1998

PC MAGAZINE
"There's a lot of expansion potential in this system, despite its compact size..."
"Excellent build quality, and supports AGP graphics... If you're looking for an AGP system, this is the one to go for."
EveshamVale Platinum January 1998

PC MAGAZINE EDITORS' CHOICE
"Performance, good build quality, good expansion capabilities, a well-thought-out design and a good support package all combine to produce an award-winning system"
EveshamVale Platinum SE October 1997

Personal Computer World
"1 year test"
"Based on price and quick delivery times, I decided to go with Evesham Micros"
"GOOD POINTS: Fast, expandable, quiet fan"
"CONCLUSION: I'm very happy"
EveshamVale Platinum SE March 1998

PC GAMER
"Excellent performance at a reasonable price"
ATI Xpert@work April 1998

THE A LIST
"Fast in 2D and in 3D, the Xpert@work represents the best one-card graphics solution currently available"
ATI Xpert@work May 1998

EveshamVale

BUY NOW
PAY LATER
SEE PAGE 2 FOR DETAILS

GameStation 1

The new 3Dfx Voodoo 2 chip has taken 3D gaming performance into to a new dimension. Intel's Celeron™ 266Mhz processor has the same floating-point unit as the more expensive Pentium™ II models – perfect for top 3D performance. The combination offered in the GameStation I provides more performance and features than you could rightfully expect for this sort of money!

Prestige Celeron™ 266 MULTIMEDIA PC
with the following upgrades:

- ♦ Creative Labs 8Mb Voodoo 2 3Dfx accelerator – the latest in high performance 3D graphics
- ♦ Genuine Creative Labs SoundBlaster AWE64 Value wavetable sound card
- ♦ Zy-Fi Pro amplified speakers
- ♦ Suncom F15-E Hawk joystick

See page 5 for full details of Prestige models

only (£765.11+VAT)

£899 inc VAT

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.



ZYFI

CREATIVE
CREATIVE LABS



Want the PC with the best
game-playing performance?

GameStation 2

Building on the features of the GameStation I this model combines the power of the 12Mb version of the Creative Voodoo 2 card with a 300Mhz Intel Pentium™ II processor and 64Mb of RAM for maximum speed. Big performance is coupled with a big monitor, a 17" model, and big sound from the incredible Yamaha MS25 system which comes with a sub-woofer. If you want the best in 3D performance this system offers incredible value for money!!

Prestige Pentium™ II 300 MULTIMEDIA PC
with the following upgrades:

- ♦ 64Mb RAM
- ♦ 6Gb hard disk
- ♦ Panasonic 32x CD-ROM drive
- ♦ Creative Labs 12Mb Voodoo 2 3Dfx accelerator for unprecedented 3D graphics
- ♦ 17" EveshamVale monitor
- ♦ Genuine Creative Labs SoundBlaster AWE64 Value wavetable sound card
- ♦ Yamaha YST-MS25 speaker system with sub-woofer
- ♦ Suncom F15-E Raptor joystick

See page 5 for full details of Prestige models

only (£1165.11+VAT)

£1369 inc VAT

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.



CREATIVE
CREATIVE LABS

YAMAHA Panasonic



Microsoft software bundles

Available with any EveshamVale Multimedia or Media98 PC – see page 4 for details

PhotoStation

The age of digital photography is upon us!

Digital cameras open up a new world of opportunity. Photos can be downloaded to the PC and stored, manipulated and printed - and no developing and film costs. The Lexmark 5700 printer shot to the top of *PC Pro* magazine's 'A List' after winning the 'Recommended' award in the May 1998 issue. If you want to combine a highly specified PC with a camera and printer then this offer is for you.

Prestige Pentium® II 266 PC with the following upgrades:

- ◆ Mustek VDC-200 digital camera with image editing software
- ◆ Lexmark 5700 Colour Jetprinter

only (£1003.40+VAT)

£1179 inc VAT



Inset: Mustek VDC-200 camera showing the LCD viewfinder

Fastest PC

If you simply must have the fastest PC available, then look no further. This model takes the highly impressive Platinum Wonder, and adds the latest SCSI disk system. The twin 9Gb Quantum drives and Adaptec controller utilise the latest Low Voltage Differential signalling to double the burst transfer rate of Ultra 2 to 80Mbytes/sec.

Platinum Wonder Pentium® II 400 PC with the following upgrades:

- ◆ 2x 9Gb Quantum Viking II LVD SCSI hard disks
- ◆ Adaptec 2940 LVD U2W SCSI controller

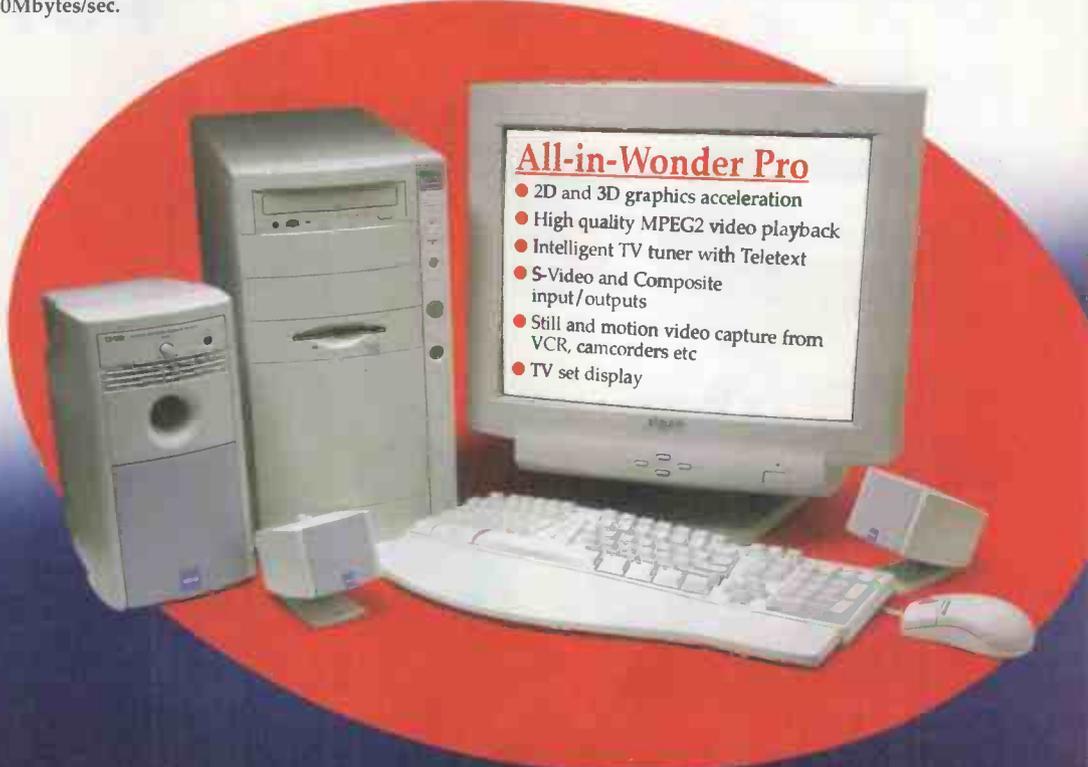
See page 7 for full details of Platinum Wonder models

£2999 +VAT
(£3523.83)



PC PRO "FASTEST PC"

"The Vale Platinum PII/400 is the latest in a series of ever-more powerful machines we've recently seen from Evesham... Evesham's system is one for the hardcore speed freaks... The PC equivalent of a land-speed record holder... All too predictably, the Platinum 400 knocks the Platinum 333 off its perch as the fastest system yet seen in *PC Pro*... if you must have the fastest PC currently known to man, or at least man at *PC Pro*, then this is it" EveshamVale Platinum June 1988



All-in-Wonder Pro

- 2D and 3D graphics acceleration
- High quality MPEG2 video playback
- Intelligent TV tuner with Teletext
- S-Video and Composite input/outputs
- Still and motion video capture from VCR, camcorders etc
- TV set display

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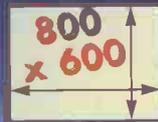
LEEDS
0113 203 2000
Fax: 0113 203 2001

Evesham Vale

**BUY NOW
PAY LATER**
SEE PAGE 2 FOR DETAILS

Voyager 2000

Mobile computing for the cost conscious.



The Voyager 2000 series is a range of highly featured notebook computers at attractive prices – all backed by a two year warranty that includes accidental damage cover.

Voyager 2000 MULTIMEDIA models:

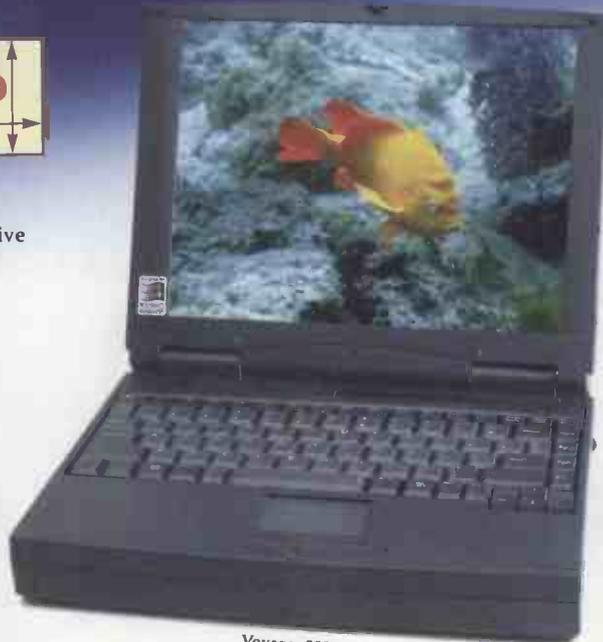
- ◆ 2 year warranty, with accidental damage insurance
- ◆ 256kb asynchronous cache
- ◆ 32Mb EDO RAM
- ◆ 2Mb 64bit PCI graphics accelerator
- ◆ 12.1" colour display with 800x600 SVGA resolution
- ◆ 20x CD-ROM drive (swaps with floppy drive)
- ◆ Nickel MetalHydride battery
- ◆ Extensive power management features, including 'suspend to RAM' and 'suspend to disk'

Voyager 2000 models also feature:

- ◆ Good solid keyboard with Windows 95 keys
- ◆ Built-in touchpad with palm rest
- ◆ Built-in 16bit stereo sound with stereo speakers and microphone
- ◆ 3.5" floppy drive
- ◆ Windows 95 installed
- ◆ ZV-enabled PCMCIA ports for two type II or one type III card
- ◆ 16550 compatible serial port
- ◆ EP/EEP bi-directional parallel port
- ◆ PS/2 mouse or keyboard port
- ◆ External monitor port (runs simultaneously)
- ◆ Jacks for external speakers and stereo line in
- ◆ Infra red data link
- ◆ Anchor for Kensington security cable

Voyager 2000 Office models also have:

- ◆ Microsoft Office97 Small Business Edition (see page 4)



Voyager 2000

Voyager 2000 – 12.1" DSTN display, NiMH battery

	MULTIMEDIA	Office
WinChip™ 200 MMX, DSTN, 32Mb RAM, 2.1Gb HDD	£949.VAT (£1115.00)	£1089.VAT (£1279.58)
Pentium® 233 MMX, DSTN, 32Mb RAM, 3.2Gb HDD	£1049.VAT (£1232.58)	£1189.VAT (£1397.08)

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Media98 models include the cost of the CD-ROM drive.

See page 3 for details of Media98 pack.

Voyager 2000 upgrades

48MB RAM	£30.VAT (£33.25)
64MB RAM	£60.VAT (£70.50)
Car lighter adaptor	£79.VAT (£92.83)

Voyager 2500 models differ in the following respects:

- ◆ 12.1" TFT colour display
- ◆ 20x CD-ROM drive and 3.5" floppy drive both built-in

Voyager 2500 – 12.1" TFT display, NiMH battery

	MULTIMEDIA	Office
WinChip™ 200 MMX, TFT, 32Mb RAM, 3.2Gb HDD	£1049.VAT (£1232.58)	£1189.VAT (£1397.08)
Pentium® 233 MMX, TFT, 32Mb RAM, 3.2Gb HDD	£1099.VAT (£1291.33)	£1239.VAT (£1455.83)

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Media98 models include the cost of the CD-ROM drive.

See page 3 for details of Media98 pack.

WHAT Testdrive PC?

"When he looked at the Evesham Vale Voyager 2000's specification, Tim found it hard to believe it fell within his budget."
"Tim liked the large, clear DSTN screen and comfortable keyboard."
"He also liked the removable floppy drive which can be replaced with the mains adaptor or optional CR-ROM drive. Since he rarely needed a floppy drive when he was on the road, this would cut down on the number of bits he had to carry around."
"In the end, the Evesham Vale Voyager 2000 looked the most promising."
Evesham Vale Voyager 2000

WHAT PC?

"quality screen... good colour and contrast: it is also visible from a good range of angles."
"The keyboard is comfortable to type on."
"The modular drive bays, though, provided the nicest touch in the design... an elegant solution... this is extremely flexible... it also helps keep down the weight and bulk"
Evesham Vale Voyager 2000

Voyager 2700 models differ in the following respects:

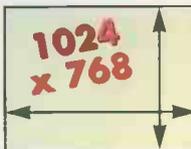
- ◆ 13.3" TFT colour display with 1024 x 768 resolution
- ◆ Low voltage Intel Mobile Pentium® II processor

Voyager 2700 – 13.3" TFT display, NiMH battery

	MULTIMEDIA	Office
Pentium® II 233, 13.3" TFT, 32Mb RAM, 3.2Gb HDD	£1599.VAT (£1878.83)	£1739.VAT (£2043.33)
Pentium® II 266, 13.3" TFT, 32Mb RAM, 3.2Gb HDD	£1829.VAT (£2149.00)	£1969.VAT (£2313.58)

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Media98 models include the cost of the CD-ROM drive.

See page 3 for details of Media98 pack.



We've got you..

2 YEAR WARRANTY WITH ACCIDENTAL DAMAGE INSURANCE

On-site maintenance is not really practical with notebook computers – but how many of our competitors look after you this well? All Voyager notebooks have a two year 'return to base' warranty with accidental damage insurance as well! For a modest sum you can extend this peace of mind to three years.

Computer Luggage

Stylish, practical carry cases for your notebook and accessories.



Pisa £65.VAT (£76.38)

Hamburg £50.VAT (£58.75)

New York (back pack) £35.VAT (£41.13)

Madrid (£35.25)

Evesham Vale

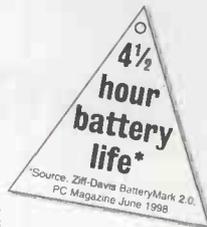
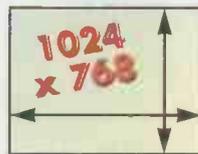
**BUY NOW
PAY LATER**
SEE PAGE 2 FOR DETAILS

Voyager 4000

**Slim, stylish and
powered by Pentium® II!**



pentium® II
PROCESSOR



If you want the most sophisticated and stylish Notebook on the market then the Voyager 4000 is the one to look at. It combines the class leading performance of the Pentium® II mobile processor with a battery life that leaves it's competitors behind. Manufactured to the highest standards, the overall quality of the fit and finish is superb; its high-tech performance is certainly matched by its svelte appearance.

Voyager 4000 MULTIMEDIA models:

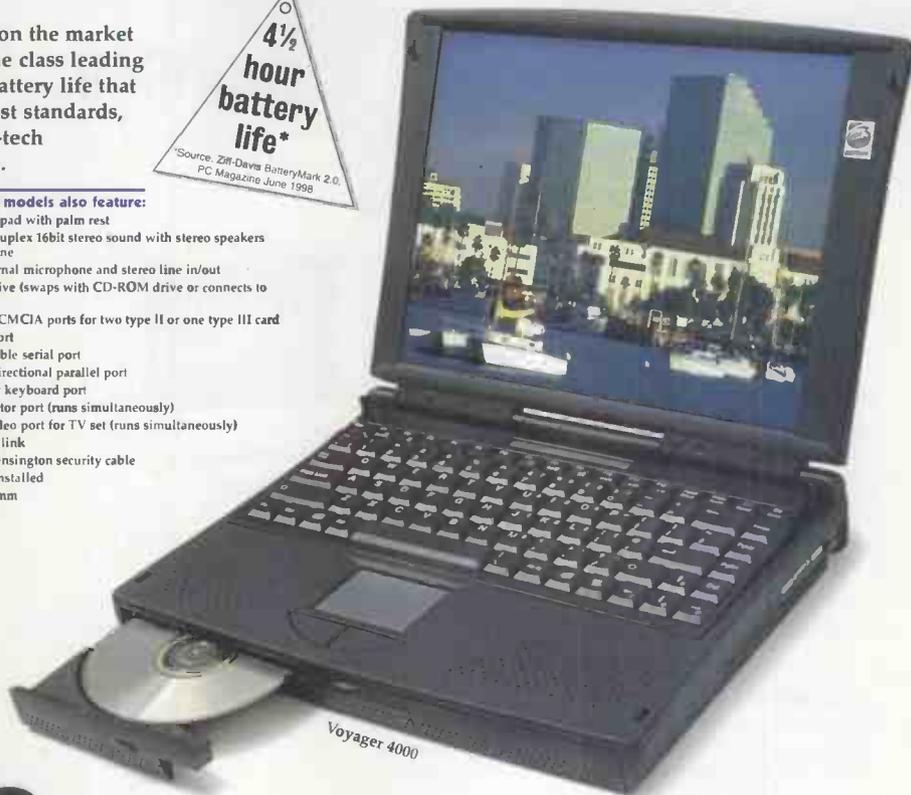
- ◆ 2 year warranty, with accidental damage insurance
- ◆ Li-Ion battery and extensive power management features give superb battery life with minimum weight
- ◆ Low voltage Intel Mobile Pentium® II processor also maximises battery life
- ◆ Automatically tilting keyboard for maximum typing comfort
- ◆ 256kb asynchronous cache
- ◆ 32Mb SDRAM (233 models)
- ◆ 80Mb SDRAM (266 models)
- ◆ 3.2Gb enhanced IDE hard disk
- ◆ 2Mb high performance graphics accelerator with support for MPEG-1 video playback
- ◆ 1024x768 resolution 13.3" TFT display with 64000 colour palette
- ◆ 20 speed CD-ROM drive built-in
- ◆ USB port
- ◆ Super slim design with superior quality fit and finish

Voyager 4000 models also feature:

- ◆ Built-in touchpad with palm rest
- ◆ Built-in full duplex 16bit stereo sound with stereo speakers and microphone
- ◆ Jacks for external microphone and stereo line in/out
- ◆ 3.5" floppy drive (swaps with CD-ROM drive or connects to parallel port)
- ◆ ZV-enabled PCMCIA ports for two type II or one type III card
- ◆ MIDI/game port
- ◆ 16550 compatible serial port
- ◆ EP/ECF bi-directional parallel port
- ◆ PS/2 mouse or keyboard port
- ◆ External monitor port (runs simultaneously)
- ◆ Composite video port for TV set (runs simultaneously)
- ◆ Infra red data link
- ◆ Anchor for Kensington security cable
- ◆ Windows 95 installed
- ◆ 334 x 250 x 51mm

Voyager 4000 Office models also have:

- ◆ Microsoft Office97 Small Business Edition (see page 4)



Microsoft Office 97
Voyager 4000 - Li-Ion battery, 3.2Gb HDD

	MULTIMEDIA	Office
Pentium® II 233, 13.3" TFT	£1949-VAT (£2290.08)	£2089-VAT (£2454.58)
Pentium® II 266, 13.3" TFT	£2179-VAT (£2560.33)	£2319-VAT (£2724.83)

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch.

See page 3 for details of Media98 pack.



June 1998

"Excellent performance and good battery life"
"The modular chassis provides an easy upgrade path"
"The case retains its clever tilting keyboard"
"BatteryMark 2.0... The results clearly show that the Asus design delivers the longest life...an impressive 4 hours 32 minutes, compared with the next best result of 2 hours 42 minutes"

..covered
3RD YEAR WARRANTY
Models up to £1700+VAT.....£99
Models from £1700+VAT to £2500+VAT.....£129
Models from £2500+VAT to £3200+VAT.....£179
The extended warranty rates are exempt from VAT and are applicable only at time of purchase.

PCMCIA card options

Evesham Vale 33.6 modem	£104.58
Evesham Vale 56k modem	£139.83
Evesham Vale ethernet adaptor	£92.83
USR Sportster Xjack modem	£182.13
Face microlin NB 33.6 voice	£190.35
3Com Etherlink III 10BaseT LAN & 33.6 modem combo	£209.15
Psion Gold Card 56k modem	£263.20
Psion Gold Card Combo LAN & 33.6 modem	£271.43
Xircom Global Access 10BaseT LAN & 33.6 modem combo	£257.33

Voyager 4000 upgrades

32Mb to 80Mb RAM	£80+VAT (£94.00)
Car cigar lighter adaptor	£79+VAT (£92.83)

LEEDS BRANCH NOW OPEN
1 Gloucester Terrace
Leeds LS1 2ER
Tel: 0113 203 2000

Multimedia software bundles Available with any EveshamVale Multimedia or Media98 PC - see page 4 for details

MILTON KEYNES
01908 230898
Fax: 01908 230865

Evesham Micros

FREEPHONE DIRECT SALES
0800 496 0800
Web: http://www.evesham.com

Evesham Micros

LEEDS
0113 203 2000
Fax: 0113 203 2001

EveshamVale Rapier Server range

The EveshamVale Rapier range offers a building block solution to your server requirements. From a modest print and file server to a powerful NT implementation, the possibilities are endless.

Rapier Server EL

- Intel Pentium® II 266MHz processor with Intel 440FX chipset
- 32Mb high performance RAM
- 512kb Pipeline-Burst cache
- 4.3Gb IDE hard drive
- 10/100Mbps PCI ethernet card
- Panasonic CD-ROM drive
- 1Mb PCI video card
- 14" SVGA colour monitor
- ATX style full-tower case with plenty of expansion room
- 3 years on-site maintenance

from **£899** +VAT

Evesham Finance example: £32.34 +VAT per month
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details.

PLEASE CALL FOR VOLUME WORKSTATION DISCOUNTS



An EveshamVale Rapier fileserver

Rapier Server

Rapier Server models differ from Rapier EL models in the following respects

- Intel Pentium® II 300MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard
- 64Mb high performance RAM
- Adaptec Ultra Wide SCSI controller
- 4Gb Ultra Wide SCSI hard drive
- Dedicated case with 6 further drive bays behind lockable front panel
- Dual redundant PSUs

from **£1949** +VAT

Evesham Finance example: £70.10 +VAT per month
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details.

Rapier Server upgrades

PROCESSOR	
P II-300 to dual P II-300	£240+VAT
Rapier EL models do not support dual CPUs	
RAM	
4Mb to 128Mb	£120+VAT
64Mb to 256Mb	£300+VAT
HARD DISK	
4Gb SCSI to 9Gb SCSI	£220+VAT
DAT DRIVE	
4/8Gb DAT drive	£650+VAT
12/24Gb DAT drive	£999+VAT

Full range of upgrades and cabling available
- please call to discuss your exact requirements

Reviews



"If you were going to invest in a dual processor-capable Pentium Pro system of this spec, then you should be looking to spend your money with someone who understands how to configure it.

Evesham fits this profile... Evesham was also the only company to install the latest NT Service pack. This gives you confidence that the company actually understand the issues that NT raises... We were sufficiently well impressed with the Evesham, both in terms of its components and its configuration, that it receives a Technical Merit award." **EveshamVale Platinum SE Dual Pro**



"The well-balanced configuration and great build quality makes for a good workhorse with a huge capacity" **EveshamVale DesignStation**

"the folk in the UNIX camp must be beginning to sweat... As Evesham Micro's flagship CAD machine, the DesignStation is a solid machine from the motherboard up."

EveshamVale DesignStation



COMPUTERWEEKLY

Best "Product knowledge of sales staff" in 'Quality of IT Suppliers 1995' survey.

"Business NT servers" **EveshamVale Fileserver**



"FASTEST PC"

"The Vale Platinum PII/400 is the latest in a series of ever-more powerful machines we've recently seen from Evesham... Evesham's system is one for the hardcore speed freaks... The PC equivalent of a land-speed record holder... All too predictably, the Platinum 400 knocks the Platinum 333 off its perch as the fastest system yet seen in PC Pro... if you must have the fastest PC currently known to man, or at least man at PC Pro, then this is it" **EveshamVale Platinum**

EveshamVale DesignStation

Power user? CAD/CAM user?

Experience astonishing performance at a fraction of the cost of a typical Workstation from the likes of Sun or Silicon Graphics with EveshamVale DesignStations. Using a combination of single or dual Intel Pentium II processors, huge RAM capacity, the latest Diamond Fire GL graphics cards and Microsoft's Windows NT4 operating system, you are guaranteed unsurpassed power for your pound.

DesignStation

- Intel Pentium® II 400MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard featuring Intel 440BX chipset
- 128Mb SDRAM
- 512kb Pipeline-Burst cache
- 2x 9Gb SCSI hard disks with Adaptec 2940 LVD U2W controller
- Diamond Fire GL1000 8Mb video card
- 21" Taxan Ergovision 2150 TCO95 monitor with DiamondTron tube
- Panasonic 24x CD-ROM drive
- High-tower case with plenty of expansion room
- 3 years on-site maintenance

from **£3499** +VAT

Evesham Finance example: £125.86 +VAT per month
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details.



EveshamVale DesignStation

"FASTEST PC"

PC Pro recently recognised our ability to build the "Fastest PC currently known" (see review, right). The EveshamVale DesignStation is an enhanced version of this PC with a dual processor capable motherboard.



SOLID EDGE™

Powerful 3D Solid Modelled CAD

If you are interested in the power and flexibility of a professional 3D CAD system then you must look at Solid Edge - we believe that £ for £ nothing else comes close. Evesham Micros is a Solid Edge Business Partner and we would be delighted to discuss your requirements.



3D Studio MAX® R2

The market leader in 3D graphics - we can supply you the fantastic new version and some amazing systems to run it on! Call us to discuss your requirements.



All EveshamVale Servers and DesignStations have 3 years on-site maintenance for parts and labour, operated by Evesham Micros' own engineers, with next business day response.

A safe and secure network for less than you'd expect

Rapier Business Network

The EveshamVale Rapier Business Network provides a complete, integrated solution to the growing communication needs of businesses – conceived, installed and commissioned by people who understand it:

A sound foundation for running your business:

- Powerful EveshamVale Rapier Server with ample power and storage, and enough expansion capacity to grow with your business
- Microsoft BackOffice Small Business Server software – file, print and application services; essential communication services; and safe, secure Internet connection are all combined, tested and optimised to work seamlessly together under Microsoft Windows NT



- Seagate DAT drive and software – simple backups help avoid catastrophic data loss
- Large uninterruptible power supply protects the server from mains supply faults
- Easy to set up, manage and grow



What can you do with it?

- Communicate in new and more efficient ways – use e-mail, the Internet and fax to communicate with suppliers and customers right from the desktop

- Operate more efficiently by easily scheduling group meetings; automating mass mailings; and creating a single, shared customer list
- Create and manage professional looking web sites without programming
- Powerful, secure relational database for running business applications
- Share resources such as printers and modems
- Dial-up networking allows home and mobile users to work as if they were in the office



What about support?

- All Rapier Business Network packages from Evesham Micros include installation by our own trained engineers (cost subject to site survey). We offer free hardware technical support, and software support at highly competitive rates. Any on-site work required is carried out by our own engineers, who will be able to remedy your problems in the shortest possible time.



"Build quality is good, with a neat internal layout... The Vale P-II 333 is a well-made system with good performance, and rounding it off is a 17in. Taxan Ergovision 750 monitor that does its job perfectly well." **EveshamVale DesignStation**

PC Direct

"what it lacks in aesthetics it makes up for in build quality... This is undoubtedly the tidiest and most carefully constricted system in this comparative review. It has a reasonable volume of documentation, too, so the installation process shouldn't be a complicated one for the new user" **EveshamVale DesignStation**



"Evesham's Vale Professional NT Workstation is a very capable and well specified Pentium Pro system, and although expensive, represents good value for money... Well-specified thanks to its well integrated Intel motherboard, the NT Workstation has performance to spare." **EveshamVale DesignStation**



"a well specified and capable system and in use proved to be an ideal system for running CAD solid modelling applications... For someone moving from DOS or Windows 3.11 up to a Windows NT platform, this system represents good value for money." **EveshamVale DesignStation**

Samurai RAID Server upgrades

PROCESSOR:	
P II-300 to dual P II-300.....	£240+VAT
RAM	
128Mb to 256Mb.....	£240+VAT
DAT DRIVE	
4/8Gb DAT drive.....	£650+VAT
12/24Gb DAT drive.....	£999+VAT

Example 5 user configuration

● EveshamVale Rapier Server (see left) with 128Mb RAM and 9Gb SCSI hard drive.....	£2289
● K56flex modem.....	£59
● Seagate 4/8Gb DAT backup drive.....	£650
● Seagate Backup Exec software.....	£299
● Galatrek 1000VA uninterruptible power supply.....	£249
● Microsoft BackOffice Small Business Server (5 clients).....	£999
● 3Com OfficeConnect hub TP4.....	£59
● 5x Prestige P-II 266 workstations.....	£3195
● 5x 3Com 3C905 network cards.....	£325
● Installation assuming 2 days (subject to site survey).....	£700

Evesham Finance example: £312.55+VAT per month
3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

£8824

This is an example configuration – call us on 0800 765500 to discuss your specific requirements

Samurai RAID Server

- Intel Pentium® II 300MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard
- 512kb Pipeline-Burst cache
- Adaptec AAA-131 RAID controller
- 128Mb high performance RAM
- 10/100Mbps PCI ethernet card
- Dual redundant PSUs
- Panasonic CD-ROM drive
- 20Gb SCSI RAID 5 array with hot swappable hard drives
- 1Mb PCI video card
- 14" SVGA colour monitor
- 3 years on-site maintenance

from £3499+VAT

Evesham Finance example: £125.86+VAT per month
3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

Hardware delivery and commissioning by an Evesham Micros engineer is included in the price.



Closed view



An EveshamVale Samurai RAID server

EveshamVale Samurai RAID Server

EveshamVale Samurai RAID Servers provide the ultimate solution to your mission critical system requirements. The stability of the Adaptec RAID controller combines with the power of Intel's Pentium® II processor giving maximum performance under Windows NT or Netware. By utilising this industry proven technology you can rest assured that your data integrity will be maintained.

LEEDS BRANCH NOW OPEN
1 Colchester Road
Leeds LS12 2ER
Tel: 0113 203 2000

Business Sales Centres:

- EVESHAM** (fax 01386 769416)
- BIRMINGHAM** (fax 0121 683 6869)
- CAMBRIDGE** (fax 01223 322883)
- MILTON KEYNES** (fax 01908 230865)
- GLASGOW** (fax 0141 445 2626)
- LEEDS** (fax 0113 203 2001)



3 months free use of any EveshamVale computer system

If you take out an Evesham Finance leasing agreement you can have free use of the equipment for up to 3 months*

*Evesham Finance is available for any order in excess of £1000. This facility is offered subject to status.

Why lease?

- Budget more effectively
- Be totally flexible – repayments can match the cashflow of your business
- Add to the equipment as requirements change and the business grows
- Repay 100% of the payments against tax
- Allocate repayments from a revenue budget as opposed to a capital budget

For an immediate free consultation call us now on 0800 496 0600

Novell, Novell.



Evesham Micros

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0800 765500
Web: <http://www.evesham.com>

Evesham Micros

Evesham Micros

Peripherals

LEEDS BRANCH NOW OPEN
1st Floor, 111-113, The Terrace, Leeds LS1 4JL
Tel: 0113 203 2000

MOTHERBOARDS

Buy a motherboard and processor together, and you get a free heatsink and fan.

Name	Form factor	Processor support			Chipset	Cache	RAM support				Exp. slots	USB	Price
		K6	Pentium	Pentium II			Fast page/EDO	SD	ISA	PCI				AGP
Chaintech 5SIM	Baby AT	●	●		SIS 5582	512kb	●	●	3*	4*		Opt*	£49+VAT (£57.58)
Chaintech 5TDM	Baby AT	●	●		430TX	512kb	●	●	3*	4*		Opt*	£59+VAT (£69.33)
Chaintech 5TTM	ATX	●	●		430TX	512kb	●	●	4*	4*		Opt*	£59+VAT (£69.33)
Chaintech 6LTM	ATX			●	440LX	on CPU	●	●	3*	4*	1	Opt*	£85+VAT (£99.86)

*One slot shared *Use of USB requires cable @ £5+VAT (£5.88)



CHAINTECH
COMPUTER CO., LTD.



Chaintech 5TDM, March 1998



RUN!PC
"Technology Creativity" award, Chaintech 5TDM & 5TTM, June 1997



Innovative simple CPU installation via BIOS - no jumpers
High security Active Processor Temperature Control - multi-level CPU temperature protection function

MOTHERBOARD SPECIALS

WinChip 200 MMX with motherboard.....	£99+VAT (£116.33)
Chaintech 5TDM with Pentium® P166 MMX.....	£115+VAT (£135.13)
Chaintech 6LTM with Pentium® II 266 and 32Mb SDRAM.....	£249+VAT (£292.56)
Chaintech 6BTM with Pentium® II 350 and 64Mb SDRAM.....	£549+VAT (£645.08)
Chaintech 6BTM with Pentium® II 400 and 64Mb SDRAM.....	£699+VAT (£821.33)

PROCESSORS

K6-233 MMX.....	£109+VAT (£128.08)	Celeron 266.....	£90+VAT (£105.75)
Pentium 166 MMX.....	£55+VAT (£64.63)	Pentium II 266.....	£160+VAT (£188.00)
Pentium 233 MMX.....	£145+VAT (£170.38)	Pentium II 300.....	£240+VAT (£282.00)
Heatsink & fan for Pentium class.....	£10+VAT (£11.75)	Pentium II 350.....	£400+VAT (£470.00)
		Pentium II 400.....	£550+VAT (£646.25)

MEMORY MODULES

4Mb 72-pin.....	£12+VAT (£14.10)	SDRAM DIMMs for 430VX/TX	
8Mb 72-pin.....	£19+VAT (£22.33)	32Mb.....	£50+VAT (£58.75)
16Mb 72-pin.....	£35+VAT (£41.13)	Twinhead Sllmnote memory	
4Mb EDO.....	£11+VAT (£12.93)	8Mb for SL7.....	£39+VAT (£45.83)
8Mb EDO.....	£18+VAT (£21.15)	16Mb for SL7.....	£69+VAT (£81.08)
16Mb EDO.....	£34+VAT (£39.55)	32Mb for SL7.....	£109+VAT (£128.08)
32Mb EDO.....	£69+VAT (£81.08)	16Mb for SL9.....	£59+VAT (£69.33)

CASES WITH POWER SUPPLY

Style	Form factor	Drive bays		Price
		Internal	External	
Midi tower	Baby AT	2x3.5"	3x5.25" 2x3.5"	£45+VAT (£52.88)
Desktop	ATX	4x3.5"	2x5.25" 2x3.5"	£49+VAT (£57.58)
Midi tower	ATX	3x3.5"	2x5.25" 3x3.5"	£55+VAT (£64.63)



UPSs

Protect your installation from mains power faults with an uninterruptible power supply.

Station series UPSs

- Reliable protection from mains surges, spikes, noise and failure
 - Interface port and power management software for automatic system shutdown and remote alarm notification by paging/email
- | | | | |
|--------------------------|--------------------|--------------------------|--------------------|
| Station 280 (280VA)..... | £99+VAT (£116.33) | Station 650 (650VA)..... | £189+VAT (£222.08) |
| Station 420 (420VA)..... | £129+VAT (£151.58) | Station 1000 (1KVA)..... | £249+VAT (£292.56) |

System series on-line UPSs

- PowerSave software and intelligent interface allows comprehensive monitoring and control, plus automated alarm and shutdown routines
- | | |
|-------------------------|----------------------|
| System 1000 (1kVA)..... | £599+VAT (£703.83) |
| System 3000 (3kVA)..... | £1249+VAT (£1467.59) |



AVANADO'S
Hardware Tech Page

5TDM

"Features the spectacular SeeCPU jumperless CPU setup"

"I suggest that you seriously consider the Chaintech 5TDM"

Ratings: Performance *****
Ease of use *****
Documentation *****

6LTM

"still smokes the competition"

Win95 Performance - Business WinStone 97



STORAGE & BACKUP

- **omega ditto tape drives:**
 - 2Gb internal.....
 - 2Gb external 'parallel port'.....
 - Tapes for ditto 2Gb.....
 - Tapes for ditto 32Gb.....

- **omega ditto Max tape drives:**
 - 7Gb internal.....
 - Tapes for ditto Max 7Gb.....
 - 10Gb internal.....

- **omega zip drives:**
 - zip ext drive 'parallel port'.....
 - zip plus external drive.....
 - Cartridge for zip drive.....
 - Battery pack for zip drive.....

- **omega 16b jaz drives:**
 - internal.....
 - external 'parallel port'.....
 - Cartridge.....

- **omega 8Gb jaz drives:**
 - internal.....
 - external.....
 - SCSI card.....
 - Cartridge.....

hp SureStore 12/24Gb DAT drive.....

Seagate 3.2Gb TapeStor int.....
Tapes for 3.2Gb TapeStor.....
TapeStor capacities quoted are with 2x compression

SYQUEST 1.5Gb Syjet internal IDE.....
ext 'parallel port'.....
external SCSI.....

120Mb FLOPPY DRIVE

Panasonic Superdisk LS-120

- LS-120 internal with controller card.....
- 120Mb floppy disk.....
- Panasonic 1.44Mb floppy disk drive.....

UPGRADE PCs

Q How do you give your system a serious performance boost without spending a fortune?
A Easy - get one of our 'Upgrade PCs' and use your existing monitor, floppy drive etc.

UPGRADE YOUR PC!

WinChip upgrade PC

- ◆ 430VX chipset motherboard
- ◆ Processor & fan
- ◆ Power supply
- ◆ 32Mb EDO RAM
- ◆ 1Gb hard disk

NB - has baby AT keyboard port and serial mouse port
Winchip C6-200 MMX.....

Pentium® II upgrade PC

- ◆ ATX style motherboard with 440LX chipset
- ◆ Pentium II processor
- ◆ Power supply
- ◆ 32Mb SDRAM

NB - has PS/2 keyboard and mouse ports

HARD DISKS & CONTROLLERS

Optional installation kit (5.25" mounting bracket plus cables).....
HD I/O card.....

Quantum® Bigfoot 2.1Gb IDE (5.25").....	£99+VAT (£116.33)
Fireball ST Ultra ATA 3.2Gb IDE (3.5").....	£125+VAT (£146.88)
Fireball ST Ultra ATA 6.4Gb IDE (3.5").....	£159+VAT (£186.83)
Wiking 2.2Gb SCSI (3.5").....	£149+VAT (£175.08)
Wiking 4.5Gb SCSI (3.5").....	£242+VAT (£284.35)
Atlas II 4.5Gb Wide SCSI (3.5").....	£309+VAT (£363.08)
Atlas II 9.1Gb Wide SCSI (3.5").....	£519+VAT (£599.83)

Seagate

1.2Gb IDE.....	£79+VAT (£92.83)
Barracuda 4Gb Ultra SCSI.....	£379+VAT (£445.33)
Barracuda 4Gb Ultra Wide SCSI.....	£399+VAT (£468.83)
Barracuda 9Gb Ultra Wide SCSI.....	£649+VAT (£762.58)
Cheetah 4Gb Ultra Wide SCSI.....	£459+VAT (£539.33)
Cheetah 9Gb Ultra Wide SCSI.....	£749+VAT (£880.08)

HITACHI

3.2Gb (2.5").....	£199+VAT (£233.83)
PROMISE TECHNOLOGY INC Promise PCI Ultra ATA controller.....	£49+VAT (£57.58)

MODEMS

APPROVED for connection to telecommunication systems specified in the instructions for use subject to the conditions set out in them.

Quality hardware voice modems

- Internet access starter pack: Includes full Internet and World Wide Web access software, with first month membership free and 10 hours free on-line time
- Cables included
- K56flex units include SuperVoice software

K56flex internal.....

K56flex external.....	£59+VAT (£69.33)
33.6 PCMCIA (not voice).....	£89+VAT (£104.58)
56k PCMCIA (not voice).....	£119+VAT (£139.33)

ISDN card.....

- Plug & Play 16 bit ISDN card
- 32 bit VxD CAPI 2.0 driver
- Answering machine
- Telephone book/call log
- Telephone through port
- RV5-COM software for Windows 95/NT provides Microsoft Internet Explorer, Fax group 3 reception/transmission, and E-Mail

56 Voice internal.....	£79+VAT (£92.83)
56 Voice external (supports UK caller ID).....	£109+VAT (£128.08)
56 PCMCIA.....	£99+VAT (£116.33)

Robotics®

Sportster 33.6 Flash external.....	£109+VAT (£128.08)
Sportster 56.6 Flash external.....	£103+VAT (£121.03)
Sportster Message Plus.....	£135+VAT (£158.63)
Courier ISDN internal.....	£259+VAT (£304.33)
Sportster WinModem.....	£77+VAT (£90.48)

All modems include Internet connection software with free trial connection period.

Network Products

Plug-N-Play ethernet adaptor.....	£19+VAT (£22.33)
PCI ethernet adaptor.....	£29+VAT (£34.08)
PCMCIA ethernet adaptor.....	£79+VAT (£92.83)
Mini-hub (pocket size, 5 ports, stackable).....	£39+VAT (£45.83)

Intel

Pro 10/100 PCI.....	5 pack £55+VAT (£64.63)
10/100 PCI.....	5 pack £259+VAT (£304.33)
10Mbps 5 port hub.....	£45+VAT (£52.88)
10Mbps 8 port hub with BNC.....	£65+VAT (£76.38)
100Mbps 4 port fast hub.....	£135+VAT (£158.63)
100Mbps 8 port fast hub.....	£245+VAT (£287.88)
100Mbps 8 port fast hub with 10/100 bridge port.....	£485+VAT (£569.88)
10Mbps 8 port switch.....	£365+VAT (£428.88)
10Mbps 8 port switch with two 10/100 bridge ports.....	£499+VAT (£586.33)

Internet station.....
● The cost effective way to share one internet connection over your 10base-T network
● Uses analog or ISDN modems
● Use up to two additional modems to share fax services, bulletin board access etc.



hp Jet Direct External Plus 3.....

3Com 3C509 Combo.....	£75+VAT (£88.13)
3C589 PCMCIA Combo.....	£119+VAT (£139.83)
OfficeConnect products:	
3C16704 Hub TP4.....	£51+VAT (£59.93)
3C16700 Hub 8/TPO.....	£79+VAT (£92.83)
3C16702 Hub TP16C.....	£175+VAT (£205.63)
3C16720 Hub 8/TP100.....	£485+VAT (£569.88)
3C16730 Switch 140.....	£675+VAT (£793.13)
3C41000 Remote 510.....	£400+VAT (£470.00)
3C41001 Gateway 535.....	£995+VAT (£1169.13)
3C8842 NetBuilder 142.....	£1005+VAT (£1180.88)

CASTELLE

OfficeConnect Print Server.....	£245+VAT (£287.88)
OfficeConnect Fax Server.....	£1075+VAT (£1263.13)
OfficeConnect CD-ROM Server.....	£450+VAT (£528.75)

Cabling & Terminators

Ethernet cable with BNC plugs:		BNC T Connector.....	£3.20+VAT (£3.76)
5m length.....	£8.50+VAT (£9.99)	Through Connector.....	£1.80+VAT (£2.12)
10m length.....	£14.00+VAT (£16.45)	Cable plug.....	£1.75+VAT (£2.06)
20m length.....	£20.00+VAT (£23.50)	Terminator.....	£2.00+VAT (£2.39)

Mustek

FLATBED SCANNING

from £65 +VAT (£76.38)



- All Mustek Scanexpress flatbeds use *single-pass scanning* – much faster than models which scan each colour separately
- Colour, 8-bit grey and line art modes
- 12 built-in halftoning patterns
- Simply connects to your parallel port for easy installation
- 'Small footprint' design with compact exterior dimensions and 216mm x 296mm scan area
- Includes *iPhoto Plus* image scanning and photograph retouching software, and powerful *Textbridge OCR* software

Requirements: Pentium processor, Windows 3.11/95 (Windows 95 recommended), mouse, CD-ROM drive, SVGA graphics or higher, at least 16Mb RAM, and hard disk with at least 70Mb free

WINNER LAB
"...ease of use, great colour quality and exemplary OCR output...offers both low price and impressive speed via its Enhanced Parallel Port interface...fast and easy to setup—just five minutes and you're done" August 1997 Mustek 600

PC FORMAT
"The bundled software is impressive... The scans themselves...are satisfying and higher than you could reasonably expect for the price. The design of the case is sleek and it's compact enough to fit on the smallest desktop." March 1997 Mustek 600

CD-ROM Today
"This scanner gives a whole new meaning to easy installation – it really is an absolute dream." June 1997 Mustek 600

PC PRO
"As far as output quality is concerned the Scanexpress excelled... the Scanexpress 1200P is a good choice...and a cost effective one as well." Quality 5/6 Value for money 5/6 March 1998 Mustek 1200

Mustek Colour 800 hand scanner:
with internal interface card£49+VAT (£57.58)
with 'parallel port' interface£99+VAT (£116.33)

Scanexpress 600£65+VAT (£76.38)
Optical resolution: 300x600dpi, Interpolated resolution: 1900dpi,
Colour depth: 30-bit

Scanexpress 1200£109+VAT (£128.08)
Optical resolution: 600x1900dpi, Interpolated resolution: 24000dpi,
Colour depth: 36-bit

Software offers with any Mustek scanner:
Photo Impact 3.0 SE and Wordlink£30+VAT (£35.25)
Photoshop 3.0 LE£40+VAT (£47.00)

hp Hewlett Packard scanners
ScanJet 5100C£159+VAT (£186.83)
ScanJet 6100C£479+VAT (£562.83)

Family PC



Mustek DIGITAL CAMERA

Superb colour pictures – straight into your PC.
No fuss, no films, no developing costs, and no scanner required!

- Capture vibrant colour images any time, any place for instant use with your PC or laptop
- Use it to build-up your family album, or create flyers, adverts, newsletters, reports, or for property guides or insurance claims
- Simple point and shoot operation – fixed focus lens and automatic exposure
- 1.8" colour LCD screen for viewfinding and picture review
- Up to 640x480 resolution with 24 bit colour
- Fixed focus lens – 250mm to infinity

- Built-in 2Mb flash memory
- Store up to 48 Images in memory, then download to your PC with the serial cable supplied
- Internal slot supports CF card for extra memory
- Auto flash
- Preview the output image on the camera, a PC or your TV screen
- Complete with batteries, image editing software, TWAIN driver, carry pouch and Mains power supply!

System requirements: 486 or higher processor, Windows 3.1 or higher, 3.5" floppy disk drive, hard disk drive with at least 15Mb available, 8Mb RAM or higher, 256 colour VGA display or higher, RS232C serial port

PICTURE THIS!



£179 +VAT (£210.33)

WINDOWS98

Windows98 upgrade£69+VAT (£81.08)
Windows98 Plus Pack£29+VAT (£34.08)

VIDEO CAPTURE

LOGITECH Logitech Snappy£145+VAT (£170.38)

VIDEO CARDS

4Mb 3Dfx card£79+VAT (£92.83)

canopus Pure3D 6Mb 3Dfx£119+VAT (£139.83)
Pure3D II 12Mb 3Dfx£229+VAT (£269.08)

ATI Mach64 1Mb (PCI Bus)£22+VAT (£25.65)
3D Charger 2Mb (PCI Bus)£25+VAT (£29.38)
3D Charger 4Mb (PCI Bus)£33+VAT (£38.78)
3D Charger 4Mb (AGP Bus)£34+VAT (£39.58)

Xpert@work 4Mb (AGP)£59+VAT (£69.33) 8Mb£79+VAT (£92.83)
Xpert@play 4Mb (PCI)£55+VAT (£64.63) 8Mb£75+VAT (£88.13)
All-In-Wonder Pro 4Mb (PCI)£139+VAT (£163.33) 8Mb£159+VAT (£186.83)
All-In-Wonder Pro 4Mb (AGP)£145+VAT (£170.38) 8Mb£165+VAT (£193.88)
TV card£89+VAT (£101.08)

DIAMOND Monster 3D Video£105+VAT (£123.38)
4Mb OEM version£105+VAT (£123.38)
Monster II 3D Video£159+VAT (£186.83)
8Mb OEM version£159+VAT (£186.83)

matrox m3D£75+VAT (£88.13)
Mystique upgrade from 2Mb to 4Mb£49+VAT (£57.58)
Mystique 220 4Mb (OEM version)£65+VAT (£76.38)
Millennium upgrade from 4Mb to 8Mb£79+VAT (£92.83)
Millennium II 4Mb (OEM)£95+VAT (£111.63)
Rainbow Runner Studio£119+VAT (£139.83)
Rainbow Runner Studio/Mystique 220 combo£175+VAT (£205.63)

Note: Rainbow Runner requires Pentium P90 or higher, Matrox Mystique, and CD-ROM drive. Cannot be used in conjunction with Mystique memory upgrades. Large hard disk recommended for video capture. Videoconferencing requires modem and video camera.

CREATIVE Vooodoo 2 8Mb£149+VAT (£175.08)
Vooodoo 2 12Mb£179+VAT (£210.33)

MILTON KEYNES
01908 230898 Evesham Micros
Fax: 01908 230865

SOUND CARDS

CREATIVE SoundBlaster AWE64 Gold£117+VAT (£137.48)

ZY-FI SPEAKERS

ZY-FI COMPACT £12+VAT (£14.10)

- 16 Watts PMPO (4 Watts RMS)
- Active or Passive use (active use requires batteries or optional mains adaptor)
- Magnetically shielded
- Volume Control
- Bass Booster
- Treble Booster

ZY-FI 2 £30+VAT (£35.25)

- 64 Watts PMPO (12 Watts RMS)
- Magnetically shielded
- Volume & tone controls
- Styling as Zy-Fi 2 Pro (below)

Classic Zy-Fi – the original£29+VAT (£34.08)

ZY-FI 2 PRO £49+VAT (£57.58)

- "These are the boys to add a bit of oomph to your PC." PC Answers "Recommended" March 1995
- Rating 9/10. "Excellent value for money." PC Zone April 1995
- Rating 9/10. "A lot of sound for the money" PC Plus April 1996
- Rating 6/6. "Sound quality on a different level from the other speakers" C Guide "Best Buy" September 1996
- 120 Watts PMPO (36 Watts RMS)
- Magnetically Shielded
- 140 x 230 x 150mm
- Volume Control
- Bass control
- Treble control

ZY-FI BASS £75+VAT (£88.13)

- Subwoofer 80 Watts PMPO (20 Watts RMS), 273 x 165 x 275mm
- Satellite speakers 24 Watts PMPO (6 Watts RMS), 120 x 96 x 98mm
- 5.25" subwoofer drive unit
- 3" satellite units
- Magnetically shielded
- Individual volume and bass controls
- External mains PSU

FREEPHONE DIRECT SALES
0800 496 0800 Evesham Micros
Web: http://www.evesham.com

CD-ROM DRIVES & PACKS

Panasonic 32x CD-ROM

Bare drive
£45+VAT (£52.00)
Includes cables

NB – Bare drive and packs 25A/B/C require motherboard with secondary IDE connector

Pack 25A
Bare drive with SB 16 card

£64+VAT (£76.38)

Pack 25B
Bare drive with TC 1500 M/M Labs TC1500 speakers

£89+VAT (£104.58)

Pack 25C
Bare drive with SB 16 and M/M Labs TC1500 speakers

£108+VAT (£126.90)

Pack 25C
Bare drive with AWE64 Gold

£159+VAT (£186.83)

Panasonic CR-508 24x SCSI CD-ROM drive£65+VAT (£76.38)
SR-8582B 2x DVD drive (20x CD-ROM drive, IDE interface)£99+VAT (£116.33)

CREATIVE Discovery 64 24x CD-ROM drive kit£99+VAT (£116.33)
DVD Encore£179+VAT (£210.33)

TEAC CD-524EK 24x IDE CD-ROM drive£69+VAT (£81.08)
CD-532EK 32x IDE CD-ROM drive£89+VAT (£104.58)
CD-532S 32x SCSI CD-ROM drive£99+VAT (£116.33)
CD-R55SK 4x12 SCSI CD-R kit£334+VAT (£392.45)
CD-C68E 6 disk CD-ROM autochanger£99+VAT (£116.33)
CD-C68E autochanger with SoundBlaster 16 card£144+VAT (£169.20)

CD-ROM WRITERS

hp SureStore CD-RW 7200 (internal kit)£260+VAT (£305.50)
SureStore CD-RW 7200 (external kit)£320+VAT (£376.00)
Adaptec Easy CD Creator software for above£69+VAT (£81.08)

Blank CD-RW disk£15+VAT (£17.63)
Blank CD-R disks: Single£2+VAT (£2.35) 5 pack£9+VAT (£10.58)
10 pack£17+VAT (£19.98) 20 pack£33+VAT (£38.78)
Labeller kit: labelling software, 20 labels, applicator£22+VAT (£25.85)
50 white labels£10+VAT (£11.75)

Panasonic PD DRIVE

650Mb rewritable optical disk drive
Easy to use, high speed, high capacity, rewritable and removable storage – combined with a fast CD-ROM drive.



- Uses high speed, optical disks with massive 650Mb capacity
- Amazingly low cost media
- As easy to use as a floppy drive
- Reads conventional CD-ROM disks with 6x performance



Requirements: Enhanced IDE interface and 5.25" drive bay (internal version only); Parallel port (external version); Pentium processor or equivalent; and DOS 5.0, Windows 3.1, Windows 95 or Windows NT 3.51 or higher

Internal model£199+VAT (£233.83)

External model£269+VAT (£316.08)

PD media 3 pack£49+VAT (£57.58)
Single£19+VAT (£22.33) 10 pack£149+VAT (£175.08)

KEYBOARDS, JOYSTICKS ETC

MITSUMI Mouse as used in EveshamVale Prestige PCs£10+VAT (£11.75)
EveshamVale Windows 95 Keyboard£10+VAT (£11.75)

KEY TRONIC "Windows 95" Keyboard as used in EveshamVale Platinum PCs£25+VAT (£29.38)

"one of the best weighted and most comfortable set of keys of any mainstream keyboard and with its well rated rox and full Win95 compatibility, it gets our top vote." PC Plus, January 1997



PC GAMER
"as comfortable and realistic as you could hope for... This truly is the Aston Martin of steering wheels" Rating: 90% January 1998

F1 SIM£129+VAT (£151.58)
F1 SIM compact£59+VAT (£69.33)

Flightstick£27+VAT (£31.73)
Flightstick Pro£49+VAT (£57.58)
Virtual Pilot£62+VAT (£72.85)
Virtual Pilot Pro£65+VAT (£76.38)
Pro Pedals£69+VAT (£81.08)

Suncom F-15E Hawk£17+VAT (£19.98)
F-15E Raptor£30+VAT (£35.25)
F-15E Talon£47+VAT (£55.23)
G Force£35+VAT (£41.13)
SFS Throttle£76+VAT (£89.30)

Microsoft IntelliMouse£45+VAT (£52.88)
Home Mouse with 'Intellipoint' software£18+VAT (£21.18)
Natural Keyboard£57+VAT (£66.98)

LEEDS
0113 203 2000 Evesham Micros
Fax: 0113 203 2001

HP OfficeJet 635 £390+VAT (£458.25)



All in one colour printer, plain paper fax, scanner and copier

- PRINT** ■ 600x600dpi black with REt ■ 600x300dpi with ColourSmart ■ Versatile media handling including envelopes
- FAX** ■ Plain paper and PC faxing ■ 100 speed dials ■ Approx 65 page memory ■ Confirmation and activity reports

- SCAN** ■ 300dpi optical (1200dpi interpolated) ■ 24-bit colour ■ 256 greyscale ■ OCR software included ■ TWAIN interface
- COPY** ■ 600x300dpi text ■ 300x300dpi graphics/photos ■ Sheet-fed design ■ Up to 99 copies from original

- Black consumable kit. £19+VAT (£22.33) 3 pack. £50+VAT (£58.75)
Colour consumable kit. £22+VAT (£25.85) 3 year OSM. £72+VAT (£84.60)

- HP DeskJet 400L** £79+VAT (£92.83)
Black consumable kit. £19+VAT (£22.33)
Black consumable kit. 3 pack £50+VAT (£58.75)
Colour consumable kit. £19+VAT (£21.15)
3 year on-site maintenance. £40+VAT (£47.00)
- HP DeskJet 670C** £123+VAT (£144.53)
Black consumable kit. £19+VAT (£22.33)
Black consumable kit. 3 pack £50+VAT (£58.75)
Colour consumable kit. £18+VAT (£21.15)
3 year on-site maintenance. £40+VAT (£47.00)
- HP DeskJet 340** £145+VAT (£170.38)
Black consumable kit. £19+VAT (£21.15)
Black consumable kit. 3 pack £48+VAT (£56.40)
Colour consumable kit. £19+VAT (£22.33)
3 year on-site maintenance. £40+VAT (£47.00)
- HP DeskJet 690C** £135+VAT (£158.63)
Black consumable kit. £19+VAT (£22.33)
Black consumable kit. 3 pack £50+VAT (£58.75)
Colour consumable kit. £18+VAT (£21.15)
3 year on-site maintenance. £40+VAT (£47.00)

- HP DeskJet 690C with EasyPhoto Reader** £172+VAT (£202.10)
- HP DeskJet 890** £213+VAT (£250.28)
Black consumable kit. £21+VAT (£24.68)
Black consumable kit. 3 pack £59+VAT (£69.33)
Colour consumable kit. £26+VAT (£30.56)
3 year on-site maintenance. £56+VAT (£77.55)
- HP DeskJet 1120** £299+VAT (£351.33)
Black consumable kit. £19+VAT (£22.33)
Black consumable kit. 3 pack £50+VAT (£58.75)
Colour consumable kit. £20+VAT (£23.50)
3 year on-site maintenance. £59+VAT (£69.33)
- HP DeskJet 1600** £899+VAT (£1056.33)
Black consumable kit. £29+VAT (£33.50)
Black consumable kit. 3 pack £89+VAT (£104.58)
Colour consumable kit. £21+VAT (£24.68)
3 year on-site maintenance. £105+VAT (£123.38)
- HP DeskJet 1600CM** £1329+VAT (£1581.58)
Consumables & OSM as DeskJet 1600

PRINTERS

HP DeskJet 720C



The colour business printer that does it all

£167+VAT (£196.23)

- MS Windows 3.1x/95/NT4 3 pack. £50+VAT (£58.75)
Colour consumable kit. £20+VAT (£23.50) 3 year OSM. £40+VAT (£47.00)

SCANNERS

- HP ScanJet 5100C £159+VAT (£186.83)
HP ScanJet 6100C £479+VAT (£562.83)

HEWLETT PACKARD
Authorised Reseller
Personal Computer
Products

LEXMARK 1000 Colour Jetprinter

only (£85.11+VAT) **£100** inc VAT



The family colour printer with Disney's *Print Studio CD-ROM* featuring Hercules

- Black consumable kit. £25+VAT (£29.38)
Colour consumable kit. £29+VAT (£34.08)
On-site maintenance. £37+VAT (£43.48)

- 5000 Colour Jetprinter** £144+VAT (£169.20)
Consumables as 7000 Colour Jetprinter
- 5700 Colour Jetprinter** £175+VAT (£205.63)
Consumables as 7000 Colour Jetprinter
- 7000 Colour Jetprinter** £215+VAT (£262.83)
Black consumable kit. £25+VAT (£29.38) Colour. £29+VAT (£34.08)
On-site maintenance. £37+VAT (£43.48)

EPSON

- Stylus 300 Colour** £104+VAT (£122.20)
Black consumable kit. £18+VAT (£21.15)
Black consumable kit. 3 pack £48+VAT (£56.40)
Colour consumable kit. £19+VAT (£22.33)
3 year on-site maintenance. £40+VAT (£47.00)
- Stylus 400 Colour** £125+VAT (£146.22)
Consumables & OSM as Stylus 300
- Stylus 600** £157+VAT (£184.48)
Black consumable kit. £18+VAT (£21.15)
Black consumable kit. 3 pack £48+VAT (£56.40)
Colour consumable kit. £17+VAT (£19.98)
3 year on-site maintenance. £65+VAT (£76.38)
- Stylus 800** £221+VAT (£259.68)
Consumables & OSM as Stylus 600
- Stylus 850** £259+VAT (£304.33)
Consumables & OSM as Stylus 600
- Stylus 1520** £539+VAT (£633.33)
Black consumable kit. £18+VAT (£21.15)
Black consumable kit. 3 pack £48+VAT (£56.40)
Colour consumable kit. £17+VAT (£19.98)
3 year on-site maintenance. £199+VAT (£233.83)
- Stylus 3000** £1149+VAT (£1350.08)
Call for consumables & OSM
- Stylus Photo** £189+VAT (£222.08)
Black consumable kit. £18+VAT (£21.15)
Black consumable kit. 3 pack £48+VAT (£56.40)
Colour consumable kit. £15+VAT (£17.63)
3 year on-site maintenance. £65+VAT (£76.38)
- Stylus Photo EX** £312+VAT (£366.60)
Call for consumables & OSM
- Stylus Photo 700** £221+VAT (£259.58)
Call for consumables & OSM

MONITORS

TAXAN

All Taxan monitors have 3 years warranty (1st year on-site).



Ergovision 760 TCO95 reviews:

PC PRO "uses a new kind of CRT called Zen Tan tube which means short length. As a result, the unit takes up far less space than the others" April 1998

PC Plus "it's only 400mm deep, which is spectacular for a 17-inch device, and around 70mm less deep than others of its type." April 1998

PC Update "one of the most usable on-screen menu systems you'll find on any monitor" March 1998

- 15" Ergovision 550 TCO95 £169+VAT (£198.58)
17" Ergovision 750 TCO95 DiamondTron £425+VAT (£499.38)
17" Ergovision 760 TCO95 £309+VAT (£363.08)
19" Ergovision 975 TCO95 £519+VAT (£609.83)
21" Ergovision 2150 TCO95 DiamondTron £879+VAT (£1032.83)
14.1" Crystalvision 640 £849+VAT (£997.58)
14.5" Crystalvision 650-S £1189+VAT (£1397.08)
14.5" Crystalvision 650-PLUS S £1329+VAT (£1561.58)
14.5" Crystalvision 660-PLUS S £1429+VAT (£1679.08)

Please note that industry standard practice is to quote a monitor's CRT size - the actual viewing area is approximately 1" less.



The Evesham difference
All our iiyama prices include 3 years on-site maintenance, normally £££ extra.

- 15" Vision Master 350 (MF-8515G) £179+VAT (£210.33)
17" Vision Master 17 (MF-8617) £309+VAT (£363.08)
17" Vision Master 17ES (MF-8617ES) £365+VAT (£428.88)
17" Vision Master Pro 17 (MT-9017) £349+VAT (£410.08)
19" Vision Master 450 (S901GT) £499+VAT (£586.33)
21" Vision Master 501 (S101GT) £729+VAT (£856.58)
21" Vision Master Pro 501 (A101GT) £759+VAT (£891.83)
21" Vision Master 502 (S102GT) £765+VAT (£899.88)
21" Vision Master Pro 502 (A102GT) £789+VAT (£927.08)
13.8" Pro-Lite 35 (LP-1014P) £854+VAT (£1003.45)
14.1" Pro-Lite 36 (TXA3601GT) £899+VAT (£1056.33)

- SHINHO** 14" SM483 £109+VAT (£128.08)
15" SM585 £159+VAT (£186.83)
17" SM785 £299+VAT (£351.33)

CLEARANCE BARGAINS

- Categories: 1. As new, complete
2. Slightly soiled, complete
3. Soiled, incomplete

VALE NOTEBOOKS

- Voyager II Mk II High spec Pentium P150, 1.4Gb HDD, 16Mb RAM, Windows 95 Category 2 £799+VAT (£938.83)
Voyager II Docking station Category 2 £129+VAT (£151.58)

SCANNERS

- HP ScanJet 5P Category 2 £129+VAT (£151.58)
Mustek A4 600dpi Category 2 £49+VAT (£57.58)
Mustek A4 800dpi Category 2 £89+VAT (£104.58)
Mustek A4 1200dpi Category 2 £99+VAT (£116.33)

MODEMS

- Pace 33.6 external Category 2 £39+VAT (£45.83)
USR Sportster 56.6 Flash external Category 2 £89+VAT (£104.58)
Vale 33.6 external Category 2 £29+VAT (£34.08)
Premier 56.6 external Cat 2 £59+VAT (£69.33)

BACKUP DEVICES

- omega ditto 2000 NEW £49+VAT (£57.58)
omega ditto 3200 ext Cat 2 £79+VAT (£92.83)

MICE

- Logitech Marble Mouse Cat 2 £15+VAT (£17.63)
Microsoft Mouse Category 1 £13+VAT (£15.28)
Mitsumi mouse Category 2 £5+VAT (£5.88)

PRINTERS

- Epson Stylus 600 Category 2 £129+VAT (£151.58)

MONITORS

- 15" iiyama MF8515 Cat 2 £149+VAT (£175.08)
14" Optiquest 1000S Cat 2 £79+VAT (£92.83)

MISCELLANEOUS

- Vale keyboard Category 2 £10+VAT (£11.75)

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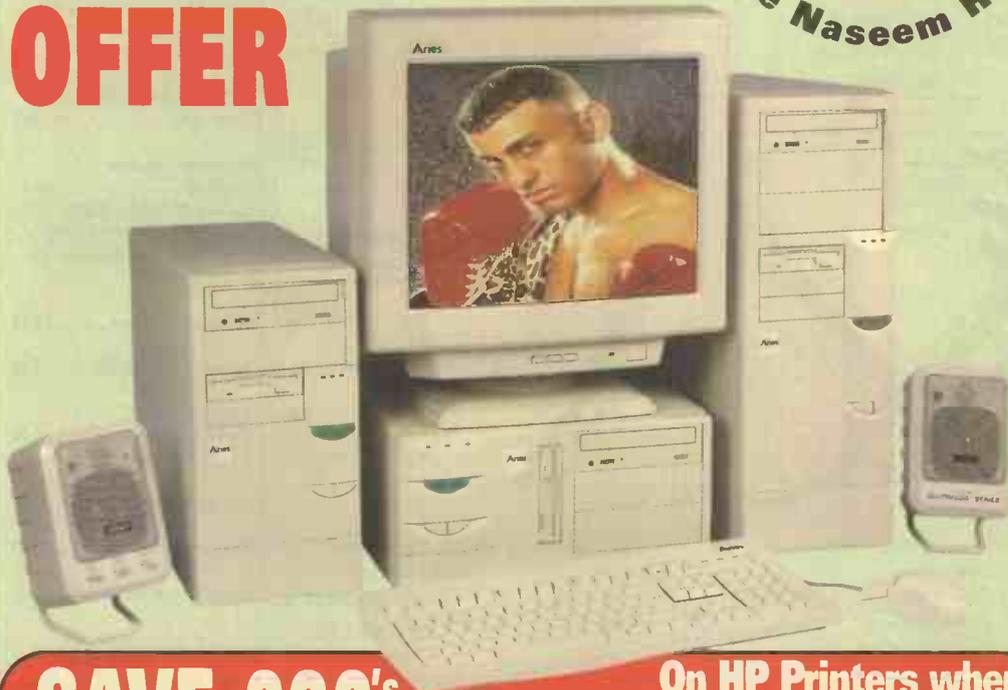
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CLEARANCE OFFER CD-ROM DRIVES
See Page 22

SOFTWARE SPECIAL OFFERS
See Page 35

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Index

0% Finance PC's.....	3
Cables & Leads - Various.....	8,15,27,32,33
Camera - Digital	9-10
Cards & Accessories.....	29
Graphics, Multimedia/Video/TV, I/O, Controller, SCSI Cards, SCSI Kits, PCMCIA Card Adaptors	
Cards - Graphics / Teletext / Multimedia.....	30-31
Voodoo, TV Teletext, Instant TV, 3D, Capture & Graphics Cards Special Offers	
CPU & Accessories.....	32-34
Drives - Backup & Accessories.....	21-22
Backup & Portable Storage Devices, Int/Ext Backup Solutions, CD ROM Drives & Special Offers Data Cartridges - Various, 3.5" Excel Diskettes, Int/Ext DAT & Bare Drives	
Drives & Accessories	23-25
Removable Hard/Optical Drives, 3.5", 2.5", External SCSI Cases, Hard Disk Drives & Accessories, FDD, PCMCIA, IDE, CD ROM's, Jukebox CD ROM Drives, Read/Write CD ROM's, DVD, Optical, CD Media & Accessories	
Handheld/Laptop PC's	9-10
Handheld Computers, Laptop Connections, Notebooks, Digital Cameras & Accessories	
Input Devices.....	27-28
Graphics Tablets, Keyboards, Mice, Trackerballs	
Internet - Connect 2	48
Microsoft	39
Windows '98, Save 50% Special Offer, Office 97, Education Software Offer	
Modem / ISDN / UPS	32-34
K56 Modems, Video Conferencing / Communications Kit	
Monitors	11-12
Multimedia & Accessories.....	27-28
Sound/Midi Keyboard, Speakers, Mice, Trackerballs, Keyboards, Joysticks, Accessories, Multimedia Bundles, Disk Storage Units	
Networking	8
Starter Kits, Cabling , Sockets & Outlets, Connectors, Tools, Adapter, Hubs, Print Servers	
Notebook PC's Accessories.....	6-7, 9-10
InfraRed PC Adapters, Laptop & Printer Adapter, External Notebook Drives, Digital Camera	
PC's.....	4-5, 9-10

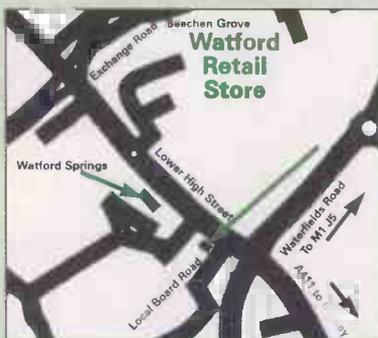
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PC Components /
Motherboards & Memory.....33
Memory, CPU, Cooling Fans,
Motherboards, Computer Cases
& Accessories

Printers & Accessories.....13-18
Laser, 9-Pin, 24-Pin, Inkjet, RAM,
Cartridges, CSF, Leads/Cables,
Paper & Transparencies, Labels,
Sharers/Buffers, Adapters,
Film Scanner, Extended Warranty
& All-In-One Printers

Processors - Overdrive.....26

Scanners & Accessories.....19-20
Hand & Flat Bed, Transparency
Adapters & Extended Warranty

Software - Business.....45
Accounting, OCR, Database &
Development

Software - Cross Atlantic...42-43
Utility, Internet, Contract, Legal,
Company, Health & Safety &
Business Software

Software - Design/Word
Processing.....47

Software - Hot New
Products.....40-41
Back-Up /Virus/Web Utility,
Language Translation, Network,
Privacy Software, Home/Garden
& Music Design

Software - Listings.....35-38

Software - Microsoft.....39

Software -
Powerful Utilities.....46
Anti Virus, Modern Utilities

Software - Route Finders.....44

Video Conferencing.....34

Video/Input & Accessories.....33

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- ▲ Mini Tower Case + PSU (CE approved)

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ARIES PERFECTA 6200

WINNER - RECOMMENDED AWARD WHAT PC?, Dec 97

266MHz system from £699 +VAT

- ▲ Intel Pentium® II Processor
- ▲ NEW - Intel 440 LX AGP chipset motherboard and Intel Slot One for processor upgrades - ATX
- ▲ Bios is year 2000 compliant
- ▲ 32Mb SDRAM expandable to 384Mb
- ▲ 512K Pipeline Burst Cache Memory
- ▲ 3.2Gb 11ms FAST Ultra DMA Hard Disk Drive
- ▲ Matrox Productiva G100 4MB AGP Graphics Card
- ▲ 15" SuperVGA Low Radiation 1024x768 0.28mm Digital Colour Monitor (3 Year Warranty with 1 Year On-Site Swap Out.)
- ▲ Multimedia Ready - See below
- ▲ IBM AntiVirus Software CD Included
- ▲ **Software Bundle Pack (see details above)**
- ▲ 6 YEAR WARRANTY includes 1st year On-Site parts & labour 5 years return to base, labour only (excluding monitors)
- ▲ Midi Tower ATX Case + PSU (CE approved)

Multimedia Specification

- ▲ 24X MAX Twenty Four Speed CD ROM Drive
- ▲ SoundBlaster Compatible 16-bit 3D sound card
- ▲ 80W Mains Powered Speakers

ARIES PERFORMA 6400

WINNER - RECOMMENDED AWARD WHAT PC?, Dec 97

- ▲ Intel Pentium® II Processor
- ▲ NEW - Intel 440 LX AGP chipset motherboard and Intel Slot One for processor upgrades - ATX
- ▲ 64Mb SDRAM expandable to 384Mb
- ▲ 512K Pipeline Burst Cache Memory
- ▲ Bios is year 2000 compliant
- ▲ 6.4Gb 10ms FAST Ultra DMA Hard Disk Drive
- ▲ AGP graphics card with 8Mb SDRAM
- ▲ 17" SuperVGA Low Radiation 1600x1200 0.26mm Digital Colour Monitor (3 Year Warranty with 1 Year On-Site Swap Out.)
- ▲ Aries K56 56600 VOICE Internal Fax/Modem with 30 days Internet Access
- ▲ Multimedia Ready - See below
- ▲ IBM AntiVirus Software CD Included
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- ▲ Midi Tower ATX Case + PSU (CE approved)

Multimedia Specification

- ▲ 24X MAX Twenty Four Speed CD ROM Drive
- ▲ CreativeSoundBlaster AWE64 sound card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- ▲ 80W Mains Powered Speakers

ARIES PROFESSIONAL 7200

- ▲ Intel Pentium® II Processor
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- ▲ 512K L2 Pipeline Burst cache RAM
- ▲ **11.5Gb V-FAST** Ultra DMA Hard Disk Drive
- ▲ Diamond Fire GL1000 (Permedia 2) 8Mb AGP Graphics Accelerator
- ▲ 17" XGA Low radiation 1600 x 1200 0.26mm Digital Colour Monitor (12 months swap-out warranty)
- ▲ K56 56000 Internal Voice Fax Modem with 30 days Internet Access
- ▲ Multimedia Ready - See below
- ▲ IBM AntiVirus Software CD Included
- ▲ **Software Bundle Pack (see details above)**
- ▲ 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only (excluding monitors)
- ▲ Midi Tower ATX Case + PSU (CE approved)

Superb Value!

Multimedia Specification

- ▲ 32X MAX Thirty Two Speed CD ROM Drive
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- ▲ 80W Mains Powered Speakers

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High performance PCI Graphics Controller with 2Mb Video RAM & Zoomed Video Support

Stereo Speakers
with Hardware Wavetable and
SoundBlaster 16
compatible Sound System



12.1" TFT
Active Matrix SVGA Display



20X Modular CD ROM
and 3.5" 1.44Mb Disk Drive



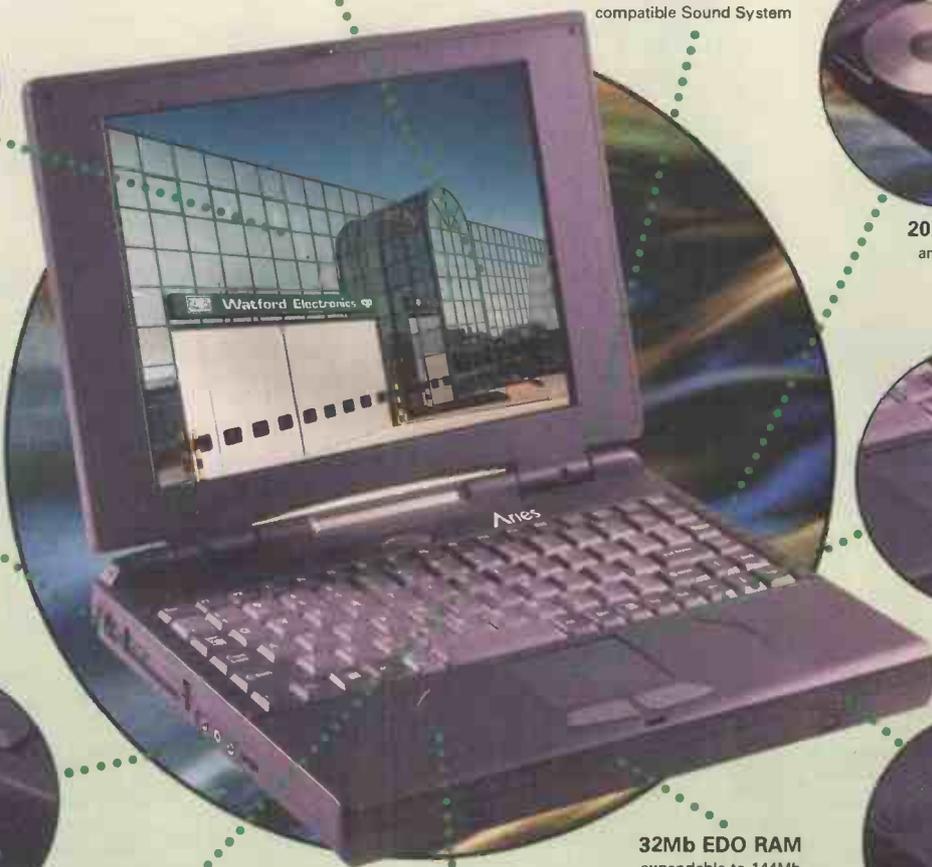
2 PCMCIA Cardbus Type II
slots or 1 Type III



Integrated two button
Touchpad



USB Port, Serial, Parallel, External
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Intel Mobile Module (MMO)
Pentium MMX Processor
200MHz, 233MHz or 266MHz
& 512K L2 Pipeline Burst Cache

2.1Gb ATA Hard Disk
upgradable to 3.2Gb Hard Disk
Support for Ultra DMA Hard Disk Drives

32Mb EDO RAM
expandable to 144Mb

Lithium-Ion Battery
(Optional 2nd Lithium-Ion
Battery for the Modular Bay)



**NEW
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Lost your Notebook - No problem
Drop Your Notebook - No Problem

With Aries Worldwide All-Risk cover we shall immediately obtain a replacement. All risk insures you against total loss + accidental damage anywhere in the world

- Insurance based warranty
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M8200	£199	£299

All Risks with World Wide Cover

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A Notebook with the Fastest Intel Pentium Mobile processor available.....

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High performance PCI Graphics Controller with 2Mb VRAM & Zoomed Video Support

Stereo Speakers with 3D, AC-97 (PCI) Sound System



14.1" XGA (1024x768) Active Matrix TFT Display



3.5" Floppy Drive built-in (with CD ROM Drive)



2 PCMCIA Cardbus Type II slots or 1 Type III



Integrated two button Touchpad

Intel Mobile Pentium II Processor 233MHz or 266MHz & 256K L2 Pipeline Burst Cache

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64Mb RAM Expandable to 128Mb



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Midi/Game PS/2 Mouse/Keyboard Infrared (IrDA) communications

8200 Connections

24X CD ROM Drive built-in (with Floppy Drive) Optional DVD Drive



Docking Port

Parallel Port

Serial Port

TV Port

External Monitor Port

2x USB Ports

241mm

42 mm (Ultra Slim)

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NETWORKING STARTER KITS

3Com OfficeConnect Networking Kit



The OfficeConnect Networking Kit is a complete network hardware bundle, ideal for small business installing their first network, or expanding an existing one. The kit contains all the hardware and documentation to network up to 3 PC systems, and includes the OfficeConnect 8TPC hub, 3 Etherlink III adapters, cabling and full instructions.

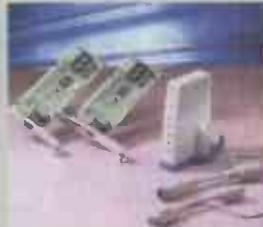
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£159.00
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D-Link

D-Link DE-905 Network Starter Kit

This kit includes everything you need to set up a network. All users have to do is plug in the cables and run the network! The kit includes a 5port hub, 2 network adapters, and comes complete with all cabling and full instructions.



£57.95
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NEW

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A complete network hardware solution in a box. The kits contain a 5 port hub, 2 network adapters, cabling and full installation instructions. Simple and easy to install, your network will be up and running in minutes.



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2 Station Fast Ethernet LAN
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Part Code 20075

Fast Ethernet Extension Kit
£32.95
£38.72 inc VAT
Part Code 20076

NETWORKING

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11446	3C509B ISA BNC/TP	£64.95
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11438	3C900 PCI BNC/TP	£73.95
17288	3C589D 16bit PC Card TP only	£75.95
11479	3C589D 16bit PC Card BNC/TP	£103.50
17857	3C563 16bit PC Card BNC/TP & 33.6 Modem	£196.00

D-LINK



18201	DE220PCT ISA BNC/TP	£14.95
20048	DE528CT PCI BNC/TP	£33.00
12121	DE530CT+ PCI BNC/TP	£41.95
18202	DE660CT 16bit PC Card BNC/TP	£41.75

GENIUS

11456	GE2000 III ISA BNC/TP	£12.95
12123	GE2500 III PCI BNC/TP	£13.95
13355	E3000 II Parallel Port BNC/TP	£39.95
11638	ME3000 16bit PC Card BNC/TP	£37.95

INTEL

12115	EtherExpress Pro/10+ ISA BNC/TP	£63.70
16319	EtherExpress Pro/10+ PCI BNC/TP	£68.25

SMC

12117	EtherEZ ISA TP only	£34.50
12118	EtherEZ ISA BNC/TP	£38.75
11460	EtherPower PCI BNC/TP	£47.00

FAST ETHERNET ADAPTERS

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16763	3C905TX PCI 10/100	£54.00
19407	3C515TX ISA 10/100	£94.95
19009	3C574TX 16bit PC Card 10/100	£88.95
18210	3C575TX 32bit CardBus 10/100	£92.50

D-LINK

18072	DFE500TX PCI 10/100	£29.00
18203	DFE650TX 16bit PC Card 10/100	£79.50

GENIUS

12116	GF100TX PCI 10/100 TP only	£29.95
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INTEL

20065	EtherExpress Pro/100 ISA 10/100	£98.50
15624	EtherExpress Pro/100+ PCI 10/100	£48.50
18713	EtherExpress Pro/100 PCI Server Adapter	£199.00
18655	EtherExpress Pro/100 16bit PC Card 10/100	£89.00
18654	EtherExpress Pro/100 32bit CardBus 10/100	£89.00

SMC

20049	EtherPower II PCI 10/100	£46.50
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UNMANAGED 10Mbps ETHERNET HUBS

3COM



20050	3C16704 OfficeConnect TP4 4xTP	£37.95
20051	3C16703 OfficeConnect TP4-Combo 4xTP,1xBNC/AUI	£54.00
17295	3C16700 OfficeConnect 8TPD 8xTP	£54.00
20052	3C16701 OfficeConnect 8TPC 8xTP,1xBNC	£68.00
18701	3C16702 OfficeConnect TP16C 16xTP,1xBNC	£125.50

D-LINK

18214	DE805TP Mini Hub 5xTP	£27.50
18215	DE809TP Mini Hub 8xTP + Link Port	£49.00
18216	DE816TAC Mini Hub 16xTP,1xBNC,1xAUI	£127.95

18217	DE812TP 19" Rack 12xTP,1xBNC,1xAUI	£94.00
18218	DE816TP 19" Rack 16xTP,1xBNC,1xAUI	£89.00
18219	DE824TP 19" Rack 24xTP,1xBNC,1xAUI	£129.00
GENIUS		
12168	GH4080 Mini Hub 8xTP,1xBNC	£37.95
12199	GH4160 Mini Hub 16xTP,1xBNC,1xAUI	£68.95
14186	GH4160R 19" Rack 16xTP,1xBNC,1xAUI	£89.90
HEWLETT PACKARD		
20053	J3128A AdvanceStack 8E 8xTP,1xBNC	£86.50
15634	J2610B AdvanceStack 8U 8xTP	£105.00
17346	J3300A AdvanceStack 12 12xTP	£147.00
18709	J3302A AdvanceStack 24 24xTP	£219.75
INTEL		
20054	SH10T5 InBusiness Mini Hub 5xTP	£38.00
20055	SH10T8 InBusiness Mini Hub 8xTP,1xBNC	£54.00
SMC		
20056	EtherEZ Mini Hub 5xTP	£36.00
20057	EtherEZ Mini Hub 8xTP,1xBNC	£81.00

MANAGED 10Mbps ETHERNET HUBS

3COM

20058	3C16710 OfficeConnect 8TPM 8xTP,1xBNC	£203.95
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D-LINK

18220	DE1812i 19" Rack 12xTP,1xAUI Master	£305.00
18222	DE1812 19" Rack 12xTP,1xAUI Client	£174.00
18221	DE1824i 19" Rack 24xTP,1xAUI Master	£460.00
18223	DE1824 19" Rack 24xTP,1xAUI Client	£174.00

UNMANAGED FAST ETHERNET HUBS

3COM

20059	3C16723 OfficeConnect TP400 4xTP	£125.00
18702	3C16722 OfficeConnect TP800 8xTP	£220.00
18703	3C16721 OfficeConnect TP1200 12xTP	£316.00

CISCO

18805	5128 8port Mini Hub 8xTP	£345.00
18806	116T 19" Rack 16port Hub 16xTP	£531.00

D-LINK

18224	DFE808TX Mini Hub 8xTP	£179.00
18225	DFE812TX+ 19" Rack 12xTP Stackable	£405.00

GENIUS

15627	GF4080TX 19" Rack 8xTP	£396.00
15628	GF420TX 19" Rack 12xTP	£440.00

HEWLETT PACKARD

18228	J3235A AdvanceStack 8TXE 8xTP	£281.00
18710	J3234A AdvanceStack 12TX 12xTP	£615.00

INTEL

20060	SH100TX4 InBusiness Mini Hub 4xTP	£119.00
20061	SH100TX8 InBusiness Mini Hub 8xTP	£215.00
20062	SH100TX8+ InBusiness Mini Hub 8xTP + Link	£299.00

RINGDALE

18722	4port 100baseTX Mini Hub	£159.00
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18724	16port 100baseTX 19" Rack Hub	£599.00

MANAGED FAST ETHERNET HUBS

D-LINK

18226	DFE1612TX 19" Rack 12xTP Master	£775.00
18227	DFE1212TX 19" Rack 12xTP Client	£517.00

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3COM

18707	3C16730 OfficeConnect Switch 140 1x100,4x10	£242.00
20063	3C16732 OfficeConnect Switch 280 2x100,8x10	£376.00

D-LINK

18708	DES1008 Switch 19" Rack 8x10/100	£495.00
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INTEL

18719	SS110TX8 InBusiness Switch 8x10,2x10/100	£439.00
20064	Express 10/100 Downlink 2x10/100	£461.00

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3COM

20066	3C8812 OfficeConnect 112 IIPX 1x10Mbps,1xWAN	£592.00
20067	3C8817 OfficeConnect 117 Multi 1x10Mbps,1xWAN	£845.00
20068	3C8842 OfficeConnect 142 IIPX 1x10Mbps,1xWAN,1xSDN	£845.00

CISCO

20069	1601 Desktop 1x10Mbps,1xSerial,1xWAN	£795.00
17314	2501 19" Rack 1x10Mbps,2xSerial,1xWAN	£1,169.00
17314	2503 19" Rack 1x10Mbps,1xSerial,1xWAN	£1,434.00
17315	RS232 Cable for above	£53.47
18377	X21 DTE Cable for above	£53.47

ETHERNET PRINTER SERVERS

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18234	DP300 10/100 External 2xP,1xS	£149.50

GENIUS

12430	GPS300 BNC/TP Pocket NetWare 1xP	£64.00
17856	GPS300M BNC/TP Pocket Multiprotocol 1xP	£79.00

HEWLETT PACKARD

19795	J2550B JetDirect MIO TP Internal	£205.00
15716	J2558B JetDirect MIO BNC/TP/LocalTalk Internal	£223.00
18235	J2556B JetDirect MIO 10/100 TP Internal	£249.00
19336	J3111A JetDirect 600N EIO BNC/TP Internal	£202.00
15187	J2591A JetDirect EX Plus BNC/TP 1xP	£175.00
17329	J2593A JetDirect EX Plus3 BNC/TP 3xP	£235.00
20070	J3263A JetDirect 300X 10/100 TP 1xP	£179.00
20071	J2592A JetDirect 150X TP 1xP	£108.00

INTEL



20072	NetPort Express Pro MIO BNC/TP Internal	£152.00
17330	NetPort Express Pro BNC/TP External 2xP,1xS	£218.00
18236	NetPort Express Pro/100 10/100 External 1xP	£159.00
18071	NetPort Express Pro/100 10/100 External 2xP,1xS	£225.00

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18247	FastPort 10/100 Pocket TP 1xP	£190.00
18721	FastJet 10/100 MIO TP Internal	£232.00
18720	PrintServ3 External BNC/TP 2xP,1xS	£195.00
18793	PrintProFL External Fibre Optic 1xP	£520.00

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14149	BackUPS Pro 650 PnP - 650VA	£155.00
18725	SmartUPS Value Server 420 - 420VA	£128.00
14588	SmartUPS Value Server 650 - 650VA	£169.00
14589	SmartUPS Value Server 1000 - 1kVA	£255.00
14590	SmartUPS Value Server 1400 - 1.4kVA	£218.00
12249	Matrix 3000 - 3kVA	£1,399.00
18831	Matrix 3000 Extended Runtime - 3kVA	£1,715.00
12250	Matrix 5000 - 5kVA	£2,595.00
18832	Matrix 5000 Extended Runtime - 5kVA	£2,185.00
12223	PowerChute Plus software for Novell NetWare	£43.50
17072	PowerChute Plus software for MS Windows NT	£43.50

PK ELECTRONICS

19320	Blackout Buster 500VA	£99.00
19321	Blackout Buster Additional Powerpack	£95.00
19322	Blackout Buster Smartpack	£42.50
19323	Blackout Buster Micropack	£15.95

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Length	Thin Ethernet	Cat 5 UTP Patch		
1m	12010	£0.99	12040	£0.85
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3m	12012	£1.95	12045	£1.85
5m	12014	£2.65	12047	£2.50
10m	12016	£4.80	12049	£4.25
15m	12017	£6.95	12033	£6.80
20m	12019	£8.70	12051	£8.50
30m	12053	£11.50	12060	£10.75
50m	12056	£14.65	12068	£13.95
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Connectivity Made Easy

Efficiently linking people to information

JetEye PC Infrared Adapter for PDA / laptop connection to desktop



- ▲ Wirefree connection between portable and desktop
- ▲ Receives Infrared signal from your laptop, PDA (PSION etc) or mobile data 'phone (Nokia 9000)
- ▲ Connects to Com port on PC
- ▲ Compatible with Win 95 & 3.x

£69
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Part Code 18002

JetEye Net Infrared Adapter for PDA or laptop connection to Ethernet or Token Ring networks

**All Extended
Systems
products come
with:**

- ▲ FREE manufacturers lifetime tech support
- ▲ FREE product evaluation
- ▲ FREE 5 year guarantee
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£225
£264.38 inc VAT
Part Code 18000

JetEye Printer Infrared Adapter for PDA / laptop connection to virtually any printer



- ▲ Wirefree connection between portable and office printer
- ▲ Walk up and print convenience
- ▲ Connects to parallel port on your printer
- ▲ Supports Win 95 & 3.x

£82
£96.35 inc VAT
Part Code 18001

Relisys 2000 Camera



**"Simple to use,
Easy and Fun"**

- ▲ No films needed: unlimited image storage
- ▲ Shoot and store
- ▲ Easily connect to your computer
- ▲ Enhancing, editing, and organising images
- ▲ Extend your creativity for business or fun
- ▲ Display, print or communicate via Internet

Features

- ▲ High quality 24 bit images up to 16.88 million colours
- ▲ Standard resolution (320x240 pixels)
- ▲ Fine resolution (640x480 pixels)
- ▲ Unlimited storage expandable with RFM cards (Replaceable Flash Memory cards)
- ▲ Focus free from 0.4m
- ▲ Built-in auto flash light

£89
£104.58 inc VAT
Part Code 18693

Additional 1MB Flash RAM

£19
£22.33 inc VAT
Part Code 18694



High Speed Compact Solutions For Notebooks



100MB ZIP DRIVE



£199
£233.83 inc VAT
Part Code 19754



- ▲ Iomega Zip Drive 100 compatible (100 MB)
- ▲ Win 95 'Plug 'n' Play', via PCMCIA slot
- ▲ High speed data transfer (3Mb/s)
- ▲ Micro design, 250gm
- ▲ Patented power management system

* Zip Disks not included

20X CD DRIVE



£199
£233.83 inc VAT
Part Code 18915



- ▲ Ultrathin & Lightweight 20x CD Drive
- ▲ Powered via PCMCIA slot (no AC required)
- ▲ Audio CD player function included
- ▲ Win 95 'Plug 'n' Play', 450gm
- ▲ Regulated low power consumption

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2.1 GB	5.0 GB	4.0 GB
£269	£569	£449
£316.08 inc VAT	£668.58 inc VAT	£527.58 inc VAT
Part Code 18921	Part Code 20045	Part Code 20044

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- ▲ Data and power via PCMCIA card - NO external power required
- ▲ Most Compact external Hard drive solution in market
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- 16870 E-Photo 307 Digital Camera . . .£136
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CANON

- 17858 PowerShot 350 Digital Camera . . .£309
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- 16980 PowerShot 170Mb Ram Card . . .£325

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- 17922 C8006 Digital Camera . . .£499
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- 17931 KXL600a Digital Camera . . .£225
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RELISYS

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- 17678 RDC-2L PC Digital Camera . . .£494
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- 17680 AC Adaptor AC-2 . . .£45
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Nikon COOLSCAN II

Now, high-quality scanning is not only affordable, its exceptionally fast too!



The Coolscan II can deliver publication quality, full colour scans at 2,700dpi in about 80 seconds! So, if you're on a tight schedule, you won't have to sacrifice a thing.

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- ▲ Film Type: 35mm film (positive or negative, colour or monochrome)
- ▲ Optical resolution 2,700 dpi Colour depth 24 bit
- ▲ Light source: RGB LED array
- ▲ No film holder needed for mounted slides
- ▲ Strip film holder for up to six frames

Code	Product	Price Ex VAT	Incl. VAT
17182	COOLSCAN II External with Nikon Scan	425.00	499.38
17183	COOLSCAN II Internal with Nikon Scan	360.00	398.33
19463	COOLSCAN II External with SilverFast and Photoshop LE	544.00	639.20
19004	COOLSCAN II Internal with SilverFast and Photoshop LE	458.00	538.15
Plug & Play bundle with Adaptec 1505 SCSI card			
19905	COOLSCAN II External with Nikon Scan & Adaptec 1505E SCSI Card	475.00	519.35
19993	COOLSCAN II Internal with Nikon Scan & Adaptec 1505I SCSI Card	356.00	418.30
19994	COOLSCAN II External with SilverFast, Photoshop LE & Adaptec 1505E SCSI Card	561.00	659.17
19995	COOLSCAN II Internal with SilverFast, Photoshop LE & Adaptec 1505I SCSI Card	476.00	559.30

JVC GC-S1 Digital Still Camera

- ▲ Progressive scan
- ▲ F1.6 Lens - Brightest amongst digital cameras
- ▲ Built-in 1.8 LCD monitor
- ▲ 2-Step 10x Optical Zoom with AF
- ▲ 9 Positions can be taken from each shot
- ▲ IrDA (IrTran-P compliant) interface for wireless transfer of pictures
- ▲ Compact Flash storage
- ▲ Software, JLiP
- ▲ Picture Navigator & MGI Photosuite™ SE
- ▲ PC Terminal
- ▲ Compact Flash

F1.6 - Brightest amongst digital cameras!



10x Optical Zoom
£299
£351.33 inc VAT
Part Code 19667

For Windows and Mac
Windows* 3.1/Windows* 95/MacOS Compatible

JVC GR-DVL9000 Digital Video Camera

- ▲ 560 Lines Vertical Resolution with Progressive Scan CCD and Complementary Colour Filter
- ▲ 500 Lines Horizontal Resolution with New Luminance Processor
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- ▲ F1.2 Lens (The brightest in the industry)
- ▲ 4" Screen with hi-crystalline (High quality)
- ▲ Direct PC Connection (RS-232C type)
- ▲ Pin point zoom on screen
- ▲ Adjustments to picture on screen
- ▲ DV terminal (DV out)
- ▲ Built-in capture facility



£1347
£1582.73 inc VAT
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For Windows PC only
Windows* 3.1 and Windows* 95 Compatible

Offers 560 lines of Vertical Resolution - highest in the industry!



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UNIQUE
WARRANTY

- ▲ 14" CRT
- ▲ 0.28mm dot pitch (anti-static, anti-glare)
- ▲ 30-50KHz Horizontal freq.
- ▲ 50-100Hz Vertical freq.
- ▲ 1024 x 768 Max Resolution
- ▲ Vertical/Horizontal, position, size, brightness, contrast
- ▲ 7 User Programmable Modes
- ▲ 3 Years On-Site Swap-Out Warranty



£79
£92.83 inc VAT
Part Code 10073

EnergyPro 15

3 YEAR
UNIQUE
WARRANTY

- ▲ 15" CRT
- ▲ 0.28mm dot pitch (anti-glare, anti static)
- ▲ 30 - 66kHz Horizontal frequency
- ▲ 50 - 100Hz vertical frequency
- ▲ 1280 x 1024 Max Resolution
- ▲ Digital control
- ▲ 7 User Programmable Modes
- ▲ 3 Years On-Site Swap-Out Warranty



15" Trinitron
£165
£193.88 inc VAT
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15" EnergyPro
£115
£135.13 inc VAT
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EnergyPro+ 8000s



PC
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"Sharp image and vibrant colours. Very good value for money."

- ▲ 17" High Res Screen
- ▲ 0.26mm Aperture Grille
- ▲ Antistatic, anti reflection screen
- ▲ 30 - 85kHz horizontal
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- ▲ 1600x1200 NI-Max Res
- ▲ On screen display
- ▲ TCO Compliance
- ▲ Plug and Play
- ▲ 3 Years On-Site Swap-Out Warranty

3 YEAR
UNIQUE
WARRANTY

17" EnergyPro+
£319
£374.83 inc VAT
Part Code 15857

17" Trinitron
£359
£421.83 inc VAT
Part Code 18930

EnergyPro 17

3 YEAR
UNIQUE
WARRANTY

This 17" diagonal flat square technology CRT monitor provides an entry level solution for those wishing to use business, small office / home office, home education / entertainment, general graphics and windows applications.

- ▲ 17" CRT
- ▲ 0.28mm dot pitch (anti-glare, anti static)
- ▲ 30 - 65kHz horizontal freq.
- ▲ 50 - 120Hz vertical freq.
- ▲ 1280 x 1024 Max Resolution
- ▲ Digital control
- ▲ Windows Plug & Play
- ▲ EPA, MPRII, CE
- ▲ 3 Years On-Site Swap-Out Warranty



£235
£276.13 inc VAT
Part Code 10074

EnergyPro 19

3 YEAR
UNIQUE
WARRANTY

- From the monitor specialists comes this fantastic new 19" display which performs best in both tests and on price. Voted "Labs Best Buy" by MacUser.
- ▲ 19" CRT 18" Viewable
 - ▲ 0.26mm dot pitch (anti-static, anti-glare)
 - ▲ 1600 x 1200 max resolution @75Hz
 - ▲ On screen display
 - ▲ TCO Compliance
 - ▲ Plug and Play
 - ▲ 3 Years On-Site Swap-Out Warranty



£419
£492.33 inc VAT
Part Code 20078



iiyama

a visible difference

Vision Master 350 (MF-8515G)



- ▲ 15" FST (13.8" viewable diagonal)
- ▲ 0.28mm dot pitch
- ▲ 1024 x 768 @ 85Hz
- ▲ Windows 95 plug-and-play
- ▲ Frequency H: 27-69KHz V: 50-160Hz

£169
£198.58 inc VAT
Part Code 13447

Vision Master 17 (MF-8617T)



- ▲ 17" FST (15.8" viewable diagonal)
- ▲ 0.26mm dot pitch (AR-AS coating)
- ▲ 1280 x 1024 @ 80Hz
- ▲ Windows 95 plug-and-play
- ▲ On-Screen Display menus
- ▲ 1 yr on-site, 2 yrs RTB warranty

£299
£351.33 inc VAT
Part Code 14435

Vision Master PRO 17 (MT-9017T)



- ▲ 17" DiamondTron (15.98" viewable)
- ▲ 0.25mm AG, (AR-AS coating)
- ▲ 1280x1024 @ 85Hz, 1600x1200 @ 72Hz
- ▲ On-Screen display menus
- ▲ 1 yr on-site, 2 yrs RTB warranty

£349
£410.08 inc VAT
Part Code 17445

Vision Master 502 (51020T)



- ▲ 21" FST (20" viewable diagonal)
- ▲ 0.27mm Enhanced dot pitch
- ▲ 1800x1440 @ 75Hz, 1600x1200 @ 85Hz
- ▲ Windows 95 plug-and-play
- ▲ Frequency H: 27-110KHz V: 50-160Hz

£765
£898.88 inc VAT
Part Code 20003

All iiyama monitors come with standard warranty, 1yr on-site, 2nd & 3rd yr RTB or upgrade to VisionCare 3 yr on-site

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ARIES

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10075	15" EnergyPro LR 0.28mm 1280x1024 NI	£115
18929	15" EnergyPro LR Trinitron NEW	£165
10074	17" EnergyPro LR 0.28mm 1280x1024 NI	£235
15857	17" 8000S EnergyPro + 0.2mm 1600x1200 NI	£319
18930	17" 8500T EnergyPro Trinitron 1600x1200 NI	£359



20078	19" EnergyPro LRO.26mm1600x1200 NI	£419
18844	21" 9000S EnergyPro 0.26+CA17mm 1600x1200 NI	£675

BELINEA

3 Year Warranty

19434	104010 14" 0.28mm Digital 1024 x 768 NI	£92
19435	105035 15" 0.28mm Digital 1280 x 1024 NI	£119
19733	105076 15" 0.27 1280 x 1024 & speakers	£165
19734	105586 17" 0.27 1280 x 1024 & speakers	£339
19735	107030 17" 0.27 1600 x 1200 and speakers	£349
19736	105596 17" 0.26 1600 x 1200 and speakers	£359
19436	107020 17" 0.28 mm 1280 x 1024 NI	£215
19437	107050 17" 0.25mm TCO95 1600 x 1200 NI	£330
19438	106090 19" 0.26mm TCO95 1600 x 1200 NI	£445
19439	108095 21" 0.25mm TCO95 1600 x 1200 NI	£635
19737	108010 21" 0.25 1600 x 1200	£929

CTX

3 Year Warranty Inc. 1st Year On-Site Swap Out

10082	1451ELR 14" Colour Monitor	£99
15434	1568SE 15" Colour Monitor	£129
15437	1569MS 15" MultiMedia Colour Monitor	£169
18931	1569UA 15" Trinitron Colour Monitor	£199
10090	1769SE 17" Colour Monitor	£229
18683	1792SE 17" Colour Monitor	£349

17704	1769MS 17" Multimedia Colour Monitor	£309
17705	1785XE 17" Colour Monitor	£309
15678	1785XA 17" Colour Monitor	£429
18886	1792UA 17" Trinitron Colour Monitor	£398
20078	1995UE 19" Colour Monitor	£449
15436	2085XE 20" Colour Monitor	£699
17706	2185XE 21" Colour Monitor	£699
20001	2195XE 21" Colour Monitor	£798

IYAMA

covered by 3 year warranty

13447	MF8515G 15" Colour Monitor	£169
14435	MF8617T 17" Colour Monitor	£299
16431	MF8617ES 17" Colour Monitor with Speakers	£365
17445	MT9017T PRO 17" Colour Monitor	£349
19337	S90IGT 19" Colour Monitor	£499
17524	MF8721T 21" Colour Monitor	£765
18579	MT9221T 21" Colour Monitor	£789
20003	SI02GT 21" FST Colour Monitor	£765
19016	LP-1014A 13.8" LCD Analogue Monitor	£854
19616	TXA-360IGT 14.1" TFT LCD	£899

IIVAMA

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14252	15" 3 year on-site maintenance	£15
14253	17" 3 year on-site maintenance	£39
14254	21" 3 year on-site maintenance	£49

MITSUBISHI

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16367	Diamondscan 15VX 15" 0.28dp Monitor	£186
16371	Diamondpro 67TXV 17" Diamontron Monitor	£326
16368	Diamondscan 17HX 17" 0.26dp Monitor	£310
16369	Diamondpro 91TXM 21" Diamontron Monitor	£802
19338	Diamond Pro 1000 21" Diamontron Monitor	£999
20079	Diamond Plus 72 17" Diamontron Monitor	£379
18932	17" 3 Years On-Site Warranty	£45
18933	21" 3 Years On-Site Warranty	£50

NEC MULTISYNC

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19589	LCD 400V 14" Flat Panel	£1,695
19588	LCD 400 14" Flat Panel	£1,859
14535	A500 15" Color Monitor	£172
14536	E500 15" Colour Monitor	£213
13191	M500 15" Colour Monitor	£253
14537	A700 17" Colour Monitor	£309
14542	E700 17" CRT Colour Monitor	£404
15154	M700 17" Colour Monitor	£425
14327	P750 17" Colour Monitor	£485

17721	E1100 21" Colour Monitor	£824
17722	P1150 21" Colour Monitor	£1,100
19587	LCD 2000 20" Flat Panel	£5,100
15733	XM29 29" Multimedia Colour Monitor	£1,789
15734	XM37 37" Multimedia Colour Monitor	£4,741

NOKIA

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19592	300Xa 13.3" STFT	£1,090
17708	449XA 15" Colour Monitor with Speakers	£249
17576	447XJ 17" Trinitron Colour Monitor	£435
17709	447XAV 17" Monitor with Speakers, Sub Woofer & Mic	£549
17710	447XVC 17" Monitor with Speakers, Sub Woofer & Mic & Camera	£999
15503	417V17" FST Colour Monitor with Speakers & Built in TV	£535
19593	447ZA 17" FST Monitor With speakers, m/c	£320
19591	447X Pro 17" Trinitron TCO95 PnP	£430
19590	446X Pro 19" FST Monitor	£579
19841	445X Pro 21" FST Colour Monitor Dynamic Focus	£C4LL
19640	445Xi 21" CRT Colour Monitor	£775
17711	445XAV 21" Monitor with Speakers, Sub Woofer & Mic	£995
17712	445XVC 21" Monitor with Speakers, Sub Woofer & Mic & Camera	£1,280

OPTI

19035	Opti Image 13.8" TFT Colour Monitor	£1,599
19853	Opti Image 17" DSTN Colour Monitor	£1,399

PANASONIC

covered by 2 years warranty

16944	Panaview 530 9.4" TFT	£1,599
16945	Panaview 550 10.4" TFT	£1,799
15954	TXD1562FU 15" Multimedia	£227
15952	TXD1563 15" Pro 4G	£222
15951	TXD1565U 15" Panasync 4	£179
10095	TXD0735 17" 5G	£260
15872	TXD1734FU 17" Multimedia	£370
19632	TXD 1734 5G Monitor	£303
15953	TXD1753 17" Pro 5G	£329
19594	PanaFlat PF70 17"	£488
15360	TXD2162 21" Pro 7G	£779

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covered by 3 years warranty

16946	14" Mono 14M	£69
16948	15" High Resolution Autoscans 105B	£155
16949	17" Autoscans Colour Brilliance 107S	£239
16950	17" Brilliance Colour 107B	£279
18935	21" Colour 201B	£699
18936	21" Brilliance Colour 201	£879
18937	21" Brilliance Colour 201CS	£1,175

SAMSUNG

covered by 3 years warranty

19597	Syncmaster SM500b 15" Colour Monitor	£159
19596	Syncmaster SM500S 15" Colour Monitor	£179
18889	Syncmaster SM700S 17" Colour Monitor	£299
19595	Syncmaster SM700P 17" Colour Monitor	£379
10107	Syncmaster 17GLSI 17" Colour Monitor	£455

SONY

covered by 1 year warranty

19464	CPD100ES 15" Colour Monitor	£179
19465	CPD100GST 15" Colour Monitor	£215
17492	CPD200EST 17" Colour Monitor	£325
17739	GDM17SE275 17" Colour Monitor	£465
14331	CPD300FT5 20" Colour Monitor	£719
17587	GDM20SE275 20" Colour Monitor	£779
17589	GDMV900 24" Colour Monitor	£1,559

TAXAN

covered by 3 years warranty

19014	EV430LR 14" Colour Monitor	£113
19358	550TCO 15" Colour Monitor	£169
14202	740TCO 17" Colour Monitor	£349
14203	740TCO95-S 17" Multimedia Colour Monitor	£359
14368	750TCO95-17" Colour Monitor	£425
18371	2040 TCO92 20" Colour Monitor	£664
14437	2150TCO95 21" Colour Monitor	£899
18940	Crystalvision 620 TFT Colour Monitor with Speakers	£809
18941	Crystalvision 650 TFT Colour Monitor with Speakers	£1,189
19362	Ergovision 760 TCO95	£309
19363	Ergovision 760 TCO95 S	£319
19361	Ergovision 975 TCO95	£519

VIEWSONIC

covered by 3 years warranty

10113	14" 14E641 1024 x 768	£109
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10117	15" 15GA 1280 X 1024 with Speakers	£219
10118	17" 17EA 1280 x 1024 0.27 with Speakers	£395
10119	17" 17G5 1280 x 1024 0.27	£350
10120	17" 17GA 1280 x 1024 0.27 with Speakers	£389
10121	17" 17PS Professional 1600 x 1200 0.25	£449
16958	17" PT770 Pro. 1600 x 1280 0.25	£459
17743	17" PT775 Pro. 1600x1200 @ 77Hz 0.25	£489
10084	20" G800 1600 x 1200 0.28	£699
16959	21" P810 Professional 1600 x 1200 0.25	£869
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TAXAN

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Now you can use a large screen display without detriment to your finances or upgrading your desk!

'Another first from Taxan'



Easy One-Touch Control

£319
£374.83 inc VAT
Part Code 19363

Ergovision 760 TCO 95

- ▲ 17" 'Zen Tan' FST Tube
- ▲ Footprint equivalent to a 14" monitor
- ▲ AGRAS Face treatment
- ▲ 0.27mm dot pitch
- ▲ 30-70kHz Horizontal Scan Frequency
- ▲ 1024 x 768 up to 86Hz Display Resolution
- ▲ Fully TCO 95 compliant
- ▲ Easy One-Touch Control

£309
£363.08 inc VAT
Part Code 19362

Ergovision 760 TCO 95-S

- ▲ 17" 'Zen Tan' FST Tube
- ▲ Footprint equivalent to a 14" monitor
- ▲ AGRAS Face treatment
- ▲ 0.27mm dot pitch
- ▲ 30-70kHz Horizontal Scan Frequency
- ▲ 1024 x 768 up to 86Hz Display Resolution
- ▲ Fully TCO 95 compliant
- ▲ Easy One-Touch Control
- ▲ Built in 4W Dome Stereo Speakers



£113
£132.78 inc VAT
Part Code 19014

Introducing three Ergovision Monitors from Taxan

Ergovision 430 LR

- ▲ 14" (13.1" Viewable)
- ▲ 0.28mm Dot Pitch
- ▲ 270mm x 200mm Display Area (Max)
- ▲ 30-54kHz (Horizontal Scan Freq.)
- ▲ 50-110Hz (Vertical Scan Freq.)
- ▲ 1024 x 768 up to 66Hz Display Resolution



PC Pro 'A' list, PCW Highly Commended May '97

£169
£198.58 inc VAT
Part Code 19358

Ergovision 550 TCO 95

- ▲ 15" FST (13.7" Viewable)
- ▲ 0.27mm Dot Pitch (Aperture Grille)
- ▲ 30-69kHz (Multiscan)
- ▲ Fully TCO 95 Compliant
- ▲ 1280 x 1024 up to 64Hz Display Area
- ▲ Windows 95 Plug & Play



18.4" Viewable

£519
£609.83 inc VAT
Part Code 19361

Ergovision 975 TCO 95

- ▲ 19" FST Tube
- ▲ ARASC Face Treatment
- ▲ 0.26mm dot pitch
- ▲ 30-95kHz (Horizontal Scan Frequency)
- ▲ 1600 x 1200 @ 75Hz
- ▲ Fully TCO 95 Compliant
- ▲ BRAND NEW FROM TAXAN!!



Watford Electronics

Order on-line: www.watford.co.uk

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN



ESTABLISHED 1972

PRINTERS

LASER PRINTERS

BROTHER

covered by 1 year warranty

14133	Brother HL730 Plus 6ppm	£205
15366	Brother HL760 6ppm	£229
14470	Brother HL760 (5Mb) 6ppm	£245
14239	Brother HL1060 2Mb 10ppm (1 year onsite)	£299
19896	Brother HL1060 6Mb 10ppm (1 year onsite)	£315
14268	Brother HL1660E 8Mb 16ppm (1 year onsite)	£639
14415	Brother HL1660 EN 8Mb 16ppm	£859
14416	Brother HL1660 EN 16Mb 16ppm	£875
19503	Brother HL2400c	£2,349
19680	Brother HL2400cn	£2,685
19859	Brother MC3000 All in one Print/Scan/Fax Colour Laser	£675
19858	Brother MFC7000 All in one Print/Scan/Fax Colour Laser	£595

CANON

covered by 1 year warranty

17859	Canon LBP660 6ppm	£185
15658	Canon LBP1260+ 12ppm	£614
19689	Canon LBP 2460 24ppm	£1,469

EPSON

covered by 1 year warranty

19685	Epson EPL 5500W	£CALL
17901	Epson EPL-N1200 12ppm	£593
17902	Epson EPL-N1200EN 12ppm	£791
17903	Epson EPL-N1200PS 12ppm	£986
17904	Epson EPL-N2000 20ppm	£1,278
17905	Epson EPL-N2000PS 20ppm	£1,582

HEWLETT PACKARD

covered by 1 year warranty

10003	HP LaserJet 5 Colour 10ppm(1year onsite)	£2,460
10004	HP LaserJet 5M Colour 10ppm(1year onsite)	£3,099
10002	HP LaserJet 5N 12ppm	£847
14607	HP LaserJet 5N Colour (1year onsite)	£2,700
17628	HP LaserJet 6L 6ppm	£232
14169	HP LaserJet 6MP 8ppm	£562
15368	HP LaserJet 6P 8ppm	£461
19553	HP LaserJet 3100 Printer/Fax/Copier/Scanner	£489
18802	HP LaserJet 4000 16ppm	£711
18809	HP LaserJet 4000T 16ppm	£787
18810	HP LaserJet 4000N 16ppm	£914
19671	HP LaserJet 400TN 8MB 16ppm	£999
19567	HP LaserJet 5000 16ppm	£929
19570	HP LaserJet 5000N 16ppm	£1,334
19573	HP LaserJet 5000GN 16ppm	£1,649
19925	HP LaserJet 8000	£1,604
19926	HP LaserJet 8000N	£1,791
19926	HP LaserJet 8000DN	£2,100
17629	HP LaserJet Companion (4/5/6 series)	£78
14604	HP PhotoSmart Photo	£262
19670	HP LaserJet 5si Mopier	£4,199
20011	HP LaserJet 240 Mopier	£3,279

KYOCERA

covered by 1 year warranty

14464	Kyocera FS600 6ppm	£223
14273	Kyocera Ecosys FS1700 12ppm	£568
15894	Kyocera Ecosys FS3400+ 18ppm	£775
17517	Kyocera Ecosys FS3700 18ppm	£849
16608	Kyocera Ecosys FS6500 13ppm A3	£1,175
19672	Kyocera Ecosys FS-1550+ 10ppm	£565
19673	Kyocera Ecosys FS-1700N Network Ready 15ppm	£725
19674	Kyocera Ecosys FS-1700N Network Ready 12ppm	£565
19674	Kyocera Ecosys FS-3700N Network Ready 18ppm	£1,016
14492	Kyocera Ecosys FS-7000 28ppm A4/A3	£1,784

LEXMARK

covered by 1 year on-site warranty

10012	Lexmark Optra C (8Mb, 600dpi) 12ppm	£4,554
10013	Lexmark Optra E Model A 6ppm	£279
18753	Lexmark Optra S 1255 (100dpi 4Mb) 16ppm	£645
18749	Lexmark Optra S 1855 (1200dpi 4Mb) 16ppm	£715
18748	Lexmark Optra S 1855N	£917

18747	Lexmark Optra S 2455 N	£1,346
18755	Lexmark Optra ES	£339
18758	Lexmark Optra N	£1,685
18759	Lexmark Optra N Pro	£1,930
18751	Lexmark Optra SC 1275	£2,257
18752	Lexmark Optra SC 1275 N	£2,633
18756	Lexmark Optra C Contone	£3,374
18757	Lexmark Optra C Pro Contone	£3,699

NEC

14075	NEC SuperScript 860 8ppm	£239
19675	NEC SuperScript 1260 12ppm	£525

OKI

covered by 1 year on-site warranty

14235	OKI PIPAGE 16N 16ppm	£579
14573	OKI 4W+	£135
14560	OKI OL6e 6ppm	£189
14587	OKI OL6ex	£219
19855	OKI Page 10i	£359
19856	OKI Page 10i with serial IF	£395
19857	OKI Page 10i EN	£445

PANASONIC

covered by 1 year on-site warranty

14040	Panasonic KXP6300 6ppm	£172
14407	Panasonic KXP7200 20ppm	£1,175
19677	Panasonic KXP 6500 6ppm	£234

QMS

covered by 1 year warranty

18506	QMS 2060EX A4/A3 (48Mb) 20ppm	£2,107
18500	QMS 2060GX A4/A3 (16Mb) 20ppm	£1,249
18482	QMS 2060BX A4/A3 (8Mb) 20ppm	£1,729
18480	QMS DeskLaser 600 6ppm 1 year RTB	£159
19679	QMS Office Laser 6P CF	£539
19681	QMS Desk Laser 2000 NET A3 20ppm	£889
19682	QMS Desk Laser 1400P	£655
19678	QMS Mgcicolor 2 CX (24Mb) Colour	£2,249

XEROX

19641	DocuPrint C55 Colour Laser 600 x 600 dpi	£2,439
19642	DocuPrint C55MP Colour Laser 600 x 600 dpi	£3,139
19643	DocuPrint C55MPV Colour Laser 600 x 600 dpi	£3,999
19644	DocuPrint 4508 8ppm Laser	£394
19645	DocuPrint 4512 12ppm Laser Duplex	£709
19646	DocuPrint 4512N 12ppm Laser (Network Ready) Duplex	£791
19647	DocuPrint 4517 17ppm Laser	£712
19648	DocuPrint N24 24ppm Laser	£1,565

LASER RAM UPGRADES

12480	1Mb Dki OL400e	£20
16717	2Mb Dki OL400e	£89
12470	4Mb LaserJet 4/4M/4S/4SIMX	£29
15471	4Mb LaserJet 4P/4MP/5/5M/5MP/6P/6MP	£29
13809	4Mb LaserJet 5L/6L	£35
19829	4Mb LaserJet 5SIMX	£39
16716	4Mb Panasonic KXP4400/5400 - PEM2	£59
16432	8Mb LaserJet 4P/4MP/4+AM+/5P/5MP/6P/6MP/5M/5N	£59
12482	1Mb Panasonic KXP 4400 - PEM3	£20

LASER CONSUMABLES

11416	Brother HL600 Series Drum	£89
11415	Brother HL600 Series Toner	£19
14222	Brother HL730/760 Series Toner	£19
17645	Brother HL1060 - TN300 Toner	£14
11307	Canon LBP4/Star LP4 Toner	£49
11308	Canon LBP8/ HPII/ HPIID/ HPIII/ HPIIID Toner	£50
19649	Canon LBP 1260/1260+ (EPE) Toner Cartridge	£60
15468	Epson EPL3000 Toner	£73
19692	Epson EPL 3000 Imaging Cartridge	£75
11593	Epson EPL4000/4100/4300 Drum	£112
11573	Epson EPL4000/4100/4300 Toner	£86
11304	Epson EPL5000/5200 Toner	£92
15163	Epson EPL5500 Drum	£39
11653	Epson EPL5500 Toner	£28
11529	Epson EPL5600 Toner	£68
19694	Epson EPL 5600 / N1200 Imaging Cartridge	£99
11614	Epson EPL7100/7500/8100 Toner	£131
18463	Epson EPL9000/PS Imaging Cartridge NEW	£151

18464	Epson EPLN2000 Imaging Cartridge NEW	£140
11430	Epson G05000/3500 Toner	£16
19695	Epson Photo Conductor Unit for EPL 5500	£CALL
11216	HP 4L/4ML/4P/4MP Toner	£39
11418	HP 4V/4MV Toner	£79
11537	HP 5L Toner	£36
11526	HP 5P/5MP/6P/6MP Toner	£45
11426	HP 5Si Toner	£95
15192	HP IIS/4SI Toner	£62
14606	HP PhotoSmart Cartridge - Orange Star NEW	£24
14605	HP PhotoSmart Cartridge - Purple Moon NEW	£24
11308	HP LaserJet I/II/III/IIID Toner Cartridge	£42
11307	HP LaserJet IIP Plus / IIP Toner Cartridge	£49
11477	HP LaserJet 4/4M/5/5M/5N Toner Cartridge	£54
14234	Kyocera 800 Toner TK6	£25
15927	Kyocera Toner 1550/1600/3400/3600/6500	£36
15927	Kyocera 3400/6500/1550 Toner	£39
11540	Kyocera FS400 Toner TK11	£13
18471	Kyocera FS1700/3700 Toner Kit NEW	£45
16659	Lexmark Optra C Black Toner	£73
16674	Lexmark Optra C Cyan Toner	£85
16676	Lexmark Optra C Magenta Toner	£85
16675	Lexmark Optra C Yellow Toner	£85
19703	Lexmark 150C Cartridge Black	£22
19704	Lexmark 150C Cartridge Colour	£27
19705	Lexmark Winwriter 400 Toner	£21
19706	Lexmark Winwriter 4600 Toner	£21
11621	NEC 610/660/660i EPP Toner	£84
15060	NEC S60/S62/S90 Toner	£117
14196	OKI 4W Toner	£18
13561	OKI DL400/410/800/810/830/840/850/870 Drum	£149
11429	OKI DL400/410/800/810/830/840/850/870 Toner	£20
15248	OKI DL400E/OL400W/410E/410EX/600EX/610EX/810EX Drum	£129
11482	OKI DL400E/OL400W/410E/410EX/600EX/610EX/810EX Toner (MS1)	£15
14460	OKI 16N Toner	£31
11390	Panasonic KXP4400/5400 Drum	£55
13501	Panasonic KXP4400/5400 Toner	£10
11389	Panasonic KXP4410/4430/4440 Developer	£98
11388	Panasonic KXP4410/4430/4440 Drum & Ozone	£98
11577	Panasonic KXP4410/4430/4440 Toner	£24
11127	Panasonic KXP4420 Developer	£57
11333	Panasonic KXP4420 Drum	£57
11447	Panasonic KXP4420 Toner	£25
11219	Panasonic KXP4450/4450/4451/4455 Developer	£60
15065	Panasonic KXP4450/4450/4451/4455 Drum	£75
11214	Panasonic KXP4450/4450/4451/4455 Toner	£20
11425	Panasonic KXP6100/6150 Toner	£12
11679	Panasonic KXP6300/6500 Toner	£12
18485	QMS 2060 Toner NEW	£165
18481	QMS DeskLaser 600 Toner NEW	£65
11332	Qume Crystalprint Toner Drum	£149
16613	Qume Crystalprint Toner Toner	£108
16615	Sharp Toner 9200/9210 (92BC) Drum	£51
16678	Sharp Toner 9660/9680 (96DC) Drum	£99
16677	Sharp Toner 9660/9680 (96DC) Toner	£95
11589	Star LSS Toner	£68
11562	Star WinType 4000 Toner	£68

LASER ACCESSORIES

14471	Brother HL1060 Serial I/F RS100M	£79
14419	Brother HL1660 Second Duplex Unit	£380
15716	HP LaserJet 4 JetDirect Ethernet Card	£235
10946	HP LaserJet 4 Lower Paper Cassette	£199
17502	HP LaserJet 5 Colour Postscript SIMM	£339
14379	Kyocera FS3700/FS1700 Duplex Unit	£345
14382	Kyocera FS3700/FS1700 Output Stacker - 500 sht	£105
11431	Panasonic KXP4420 Ozone Filter	£9
11326	Panasonic KXP4450/4455 Ozone Filter	£20
18484	QMS 2060 A4 Paper Cassette NEW	£100
18483	QMS 2060 Letter Paper Cassette NEW	£100
18498	QMS Magicolor CX/EX Fuser & Oil Cleaning Pad NEW	£30
18498	QMS Magicolor CX/EX OPC Belt Cartridge NEW	£250
18488	QMS Magicolor CX/EX Paper Cassette NEW	£105
18001	JetEye Printer Infrared Link	£82
19693	ExtendNet 100s	£265

INKJET PRINTERS

BROTHER

18518	Brother MC3000 Colour Printer/Copier/Scanner	£449
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CANON

14608	Canon BJC80 Colour	£140
14609	Canon BJC80 + Image Scanner	£184
14468	Canon BJC250 Colour	£71
14610	Canon BJC4300 Colour	£92
19650	Canon BJC4650 Colour A3 InkJet Printer	£197
16997	Canon BJC5500 Colour	£409
19255	Canon BJC7000 Colour	£178

CITIZEN

19669	Citizen Printiva 700C Colour	£122
17489	Citizen Printiva 1700C Scanner/Printer Colour	£305

EPSON

18197	Epson Stylus 300 Colour	£83
14294	Epson Stylus 400 Colour	£103
16402	Epson Stylus 600 Colour	£147
16403	Epson Stylus 800 Colour	£207
19631	Epson Stylus 850 Colour	£243
14295	Epson Stylus 1520 Colour	£511
17843	Epson Stylus 3000 Colour	£1,118
19835	Epson Stylus Pro 5000	£1,587
17918	Epson Stylus Photo Colour	£177
19628	Epson Stylus Photo 700	£207
19629	Epson Stylus Photo EX	£308
20019	Epson EPL5700	£304
20020	Epson EPL5700EN	£CALL
20022	Epson EPL5700PS	£CALL

HEWLETT PACKARD

15370	HP DeskJet 340 Colour	£135
19709	HP DeskJet 340 CBI (Infra Red)	£159
14552	HP DeskJet 400L Colour NEW	£66
17746	HP DeskJet 670C Colour	£111
17745	HP DeskJet 690C Plus Colour	£126
19193	HP DeskJet 690 C+ Photo Reader	£161
19347	HP DeskJet 720C	£156
18476	HP DeskJet 890C Colour	£202
19552	HP DeskJet 1120C Colour	£285
13710	HP DeskJet 1600 Colour	£871
10007	HP DeskJet 1600M Colour	£1,280
14553	HP OfficeJet 590 Colour	£289
19386	HP OfficeJet 635	£339
14356	HP OfficeJet 1150C Colour	£491
14604	HP PhotoSmart Printer	£262

LEXMARK

covered by 3 years warranty 1st year on-site

18571	Lexmark 1000 ColourJet Colour & Disney Studio	£85
14457	Lexmark 3000 ColourJet Colour	£110
19710	Lexmark 5000 ColourJet Colour	£139
19711	Lexmark 5700 ColourJet Colour	£179
19480	Lexmark 7200 ColourJet Colour	£195



Advancing the Art of Printing with the Lexmark InkJet Printer Range...

ColorJet 1000 & Disney Print Studio

All the family prints...in the most colourful way!

- ▲ Single cartridge design
- ▲ 600 x 600 dpi resolution
- ▲ Up to 3ppm mono and 1ppm colour
- ▲ Compact design
- ▲ Optional Super Sharp Waterproof black ink
- ▲ ColorFine 2 software for superior colour balancing
- ▲ Instant on for ease of use
- ▲ Colour sort feature for improved document quality
- ▲ Banner printing feature
- ▲ Verbal messages and visual feedback
- ▲ Ink level information
- ▲ Bi-directional printing
- ▲ Fully compatible with Win 3.1x, Win 95 & DOS applications running under Windows
- ▲ 1 year warranty



£84
£98.70 inc VAT
Part Code 18571

ColorJet 5000

Breakthrough technology for high quality printing.



£143
£168.02 inc VAT
Part Code 17723

- "Now you can print darker & sharper black text & true to life colours - use the optional photo cartridge for Photo - realistic & colour printing!"*
- ▲ New design
 - ▲ 1200 x 600 dpi
 - ▲ Up to 5ppm in black
 - ▲ Up to 2ppm in colour
 - ▲ Dual cartridge design
 - ▲ Photo capability with optional photo cartridge
 - ▲ Laser crafted printheads
 - ▲ EX2 technology
 - ▲ Laser sharp black text
 - ▲ ColorFine software
 - ▲ Very quiet operation
 - ▲ Value for money
 - ▲ Superior paper handling
 - ▲ Windows 3.1x, 95 and Windows NT 4.0

Photo Cartridge
£25
£29.38 inc VAT
Part Code 19787

Specifications	1000	5000	5700	7200
Resolution	600 x 600	1200 x 600	1200 x 1200	1200 x 1200
Print - Mono	3ppm	5ppm	8ppm	8ppm
Speeds - Colour	1ppm	2ppm	4ppm	3ppm
Cartridges - Arrangement	Single	Dual	Dual	Dual
- Technology	Standard	Excimer	Excimer	Excimer
Photo Capability	No	Capable	Capable	Capable
Windows 3.1x, 95	Yes	Yes	Yes	Yes
Windows NT 4.0	No	Yes	Yes	Yes
Paper Input	30	100	100	150
ColorFine Driver	Yes	Yes	Yes	Yes

ColorJet 5700

Designed to meet all professional users needs.

- ▲ New robust design
- ▲ 1200 x 1200 dpi
- ▲ Up to 8ppm in black
- ▲ Up to 4ppm in colour
- ▲ Dual cartridge design
- ▲ Photo capability with optional photo cartridge
- ▲ Laser crafted printheads
- ▲ EX2 Technology
- ▲ Laser sharp black text
- ▲ ColorFine software
- ▲ Very quiet operation
- ▲ Value for money
- ▲ Superior paper handling
- ▲ Windows 3.1x, 95 and Windows NT 4.0



NEW ROBUST DESIGN!

£177
£207.97 inc VAT
Part Code 14456

ColorJet 7200

For the sophisticated home and office user
The Lexmark 7200 Color Jetprinter introduces Lexmark EX2 technology. This new technology combines six colour printing, advanced colour science and high quality mechanical design to deliver Lexmark's best print quality ever.



SIX COLOUR PRINTING

£203
£239.52 inc VAT
Part Code 19480

Photo Cartridge
£25
£29.38 inc VAT
Part Code 19787

- ▲ 1200 x 1200 dpi
- ▲ Ultimate text quality and detail
- ▲ Waterproof sharp black printing
- ▲ Six colour printing
- ▲ Printhead design allows laser printer speed & performance
- ▲ Patented fast drying, fade resistant inks
- ▲ High intensity colour, even on plain paper
- ▲ Double width print swath for faster printing

brother

HL-730 PLUS

More than just features
The award winning, low-cost printing solution.



- The ideal desktop printer, providing the 'best of both worlds' by allowing you to print directly from Windows and DOS.
- ▲ Windows and direct DOS printing
 - ▲ True 600dpi print resolution
 - ▲ 6 pages per minute print speed
 - ▲ Straight paper path technology
 - ▲ Easy to set up and use
 - ▲ Low running costs
 - ▲ Microfine toner included
 - ▲ 200 sheet adjustable paper tray

HL-730
£205
£240.88 inc VAT
Part Code 14133

Toner
£19
£22.32 inc VAT
Part Code 14222

HL-760

The professional printing solution
The high quality, affordable laser printer offering superb output - up to 1200dpi, network connectivity options and multi-emulations for professional documentation.



- ▲ Windows and direct DOS printing
- ▲ True 1200dpi print resolution
- ▲ 6 pages per minute print speed
- ▲ Straight paper path technology
- ▲ Auto interface/emulation switching
- ▲ 200 sheet adjustable paper tray
- ▲ PCL 5e compatible
- ▲ Multiple emulations
- ▲ Low running costs

£229
£269.08 inc VAT
Part Code 15366

MC-3000

The three-in-one colour printer, copier and scanner

- Printer
- ▲ 720x720dpi resolution
 - ▲ 2.5 colour or 5 monochrome pages per minute
 - ▲ 200 sheet capacity
- Copier
- ▲ Reproduce colour documents direct from your desk
 - ▲ 720x720dpi A4 copy
 - ▲ Automatic colour matching software
- Scanner
- ▲ 24bit technology
 - ▲ 1200dpi final resolution
 - ▲ Software includes - Xerox OCR 'Textbridge', 'Visioneer' 'PaperPort' and Unleaded Systems PhotoExpress'

£449
£527.58 inc VAT
Part Code 18518



HL-1060

High quality print at a surprisingly low price

A laser printer that makes high quality, high speed and high capacity highly affordable.

- ▲ Up to 1200 x 600 dpi printing
- ▲ 10 pages per minute print speed
- ▲ Dual bin as standard
- ▲ Straight paper path
- ▲ Multiple emulations
- ▲ Auto interface switching
- ▲ Network connectivity option
- ▲ 2Mb RAM



HL-1060
£299
£351.33 inc VAT
Part Code 14239

HL-1060/BMB
£315
£370.13 inc VAT
Part Code 19896

Toner
£20
£23.50 inc VAT
Part Code 17645

HL-2400c

With a resolution of up to 2400dpi the new colour laser printer from Brother provides the high quality output demanded by professionals

- ▲ Up to 2400dpi
- ▲ Up to 8ppm colour
- ▲ Up to 16ppm mono
- ▲ 24Mb memory upgradable to 112Mb
- ▲ Semi automatic manual duplex
- ▲ Low running costs
- ▲ Automatic e-mail printing
- ▲ Intelligent sleep mode

£2349
£2760.08 inc VAT
Part Code 19503



ALSO AVAILABLE
HL-2400cn
The HL-2400cn is a network ready version, having all the features of the HL-2400c with the addition of:

- ▲ 40Mb memory as standard
- ▲ 10 baseT & 10 Base2 connectors with automatic detection

£2685
£3154.88 inc VAT
Part Code 19680



What is Straight Paper Path Technology?

- ▲ Reduces annoying jams and curls
- ▲ Prints envelopes reliably
- ▲ Prints on a wide variety of stocks and sizes
- ▲ Less paper path distance, faster throughput
- ▲ Multiple emulations
- ▲ Auto interface switching
- ▲ Network connectivity option



Watford Electronics

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN



ESTABLISHED 1972

INK CARTRIDGES continued

15322	Canon BJJ200/210/230/240 Colour Ink BC05	£17
11343	Canon BJJ300/BJ330	£10
11424	Canon BJC70 Ink Tank Colour Ink BC111c	£14
11420	Canon BJJ30/BJC70/80 Black Ink Cart.	£22
16679	Canon BJC240 Fluorescent Ink Cartridge - BC09F	£21
16616	Canon BJC240 Photo Ink Cartridge - BC06	£29
11646	Canon BJC600 - Black High Capacity	£5
13683	Canon BJC600 - Cyan	£5
11608	Canon BJC600 - Magenta	£5
11607	Canon BJC600 - Yellow	£5
11581	Canon BJC800 - Black	£13
13727	Canon BJC800 - Cyan	£16
11584	Canon BJC800 - Magenta	£16
13729	Canon BJC800 - Yellow	£16
11405	Canon BJC4000/4100/4200/4550/5550 Colour Ink Tank	£13
11406	Canon BJC4000/4100/4200/4550/5550 Black Ink Tank	£4.50
11407	Canon BJC4000/4100/4200/4550/5550 BC20 Black Ink Cart.	£19
16680	Canon BJC4200/4550 Fluorescent Ink Cartridge BC29F	£21
18828	Canon BJC4000/4100/4200/4300/4550 Colour Ink Cart BC21e	£25
14289	Canon BJC4200/4550 Photo Ink Cartridge BC22	£25
10024	Citizen Printiva 600C/700C Black Ink Cart	£4.50
11548	Citizen Printiva 600C/700C Cyan Ink Cart	£5
11552	Citizen Printiva 600C/700C Magenta Ink Cart	£5
11554	Citizen Printiva 600C/700C Yellow Ink Cart	£5
15139	Citizen Printiva 600C/700C Metallic Cyan Ink Cart	£10
11558	Citizen Printiva 600C/700C Metallic Gold Ink Cart	£12
11556	Citizen Printiva 600C/700C Metallic Magenta Ink Cart	£12
11471	Epson SQ850/2550 Black Ink	£17
15369	Epson SQ870/SQ1170 Black Ink	£16
13771	Epson Stylus 200/500 Colour Ink Cart. S020097	£20
11586	Epson Stylus 300 Black Ink	£15
18678	Epson Stylus 300 C Colour Ink Cart.	£15
18436	Epson Stylus Colour 3000 Black Ink Cart. S020018	£34
18437	Epson 3000 Cyan S020130	£38
18439	Epson 3000 Magenta S020126	£38
18440	Epson 3000 Yellow S020122	£38
13772	Epson Stylus 400/500/600 Black Ink S020093	£14
11592	Epson Stylus 400/800+/1000 Black Ink	£8
13760	Epson Stylus 400/800+/1000 Double Black Ink	£14
11671	Epson Stylus 1500 Black Ink	£28
16404	Epson Stylus Colour 400/600/800/1520 Ink Cart.	£14
16405	Epson Stylus Colour 800/1520 Black Ink Cart. S020108	£15
11532	Epson Stylus Colour 200/820/1115 Black Ink	£13
11535	Epson Stylus Colour 820/1115 Colour Ink	£18
11396	Epson Stylus Colour/Pro/Pro XL Tri Colour	£21
13708	Epson Stylus Colour Pro XL + Tri Colour	£20
11395	Epson Stylus Colour/Pro/XL/Black Ink	£10
17919	Epson Stylus Photo 5 Colour Ink	£13
11400	HP DeskJet 310/320/340 Black Ink	£14
11348	HP DeskJet 350 / 400 / 500 Black Ink	£17
11347	HP DeskJet 350 / 400 / 500 Colour Ink	£16
11519	HP DeskJet 600Series Black Ink	£15
11522	HP DeskJet 600Series Colour Ink	£17
14192	HP DeskJet 890 Photo Colour	£23
11495	HP DeskJet 720/850/870/890/1600 H51645A Black Cart.	£18
11520	HP DeskJet 820/850/870/890 Colour Ink H51641A	£18
15128	HP DeskJet 1200/CopyJet/DesignJet650 Bk. Ink	£18
11600	HP DeskJet 1200/1600/CopyJet - Cyan	£19
11598	HP DeskJet 1200/1600/CopyJet - Magenta	£19
11599	HP DeskJet 1200/1600/CopyJet - Yellow	£19
11601	HP PaintJet XL300 Black Ink Cart.	£13
11602	HP PaintJet XL300 - Cyan Ink Cart.	£14
11603	HP PaintJet XL300 - Magenta Ink Cart.	£14
11604	HP PaintJet XL300 - Yellow Ink Cart.	£14
11674	Lexmark 1000/1020/2030/2050/3000 Black Ink	£21
14210	Lexmark 1000/1020/2030/2050/3000 Colour Ink	£26
14150	Lexmark 2070 Black Ink	£24
14151	Lexmark 2070 Colour Ink	£26
18684	Lexmark 7000/7002/5000/5700 Black	£19
18685	Lexmark 7000/7002/5000/5700 Colour	£22
19787	Lexmark 5000/7000/7200 Photo Colour	£25

9 PIN DOT MATRIX PRINTER

EPSON
covered by 1 year warranty

10026	Epson FX870 80col	£247
18977	Epson FX880	£247
13379	Epson FX2170 132col	£395
13372	Epson LX300 80col	£97
10036	Epson LX1050+ 132col	£154
19707	Epson DFX 5000+	£1,226
19708	Epson DFX 8000	£1,911

OKI

19652	Oki ML 320	£299
19653	Oki ML 520	£329
19656	Oki ML 3410	£799
19657	Oki ML 280	£182
19658	Oki ML 321	£359
19659	Oki ML 3320	£315
19661	Oki ML 3321	£369
19662	Oki ML 521	£389

PANASONIC
covered by 1 year warranty

13367	Panasonic KXP1150 80col	£87
16873	Panasonic KXP3200 80col	£169
10010	Panasonic KXP3696 132col (1 year onsite)	£255

24 PIN DOT MATRIX PRINTER

EPSON

13658	Epson DLQ3000 132col	£791
10035	Epson LQ300 80col	£115
10049	Epson LQ570+ 80col	£216
14418	Epson LQ670	£230
13378	Epson LQ870	£377
14072	Epson LQ2070 132col	£330
10048	Epson LQ2170 132col	£468

PANASONIC

13363	Panasonic KXP2023 80col	£108
10053	Panasonic KXP3626 132col (1 year onsite)	£255

OKI

19654	Oki ML 590	£434
19660	Oki ML 3390	£335
19663	Oki ML 591	£519
19664	Oki ML 395 Mono	£630
19665	Oki ML 395 Colour	£715

PRINTER RIBBON

11321	Citizen 1200+	£6
17495	Citizen ProDot 450 L Black Ribbon	£7
17497	Citizen ProDot 810 X Black Ribbon	£22
17498	Citizen ProDot 810 X Colour Ribbon	£40
11338	Citizen Swift 24/200/240/ABC Black Ribbon	£5
13653	Citizen Swift 24/200/240/ABC Colour Ribbon	£11
11378	Citizen Swift 24X Black Ribbon	£7
11377	Citizen Swift 24X Colour Ribbon	£13
18456	Epson OFX5000+/8000 Black Ribbon	£13
18461	Epson DFX5000+/8000 Ribbon Refill	£12
18460	Epson DLQ3000 Black Film Ribbon	£16
11408	Epson DLQ3000 Black Ribbon	£15
11409	Epson DLQ3000 Colour Ribbon	£21
11322	Epson EX800/1000 Black Ribbon	£5
11310	Epson EX800/1000 Colour Ribbon	£9
18454	Epson FX/LQ2170/LQ2070 Black Ribbon	£14
13733	Epson LQ100 Black Ribbon	£5
13689	Epson LQ150 Colour Ribbon	£14
11544	Epson LQ300 Colour Ribbon	£16
11442	Epson LQ570/LQ870 Black Ribbon	£5
11323	Epson LQ1000/1050/1070/1170 Black Ribbon	£12
11444	Epson LQ1070/LQ1170 Black Ribbon	£5
18457	Epson LQ1500 Black Ribbon	£5
11334	Epson LQ2550 Black Ribbon	£5
13737	Epson LQ2550 Colour Ribbon	£12
11445	Epson LX86/80, GX80 Black Ribbon	£4
13732	Epson LX100 Black Ribbon	£4
18459	Epson LX300 Colour Ribbon	£15
15224	Kaga KP810 Ribbon	£5
13750	NEC P62/P72/P90 Black Ribbon	£8

11301	Panasonic 1123 / 1124 / 2023	£6
11265	Panasonic 1150/1170/1180	£5
11384	Panasonic 1624/2624	£7
11339	Panasonic 2180/2123/2124/2135 Black Ribbon	£8
11559	Panasonic 3696/3626	£10
11567	Star LC10/LC20/LC100 Black Ribbon	£4
11331	Star LC10/LC20/LC100 Colour Ribbon	£6
11349	Star LC200 Black Ribbon	£5
11379	Star LC200 Colour Ribbon	£11
11385	Star LC240 Col Black Ribbon	£7
11386	Star LC240 Col Colour Ribbon	£10
11413	Star SJ144 Black Ribbon	£9
13762	Star SJ144 Black Ribbon	£10

CUT SHEET FEEDERS (CSF)

15491	Epson LQ570, 870, FX870, C806382	£99
11158	Epson LQ1170 Hi-Cap C806471	£49
11718	Epson SQ870 Hi-Cap CSF C806481	£89

PRINTER ACCESSORIES

13744	Canon BJJ30/70 Battery Pack & Adapter	£47
15164	Epson LX300 Colour Kit	£29
17841	Epson Ethernet Interface for Stylus 1520 Printer	£279
14377	HP DeskJet 320/340 Infra Red Adapter	£32
11649	HP DeskJet 600 Colour Kit (C4534A)	£28
14182	HP DeskJet 690C Photo Colour Kit (C4584A)	£30
14267	HP Infra Red Adaptor for 310/320/340	£29
19759	Printer Organiser	£22

PRINTER LEADS & CABLES

12332	1.8m 18wire PC Parallel	£3
12385	1.8m 25wire PC Parallel Enhanced EPP	£5
12360	1.8m 25 Male 'D' to 25 Female 'D'	£4
12356	1.8m 25 Male 'D' to 25 Male 'D'	£4
12340	1.8m Centronics Male to Centronics Male	£7
12343	5m 18wire PC Parallel	£8
12383	5m 25wire PC Parallel Enhanced EPP	£10
12365	5m 25 Male 'D' to 25 Female 'D'	£8
12370	5m 25 Male 'D' to 25 Male 'D'	£8
12375	5m Centronics Male to Centronics Male	£8
12346	10m 18wire PC Parallel	£13
12384	10m 25wire PC Parallel Enhanced EPP	£15
12368	10m 25 Male 'D' to 25 Female 'D'	£12
12372	10m 25 Male 'D' to 25 Male 'D'	£12
12378	10m Centronics Male to Centronics Male	£11

PAPER & TRANSPARENCIES

11311	9.5"x11" Fanfold Paper - 1000shts	£6
11313	9.5"x11" Fanfold Paper - 2000shts	£11
11315	A4 70g Fanfold Paper - 2000shts	£15
11450	A4 80g White Laser Paper - 500shts	£3
11595	A4 90g White Laser Paper - 500shts	£5
16743	Canon BJC4000 Coated Paper - 200shts	£20
16741	Canon BJC4000 High Gloss Film - 50shts	£20
16742	Canon BJC4000 Transparencies - 50 Shts	£30
14313	Canon BJC4550/4650 Coated Paper A3 - 200shts	£35
18443	Epson A2 Photo Quality Glossy Paper - 20shts	£28
14307	Epson A2 Stylus Photo Quality Ink Jet paper - 30shts	£22
18442	Epson A3 Photo Quality Glossy Paper - 20shts	£16
11672	Epson A4 360 dpi Stylus Coated Paper - 100shts	£8
15146	Epson A4 720 dpi Stylus Coated Paper	£11
14299	Epson A4 High Gloss Paper for Stylus 15shts	£20
18441	Epson A4 Photo Quality Glossy Paper - 20shts	£6
15156	Epson A4 Transparencies for Stylus 30shts	£32
14298	Epson A4 Stylus Photo Quality Ink Jet Paper - 100shts	£8
16736	HP A4 DeskJet Cut Sheet Paper - 200shts	£12

PRINTER LABELS

11480	70mm x 37mm A4 Laser Labels - 2400	£15
11317	89mm x 36mm Single Row Fanfold Labels - 1000	£5
11318	89mm x 36mm Twin Row Fanfold Labels - 1000	£5
11320	102mm x 36mm Twin Row Fanfold Labels - 1000	£5

EXTENDED ON-SITE WARRANTY PACKS

CANON

19801	3 Year Extended Warranty - BJC-80	£32
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EPSON COVER PLUS

15072	Group 1 - LQ100+/Stylus 820/Stylus IIS	£40
15180	Group 2 - LX300/1050+/LQ300/Stylus/Pro GT300/GT5000/Stylus400/Stylus600/Stylus800	£60
15181	Group 3 - FX870/1170/570+/870/Stylus1000/EPL5500W/EPL5500	£95
15182	Group 4 - FX2170/LQ2170/GT8500/GT9000	£149
15183	Group 5 - DFX5000+/DLQ3000/Stylus1500	£199
15184	Group 6 - DFX8000/Pro XL+/EPL9000	£259

HEWLETT PACKARD SUPPORT PACKS

16704	HP SSI Mopier (HP5499A)	£846
16481	Colour LaserJet 5/5M (HP5505A)	£894
16479	CopyJet/CopyJet M/ScanJet 5 (HP5485A)	£299
15943	DeskJet 820 CXI (HP5462A)	£47
14241	DeskJet 870CXI & CSE/ScanJet 4S + 4P + 5P (HP5465A)	£66
12518	DeskJet 1600C/CM (HP5473A)	£95
12513	DeskJet/DeskWriter 340/400/500/550/630/1120C (HP5461A)	£35
12515	DeskJet/DeskWriter 660C/850C (HP5466A)	£65
13470	LaserJet 4W/4M/5000/5000N/5000GN (HP5482A)	£235
10780	LaserJet 5/5M/5N (HP5479A)	£180
13720	LaserJet 5L/6L (HP5500A)	£67
16284	LaserJet 5Si/5Si MX/5Si NX (HP5492A)	£530
13743	LaserJet 6P/6MP/ScanJet 4C/ScanJet 4Si (HP5478A)	£142

KYOCERA WARRANTY PACKS

14310	Kyocera FS400 (2 Years)	£69
16709	Kyocera FS1550/FS1600 (3 Years)	£179
16708	Kyocera FS3400/FS3600 (1 Year)	£160
14312	Kyocera FS400	£43
12530	Kyocera FS1550/FS1600	£95
14274	Kyocera FS1700	£190
15926	Kyocera FS3400/FS3600	£95

LEXMARK WARRANTY PACKS

16710	Laxmark Optra R+	£118
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PRINTER SHARERS & BUFFERS

MANUAL PRINTER SHARERS - PARALLEL

12396	2in/1out	£13
12401	2in/2out	£29
12397	3in/1out	£17
12419	4in/1out	£26

MANUAL PRINTER SHARERS - SERIAL

12399	2in/2out	£28
12394	3in/1out	£15
12395	4in/1out	£24

AUTO PARALLEL PRINTER SHARER BUFFERS

12404	2in/1out OK	£15
12402	2in/2out 256K	£49
13815	2in/2out 1Mb High Speed	£79
12462	4in/1out OK	£35
12454	4in/2out OK	£45
12424	4in/2out 256K	£85
12455	8in/1out OK	£59

AUTO SERIAL PRINTER SHARER BUFFERS

12406	2in/1out OK	£18
12444	2in/2out 256K	£59
12463	4in/1out OK	£29
12447	4in/2out OK	£49
12458	8in/1out OK	£42

RAM EXPANSION CARDS FOR ABOVE BUFFERS

11729	256K Expansion Card	£59
11730	1Mb Expansion Card	£78
16718	2Mb Expansion Card	£124

POCKET BUFFERS - PARALLEL</

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The BJC-4300 is equally at home in the study or office. For family and business use, from club newsletter to working at home, every document you produce will be in high quality, Impressive colour.



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- ▲ 720 x 360 dpi
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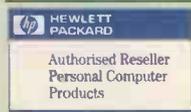
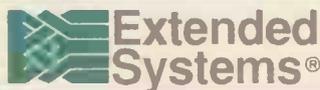
External Print Server for standard or FAST ethernet networks



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- ▲ Supports Novell NetWare & NDS, TCP/IP, Win NT, LAN Manager, LAN Server, Ether-Talk & Win 95. Banyan VINES available

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The printer you spend less time with
HP's LaserJet 4000.
The new standard for workgroup printing.



- ▲ 16ppm
- ▲ 600dpi, FastRes 1200dpi
- ▲ 80 scalable TrueType® Fonts built in

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4000	Input capacity 1 x 500, 1 x 100 (Add JetDirect for Network capabilities)	18802	£711.00	£835.43
4000T	Input capacity 2 x 250, 1 x 100 (Add JetDirect for Network capabilities)	18809	£787.00	£924.73
4000N	Input capacity 1 x 500, 1 x 100 (Network ready)	18810	£914.00	£1073.95
4000TN	Input capacity 2 x 250, 1 x 100 (Network ready)	19671	£990.00	£1163.25

Hewlett Packard HP Mopier 240

The advanced, economical solution to high-quality creation of multiple documents in busy networks

Hewlett Packard's Mopier 240 is an advanced network laser printer that is optimized to produce multiple sets of documents which significantly boosts end-user productivity by simplifying the document creation process, and results in much higher user satisfaction because of its flexibility and superior performance



- ▲ 24ppm printing
- ▲ 133MHz RISC processor
- ▲ 24 MB standard memory
- ▲ Reduced cost-of-ownership
- ▲ Integrated, easily networked devices
- ▲ Virtual 1200dpi resolution output
- ▲ Industry-leading low cost-per-page
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Hewlett Packard



The Ultimate in Affordable Quality wherever you are!

HP DeskJet 1120C Professional Series



- Professional performance enhances professional image
- ▲ Smart Software features for document / paper handling versatility via driver
 - ▲ paper sizes from A6 to A3 oversize
 - ▲ colour printing on plain paper
 - ▲ HP PhotoRet II for photo realistic printouts

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Print speed (up to) and throughput	Document Type	A4	A3	Resolution	back: 600*600 dpi colour: HP PhotoRet II for Photo Quality output
	black text	6.5ppm	4ppm	Typefaces capabilities	26 built-in scalable fonts
	black text with colour highlights	6ppm	4ppm	Memory	2MBytes ROM, 2 MBytes RAM standard memory
	mixed text with colour graphics	4.5ppm	3ppm		
	full page colour	2ppm	1.5ppm		

The LaserJet 6L



- ▲ Fast and efficient personal laser printing. A 6-page-per-minute engine and 18 seconds for first-page-out ensure rapid results.
- ▲ True 600x600 dpi
- ▲ Able to print on envelopes, labels, postcards and transparencies
- ▲ Compatible with major IT platforms

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£78 The HP LaserJet Companion

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- ▲ Copy. Convenience copies at the touch of a button, even with the PC switched off.
- ▲ File. Storage of many types of documents on PC.
- ▲ Read. Conversion of hardcopy documents to editable text.
- ▲ Fax. Send faxes in conjunction with a PC fax modem.



Hewlett Packard HP LaserJet 5000

The A3 Network Printer for small to medium-sized workgroups

- ▲ Support from postcard size up to full bleed A3
- ▲ Up to 1100 sheet input from 4 different size trays
- ▲ Duplexing capability
- ▲ 2 new, fast EIO interface
- ▲ FastRes 1200
- ▲ Optional Disk for Transmit Once/MOPY functionality, fonts and forms printing
- ▲ JetSend enabled
- ▲ 100 MHz processor
- ▲ Instant-on Fuser for first page out in less than 13 seconds
- ▲ FastRes 1200 for best quality business documents and drafts prints
- ▲ ProRes 1200 for best quality graphic intensive documents
- ▲ New 10K page UltraPrecise cartridge and toner formulation for crisp and sharp output
- ▲ 220 levels of grey



4MB 5000	8MB 5000N	12MB 5000GN
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Hewlett Packard HP LaserJet 8000/N/DN

The advanced workgroup printers for economical and effortless high performance

- ▲ 24ppm printing
- ▲ 133MHz RISC processor
- ▲ 16 MB standard memory
- ▲ Reduced cost-of-ownership
- ▲ Need for minimum interaction with the printer itself
- ▲ Increased networking speed
- ▲ Performance monitoring capability
- ▲ Inter-operability



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- PrintArtist v.4 - Imaging editing graphics software with 25 Fantastic Fonts, 100+ fab photo & 1000+ clip art images (Windows & Macintosh)
- LivePix v.1 - Professional photo image editing software (Windows & Macintosh)
- Photo Quality Media Pack - a selection of EPSON print media
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EPSON STYLUS Color 400

Low cost easy to use advanced 720 dpi colour printer. PhotoReal output as standard

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- ▲ Photo Real Colour & Laser Sharp Mono Printing as standard
- ▲ Up to 3ppm Colour, 4ppm Mono printing on plain paper
- ▲ 1 year RTB warranty with optional 3 year on-site warranty
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EPSON STYLUS Color 600

1440 dpi colour & true black printing PhotoReal colour

- ▲ Photo-Real colour as standard
- ▲ Up to 4ppm colour 6ppm mono printing
- ▲ Advanced dual ink cartridge system with Epson Quick Dry Ink.
- ▲ Optimised printing of video/digital camera images
- ▲ 1 year RTB warranty with optional 3 year on-site warranty

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EPSON COVER plus+ £65



EPSON STYLUS Color 300

Low cost 4 colour inkjet printer, ideal for both education and at home

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- ▲ Up to 3ppm black and 1.2ppm colour
- ▲ Designed exclusively for Windows
- ▲ Epson AutoColour function
- ▲ Epson Quick-Dry Inks
- ▲ Windows '95 ICM Colour Matching
- ▲ 1 year RTB warranty with optional 3 year on-site warranty

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EPSON EPL 5700

NEW

Available in 3 configurations
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EPL-5700EN Network
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- ▲ 8ppm with 100MHz RISC processor
- ▲ True 600x600dpi
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- ▲ Up to 650 sheet capacity with optional paper cassette
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EPSON STYLUS Color 850

1440 dpi Colour Printing on Plain paper

EPSON COVER plus+ £65

- ▲ Ultra-fast Print Speed - up to 9 ppm mono and up to 8.5 ppm colour
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- ▲ Windows 3.1, Windows '95, Windows NT and Macintosh compatible
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NEW
£243
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EPSON STYLUS Photo

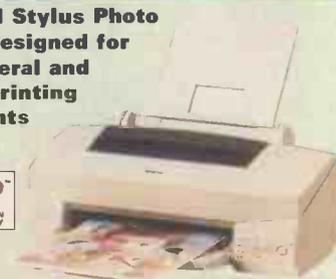
The EPSON Stylus Photo has been designed for photo, general and business printing requirements



- ▲ Photo Reproduction Quality output (PRQ)
- ▲ Optimised for photo & text reproduction
- ▲ Prints 4" x 6" format and enlargements to A4 size
- ▲ Up to 720 x 720 dpi resolution
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- ▲ Comes bundled with Software including LivePix for Windows 95 and Macintosh

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EPSON STYLUS Photo 700

EPSON COVER plus+ £65

NEW

- ▲ Perfect for photo reproduction, editing and output up to A4
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- ▲ 1440 dpi and Super MicroDot
- ▲ New smaller Super MicroDot delivers unequalled print performance
- ▲ EPSON PhotoEnhance 2 - automatically optimises photo output
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- ▲ 1 year RTB warranty as standard

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EPSON Stylus Photo EX

NEW A3 Colour 1440 dpi

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EPSON GT 5000 Scanner

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- ▲ Scans everything from photos to A4 documents

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Includes Free OCR Imaging Software



EPSON GT 5500 Scanner

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- ▲ Advanced TET (text enhancement technology)
- ▲ AA* (auto segmentation) for accurate copying & faxing

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Incredible printer at an incredible price!

- ▲ Print technology: Plain paper drop-on-demand thermal inkjet printing.
- ▲ Black print speed: Microsoft® Windows® EconoFast mode 4 pages per minute; Normal mode 2.5 pages per minute.
- ▲ Colour print speed: Microsoft® Windows® EconoFast mode 1.5 pages per minute.
- ▲ Warranty: One Year

Easy to use

Achieving great quality with affordable costs has never been easier: the HP DeskJet 670C has two built-in cartridges - one for colour and one for black - which means there is no need to switch cartridges.

Great results, even on plain paper

The HP DeskJet 670C comes with HP's RealLife Imaging system for true-to-life images. Your printed documents are given maximum appeal with crisp black text and photo-quality colour: professional-standard printing - on plain paper! And you can use HP's exclusive built-in ColorSmart technology to produce spectacular colour - automatically.

£111
£130.43 inc VAT
Part Code 17746



hp HEWLETT
PACKARD
Expanding Possibilities



WORLD CUP INSIDE:

Fantasy football creator kit
Competition to win 2 tickets to the world cup
Famous moments from football
Screen savers
Quizzes and more!

Main Features

Luminous intense colours with incredibly smooth tonal gradations. The 690C features the HP Photo Cartridge for photo-quality colour and HP Resolution Enhancement to ensure solid, smooth print-outs with simple plug and play installation. Exclusive HP Ret (Resolution Enhancement technology) for sharper output.

- ▲ Black Resolution: Best mode 600 x 600 dpi, Normal mode 600 x 300 dpi, EconoFast 300 x 300 dpi
- ▲ Colour Resolution for Standard Pen Set: 300 x 300 dpi on plain paper, 600 x 300 dpi black and colour on HP Premium Paper and HP DeskJet Photo Paper



£126
£148.05 inc VAT
Part Code 17745

- ▲ Colour Resolution for Photo Pen Set: 600 x 300 dpi with 6 Inks on all paper types with Photo Resolution Enhancement technology (Photo-RET)
- ▲ MS Windows® compatible, OS/2 and an extensive range of DOS software programs
- ▲ One year warranty

HP DeskJet 890C Professional Series

- ▲ Outstanding print quality: The HP DeskJet 890C Professional Series printer incorporates PhotoREt II, HP's latest technological innovation, to deliver photo-quality output, even on plain paper.
- ▲ Professional printing without the waiting: Prints at up to 9 pages per minute in crisp, sharp black and up to 5 pages per minute in vibrant colour.
- ▲ Business connectivity: Can be used with Win 95, Win NT 4.0, Win 3.x or DOS systems.
- ▲ Print Technology: Plain paper drop-on-demand thermal inkjet printing
- ▲ Warranty: One Year

Outstanding print quality
at unrivalled speed

£202
£237.35 inc VAT
Part Code 18476



HP DeskJet 720C

Show your true colours - outstanding photo-quality colour and performance on any paper

Looking for a photo-quality printer that gives you sharper, more realistic colour for everything you print at home? The HP DeskJet 720C is your choice. With outstanding photo-quality colour and performance on any paper.

Outstanding photo quality printing on any paper. From plain to premium papers, transparencies, cards, envelopes, labels or even banners and iron-on transfers - PhotoREt II, HP's latest technological innovation, delivers photo-quality colour and crisp black text.

- ▲ Outstanding photo-quality printing on any paper.
- ▲ Fast results for enhanced productivity
- ▲ 4 pages per minute
- ▲ Convenient and reliable
- ▲ Warranty: One Year

£156
£183.30 inc VAT
Part Code 19347



ALL IN ONE

HP OfficeJet 590

All-in-One • Colour Printer • Fax • Copier • Scanner



- ▲ All-in-One: Printing, Faxing, Copying, Scanning in one product
- ▲ Colour Printer
- ▲ Print Resolution: Black 600 x 600 dpi, Colour 600 x 300 dpi
- ▲ Print Speed: 4ppm Black, 1ppm Colour
- ▲ Fax
- ▲ Paper Type: Plain
- ▲ Memory: 65 pages
- ▲ Send Resolution: Standard, Fine, 300 dpi, Photo
- ▲ Speed Dialling - Compatibility: 100 numbers - CCITT/ITU Group 3
- ▲ Phone Line: Able to share line with telephone & answering machine; automatic fax/answering machine switching
- ▲ Copier
- ▲ Copy Resolution: 600 x 300 dpi text, 300 x 300 dpi image resolution
- ▲ Number of Copies: Up to 99
- ▲ Copy Speed: 50 seconds per page
- ▲ Scanner
- ▲ Scanner Resolution: 600 dpi enhanced, 300 dpi optical
- ▲ Interface: TWAIN
- ▲ Optical Character Recognition: Includes OmniPage Limited Edition™ software from Caere
- ▲ General
- ▲ Warranty: One Year

£289
£339.58 inc VAT
Part Code 11553

HP OfficeJet 635

Printer, Copy, Scan in Colour • Fax



NEW
LOW PRICE

- ▲ Print
- ▲ 600 x 600 dpi black with Resolution Enhancement technology (RET)
- ▲ 600 x 300 dpi colour with HP ColorSmart technology
- ▲ Up to 5ppm black and 2ppm colour
- ▲ Fax
- ▲ Plain paper and PC faxing
- ▲ 100 speed dials
- ▲ 65 page memory
- ▲ 14.4 Kbps transmission speed
- ▲ Fine, standard, 300dpi & photo transmission resolutions
- ▲ Copy
- ▲ 600 x 300 colour & black/white
- ▲ Up to 99 copies from original
- ▲ Digital zoom from 50% to 200%
- ▲ Scan
- ▲ Up to 1200 dpi enhanced (300 dpi optical)
- ▲ 24-bit colour (millions of colours)
- ▲ 8-bit grayscale (256 levels of gray)
- ▲ Caere® OmniPage® Ltd. Ed. OCR software included
- ▲ TWAIN interface
- ▲ General
- ▲ Warranty: One Year

£339
£398.33 inc VAT
Part Code 19386

HP LaserJet 3100

Printer • Fax • Copier • Scanner

The HP LaserJet 3100 Printer • Fax • Copier • Scanner efficiently delivers professional documents for business communications



- ▲ Print
- ▲ 6ppm - first page out in 18 seconds
- ▲ 600 x 600 dpi
- ▲ Paper sizes A4, B5, C5 & DL
- ▲ Fax
- ▲ 6 seconds per page
- ▲ 175 programmable speed dials
- ▲ Photo mode resolution 300 x 300 dpi
- ▲ Copy
- ▲ 6ppm, 1-99 copies with automatic collation
- ▲ Photo mode 300 x 300 dpi
- ▲ Reduce to 50%, enlarge to 200%
- ▲ Scan
- ▲ Twain 1.6
- ▲ 300 x 300 dpi optical (600 x 600 enhanced)
- ▲ Up to 6ppm
- ▲ General
- ▲ Warranty - one year

Printer, Fax,
Copier, Scanner

£489
£574.58 inc VAT
Part Code 19553



Watford Electronics

Order on-line: www.watford.co.uk

MAIL ORDER & RETAIL STORE: JESSA HOUSE, FINWAY, OFF DALLOW ROAD, LUTON LU1 1TR
RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN



ESTABLISHED
1972

AGFA *Agfa*

The complete picture.

SnapScan 310



The perfect answer to increasing demands for images in hobby and home office applications such as the Internet. It registers more than a billion colours, giving you vivid hues and striking image details. Quality scans couldn't be simpler to produce. Agfa FotoLook takes care of all the professional-level settings. SnapScan 310 is packed with invaluable software. OmniPage OCR software converts printed text into editable files, saving you hours of typing. PaperPort turns your modem into a "real" fax machine and your b/w or colour printer into a copying machine.

- * A4 Flatbed, single pass Colour Scanner
- * 300 x 600 ppi optical resolution
- * 4800 ppi through interpolation
- * Impressive 30 bit colour depth
- * High speed scanning; full colour preview in less than 7 seconds
- * Compatible with both PC and Macintosh
- * Adaptec SCSI card included in PC version
- * Valuable CD collection of Agfa and third-party software
- * Comes with footloose, FotoSnap, PhotoExpress (Windows 95, Windows NT), PhotoPlus (Windows 3xx) Color it (Macintosh only) OmniPage Limited Edition (PC only) OmniPage Lite and Visioneer PaperPort.

AGFA SnapScan 310
£99
 £116.33 inc VAT
 Part Code 16508

All SnapScan 310's come with **ON SITE WARRANTY** included in the price!

NEW

AGFA SnapScan 600
£179
 £210.33 inc VAT
 Part Code 14546

SnapScan 600



Low-cost scanning is raised to superb quality levels by SnapScan 600. It's an outright winner in the personal A4 flatbed scanner market. Razor-sharp images are captured on PC or Macintosh platforms. SnapScan 600 registers more than a thousand million colours, ensuring excellent reproduction of original pictures. These high specifications make SnapScan 600 the ideal scanner for producing printed images in promotional advertising, newsletters and technical documentation. It's also packed with the same extensive software bundle as SnapScan 310. This includes the professional-quality FotoLook scanner control software, OCR, image manipulation and file-fax-copy applications.

- * A4 Flatbed, single pass Colour Scanner
- * 600 x 1200 ppi optical resolution
- * 4800 ppi through interpolation
- * Impressive 30 bit colour depth
- * High speed scanning; full colour preview in less than 7 seconds
- * Compatible with both PC and Macintosh
- * Adaptec SCSI card included in PC version
- * Valuable CD collection of Agfa and third-party software
- * Comes with footloose, FotoSnap, PhotoExpress (Windows 95, Windows NT), PhotoPlus (Windows 3xx) Color it (Macintosh only) OmniPage Limited Edition (PC only) OmniPage Lite and Visioneer PaperPort.

SCANNERS

ARIES

- 11174 SCANIT PRO 4800P£45
- 17654 OPTIC PRO 600P£49
- 18380 OPTIC PRO A3P£249
- 19956 OPTIC PRO 1236P£85

AGFA

- 16512 Arcus II for PC with Transparency Adaptor£1,279
- 16513 Duo Scan£1,799
- 16508 SnapScan Colour 310£99
- 14546 SnapScan Colour 600£179
- 16511 Studio Star Colour£519
- 19731 SnapScan 300£179
- 19732 SnapScan 600 Artline£197

CANON

- 14275 CanoScan 300£119
- 14276 CanoScan 300 + SCSI Interface£128
- 14278 CanoScan 600£454
- 14279 CanoScan 600 + SCSI£499
- 18619 Film Adaptor for CanoScan 600£344

EPSON

- 17927 FilmScan 200 SCSI£303
- 13374 GTX5000 Flatbed Scanner - Parallel£130
- 18661 GT-5500 SCSI£187
- 14185 GTX9500 Flatbed Scanner - Parallel£446
- 14184 GTX9500 Flatbed Scanner - SCSI£469
- 17796 GT19500 Flatbed Scanner - SCSI£538
- 18885 GT-12000 with Twain Pro Software£1,315
- 20089 GT-12000 Graphics Bundle with TPU£1,713
- 20090 GT-12000 OCR Bundle with ADF£2,043

HEWLETT PACKARD

- 18238 ScanJet 4C Graphics Pro£445
- 13516 ScanJet 4Si Mono£450
- 17952 ScanJet 5S Colour£134
- 19385 ScanJet 5100C£149
- 14508 ScanJet 6100C£434
- 19555 The complete solution - HP Photosmart£318
- 14506 Transparency Adaptor£367
- 14507 Auto Document Feeder£257

HP EXTENDED WARRANTY PACKS

- 12519 Support Pack for Scanjet 4C/4Si - HP5475A£125
 - 12421 Support Pack for Scanjet 4S/4P/5P - HP5465A£85
- ### MICROTEK
- 19424 Phantom 330 Parallel Scanner£85
 - 19423 ScanMaker 330 4800dpi 30 Bit A4 Colour Scanner + Software£109
 - 19421 ScanMaker 630 3800dpi 30 Bit A4 Colour Scanner + Software£205
 - 20032 Scanmaker 6400XL A3 Scanner£1,135
- ### NIKON
- 17182 Coolscan II External£425
 - 17183 Coolscan II Internal£339
 - 19904 Coolscan II Internal + Silver Fast + Photoshop LE£458
 - 19463 Coolscan II External - Silver Fast + Photoshop LE£544
 - 19905 Coolscan II External - With Nikon Scan + Adaptec SCSI Card£442
 - 17184 Coolscan II Internal Drivers£55
 - 16514 Scantouch AX-110£189
 - 17181 Scantouch AX-210£499
 - 17185 Super Coolscan£1,016

RELISYS

- 14555 Scorpio A4 Colour SCSI Scanner£75
- 20081 Scorpio Pro A4 Colour SCSI Scanner£99
- 18692 Transparency Adaptor VMT68S£79

UMAX

- 17928 Astra 610S SCSI Colour Scanner£99
- 17929 Astra 610P Colour Scanner£59
- 17995 Astra 1220S SCSI Colour Scanner£229
- 18623 Astra 1210P Colour Scanner£99
- 17930 Astra Transparency Adaptor£199
- 16515 PageOffice Colour Document Scanner£59
- 19005 PageOffice IIC Colour Document Scanner£65
- 17997 Powerlook Colour Studio II Scanner£749

UMAX EXTENDED WARRANTY

- 18578 Astra 610/600 2 Year RTB Warranty£29
 - 19790 Astra 1200S 2 Year RTB Warranty£45
 - 19791 Astra 1200S 3 Year RTB Warranty£75
- ### VISIONEER
- 17186 Paperport IX Windows Scanner£95
 - 18624 Paperport 3000£95
 - 18625 Paperport 6000£122
 - 18626 Paperport Strobe£129
 - 19852 Paperport Deluxe Scanning Software£55

HEWLETT PACKARD
 Authorised Reseller
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 Products

THE Hewlett Packard Scanner Collection

EASY TO USE SCANNERS FOR EVERY OFFICE SITUATION
 The Intelligent Scanning Solution



ScanJet 6100c

- ▲ Type: Flatbed, Colour
- ▲ Resolution: 600 dpi, Enhanced 2400 dpi
- ▲ Interfaces: SCSI
- ▲ Compatibility: Windows & Macintosh



ScanJet 6100c**£434**
 £509.95 inc VAT
 Part Code 14508

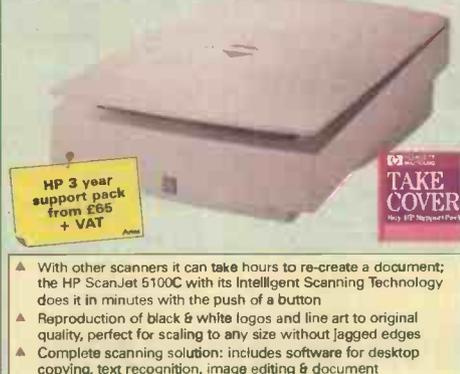
Transparency Adaptor**£367**
 £431.23 inc VAT
 Part Code 14506

Auto Document Feeder**£257**
 £301.98 inc VAT
 Part Code 14507

ScanJet 5100c

Finally, a scanner that delivers the quality results you expect on the **FIRST scan** - with **no experience required!**

Professionals working in small or home businesses who need the scan to be right the first time without having to work on it.



ScanJet 5100c**£149**
 £175.08 inc VAT
 Part Code 19385

HP Support Pack**£65**
 £76.37 inc VAT
 Part Code 14241

The HP ScanJet Family are a range of affordable colour flatbed scanners. Compact in design, you can conserve precious desk space. HP have built in energy-saving features that will significantly reduce the amount of power the scanners consume, minimising cost of ownership and impact on the environment. The HP ScanJet family provides an easy and convenient way to scan your images and text, enabling you to change the look of your documents, Streamline communications and eliminate time - consuming typing.

Warranty: 1 year HP Express Exchange (most of Europe), 1 year Technical support.
Options: HP SupportPack for 2 years additional coverage. HP First - Fax Information Retrieval System by phone

The Complete Solution...

The HP PhotoSmart Photo Scanner

The only home scanner that scans negatives, slides and prints.

- ▲ Scans a variety of sizes and objects, slides, negatives and prints up to 13 x 18cm for highest possible picture quality
- ▲ Fast - preview scans in 10 seconds, final scans in 40 seconds
- ▲ Includes HP PhotoSmart Scanning Software so you can control exposure, colour, brightness and make multiple copies



Specifications:
 Optical Resolution:
 300 dpi prints, 2400 dpi slides and negatives, 30 bit color depth
 Time to scan:
 10 second preview, 40 second final scan (typical)
 Media Type supported:
 Photographic prints up to 13 x 18cm, 35mm negatives and 35mm slides
 Maximum scannable photo size:
 Prints - Up to 13 x 18cm
 Negatives - 8 exposure strip
 Interfaces:
 SCSI II (card and cable included)
 File Formats:
 BMP, TIF, JPG, FFX

Product Warranty
 One year Standard Unit Exchange, HP Support Pack available at time of purchase.

- ▲ Capture Scans any image into your PC
- ▲ Create Edit your images as you please
- ▲ Share Our scan is ready to print or send electronically in minutes



Sales Hotline: 01582 745555

Facsimile: 01582 488588

FOR ORDERING INFORMATION SEE PAGE 2
 SALES LINES OPEN: 9AM - 7PM MONDAY - FRIDAY, 9AM - 6PM SATURDAYS



Prices exclude carriage & VAT @ 17.5% except where shown.

Aries Colour Scanners

KILLER PRICES!

See page 19 for scanner listings "High Specification, High Resolution, Incredible Value..."

Optic Pro® 600P

With 30bit & 4800 dpi, the Optic Pro® captures colour in all its detail!

- ▲ High Resolution - 4800dpi Interpolated. (300x600 Optical)
- ▲ Incredible colour depth - 30bit for 1 billion colours and ultra smooth images.
- ▲ Single Pass Convenience - Scan A4 images at full resolution in a single operation.
- ▲ OCR Included - Scan text documents straight into your word processor with the OCR software included.
- ▲ EPP Card may be required

The Optic Pro 600P is supplied with a unique collection of software, including image editing and optical character recognition (OCR). With these powerful tools, you can use your Aries Optic Pro 600P to enhance and adjust scanned images as well as convert typed papers into electronically word processed documents. You've never seen such scanning power in such an affordable package.



NEW

UNBEATABLE PRICE

£49.95
£58.69 inc VAT
Part Code 17654

Optic Pro® 1236P

9600dpi. Incredible Performance!
36bit & 68 billion colours

- ▲ High Resolution - 9600dpi Interpolated. (600x1200 Optical)
- ▲ Incredible colour depth - 36bit for 68 billion colours and ultra smooth images.
- ▲ Single Pass Convenience - Scan A4 images at full resolution in a single operation.
- ▲ OCR Included - Scan text documents straight into your word processor with the OCR software included.
- ▲ EPP Card may be required

The Optic Pro 1236P colour flatbed scanner is a feature packed product at a very affordable price. Not only does it share the specifications of many high-end scanners, such as - single-pass scanning, a cold cathode lamp and up to 9600dpi resolution, it also installs in minutes without any tools.



36bit

68 Billion Colours

£85
£99.88 inc VAT
Part Code 19956

Optic Pro® A3P

The ideal solution for anyone who requires a low cost A3 colour scanner!

- ▲ Optic Pro Resolution 6,400 dpi
- ▲ Optical Resolution 400 x 800 dpi
- ▲ 30 Bit colour
- ▲ Easy "Plug In" installation
- ▲ TWAIN compatible
- ▲ Windows 3.x and Windows 95 compatible
- ▲ EPP Card may be required
- ▲ 297 x 431.8mm Scanning Area

The latest edition to the Aries range of scanners - The Aries Optic Pro A3-P provides top of the range image processing power allowing you to produce superior documents and presentations of outstanding quality within minutes of pressing a button - all at a price you can afford.



A3 Scanner at an affordable price

£249
£292.58 inc VAT
Part Code 18380

Relisys SCSI II

The power of SCSI plus the value of Aries!

- ▲ Flatbed, single pass colour image scanner
- ▲ 9600x9600 dpi Interpolated 600x1200 dpi Optical (Pro)
- ▲ 4800x4800 dpi Interpolated 300x1200 dpi Optical
- ▲ 1 Billion colours at 30 bit colour
- ▲ 1024 Levels of grey at 10 bits
- ▲ Xenon glow lamp light source
- ▲ Scanning speed: 40 seconds A4 (300 dpi, colour)
- ▲ 216mm x 356mm Scanning area
- ▲ SCSI-2 interface for PC & Macintosh
- ▲ SCSI Card included for PC

The Aries Relisys line of scanners brings the latest technology to your table top at the most affordable price. Utilising Cold Scan single pass technology, which uses a Xenon glow lamp to give lower running costs, Relisys scanners don't require a warm up time and have an automatic shut off feature.



SCSI Bargain

Relisys 4800 dpi
£75
£88.13 inc VAT
Part Code 14555

Relisys 9600 dpi (Pro)
£99
£116.33 inc VAT
Part Code 20081

UMAX The Astra 610 and 1200 Series

The Affordable 30-bit Desktop Scanner and High Quality Scanner for the Office



FROM £59 + VAT



EXTENDED WARRANTY £29.95 + VAT



FROM £99 + VAT

FEATURES

- ▲ Single pass, colour CCD
- ▲ 30-bit, over one billion colours
- ▲ Optical resolution: 300 x 600 dpi
- ▲ Maximum resolution: 4,800 x 4,800 dpi
- ▲ Choice of SCSI (610S) or Parallel (610P) computer interfaces
- ▲ "Bit Enhancement Technology" to optimise your scanned image
- ▲ Scan area up to 8.5" x 11.7"
- ▲ Software:
Vista Scan - easy to use scanner control software
PhotoDeluxe - photo editing software from Adobe
Presto!PageManager - all-in-one scanning solution
UMAX Copy Utility - turns your printer into a copy machine
Omnipage Direct - OCR software

£59

Astra 610P Parallel
£69.33 inc VAT
Part Code 17929

£99

Astra 610S SCSI
£116.32 inc VAT
Part Code 19007

Adobe Photoshop 4.0 for £130 + VAT when purchased with any scanner - includes on-line digital user guide

FEATURES

- ▲ Single pass, colour CCD
- ▲ 36-bit, over one billion colours
- ▲ Optical resolution 1220S: 600 x 1200 dpi
- ▲ Optical resolution 1210P: 600 x 600 dpi
- ▲ Maximum resolution: 9,600 x 9,600 dpi
- ▲ Scan area up to 8.5" x 11.7"
- ▲ "Bit Enhancement Technology" to optimise your scanned image
- ▲ Choice of SCSI (1220S) or Parallel (1210P) computer interfaces
- ▲ Software:
PhotoDeluxe - photo editing software from Adobe
Presto!PageManager - all-in-one scanning solution
UMAX Copy Utility - turns your printer into a copy machine
Vista Scan - (Not included with 1210P) easy to use scanner control software

Astra 1210P Parallel
£99
£116.33 inc VAT
Part Code 18623

Astra 1220S SCSI
£229
£269.08 inc VAT
Part Code 17995

EXTENDED WARRANTY Astra 1210P £29.95 + VAT

NEW

EXTENDED WARRANTY Astra 1220S £45.00 + VAT

The Next Generation in Prepress Scanning Power

With a true optical resolution of 600 x 1200dpi (achieving a maximum resolution of 9600 x 9600dpi via software interpolation) the PowerLook II leads the field with a dynamic range of 3.3D. MagicScan intelligent scanner control software and MagicMatch (which incorporates Kodak's colour management software) ensures consistent high quality results and increased productivity.

A4 Size
Large scan area for accommodating A4-size or multiple originals

3.3D High Dynamic Range
Captures more details for professional scans

Adjustable Lamp Intensity
Yields high image quality scans for all types of images.

Smart Frame Holders
For high productivity, automatic scans in the multiple and batch scanning modes

Direct CMYK Scans
For increased productivity

Includes FREE Painter and Wacom Artpad II (bundled version) worth over £400 (whilst stocks last)

From £749 inc. VAT £880.07



Product	Code No.	Price	inc. VAT
Scanner Including Adobe Photoshop FE	17998	£899.00	£1056.32
Powerbook Colour Studio 11	17997	£74.00	£880.07
Transparency Adaptor	14439	£29.00	£218.74



*Includes MagicScan & MagicMatch



Watford Electronics

Order on-line: www.watford.co.uk

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN

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Insuring your data has never been easier

Everything a Zip drive has...Plus more!

ZipPlus™ drive is the easiest and most economical way to expand your hard drive, move files and backup plus:

Simple PC recording software

The easiest way to record music and audio on your computer - and mix, match and edit it!

Zip Built-In

NEW

It's portable so you can move files from work to home and back again. No more late nights! at the office. 100 Megabyte disks allow you to organize and store all your stuff. Store your work stuff on one disk, personal stuff on another. When you get more stuff, just get more disks. It's a great solution for fast, easy backup. Zip™ Tools software will help you store, share, back up, organize and manage all that stuff.

£69

£81.08 inc VAT
Part Code 18166

- ▲ New: Fast! - up to 50 times faster than a floppy drive
- ▲ New: One drive fits all - only one version for SCSI and parallel port interfaces
- ▲ New: Lightweight universal power supply
- ▲ New: Great Multimedia Software

Complete package, everything you need to get started on a PC or a Macintosh is included.

- ▲ ZipPlus drive
- ▲ AutoDetect™ cable for SCSI or parallel port, PC or Macintosh
- ▲ One multiusing Zip tools disk and one installation floppy
- ▲ Iomega CD-ROM containing Zip Tools & other third party software
- ▲ Adobe® PhotoDeluxe™ CD-ROM (PC & MAC)
- ▲ Owner's Manual
- ▲ Multimedia software guide



£119
£139.83 inc VAT
Part Code 18434



Zip 100 drives and media

Product	Part Code	Price	Inc. VAT	Product	Part Code	Price	Inc. VAT
Zip 100 PC Parallel	10787	£86	£101.05	Zip 100 EIDE	18166	£69	£81.08
Zip 100 SCSI Ext.	10800	£86	£101.05	Zip 6 pack disks	14001	£47	£55.22
Zip 100 SCSI Int.	15883	£86	£101.05	Zip disk	13983	£9	£10.58

Ditto Max™ and Ditto Max™ Professional - powerful desktop storage and tape backup in one simple device.



Ditto Max Pro Internal **£139**
£163.33 inc VAT
Part Code 18432

Ditto Max 7GB Internal **£99**
£116.33 inc VAT
Part Code 18431

- ▲ Up to 10GB* for all your stuff
- ▲ Range of available cartridges: 3.7GB*, 5GB*, 7GB* & 10GB*
- ▲ 5 second average access time for up to 125MB with FlashFile™
- ▲ Back-up and restore at up to 2GB* per hour - 4 times faster than Ditto 2GB
- ▲ 1-Step™ easy backup & FullBack™ system recovery software.

Ditto Max Pro External **£169**
£198.58 inc VAT
Part Code 18432

Ditto Max 7GB External **£129**
£151.58 inc VAT
Part Code 18430

Jaz® is the super fast, extremely vast personal storage drive!



- ▲ Transfers faster than many hard drives - works as fast as you do!
- ▲ Provides 2GB of disk space on each compact cartridge - enough to back up your 4GB hard drive (with 2:1 compression)
- ▲ Portable - jaz goes where you go, makes transporting information easier!

Jaz 2GB External **£399**
£468.83 inc VAT
Part Code 19212

Jaz 2GB Internal **£339**
£398.33 inc VAT
Part Code 19211

BACKUP & STORAGE DEVICES

AMACOM			
16962	2/4Gb External DAT Parallel & SCSI	£549	
16963	4/8Gb External DAT Parallel & SCSI	£685	
16964	4/8Gb External TR-4 Parallel & SCSI	£469	
19116	PSDAT 12/24 Gb External Dat Parallel & SCSI	£929	
BACKPACK			
16966	8000T TR-4 (4Gb)	£415	
16965	800TD TR-1 (800Mb)	£99	
DANMERE			
16770	Danmere Backer	£34	
19121	Danmere Backer Win/Win95 Parallel Port	£55	
HP COLORADO (INTERNAL)			
15715	Travan 3.2Gb Internal (T3000)	£99	
19183	Travan 5Gb Internal (C4354A) IDE	£127	
15345	Travan 8Gb Internal SCSI (T4000s)	£217	
HP COLORADO (EXTERNAL)			
15735	Travan 8Gb External SCSI (T4000es)	£279	
19184	Travan 5Gb External (C4361A) Parallel	£160	
HEWLETT PACKARD (INTERNAL)			
16969	HP C1533 4/8Gb DAT OEM Internal	£525	
16967	HP C1534 2Gb DAT OEM Internal	£339	
16968	HP C1536 2/4Gb DAT OEM Internal	£355	
HEWLETT PACKARD (EXTERNAL)			
16972	HP C1533/E 4/8Gb DAT OEM External	£659	
16970	HP C1534/E 2Gb DAT OEM External	£452	
16971	HP C1536/E 2/4Gb DAT OEM External	£475	
HP SURESTORE			
15190	SureStore 2000e 2.0Gb External SCSI	£519	
15189	SureStore 2000i 2.0Gb Internal SCSI	£455	
15237	SureStore 5000e 5.0Gb External SCSI	£542	
10782	SureStore 5000i 5.0Gb Internal SCSI	£475	
15186	SureStore DAT 8e 8.0Gb External SCSI	£669	
10815	SureStore DAT 8i 8.0Gb Internal SCSI	£597	
17814	SureStore DAT 8eU 8.0Gb External SCSI	£689	
19415	SureStore DAT 24/e 24Gb Autoloader DAT External SCSI	£1,979	
15737	Surestore DLT40E 40Gb External SCSI	£2,830	
18635	Surestore DLT70E 70Gb External SCSI	£4,399	
16434	SureStore T41 8Gb Internal SCSI	£249	
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16973	DATpack HP Surestore 5000i/Arcada NT	£669	
16974	DATpack HP Surestore 5000i/Arcserve Netware	£815	
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16976	DATpack HP Surestore 5000e/Arcserve Netware	£885	
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16978	Support Pack for Surestore 6000 Dat Drives	£66	
16979	Support Pack for Surestore 2000/5000 Dat Drives	£47	
16981	Support Pack for Surestore T41 Tape Drives	£40	
16982	Support Pack for Surestore DLT30e Drives	£140	
16983	Support Pack for Surestore DLT40e Drives	£192	
HP ACCESSORIES			
15194	HP Colorado ISA External Kit (KE10)	£59	
10366	HP Colorado ISA Fast Tape Controller (FC20)	£44	
13449	HP Colorado ISA Fast Tape & H/W Comp. (TC15)	£109	
11995	HP Colorado Windows Backup Software (SK7)	£39	
IOMEGA STORAGE SOLUTIONS			
18564	BUZ-Multimedia	£149	

19427	5Gb Ditto MAX Tape	£19
18799	7Gb Ditto MAX Tape	£24
18800	10Gb Ditto MAX Pro Tape	£27
16985	Ditto Oash 2Mb/Sec Controller	£35
MEMORY TECHNOLOGY - SCSI / PARALLEL		
16994	DATShuttle 4000 2GB/4GB, 20MB/min parallel, 35MB/min SCSI	£655
16995	DATShuttle 8000 4GB/8GB, 20MB/min parallel, 40MB/min SCSI	£855
MEMORY TECHNOLOGY - PARALLEL		
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EXABYTE		
17130	Eagle TR-3 Internal Floppy Tape Backup Solution (Up to 4.4Gb)	£95
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15562	8000 INT SCSI TST8000R-SBET (TR4)	£199
15564	8Gb TR-4 Falcon Internal IDE TST8000	£168
SEAGATE TAPESTOR - EXTERNAL		
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17134	3.2Gb Travan Parallel Port (TST3200) TR3	£112
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17135	4Gb DAT Drive External SCSI (DDS-DC)	£429
17136	8Gb DAT Drive External SCSI (DDS-2)	£529
17131	2Gb DAT Drive Internal SCSI (DDS-1)	£329
17132	4Gb DAT Drive Internal SCSI (DDS-DC)	£345
17133	8Gb DAT Drive Internal SCSI (DDS-2)	£455
SONY		
17137	TSL-7000 DDS Auto Loader Internal	£1,399
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17139	SDT-5000 4Gb-8Gb DSS2 Internal	£445
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17141	SLR2 (TDC-3820) 525Mb Bare Drive	£320
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15599	4mm DDS Tape Cleaning Cartridge 2 Pack	£17
11939	8mm DAT 2.3Gb	£8
11982	DC2120XL	£11
16771	4mm HP 12Gb/24Gb Dat Tape 125 Metre (DD-3) C1517A 5PK	£99
14600	DC2155 155Mb Mini Tape Cartridge	£25
11819	DC 300XPL 5.25" Cartridge	£6
11847	Mini Cartridge Data Storage Box (10)	£10
11823	DC 6150 Tape Cartridge 5.25"	£11
11961	DC 6525 Tape Cartridge 5.25"	£17
11962	3M Magnus 1.0Gb Tape Cartridge	£15
14599	3M Magnus 1.35Gb Tape Cartridge	£10
17022	5.25" Data Cartridge Storage Unit (5)	£5
16771	HP 12Gb/24Gb 4mm DAT 125 Metre (DD-3) C1517A 5PK	£99
11977	HP 2.0Gb 90M DDS Tape Cartridge	£39
15787	8mm Sony Cleaning Tape Cartridge	£12
11978	MC3000XL	£15
17049	MC3010XL 35Gb Tape Cartridge	£15
11973	QIC 3020 1.7Gb for DJ50	£12
11985	Travan TR1 400/800 Mb	£15
17525	Travan TR1 XTRA 1GB	£17
11969	Travan TR3	£24
16095	Travan TR3 XTRA 4.3GB	£18
15359	Travan TR4	£27
18771	Virgin 6150	£7
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18784	Virgin 8mm 112M DAT tape	£11
18785	Virgin 8mm 160M DAT tape	£8
15529	Xyratec Maxi-IT 540Mb Cartridge	£19
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16830	BackPack PDCD	£185
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Unique multi-function concept combining 6X CD-ROM reader, 2X CD-Recorder and the world's first 2X CD-ReWritable drive! The NOMAI 680.RW is a 6X CD reader which will play any CD type (CD-ROM, CD-AUDIO & CD-VIDEO).

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Specifications:

Capacity:	680 MBytes
Average access time (1)	290 msec
Max. access time (1)	550 msec
Transfer rate (mode 2) (Zoned 6 speed)	1146 KB/sec (read only)
Transfer rate (mode 2) (Double speed)	352.6 KB/sec (reading or writing)
Transfer rate (mode 2) (Single speed)	176.4 KB/sec (reading or writing)
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Dimensions (internal drive):	Height 41.5 mm Width 146 mm Depth 206 mm
	1 Year warranty on all drives and media

CD-R
£1.10
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CD-RW
£14
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Flip disk

The Flip Disk is a revolutionary, new portable data storage device that is smaller, faster and offers greater capacity than anything else on the market

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Key Features

- ▲ Connects via PCMCIA/Parallel Ports
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- ▲ Includes 'Novadisk' Backup Software



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PCMCIA 10X Plus Audio	17770	£150	£176.25
PCMCIA 20X Plus Audio	19453	£175	£205.63
PCMCIA 16X	19451	£130	£152.75
PCMCIA 24X	19452	£145	£170.38
Parallel 16X	14509	£115	£135.13
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HP Colorado 5GB External & Internal



Breakthrough performance for full system protection
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HP Colorado 5GB (inc. tape) External	19184	£160.00	£188.00
HP Colorado 5GB (no tape) Internal	18425	£118.00	£138.65
HP Colorado 5GB (no tape) External	18426	£152.00	£178.60

- ▲ Disaster recovery for Windows 95 with full system protection
- ▲ 2.5GB native capacity, up to 5GB compressed
- ▲ Backup up to 2GB in less than an hour
- ▲ Includes Colorado Backup by Cheyenne for Windows 95, Windows and DOS
- ▲ Supports Windows NT 4.0 backup utility
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- ▲ Low cost HP Colorado 5GB media



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19212	Jaz 2Gb External SCSI	£399
19211	Jaz 2Gb Internal SCSI	£339
13186	1Gb Jaz Disk	£53
17154	1Gb Jaz Disk 3-Pack	£155
19425	2Gb Jaz Disk	£99
19422	2Gb Jaz Disk 3 Pk	£269
16992	Jaz Carry Case	£26
16991	Jaz Jet Interface	£69
18166	Zip 100Mb EIDE Internal	£69
18080	Zip 100Mb External SCSI	£86
10787	Zip 100Mb Parallel Port	£86
15883	Zip 100Mb SCSI Internal	£86
18434	Zip 100Mb External SCSI / Parallel	£119
13983	Zip 100Mb Disk	£9
14001	Zip 100Mb Disk 6-Pack	£47
19429	Zip 100Mb Disk 10-Pack Colour	£89
16908	ZIP Card PCMCIA to SCSI Adapter	£69
15885	ZIP Zoom Card	£25
19758	Zip and Diskette Drawer	£18
19762	Zip Carry Case	£13
19765	Zip Wallet	£6

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20044	Nova Max 4.0Gb PCMCIA External Hard Drive	£449
20045	Nova Max 5.0Gb PCMCIA External Hard Drive	£569

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17914	Nomai 750.c Parallel Port External	£202
17915	Nomai 750.c SCSI External	£177
17916	Nomai 750.c SCSI Internal	£155

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15739	EZFlyer 230Mb External Parallel Port	£92
15738	EZFlyer 230Mb External SCSI	£92
18636	EZFlyer 230Mb Internal IDE	£91
19231	SparQ 1.0Gb External Parallel Port	£131
19232	SparQ 1.0Gb Internal EIDE	£131
16098	Syjet 1.5Gb External SCSI	£199
10346	Syjet 1.5Gb Internal IDE	£195
16096	Syjet 1.5Gb Internal SCSI	£195
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17156	230Mb EZFlyer Cartridge 3-Pack	£53
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15740	230Mb EZFlyer Cartridge Single	£15
17166	Syjet 1.5Gb Cartridge (3 Pack)	£189
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11964	SQ2000 5.25" 200Mb Cartridge for SQ5200	£35
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10324	Maxtor 1.3Gb IDE Hard Drive	£65
1342	Maxtor 2.0Gb IDE Hard Drive	£79
17484	Maxtor 4.0Gb IDE Hard Drive	£120
14057	Quantum 1.2GB Bigfoot 5.25" IDE Hard Drive	£49
10325	Quantum 850Mb IDE Hard Drive	£35
10309	Seagate 1.0Gb IDE Hard Drive	£55
15327	Seagate 360Mb IDE Hard Drive	£25
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17260	AR3200MB 3.2Gb	£99
18945	AR4300MB 4.3Gb	£120
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17064	MPB3043AT 4.3Gb ATA3 10ms 5400RPM 128k Cache	£115
18267	MPB3052AT 5.2Gb ATA3 10ms 5400RPM 128k Cache	£135
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18954	85250D6 5.2Gb EIDE/Ultra DMA ATA 10ms	£130
20034	86480D6 6.4Gb EIDE/Ultra DMA ATA 10ms	£136
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18448	ST32122A Medalist 2.1Gb Ultra ATA 12ms 4500RPM	£76
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20035	ST34321A Medalist 4.3Gb Ultra ATA 10ms 5400RPM	£115
20036	ST3630A 6.4GB Ultra ATA 10ms 7200RPM	£169
19230	ST38641A 8.0GB Ultra ATA 12ms 5400RPM 512k Cache	£195
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18562	AC33200 3.2Gb Ultra ATA 12ms 5200RPM	£99
18561	AC34300 4.3Gb Ultra ATA 12ms 5200RPM	£114
18560	AC35100 5.1Gb Ultra ATA 12ms 5200RPM	£134
18559	AC36400 6.4Gb Ultra ATA 12ms 5200RPM	£146

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14123	540 Mb 2.5" Hard Drive	£25
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17530	DK25A32 3.2Gb 12ms 128k cache	£169
19405	DK27A32 3.2Gb 12ms 512k Cache	£225
19406	DK27A41 4.1Gb 12ms 512k Cache	£295
19407	DK27A50 5.0Gb 12ms 512k Cache	£CAll

IBM

19602	73H7673 2.1Gb IDE 13ms 128k Cache 12.5mm High	£115
19601	00K0831 3.2Gb IDE 13ms 512k Cache 12.5mm High	£185
19600	09J1195 4.0Gb IDE 13ms 512k Cache 12.5mm High	£275
19599	46H6144 3.0Gb IDE 12ms 128k Cache 17mm High	£268
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16107	Western Digital 2.1Gb Wide SCSI	£115

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16488	M2954A 4.3Gb 10ms 7200RPM 512k Cache Ultra Wide	£395
16102	M2949S 9.1Gb 10ms 7200RPM 512k Cache Ultra	£622
16489	M2949A 9.1Gb 10ms 7200RPM 512k Cache Ultra Wide	£635

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14485	Fireball Stratus 4.3Gb 10.5ms SCSI	£158
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18644	ST4572Z Barracuda 4.5Gb ULTRA Wide 9ms 7200RPM 512k Cache	£315
16505	ST19171 Barracuda 9.1Gb ULTRA 9ms 7200RPM 512k Cache	£445
17538	ST34501N Cheatah 4.5Gb Ultra 8ms 10000RPM	£325
17539	ST34501W Cheatah 4.5Gb Ultra Wide 8ms 10000RPM	£339
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16117	Dataview Quickdrive Kit - Parallel Port External HDD Kit	£75

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24 X

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18260	Goldstar 24x	£39
19214	Philips 24x EIDE Tray Loading	£45
17889	Mitsumi FX240 24X	£38
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32 X

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 Applications - Data backup, Regular back up of HDD

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 - ▲ 1 CD-ReWritable blank disc
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 - ▲ Audio Cable
 - ▲ User's manual (English, German, French, Italian and Spanish)
- Software**
- ▲ DirectCD (Packet write file system)



Features - Makes CD recording as easy as using a floppy disk drive. Random write / erase is possible with CD-RW discs. Write data directly from application. UDF (Universal Disk Format Version 1.5) supported.
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SPECIFICATIONS

Model:	WT-412S
Interface:	Fast SCSI-2
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Access Time:	165msec (1/3 Stroke)
Buffer Size:	1MB
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Multi-Session:	Incremental
Write Verification:	Automatic Optimum Power Control to dynamically adjust laser write power
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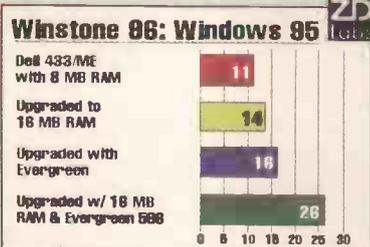
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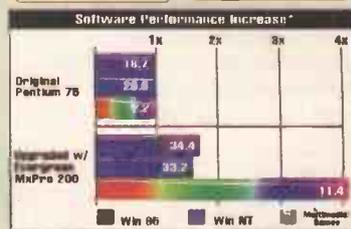
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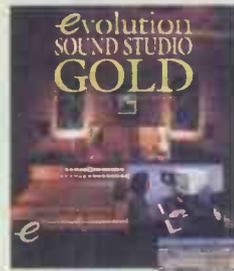


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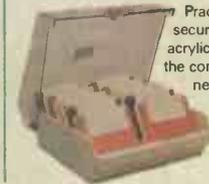


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February 1998

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Aries TV/Graphics Cards

High Speed Graphics Accelerator & TV Teletext Cards

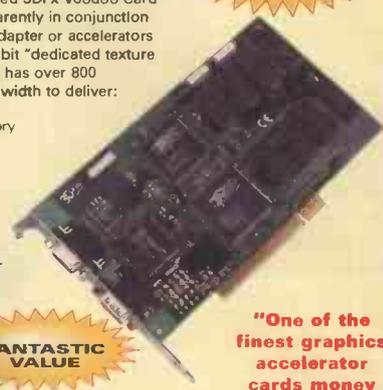
The ultimate upgrade for the games enthusiast! 3DFx Voodoo Card

The Aries 3DFX Voodoo card is one of the finest graphics accelerator cards money can buy. If you are a PC games enthusiast then this product should be top of your PC upgrade list! The new Aries 3DFx Voodoo Card is a hardware 3D graphics accelerator card that utilises the renowned 3DFx Voodoo Card chipset. The MM100PC3D works transparently in conjunction with an existing 2D or 2D/3D graphics adapter or accelerators via analogue pass through. With its 128-bit "dedicated texture memory" architecture, the MM100PC3D has over 800 megabytes per second of memory bandwidth to deliver:

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FANTASTIC VALUE

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NEW LOW PRICE

£65

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TV Teletext Card

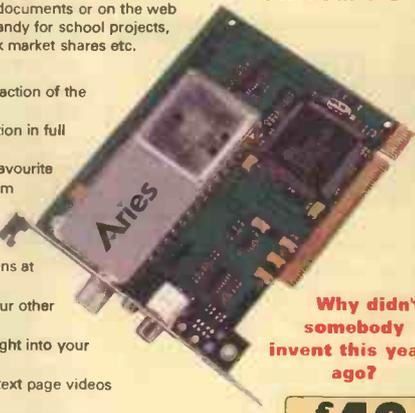
Plug in our multimedia TV and Teletext card and watch TV on your PC.

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Imagine having your favourite PC program and favourite TV gameshow running simultaneously on your screen then calling up Teletext for information on tomorrow's weather - the possibilities are endless.

Then, if you want to save a picture (or Teletext information) to disk, now you can use in all your documents or on the web to create truly impressive stuff - handy for school projects, business reports, monitoring stock market shares etc.

- ▲ Have both PC and a TV for a fraction of the cost.
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- ▲ Capture screen shots of your favourite programmes and videos or from your camcorder
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- ▲ Watch TV while working on your other tasks.
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Why didn't somebody invent this years ago?

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ATI Technologies

All-In-Wonder™ Pro



ATI's ALL-IN-WONDER PRO is the award-winning all-in-one graphics and multimedia upgrade offering everything you need for explosive multimedia on your PC - all in one card. Powered by ATI's RAGE PRO technology, ALL-IN-WONDER PRO delivers 3D, 2D and video acceleration, an intelligent TV Tuner, instant replay and zoom capabilities, still and motion video capture and TV set display. ALL-IN-WONDER PRO comes in 4MB (upgradeable) or 8MB configurations and includes a valuable software bundle of full versions of multimedia and Teletext software. PCI and AGP versions available.

What the press are saying...

The fact that ATI has managed to pack all these features on one card is a wonder in itself. The fact that all these features work extremely well makes the card a good buy.

PC PRO
Features
Performance
Value For Money
Overall
PC Pro, April '98

COMPUTER SHOPPER

The 2D and 3D performance of the board make the All-In-Wonder Pro an attractive proposition, but the addition of TV sets the same board with many installation and only one slot make it a great all round choice for a home system.

PC GAMER
The card is obviously fast in 3D and is provided with TV set, a TV Tuner, high quality video playback, acceptably fast 2D. Can be used for video editing and is ready for DVD.
PC Gamer
PC Guide Best Buy, March '98

PC GAMER
PC Guide Best Buy, March '98

- ▲ Incredible 3D Acceleration
- ▲ Powerful 2D Graphics
- ▲ Advanced TV Tuner Functionality
- ▲ Bring Video into Your PC
- ▲ Connect Your TV to All-In-Wonder Pro

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What the press are saying...

WHAT PC?
RECOMMENDED BUY
Value For Money
Performance
Overall
What PC, April '98

WHAT PC BEST BUY

Our best buy has to go to the ATI XPERT@Play product

Features Value For Money Performance Overall

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- ▲ No compromise 3D acceleration and quality
- ▲ Big Screen Gaming. ATI XPERT@Play makes it so simple - just connect your PC to a TV or VCR - to record your scores - and in no time you'll be wowing your audience.
- ▲ Amazing DVD quality video
- ▲ Outstanding quality and value

XPERT@Work™

- ▲ Maximum Graphics Power
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NEW



The Worlds No.1 Graphics Company

For corporate and small office users, there's now an easy and affordable way to get the most out of your business applications, as well as increase productivity and PC performance.

Introducing ATI XPERT@WORK, the only graphics board you'll ever need for faster 2D performance, the best video acceleration and extensive software support. Featuring ATI's 3D RAGE PRO chip technology, XPERT@Work adds incredible horsepower to your PC, letting you work more smartly and efficiently with your favourite business applications. And with XPERT@Work's 3D acceleration features you're prepared for exciting new 3D business applications - today!

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- ▲ What PC? - Five Star Award, July 97
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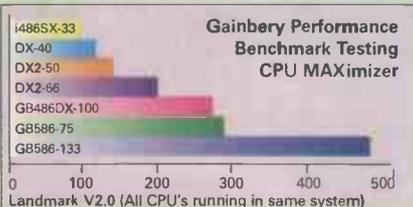
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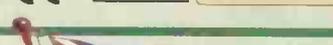


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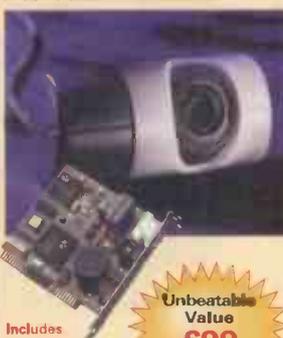
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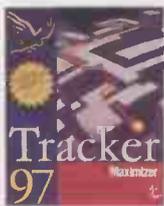
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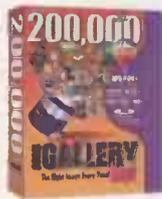
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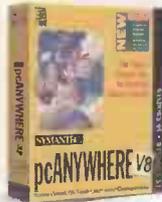
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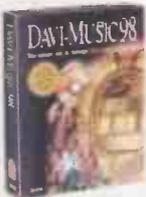
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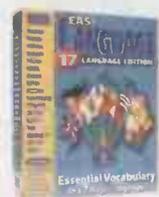
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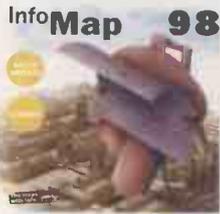
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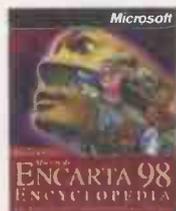
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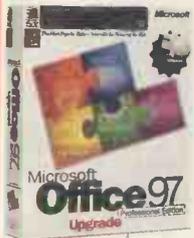


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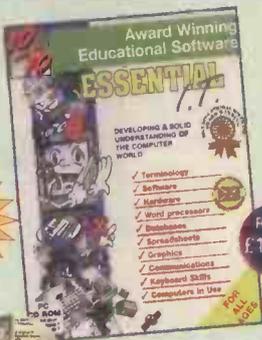
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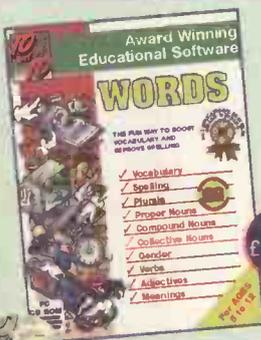
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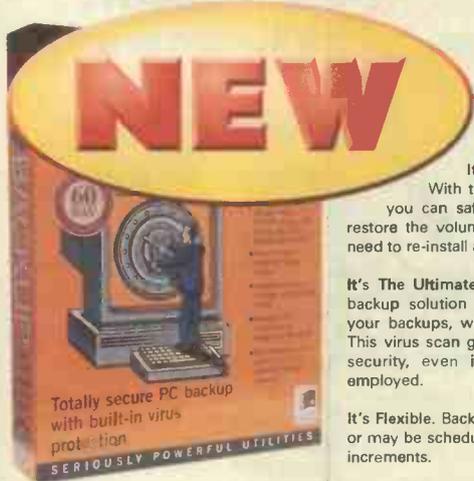
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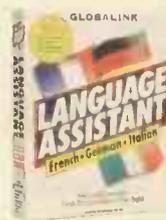
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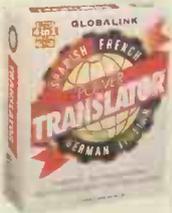
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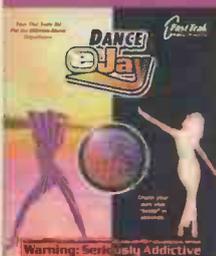
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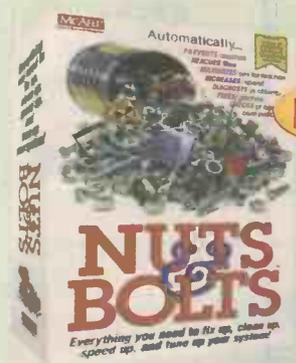


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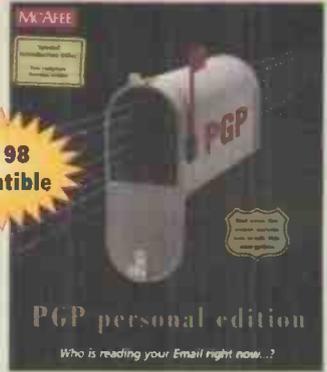
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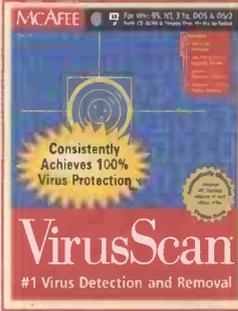
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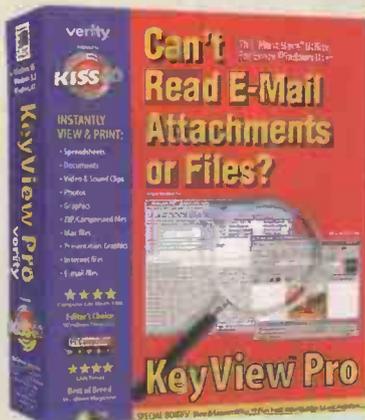
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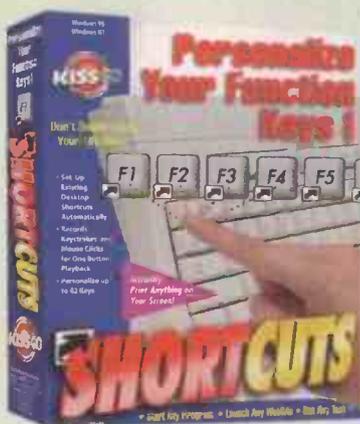


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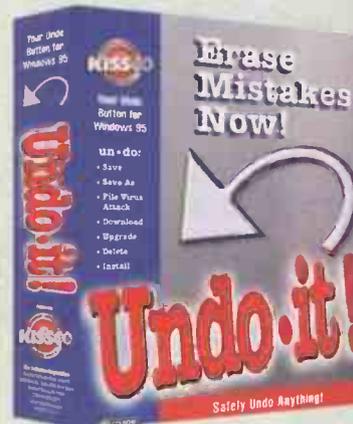
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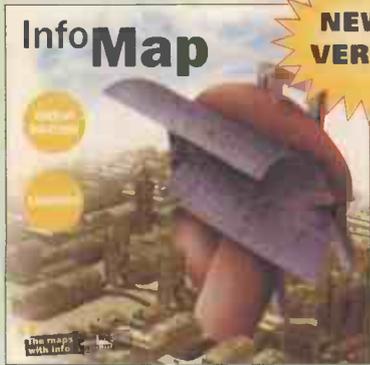


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InfoMap 98

InfoMap 98 is a Geographical Information System for Windows 95/NT which uses the latest vectorised map data from Bartholomew - HarperCollins Publishers, who have been making quality maps for 160 years. InfoMaps superior design and technology allow you to modify existing map objects and associated databases or create new ones. Optional modules such as GPS, Distribution, Postcode locator and Statistics makes InfoMap 98 a powerful tool suitable for both business and home use.

Also available - InfoMap 98 Professional - in addition to all the standard features the professional version includes GPS (Global Positioning System) module and a postcode locator providing 1.6 million postcodes!



NEW 98 VERSION

InfoMap 98
£25
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InfoMap 98 Pro
£55
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 Part Code 19684

Features

- Open up to ten map windows at a time - the same map can be shown in several windows, each with different settings
- Display a map in full screen or in a window
- Customise the way you see the map
 - ▲ turn on/off layers
 - ▲ change colours and fills, line thickness, text styles etc.
 - ▲ change zoom levels at which objects appear

Configure your desktop

- ▲ arrange buttons in your toolbar
- ▲ tile map windows horizontally or vertically
- ▲ load settings on start, save settings on exit

Measure

- ▲ distance
- ▲ radius
- ▲ area
- ▲ bearing

Move around

- ▲ Zoom in and out
- ▲ Scroll the screen
- ▲ Centralise a point on the screen
- ▲ Go to co-ordinates

Legend

Floating menu for ease of operation

Search

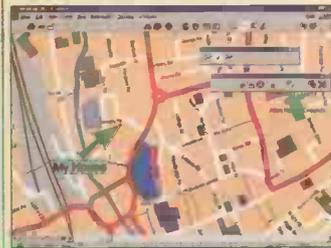
- ▲ circular
- ▲ nearest
- ▲ any word or pattern
- ▲ annular
- ▲ polygonal

Print in colour or Copy to clipboard

- ▲ whole window
- ▲ section of a window

Edit

- ▲ add any new map objects (icon, line, polygon, text)
- ▲ remove any object
- ▲ move any icon or point
- ▲ move, rotate and edit text items
- ▲ alter the shape of lines or polygons



Greater London

1:5,000 scale at 800x600
 All classified and the majority of unclassified roads, Rivers, lakes and ponds, Railtracks, Boroughs, Postcode Boundaries to sector level, Parks and wooded areas, Places of Interest, Accommodation - Hotels, Camping sites etc., Rail and Underground Stations, Airports, Schools, Colleges and Universities and much more!



External module

Underground journey planner
 calculate journey with fewest interchanges from several departure and destination points, print an itinerary, display route on the map and print it

Great Britain

1:60,000 scale at 800x600 resolution
 27,000 towns and villages, All classified and the majority of unclassified roads, Rivers and lakes, Railtracks, Counties, Postcode Boundaries to sector level, Scenic areas, National Parks, Forest Parks, Regional Parks, Places of Interest, Danger Zones, Coastal Features, Camping Sites, Motorway Service Stations, Rail Stations, Airports

External modules

Journey planner
 The map has over 16000 junctions. Calculate the shortest, quickest, optimal journey between any two junctions on the map. Fuel consumption, mileage and journey cost.

Distribution (optional module)

Plan your stock distribution route using a fleet of vehicles.

Postcode Locator

(Inc. in professional version)
 1.6 million postcodes can be located on the map.

GPS (inc. in professional version)

Global Positioning System
 Monitoring your true position, Displaying position on a map, Record to file and replay recorded data.

Statistics (optional module)

display statistical data on a map, use any dBase format database - internal or external, create relations to use several databases simultaneously, display results on a map in three ways - pie chart, bar graph or coloured areas

What the computer press says

"I have to say that the content and the possibilities of InfoMap are enormous" - PC WORLD

"For a very reasonable price, InfoMap offers a comprehensive Geographical Information System which has a number of useful add-ons to certainly satisfy most users" - PC MAGAZINE

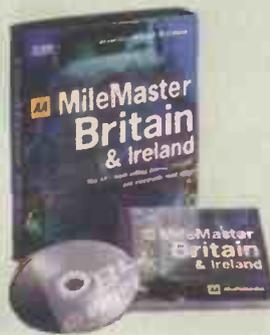
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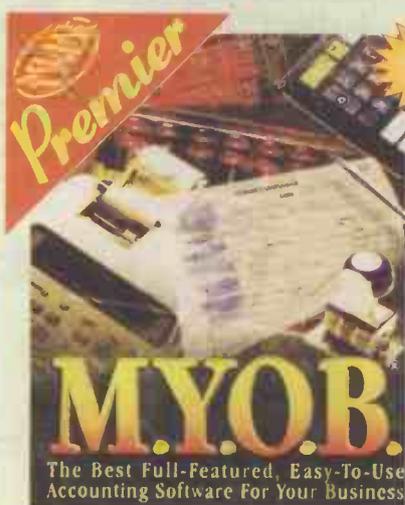


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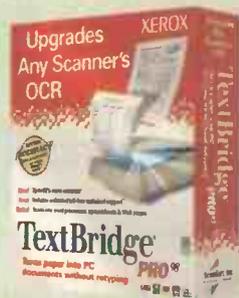
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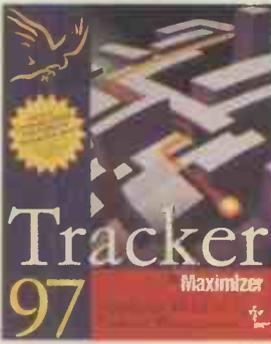
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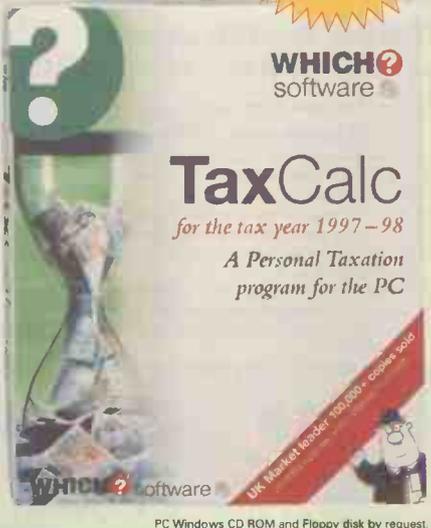
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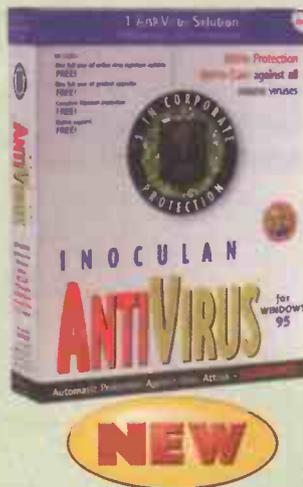
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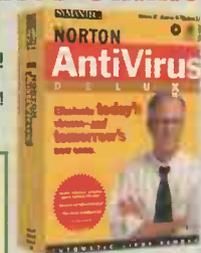
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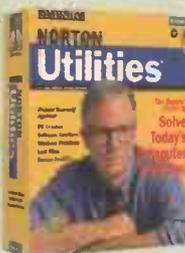


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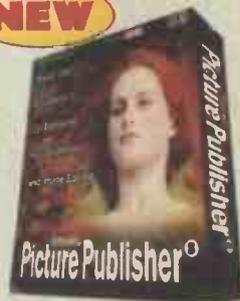
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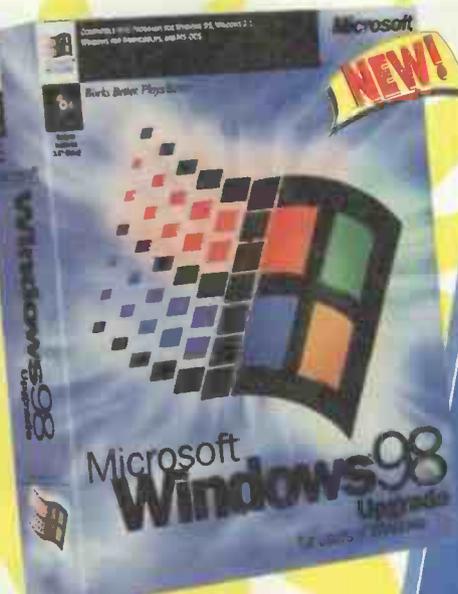
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables

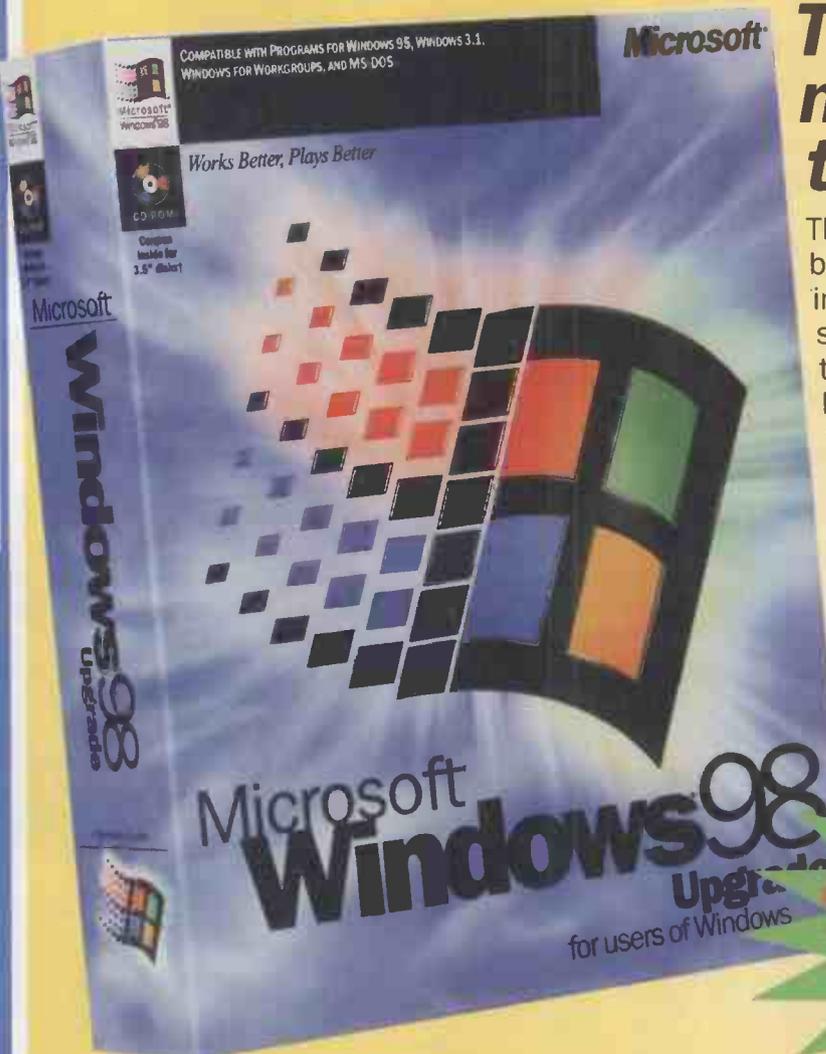
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optique
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
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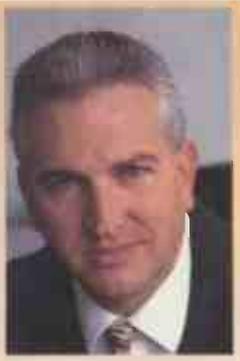
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Large Monitors (17"+ above) Servers	£24 (£28.20)	£24 (£28.20)
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Small Software package	£6.95 (£8.17)	£2 (£2.35)
	£6.95 (£8.17)	£2 (£2.35)

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Whatever your computer requirement, the Compaq Deskpro series of desktop computers provides a solution. It offers a full range of choices from the entry-level Deskpro 2000 to the Deskpro 6000 which features the new Pentium® II processor – ideal for 32-bit operating systems! The Compaq Deskpro series is a great choice for all business environments!

DeskPro 2000 Series

Delivers affordability and performance!

Compaq Deskpro 2000 PC's represent exceptional value for money. These high quality, affordable PC's are designed to grow with your needs, by upgrading key components protecting your investment for the future.

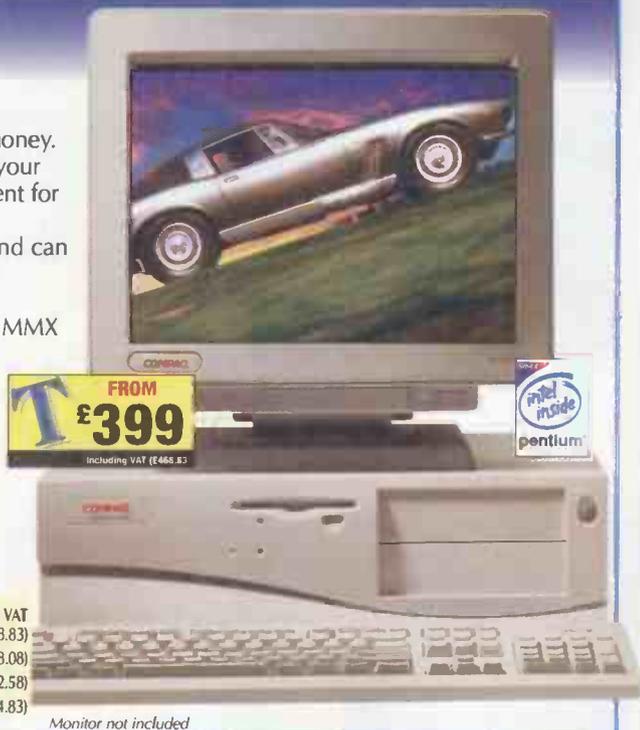
The Deskpro 2000 Series are ideal for general business tasks and can be used as stand-alone units or, with the addition of a network controller, in a company-wide network.

- ✓ 166MHz, 200MHz or 233MHz Intel Pentium Processor with MMX
- ✓ 16MB or 32MB, expandable to 384MB
- ✓ 2.1GB or 3.2GB hard drive
- ✓ CDS models include an internal CD-ROM drive and Enhanced Business Pro Audio



*Please call to confirm compatibility. Prices exclude installation.

Code	Model	CPU	RAM/MAX	HDD/CD	Price	Inc VAT
CP5541	DESKPRO 2000 M2100	Pentium 166MHz MMX	16MB/384MB	2.1GB	£399	(£468.83)
CP5542	DESKPRO 2000 M2100	Pentium 200MHz MMX	16MB/384MB	2.1GB	£509	(£598.08)
CP7157	DESKPRO 2000 M3200	Pentium 233MHz MMX	32MB/384MB	3.2GB	£649	(£762.58)
CP5543	DESKPRO 2000 M3200/CDS	Pentium 200MHz MMX	32MB/384MB	3.2GB/16X	£719	(£844.83)



Monitor not included

DeskPro 4000 Series

The intelligent network choice



Monitor not included

- ✓ 166 MHz up to 233MHz Intel Pentium® Processors with MMX
- ✓ 16MB or 32MB SDRAM expandable to 384MB
- ✓ 2.3GB or 3.4GB hard drive
- ✓ Optional CD-ROM (Included on CDS Model)
- ✓ LS models include LS-120 drive
- ✓ Microsoft Windows 95

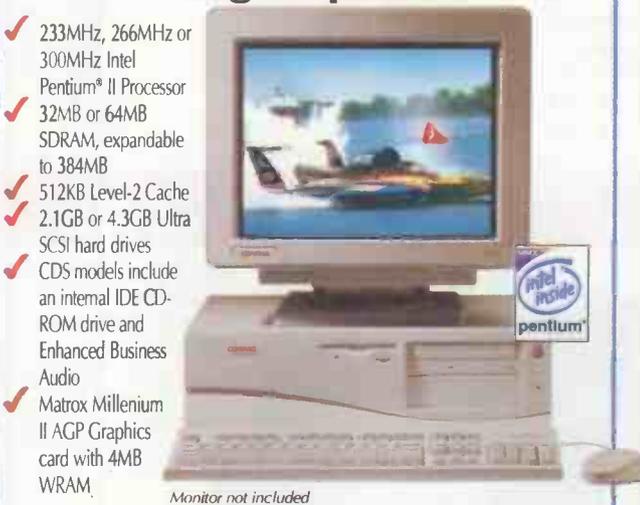
Code	Model	CPU	RAM/MAX	HDD/CD	Price	Inc VAT
CP5545	DESKPRO 4000 M2400	Pentium 166MHz MMX	16MB/384MB	2.4GB	£689	(£809.58)
CP5546	DESKPRO 4000 M3200LS	Pentium 166MHz MMX	32MB/384MB	3.2GB	£819	(£962.33)
CP5548	DESKPRO 4000 M3200LS	Pentium 200MHz MMX	32MB/384MB	3.2GB	£825	(£969.38)
CP5549	DESKPRO 4000 M3200/CDS	Pentium 233MHz MMX	32MB/384MB	3.2GB/16X	£935	(£1098.63)

LS Models come with an LS-120 Drive in place of a 3.5" Floppy Drive

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Delivers top performance and networking for power users!

- ✓ 233MHz, 266MHz or 300MHz Intel Pentium® II Processor
- ✓ 32MB or 64MB SDRAM, expandable to 384MB
- ✓ 512KB Level-2 Cache
- ✓ 2.1GB or 4.3GB Ultra SCSI hard drives
- ✓ CDS models include an internal IDE CD-ROM drive and Enhanced Business Audio
- ✓ Matrox Millennium II AGP Graphics card with 4MB VRAM



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CP6260	DESKPRO 6000 M2100/CDS	Pentium II 233MHz MMX	32MB/384MB	2.1GB/24X	£1245	(1462.83)
CP6244	DESKPRO 6000 M2100/CDS	Pentium II 266MHz MMX	32MB/384MB	2.1GB/24X	£1335	(1568.63)
CP6243	DESKPRO 6000 M4300/CDS	Pentium II 266MHz MMX	32MB/384MB	4.3GB/24X	£1509	(1773.08)
CP6242	DESKPRO 6000 M4300/CDS	Pentium II 300MHz MMX	64MB/384MB	4.3GB/24X	£1765	(2073.88)

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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables

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The Toshiba Satellite 300CDS and 300CDT notebook PCs are powerful and versatile computers that combine excellent functionality with unbeatable value. Despite their affordable price tags these stunning notebooks incorporate a range of extras to support virtually every application.

- ✓ Intel P166 to 233MHz with MMX
- ✓ 16/32MB of EDO RAM
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CP6902	Satellite 310CDS	£1175	(£1380.63)
CP6903	Satellite 310CDT	£1425	(£1674.38)
CP7487	Satellite 320CDS	£1425	(£1674.38)
CP7488	Satellite 320CDT	£1679	(£1972.83)

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CP6316	Satellite Pro 460CDX	£1259	(£1479.33)
CP4996	Satellite Pro 460CDT	£1679	(£1972.83)
CP6495	Satellite Pro 480CDT	£1929	(£2266.58)
CP7489	Satellite Pro 490CDT	£2185	(£2567.38)
CP7490	Satellite Pro 490XCDT	£2435	(£2861.13)

TECRA



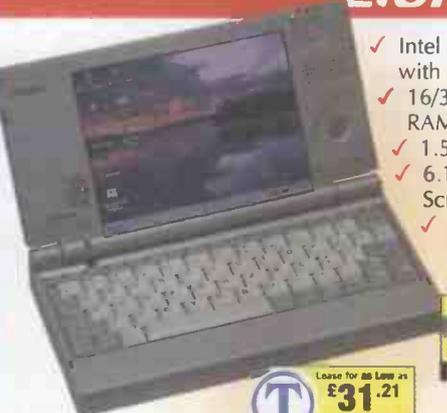
- ✓ Intel P266 to PII 266MHz with MMX
- ✓ 32/64MB of EDO RAM
- ✓ 3.82/4.77GB HDD
- ✓ 12.1"/13.3" TFT Screen
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CP7491	Tecra 550CDT	£2185	(£2567.38)
CP6691	Tecra 750DVD	£2939	(£3453.33)
CP7492	Tecra 780DVD	£3359	(£3946.83)

Libretto



- ✓ Intel P120/166MHz with MMX
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CP6692	Libretto 70CT	£925	(£1086.88)
CP6904	Libretto 100CT	£1259	(£1479.33)

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CP6705	Portege 300CT	£1345	(£1580.38)
CP7085	Portege 320CT	£1845	(£2167.88)



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EQUIUM Desktops

EQUIUM 7000S

The new Equium 7000S range desktop PC's from Toshiba expresses a significant concept in computing technology. Presented in a slimline desktop chassis, they are ideally suited for high performance users who require flexibility and functionality accommodated in a space-saving solution. Featuring the latest technologies including Pentium II processors, Dimm memory sockets, accelerated graphics ports and large data storage capacity, simply choose the 7000S that best suits your requirements.



Instant Access Door:

Unique access panel allows the most common system upgrades to be completed without having to disconnect cables or monitor ensuring faster configuration and servicing.

Space Enhancing Design:

Innovative design provides PC to be positioned vertically by use of the swivel out feet or for saving valuable workspace further can be wall mounted.

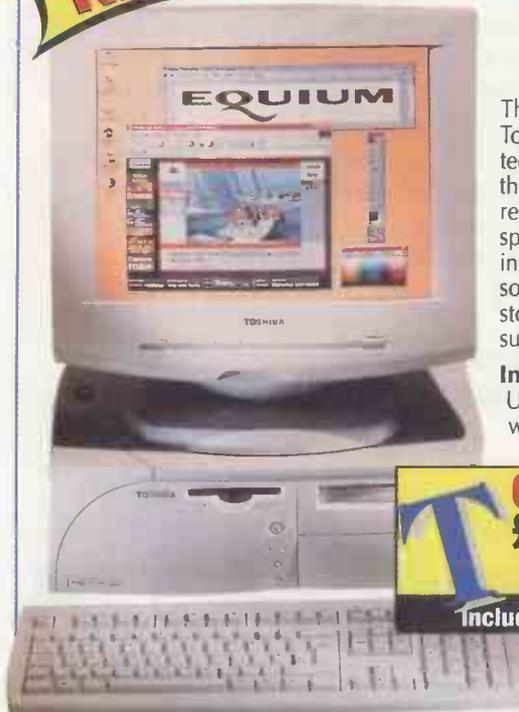
Manageability:

Featuring Desktop Management Interface and Intel LANdesk client manager software, reduce costs and efficiency by allowing hardware and software information to be accessed by LAN administrators. Additional features include Wake on LAN and Secure Sleep developed by Toshiba.

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- ✓ Windows 95 or Windows NT Workstation 4.0



Monitor not included



Monitor not included

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Including VAT (£781.38)



Equium 7000S						
Code	Processor	RAM	HDD	CD	LAN	Price
CP7211	PII 233MHz	32MB	2.1GB	No	No	£665 (£781.38)
CP7213	PII 233MHz	32MB	2.1GB	No	Yes	£725 (£851.88)
CP7325	PII 233MHz	32MB	4.3GB	Yes	No	£779 (£915.33)
CP7216	PII 266MHz	32MB	2.1GB	No	Yes	£775 (£910.63)
CP7217	PII 266MHz	32MB	4.3GB	Yes	No	£835 (£981.13)
Equium 7000D						
Code	Processor	RAM	HDD	CD	LAN	Price
CP7219	PII 233MHz	32MB	2.1GB	No	No	£719 (£844.83)
CP7227	PII 233MHz	32MB	4.3GB	Yes	Yes	£889 (£1044.58)
CP7229	PII 266MHz	32MB	4.3GB	Yes	Yes	£945 (£1110.38)
CP7233	PII 300MHz	32MB	4.3GB	Yes	No	£1069 (£1256.08)
Equium Monitors						
Code	Description					Price
MT2054	Toshiba RC4P 15" Monitor					£199 (£233.83)
MT2055	Toshiba RC4P 17" Monitor					£359 (£421.83)

Windows NT configurations are available please call for further details.



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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
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- ✓ Intel Pentium 166MHz with MMX Technology
- ✓ 16MB or 32MB RAM
- ✓ 2.1GB Hard Drive
- ✓ 12.1" DSTN or TFT Display
- ✓ Optional 8X - 20X CD-ROM (included on Model B00)

CODE	MODEL	CPU	RAM/MAX	HDD/CD	SCREEN	PRICE	Incl. VAT
CP7051	ThinkPad 310E Model A00	Pentium 166MHz	16MB/64MB	2.1GB	12.1" DSTN	£1025	(£1204.38)
CP7052	ThinkPad 310ED Model B00	Pentium 166MHz	32MB/64MB	2.1GB/20X	12.1" DSTN	£1205	(£1415.88)
CP7053	ThinkPad 310E Model C00	Pentium 166MHz	16MB/64MB	2.1GB	12.1" TFT	£1425	(£1674.38)

ThinkPad 380



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 Including VAT £1878.83

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 Including VAT £63.38

- ✓ Intel Pentium 233MHz to Pentium II 266MHz with MMX Technology
- ✓ 32MB RAM
- ✓ 3.2GB, 4.0GB or 5.1GB Hard Drive
- ✓ 12.1" FRSTN, HPA or TFT Display
- ✓ 10X-24X CD-ROM Drive

Code	Model	CPU	Ram/Max	HDD/CD	Screen	Price	Incl. VAT
CP7047	Thinkpad 380XD Model 8A0	Pentium 233MHz MMX	32MB/96MB	3.2GB/24X	12.1" FRSTN	£1599	(£1878.83)
CP7493	Thinkpad 380XD Model EAD	Pentium II 233MHz MMX	32MB/96MB	4.0GB/24X	12.1" HPA	£1979	(£2325.33)
CP7048	Thinkpad 380XD Model 9A0	Pentium 233MHz MMX	32MB/96MB	4.0GB/24X	12.1" TFT	£2175	(£2555.63)
CP7049	Thinkpad 380XD Model AAO	Pentium 266MHz MMX	32MB/86MB	5.1GB/24X	12.1" TFT	£2389	(£2807.08)
CP7495	Thinkpad 380XD Model FAD	Pentium II 266MHz MMX	32MB/36MB	5.1GB/24X	12.1" TFT	£2459	(£2889.33)

ThinkPad 600



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 Including VAT £78.29

- ✓ Intel Pentium 233MHz to Pentium II 266MHz with MMX Technology
- ✓ 32MB RAM
- ✓ 3.2GB or 4.0GB Hard Drive
- ✓ 13.0" HPA or 13.3" TFT Display
- ✓ 10X-24X CD-ROM Drive
- ✓ 56Kbps Modem

Code	Model	CPU	Ram/Max	HDD/CD	Screen	Price	Incl. VAT
CP7497	Thinkpad 600 Model 210	Pentium 233MHz MMX	32MB/256MB	3.2GB/24X	13.0" HPA	£1975	(£2320.63)
CP7499	Thinkpad 600 Model 410	Pentium II 233MHz MMX	32MB/288MB	3.2GB/24X	13.3" TFT	£2609	(£3065.58)
CP7500	Thinkpad 600 Model 510	Pentium II 266MHz MMX	32MB/288MB	4.0GB/24X	13.3" TFT	£2929	(£3441.58)

IBM PC 300GL Series



FROM £645
 Including VAT £757.88

- ✓ Intel Pentium II 233MHz to 300MHz with MMX Technology
- ✓ 16MB or 32MB SDRAM
- ✓ 2.5GB or 4.2GB Hard Drive
- ✓ 64-Bit Graphics with 2MB VRAM
- ✓ Optional 14X-32X CD-ROM Drive

Code	CPU	Ram/Max	HDD	OS	Price	Incl. VAT
CP6287	Pentium II 233MHz MMX	16MB/256MB	2.5GB	W95	£645	(£757.88)
CP6857	Pentium II 233MHz MMX	32MB/256MB	2.5GB	W95	£685	(£804.88)
CP6859	Pentium II 233MHz MMX	32MB/256MB	4.2GB	WNT	£745	(£875.38)
CP6861	Pentium II 266MHz MMX	32MB/256MB	2.5GB	W95	£735	(£863.63)
CP6862	Pentium II 266MHz MMX	32MB/256MB	4.2GB	W95	£759	(£891.83)
CP6863	Pentium II 266MHz MMX	32MB/256MB	4.2GB	WNT	£795	(£934.13)
CP6839	Pentium II 300MHz MMX	32MB/256MB	4.2GB	W95	£889	(£1044.58)
CP6841	Pentium II 300MHz MMX	32MB/256MB	4.2GB	WNT	£935	(£1098.63)

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AST Ascentia M Series

The new Ascentia M Series from AST offer flexibility, choice and the latest mobile computing technologies all in one product family. Available with a full compliment of options and upgrades provide flexibility and functionality as well as increased manageability. The Ascentia M Series is equipped with the latest notebook features including Intel processors up to 266MHz, memory configurations up to 64MB and a 20X Max speed CD-ROM drive as standard. Incorporated with AST's advanced Trillion-Technology™ which provide the finest definition, colour and resolution you have power-packed computing at its best. Available in a wide range of configurations there's an Ascentia M to suit any application and budget.



- ✓ Intel Pentium® 166MHz to 266MHz with MMX Technology
- ✓ 16MB, 32MB or 64MB of RAM as standard
- ✓ 2.1GB, 3.3GB or 4.0GB (Ultra DMA 33) Hard Drive
- ✓ 12.1" or 13.3" TFT Display
- ✓ 20X Max CD-ROM Drive
- ✓ SoundBlaster compatible chip with 3D Surround Sound
- ✓ Windows 95 or Windows NT 4,0 pre-installed



Code	Model	CPU	RAM/Max	HDD/CD	Screen	OS	Price IncVat
CP7074	Ascentia M5160T	Pentium 166MHz MMX	16MB/128MB	2.1GB/20X	12.1" TFT	W95	£1265 (£1479.52)
CP7057	Ascentia M5160T	Pentium 166MHz MMX	16MB/128MB	2.1GB/20X	12.1" TFT	WNT	£1339 (£1568.34)
CP7076	Ascentia M5160T	Pentium 166MHz MMX	32MB/128MB	3.3GB/20X	12.1" TFT	W95	£1429 (£1676.92)
CP7077	Ascentia M5160T	Pentium 166MHz MMX	32MB/128MB	3.3GB/20X	12.1" TFT	WNT	£1505 (£1765.75)
CP7079	Ascentia M5200T	Pentium 200MHz MMX	32MB/128MB	3.3GB/20X	12.1" TFT	W95	£1555 (£1824.96)
CP7078	Ascentia M5200T	Pentium 200MHz MMX	32MB/128MB	3.3GB/20X	12.1" TFT	WNT	£1635 (£1913.79)
CP7239	Ascentia M5230T	Pentium 233MHz MMX	32MB/128MB	3.3GB/20X	12.1" TFT	W95	£1685 (£1979.88)
CP7240	Ascentia M5230T	Pentium 233MHz MMX	32MB/128MB	3.3GB/20X	12.1" TFT	WNT	£1759 (£2061.84)
CP7082	Ascentia M5230X	Pentium 233MHz MMX	32MB/128MB	4.0GB/20X	13.3" TFT	W95	£2019 (£2367.82)
CP7083	Ascentia M5230X	Pentium 233MHz MMX	32MB/128MB	4.0GB/20X	13.3" TFT	WNT	£2095 (£2456.64)

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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquet
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables

MEMORY POWER

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8 MB

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SIMMS & DIMMS (SDRAM)

SDRAM 168PIN				72PIN 36BIT PARITY					
MY6588	1MB X 64	8MB	£34.95	£41.07	EURMY0416	1MB X 36-60NS 72PIN	4MB	£15.95	£18.74
MY6590	2MB X 64	16MB	£24.95	£29.32	EURMY1235	1MB X 36-70NS 72PIN	4MB	£15.95	£18.74
MY6589	4MB X 64	32MB	£39.95	£46.94	EURMY1561	2MB X 36-60NS 72PIN	8MB	£26.95	£31.67
MY7504	8MB X 64	64MB	£79.95	£93.94	EURMY1237	2MB X 36-70NS 72PIN	8MB	£26.95	£31.67
MY8004	16MB X 64	128MB	£199.00	£233.83	EURMY1238	4MB X 36-60NS 72PIN	16MB	£34.95	£41.07
					EURMY1239	4MB X 36-70NS 72PIN	16MB	£34.95	£41.07
					EURMY1241	8MB X 36-70NS 72PIN	32MB	£54.95	£64.57
					MY8001	16MB X 36-60NS 72PIN	64MB	£169.00	£198.58
72PIN EDO				30 PIN					
EURMY1336	1MB X 32-60NS (4MB EDO)	4MB	£6.95	£8.17	EURMY1218	1MB X 9-60NS (9 CHIP)	1MB	£12.95	£15.22
EURMY1332	2MB X 32-60NS (8MB EDO)	8MB	£10.95	£12.87	EURMY1219	1MB X 9-60NS (3 CHIP)	1MB	£7.95	£9.34
EURMY1555	4MB X 32-60NS (16MB EDO)	16MB	£17.95	£21.09	EURMY1221	1MB X 9-70NS (9 CHIP)	1MB	£8.95	£10.52
EURMY1643	8MB X 32-60NS (32MB EDO)	32MB	£37.95	£44.59	EURMY1222	1MB X 9-70NS (3 CHIP)	1MB	£5.95	£6.99
MY6995	16MB X 32-60NS (64MB EDO)	64MB	£125.00	£146.88	EURMY1229	4MB X 9-60NS	4MB	£12.95	£15.22
					EURMY0405	4MB X 9-70NS (9CHIP)	4MB	£14.95	£17.57
72PIN 32BIT NON-PARITY				EURMY1230	4MB X 9-70NS (3 CHIP)	4MB	£10.95	£12.87	
EURMY1244	1MB X 32-60NS 72PIN	4MB	£7.95	£9.34					
EURMY1245	1MB X 32-70NS 72PIN	4MB	£7.95	£9.34					
EURMY1250	2MB X 32-60NS 72PIN	8MB	£12.95	£15.22					
EURMY1249	2MB X 32-70NS 72PIN	8MB	£11.95	£14.04					
EURMY1253	4MB X 32-60NS 72PIN	16MB	£17.95	£21.09					
EURMY1252	4MB X 32-70NS 72PIN	16MB	£22.95	£26.97					
EURMY1293	8MB X 32-60NS 72PIN	32MB	£37.95	£44.59					
EURMY1254	8MB X 32-70NS 72PIN	32MB	£37.95	£44.59					

NOTEBOOKS

AST

ASCENTIA 800N,810N	4MB	EURMY1333	£39.95	£46.94
	16MB	EURMY1339	£49.95	£58.69
ASCENTIA 900N,910N	8MB	EURMY1502	£44.95	£52.82
	16MB	EURMY1503	£54.95	£64.57
ASCENTIA 950N	8MB	EURMY1631	£54.95	£64.57
	16MB	EURMY1630	£59.95	£70.44
ASCENTIA P SERIES	8MB	EURMY1674	£49.95	£58.69
	16MB	EURMY1675	£59.95	£70.44
	32MB	EURMY1672	£119.00	£139.83
ASCENTIA J SERIES	8MB	EURMY1677	£49.95	£58.69
	16MB	EURMY1676	£59.95	£70.44
	32MB	EURMY1673	£99.95	£117.44
ASCENTIA A & M Series	8MB	MY7018	£39.95	£46.94
	16MB	MY7075	£49.95	£58.69
	32MB	MY7509	£99.95	£117.44
	64MB	MY7633	£189.00	£222.08

COMPAQ

CONTURA 400/410	4MB	EURMY0808	£39.95	£46.94
SERIES420C,420CX,430C,430CX	8MB	EURMY0809	£44.95	£52.82
	16MB	MY6031	£54.95	£64.57
CONCERTO 4/33-4/25	4MB	EURMY0824	£39.95	£46.94
LTE ELITE 4/40C,CX,4/50CX,4/50E,	8MB	EURMY0825	£49.95	£58.69
	16MB	EURMY0826	£59.95	£70.44
	8MB	EURMY0820	£49.95	£58.69
ARMADA 1100/1120,1120T/1125	8MB	MY6366	£39.95	£46.94
	16MB	MY6367	£44.95	£52.82
ARMADA 4100/4110,4110D/4120,4120T/4125D/4130T	8MB	MY6368	£34.95	£41.07
	16MB	MY6369	£49.95	£58.69
	32MB	MY6371	£79.95	£93.94
LTE 5000,5100,5200,5300,5280,5380,51,505,250	8MB	EURMY1491	£59.95	£70.44
	16MB	EURMY1492	£44.95	£52.82
	32MB	EURMY1595	£79.95	£93.94

TOSHIBA

TECRA 700CS,700CT	8MB	EURMY1610	£49.95	£58.69
	16MB	EURMY1611	£79.95	£93.94
	32MB	EURMY1612	£179.00	£210.33
TECRA 710CDT,720CDT,730 CDT,730XCDT,740CDT	8MB	EURMY1309	£34.95	£41.07
	16MB	EURMY1308	£64.95	£76.32
	32MB	EURMY1462	£99.95	£117.44
	64MB	MY6556	£199.00	£233.83
	128MB	MY7063	£359.00	£421.83
TECRA 520CDT,530 CDT,540CDT,750CDT,COM.DVD	8MB	MY6229	£49.95	£58.69
PORTGE 650,660 SERIES	16MB	MY6136	£49.95	£58.69
	32MB	MY6809	£89.95	£105.69
	64MB	MY6876	£169.00	£198.58
	128MB	MY7121	£299.00	£351.33
TECRA 500CS.CDT,445,480CDT,460	8MB	MY6229	£49.95	£58.69
510CS.CDT,445,480CDT,460	16MB	MY6136	£49.95	£58.69
SAT220CS.CX,S/PRO440CDX,CDT,445,480CDT,460	32MB	MY6809	£89.95	£105.69
	48MB	MY6875	£119.00	£139.83
	128MB	MY7121	£299.00	£341.33
SATELLITE PRO 100CS,105CS/110CT/200CDS,200CDT/400/410/415/420CDS,420CDT/	8MB	EURMY1309	£34.95	£41.07
	16MB	EURMY1308	£64.95	£76.32
	32MB	EURMY1462	£99.95	£117.44
PORTEGE 650,660,620	8MB	MY6229	£44.95	£52.82
	16MB	MY6136	£49.95	£58.69
LIBRETTO 50CT,70CT	8MB	MY7475	£54.95	£64.57
	16MB	MY7477	£84.95	£99.82
T2100 SERIES	4MB	EURMY1172	£39.95	£46.94
	16MB	EURMY1304	£49.95	£58.69
	24MB	EURMY1620	£69.95	£82.19

IBM

THINKPAD 760C,760CD 760L,760LD	8MB	EURMY1570	£39.95	£46.94
	16MB	EURMY1571	£49.95	£58.69
	32MB	EURMY1572	£99.95	£117.44
THINKPAD 760E,760ED,760EL,760ELD,760EX	8MB	MY6360	£49.95	£58.69
	16MB	MY6361	£34.95	£41.07
	32MB	MY6363	£79.95	£93.94
THINKPAD 365X,XD,560,535	8MB	EURMY1018	£49.95	£58.69
	16MB	EURMY1637	£109.00	£128.08
THINKPAD 330/340/355/360 Series,370C	8MB	EURMY1020	£59.95	£70.44
	16MB	EURMY1021	£69.95	£82.19
POWER SERIES (TO BE INSTALLED IN PAIRS)	8MB	EURMY1585	£59.95	£70.44
	16MB	EURMY1584	£79.95	£93.94
	32MB	MY6455	£139.00	£163.33

DELL

LATITUDE 433M,433MC,450MC,475MC,450MCX,LX 4100D,4100T,4750	4MB	EURMY0866	£29.95	£35.19
	8MB	EURMY0867	£49.95	£58.69
	16MB	EURMY1605	£59.95	£70.44
450CX,475CX,4100CX/XPI	8MB	EURMY1564	£39.95	£46.95
	16MB	EURMY0868	£44.95	£52.82
LATITUDE LM P100SD	8MB	MY6457	£49.95	£58.69
	16MB	MY6458	£84.95	£99.82
	32MB	MY6461	£94.95	£111.57

FUJITSU

LifeBook 565TX,585TX,985TX,765TX,755TX	16MB	MY9235	£79.95	£93.94
	32MB	MY9236	£179.00	£210.33
	64MB	MY9237	£359.00	£421.83
LifeBook 635TX,656TX,735DX	16MB	MY9235	£79.95	£93.94
	32MB	MY9236	£179.00	£210.33
	64MB	MY9234	£359.00	£421.83

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OMNIBOOK 530,600C	4MB	EURMY1318	£54.95	£64.57
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OMNIBOOK 4000 SERIES	4MB	EURMY1625	£49.95	£58.69
	8MB	EURMY1627	£79.95	£93.94
	16MB	EURMY1626	£129.00	£151.58
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	32MB	NEW	£CALL	

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DESKTOPS

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BRAVO MS-T 5168, 5133, MS 5100, 5133, LC 5100, 5133, 5166	8MB	EURMY1661	£34.95	£41.07
	16MB	EURMY1662	£54.95	£64.57
	32MB	EURMY1663	£79.95	£93.94
	64MB	EURMY1664	£159.00	£186.83
BRAVO LC 4/25s, 4/33, 4/33s, 4/50s, BRAVO LP 4/33s, 4/33s, 4/66D, ADVANTAGE! PRO	4MB	EURMY0715	£10.95	£12.87
	8MB	EURMY0716	£19.95	£23.44
	16MB	EURMY0717	£34.95	£41.07

IBM

PC 300XL (Pentium II)	16MB	MY7586	£44.95	£52.82
	32MB	MY7587	£79.95	£93.94
	64MB	MY7585	£179.00	£210.33
	128MB	MY7588	£359.00	£421.83
PC 300GL	16MB	MY7589	£44.95	£52.82
	32MB	MY7590	£69.95	£82.19
PC 310	16MB	MY7591	£64.95	£76.32
	32MB	MY7592	£49.95	£58.69
	64MB	MY7593	£179.00	£210.33

PC 310 (8640), PC320 (8640)	8MB	EURMY0981	£29.95	£35.19
PC 700 (6875, 6886)	16MB	EURMY1025	£44.95	£52.82
	32MB	EURMY1595	£79.95	£93.94

PC 315	32MB	MY7594	£89.95	£105.69
	64MB	MY7595	£199.00	£233.83
	128MB	MY7596	£389.00	£457.08

PC 325, 330	32MB	MY7597	£109.00	£128.08
	64MB	MY7598	£199.00	£233.83
	128MB	MY7599	£429.00	£504.08

PC-300 486 Series 6573-XXX, 6583-XXX, 6571-XXX, 6581-XXX, PC-300 Pentium Series	8MB	EURMY1588	£16.95	£19.92
	16MB	EURMY1589	£34.95	£41.07
PC-300 Pentium Series 6575-XXX, 6585-XXX (Note for Pentium must be in pairs)	32MB	EURMY1590	£54.95	£64.58
PC 700 Series 6875-XXX, 6885-XXX, 6876-XXX, 6886-XXX, Power 830, 850 Series (Note for Pentium must be in pairs)	8MB	EURMY0981	£29.95	£35.19
	16MB	EURMY1025	£44.95	£52.82
	32MB	EURMY1594	£99.95	£117.44

GATEWAY

G5-166, 166M, G5-200, 200M	16MB	MY6590	£24.95	£29.32
G6-233, G6-300, G6-300XL	32MB	MY6589	£39.95	£46.94
ALL SDRAM SERIES	64MB	MY7504	£79.95	£93.94
	128MB	MY8004	£199.00	£233.83

DX2/66, DX2/50 (Deluxe & Mini Computer)	4MB	EURMY1245	£7.95	£9.34
	8MB	EURMY1249	£11.95	£14.04
	16MB	EURMY1252	£22.95	£26.97

P5-100XL, 75, 90, 90XL	4MB	EURMY1336	£6.95	£8.17
P5-120, 133XL, 150, 166XL	8MB	EURMY1332	£10.95	£12.87
Pentium Pro G6-150, G6-200 (For all Pentium to be installed in pairs)	16MB	EURMY1555	£17.95	£21.09
	32MB	EURMY1643	£37.95	£44.59

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NetServer E30 SERIES (Needs to be added in pairs)	8MB	MY7105	£49.95	£58.69
	16MB	MY7107	£89.95	£82.19
	32MB	MY7106	£89.95	£105.69

NetServer LC SERIES (Needs to be added in pairs)	8MB	EURMY1617	£34.95	£41.07
	16MB	EURMY0918	£44.95	£52.82
	32MB	EURMY1618	£99.95	£117.44

NetServer E40 SERIES (Needs to be added in pairs)	8MB	MY7105	£39.95	£46.94
	16MB	MY7107	£49.95	£58.69
	32MB	MY7106	£89.95	£105.69
	64MB	MY7624	£199.00	£233.83

NetServer LD Pro	16MB	MY7625	£89.95	£105.69
NetServer LH PLUS, NetServer LH Pro	32MB	MY7116	£99.95	£117.44
	64MB	MY7117	£179.00	£210.33
	128MB	MY7115	£389.00	£457.08

NetServer LXe Pro, LX Pro (Needs to be added in pairs) 16 Mb and 32 Mb SIMMS maybe mixed, or 64Mb and	16MB	MY7107	£49.95	£58.69
	32MB	MY7106	£89.95	£105.69
	64MB	MY7624	£199.00	£233.83
	128MB	MY7626	£399.00	£468.83

128Mb may be mixed in memory board only.	16MB	EURMY1623	£34.95	£41.07
VECTRA VE2, VL4, VA, X, M4&XA SERIES	32MB	EURMY1622	£64.95	£76.32
	64MB	MY7627	£135.00	£158.63

VECTRA XU&XW ECC DIMMS	32MB	MY7628	£109.00	£128.08
	64MB	MY7629	£189.00	£222.08
	128MB	MY7630	£369.00	£433.58

VECTRA VL4 5/90, 5/100, 5/120, 5/133 MT	8MB	EURMY1624	£19.95	£23.44
VECTRA 500 TOWER, VE (PENTIUM MODELS EDO MEMORY)	16MB	EURMY1623	£34.95	£41.07
	32MB	EURMY1622	£64.95	£76.32

FUJITSU

ErgoPro X364, X564	32MB	MY9230	£64.95	£76.32
	64MB	MY9231	£179.00	£210.33
	128MB	MY9232	£359.00	£421.83

ErgoPro e452, e462	16MB	MY9243	£34.95	£41.07
	32MB	MY9238	£74.95	£88.07

ErgoPro X453, X653	16MB	MY9233	£34.95	£41.07
	32MB	MY9120	£119.00	£139.83
	64MB	MY9240	£179.00	£210.33

ErgoPro Net PC X54	32MB	MY9239	£64.95	£76.32
	64MB	MY9241	£179.00	£210.33
	128MB	MY9242	£359.00	£421.83

DELL

Dimension XPS D300, D266 D233	32MB	MY8915	£89.95	£105.69
	64MB	MY8916	£179.00	£210.33
	128MB	MY8917	£449.00	£527.58

Dimension P200V, P166V	8MB	MY6462	£39.95	£46.94
XPS P200S, P166S, M200S	16MB	MY6454	£54.95	£64.57
M166S P133V, P133S	32MB	MY6463	£59.95	£70.44

Dimension XPS P166C, P133C, P120C, P100T, P100C	16MB	MY6465	£34.95	£41.07
Ortiplex GL-GM-GMT 5166	32MB	MY6467	£59.95	£70.44
	64MB	MY7526	£159.00	£186.83
Ortiplex GLX-GXM-GXMT 5166, 5150, 5133, 5120, 5100	16MB	MY6465	£34.95	£41.07
590, 5200, 5166, 5133, XPS Pro 200N, 180N, 150N	32MB	MY6467	£59.95	£70.44

COMPAQ

DESKPRO XE 560.5/66M.5/60M	16MB	EURMY1596	£79.95	£93.94
	32MB	EURMY1597	£129.00	£151.58
	64MB	EURMY1598	£175.00	£205.63
	128MB	EURMY1608	£219.00	£257.33

DESKPRO 2000 - 4000	8MB	MY7614	£29.95	£35.19
6000 SERIES/P 5166-5150-5133-5120-5100-575 SERIES	16MB	MY7076	£54.95	£64.57
	32MB	MY7016	£79.95	£93.94
	64MB	MY7015	£139.00	£163.33

D/P XL 450, 466 D/P 5100, 5120, 575, 590 PRO/SIGNIA 300	8MB	EURMY0832	£39.95	£46.94
5/120 - 5/0, 5/90, 5/120, 5/150	16MB	EURMY1599	£64.95	£76.31
	32MB	EURMY1600	£89.95	£105.69

DESKPRO XL6100 SERIES, XL6150, 6200 PENTIUM PRO	16MB	MY6372	£89.95	£105.69
	32MB	MY6373	£139.00	£163.33
	64MB	MY6374	£219.00	£257.33

PROLINEA MT 4/33S, MT 4/50, 8MB	8MB	EURMY0795	£34.95	£41.07
MT466, PROLINEA ENHANCED	16MB	EURMY1601	£34.95	£41.07
4/100, 4/33S, 4/50, 4/50S, 4/66	32MB	EURMY1602	£44.95	£52.82

PROSIGNIA PC SERVERS	8MB	EURMY0812	£34.95	£41.07
	16MB	EURMY0805	£34.95	£41.07
	32MB	EURMY1602	£44.95	£52.82

PRESARIO 720CDS, 724CDS, 744-744CDS, 920CDS, 924-954-972 CDS, 978CDS, 982CDS, 992CDS/9564, 9548, 9546, 510-520-524-526CDS, 520-528CDS, 7180 - 7170 - 7152 - 7110 (PENTIUM TO BE IN PAIRS)	4MB	EURMY1603	£10.95	£12.87
	8MB	EURMY1604	£29.95	£35.19
	16MB	EURMY1606	£44.95	£52.82
	32MB	EURMY1607	£54.95	£64.57

PRESARIO CDS 633, CDS 860, 660	8MB	EURMY0795	£34.95	£41.07
	16MB	EURMY0805	£44.95	£52.82

PROLIANT 2000 - 4000 - 4500 SERIES, SYSTEMPRO/XL 486/50, PENTIUM	16MB	EURMY1596	£79.95	£93.94
	32MB	EURMY1597	£129.00	£151.58
	64MB	EURMY1598	£175.00	£205.63
	128MB	EURMY1608	£219.00	£257.33

PRESARIO 7180, 5526, 5528, 5536, 9564, 9548, 9536,	8MB	EURMY0828	£16.95	£19.92
	16MB	EURMY0829	£34.95	£41.07
	32MB	EURMY1609	£54.95	£64.57

PROLIANT 1500, 1500R	8MB	MY3920	£19.95	£23.44
PROSIGNIA 300 5/150	16MB	MY3921	£34.95	£41.07
	32MB	MY3922	£109.00	£128.08
	64MB	MY3923	£64.95	£76.32

PRINTERS

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LASERJET 4/4M/4S/4SIMXIII/SI, DESKJET 1200C	4MB	EURMY0936	£19.95	£23.44
	8MB	EURMY0942	£34.95	£41.07

LASERJET 4L	1MB	EURMY0927	£22.95	£26.97
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LASERJET 5L	1MB	EURMY132B	£24.95	£29.32
	2MB	EURMY1329	£27.95	£32.84
	4MB	EURMY1327	£39.95	£46.94

LASERJET 4P/4MP/4+4M+/4V/4MV5V/5M/5P/5MP/5SV/5SIMX, COPYJET™ COLOR, DJ1600C/CM, 6P-6MP	4MB	EURMY0938	£16.95	£19.92
	8MB	EURMY0944	£34.95	£41.07
	16MB	EURMY0946	£54.95	£64.57
16MB IS NOT FOR LJ4P/MP/5P/5MP				

DESKJET 500, 500C, 510, 520, 550C	256KB	EURMY0951	£29.95	£35.19
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- 16 Optiquist
- 17 Monitors
- 18 Scanners/video conferencing/cameras
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- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
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 - ✓ 110 scalable TrueType, PostScript Level II compatible Typefaces



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Image shows optional paper trays

HP LaserJet 8000

The advanced workgroup printer for economical and effortless high performance

- ✓ 24ppm rated engine speed
- ✓ First page out in 15 sec
- ✓ 600 x 600 dpi with RET, FastRes 1200
- ✓ 16mb standard RAM on 8000/8000N, 24mb standard on 8000DN
- ✓ 80 scalable true Type fonts



FROM ONLY £1604
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PR13444	HP LaserJet 8000	£1604	(£1884.70)
PR13445	HP LaserJet 8000N	£1791	(£2104.43)
PR13447	HP LaserJet 8000DN	£2100	(£2467.50)

PR13442	HP LaserJet 5000	£929	(£1091.58)
PR13443	HP LaserJet 5000N	£1334	(£1567.45)
PR13446	HP LaserJet 5000GN	£1649	(£1937.58)

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Buy your HP printer as a bundle with HP SupportPack to obtain 3 year's on-site cover and save £££'s

TAKE COVER
 Buy HP SupportPack

HP LaserJet 3100

Printer, Fax, Copier, Scanner

- ✓ 600 x 600dpi laser output
- ✓ Enhanced document impact with graphics scanning
- ✓ 6ppm print, copy, scan, 6 seconds per page fax
- ✓ 2MB memory (150 fax pages)
- ✓ Windows 95, NT, 4.0, 3.1
- ✓ Stand alone fax/copier capable, even without connection to PC

ONLY £471
 Including VAT £553.93

PR13320	HP LaserJet 3100	£471	(£553.43)
C3906A	HP Toner	£29.84	(£35.06)
EURWR1112	HP Support Pack	£118	(£138.65)

HP LaserJet 4000

- ✓ Less waiting for output:
- ✓ 16ppm engine
- ✓ 100MHz processor
- ✓ Greater Print Quality:
- ✓ FastRes 1200 for quality business documents
- ✓ ProRes 1200 for quality graphic intensive documents
- ✓ 220 levels of grey
- ✓ HP JetAdmin
- ✓ Win NT 4.0 driver included

LJ4000 + Support Pack ONLY £879
 (£1032.83)

PR12987	HP LaserJet 4000	£711.00	(£835.43)
PR12978	HP LaserJet 4000T	£787.00	(£924.73)
PR12975	HP LaserJet 4000N	£914.00	(£1073.95)
PR12976	HP LaserJet 4000TN	£990.00	(£1163.25)
PA0990	HP Standard Capacity Toner Cartridge	£54.95	(£64.57)
PA0991	HP High Capacity Toner Cartridge	£76.95	(£90.42)
553095	HP Support Pack for LaserJet 4000 Series	£180.00	(£211.50)

HP LaserJet 6L

- ✓ 6ppm engine first page out in 18 seconds - no warm up time
- ✓ True 600 x 600dpi RET and microfine toner
- ✓ Prints on envelopes, labels, post cards and transparencies
- ✓ 26 Intellifont scalable typefaces built in
- ✓ 1 MB Standard, effectively doubled with MET

ONLY £232
 Including VAT £272.50

LJ6L + Support Pack ONLY £285
 (£334.88)

PR12230	HP LaserJet 6L Printer	£232.00	(£272.60)
C3906A	HP LaserJet 6L Toner Cartridge	£29.84	(£35.06)
PR13328	HP LaserJet 6L Remarketed Printer	£199.00	(£233.83)

HP LaserJet 6P

"Personal Quality"

- ✓ Superb 600x600dpi with HP RET, 8ppm engine
- ✓ Excellent graphics with min. 128 levels of grey
- ✓ Dual paper bins and manual option
- ✓ PC parallel port and infra-red

LJ6P + Support Pack ONLY £585
 (£687.38)

PR11827	HP LaserJet 6P	£461.00	(£541.68)
INP0975	HP LaserJet 6MP (Mac/PC)	£562.00	(£660.35)
BN3928	HP 6MP & Support Pack	£689.00	(£809.58)
C3903A	Toner: HP LaserJet 6P/6MP	£39.36	(£46.25)

HP LaserJet Companion

Read it, Copy it, File it, Fax it!!

The HP LaserJet companion is an entirely new concept, turning any personal HP LaserJet printer, Series 4, 5 or 6 into a solution which provides 4 additional productivity-boosting capabilities:

- Copy: Convenience copies at the touch of a button
- File: Storage of many types of document on PC
- Read: Conversion of hardcopy documents to editable text
- Fax: Send faxes in conjunction with a PC fax modem

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PR12232	HP LaserJet Companion	£79.00	(£92.83)
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HP Colour LaserJet 5

"Incredible Colour Laser Quality"

- ✓ 1200 dpi image quality through RET (300 dpi engine)
- ✓ 10ppm mono, 2-3ppm colour
- ✓ A3/A4 capable
- ✓ 20MB memory; Enhanced PCL5
- ✓ One year on-site warranty

LJ5 + Support Pack ONLY £3459
 (£4084.33)

EURPR1643	HP Colour LaserJet 5	£2460.00	(£2890.50)
EURPR1642	HP Colour LaserJet 5M	£3099.00	(£3641.33)
PR12969	HP Colour LaserJet 5N	£2700.00	(£3172.50)
C3105A	HP Toner Black	£3054.00	(£3588.45)
Toner: Colour (specify C, M or Y)		£18.29	(£21.49)



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- ✓ HP ZoomSmart scaling technology
- ✓ Up to 6.5 ppm black, 4ppm colour
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Show your true colours - Outstanding photo-quality colour and performance on any paper

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- ✓ Photo REt II for Photo Quality
- ✓ 600 x 600 dpi resolution with REt
- ✓ Windows NT 4.0, Windows 95



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PR12805	HP DeskJet 1120C	£285.00	(£334.88)	PR13088	HP DeskJet 720C	£156.00	(£183.30)
51645A	Black Ink Cartridge	£13.48	(£15.84)	234318	HP Support Pack	£40.00	(£47.00)
PA0892	Colour Ink Cartridge	£16.25	(£19.09)	51645A	Black Ink Cartridge	£13.48	(£15.84)
				51641A	Colour Ink Cartridge	£14.62	(£17.18)

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- ✓ 9ppm black, 5ppm colour
- ✓ MMX Compatible
- ✓ Photo REt II, ColourSmart II, Kodak Image Enhancements

PR12804	HP DeskJet 890C	£202.00	(£237.35)
WR1219	HP Support Pack	£66.00	(£77.55)
51645A	Black Ink Cartridge	£13.48	(£15.84)
C1823A	Colour Ink Cartridge	£16.25	(£19.09)

HP DeskJet 690C+



T ONLY £126
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- ✓ 600 x 600 dpi black, up to 600 x 300 dpi colour
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- ✓ Sharpest Black Printing with HP pigmented inks
- ✓ 30 TrueType Fonts
- ✓ Up to 5ppm black, 1.7ppm colour
- ✓ Optional Photo REt for better colours
- ✓ Includes Photo Colour cartridge

PR12348	HP DeskJet 690C+	£126	(£148.05)
51649A	HP Colour Ink Cart	£14.62	(£17.18)
51629A	HP Black Ink Cart	£13.13	(£15.43)
AC20411	HP Photo Colour Kit	£19.36	(£22.75)
AC20412	HP Photo Paper	£4.21	(£4.95)

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670C + Support Pack ONLY £145
(£170.38)

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- ✓ 600 x 600 dpi black, 600 x 300 dpi colour
- ✓ Automatic colour adjustment: HP ColorSmart technology
- ✓ HP RealLife Imaging System

PR12315	HP DeskJet 670C Printer	£111	(£130.43)
51629A	Black Cart	£13.13	(£15.43)
51649A	Colour Cart	£14.62	(£17.18)

T ONLY £111
Including VAT £130.43

HP OfficeJet 635

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- ✓ 600 x 600 dpi Black with REt
- ✓ 600 x 300 dpi colour
- ✓ Plain paper and PC faxing
- ✓ Up to 99 copies from original

- ✓ 600dpi enhanced scanning
- ✓ Digital zoom from 50% to 200% image size

Print Copy Scan
COLOUR
Fax Plain Paper



635 + Support Pack ONLY £405
(£475.58)

PR13270	HP OfficeJet 635	£339	(£398.33)
PR12623	HP Office Jet 590	£296	(£347.80)
PR12187	HP OfficeJet 1150C	£491	(£576.93)
WR1219	HP Support pack for 590	£66.00	(£77.55)
EURWR1112	HP Support Pack for 1150C	£118	(£138.65)

HP DeskJet 340C



340C + Support Pack ONLY £169
(£198.58)

"Mobile Solution"

- ✓ Colour option, 30-sheet feeder, 2 ppm
- ✓ Highly portable — battery option
- ✓ 600 x 300 dpi black with HP REt

EURPR1468	HP DeskJet 340	£135	(£158.63)
PR11832	HP DeskJet 340c Printer	£159	(£186.83)
51633M	Black Cartridge	£11.06	(£12.99)
51625A	Colour Cartridge	£14.69	(£17.26)

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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables

3COM Palm Pilot



Palm III

- ✓ Instant access to your data - calendar, email, address book, to do list, memo pad and expenses
- ✓ 2MB RAM
- ✓ Store up to 6000 addresses, 5 years of appointments, 1500 to do items, 1500 memo and 200 email messages
- ✓ Shirt pocket size at just 11.9cm tall and 6oz
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- ✓ Desktop software, Cradle and Protective Flip Cover included
- ✓ Backlit screen



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CP5586	Palm Pilot Personal	£109.00	(£128.08)
AC23359	Palm Pilot 1MB Upgrade	£85.00	(£99.88)
AC23360	Palm Pilot Modem	£85.00	(£99.88)
AC23362	Deluxe Leather Carry Case	£50.00	(£58.75)
AC21790	Slim Leather Carry Case	£19.00	(£22.33)
EX7600	Cradle for Palm Pilot	£21.00	(£24.68)

Hewlett Packard 620LX Palmtop

FROM ONLY £599
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CP6496	HP 620LX	16MB Palmtop	£559.00	(£656.83)
BN4945	HP 620LX & Targus Case		£619.95	(£728.44)
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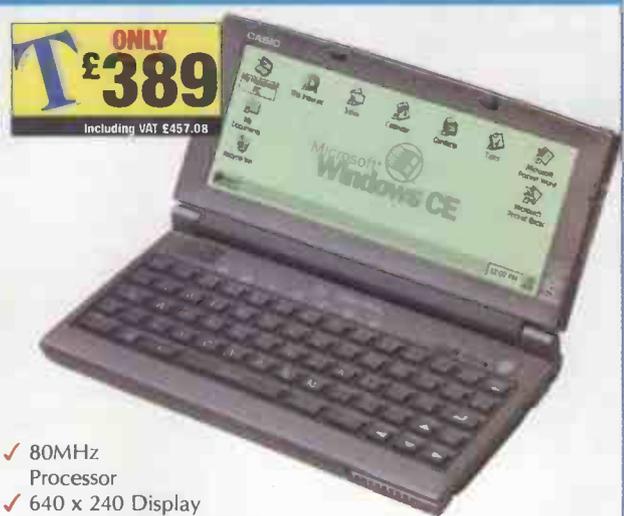
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- ✓ 640 x 240 Display
- ✓ 8MB RAM
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- ✓ Voice Applications - applications can be voice activated
- ✓ Paint Atlas - Graphics incorporated into memos
- ✓ Hypermemo - Memos can be generated using pre-programmed templates
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- ✓ Full integration with QV Cameras



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Epson Stylus Photo

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- ✓ LivePix photo editing software included
- ✓ FREE EPSON Bonus paper pack
- ✓ Max 720x720dpi in black and in colour



EPSON Stylus Color 850

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- ✓ New smaller Super MicroDot delivers unequalled print performance
- ✓ Windows 3.1, Windows 95, Windows NT and Macintosh compatible
- ✓ 1 year RTB warranty as standard



PR12406	EPSON Stylus Photo	£177.00	(£207.98)
PR12103	EPSON Stylus Color 400	£103.00	(£121.03)
PR12592	EPSON Stylus Color 300	£83.00	(£97.53)
PR12058	EPSON Stylus Color 600	£147.00	(£172.73)
PR12059	EPSON Stylus Color 800	£207.00	(£243.23)
PR13450	EPSON Stylus Photo 700	£207.00	(£243.23)
PR13449	EPSON Stylus Color 850	£243.00	(£285.53)
PR13448	EPSON Stylus Photo EX	£308.00	(£361.90)
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Laser printers from Brother

HL-730 Plus

The new HL-730 Plus replaces the best selling HL-730 which was voted 'Best Budget Laser Printer' in 1997 by Personal Computer World

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- ✓ Straight paper path technology



PR12163 HL-730 Plus Laser Printer £199 (£233.83)

HL-760

- ✓ Parallel interface with serial option
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- ✓ 6ppm
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The new Brother HL-2400C colour laser printer offers you a powerful colour printing resource with outstanding benefits for both user and network administrator.

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- ✓ Intelligent sleep mode



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PR11850	HL-1060 2MB Printer	£299.00	(£351.33)
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AC20400	Toner Cartridge for HL1060	£19.95	(£23.44)
AC20390	Toner Cartridge for HL-730/760	£19.95	(£23.44)
PR13362	HL-2400C	£2349.00	(£2760.08)
PR13492	HL-2400CN	£2685.00	(£3154.88)
PR13498	HL-1660e 8MB Printer	£639.00	(£750.83)
PR13657	HL-1660en 8MB Printer	£859.00	(£1009.33)
PR13653	HL-1660e 16MB Printer	£875.00	(£1028.13)

Panasonic

KX-P6300

FEATURES:

- ✓ True 600 dpi resolution crisp, clear and solid black print quality
- ✓ 6ppm print speed
- ✓ Windows GDI printer
- ✓ Printing for workgroups
- ✓ Optimized for fast printing and return to applications in all Windows programs
- ✓ 1 year on-site warranty



EURPR1689 Panasonic Printer KX-P6300 £172 (£202.10)

KX-P6500

FEATURES:

- ✓ 1200 dpi class laser printing quality(GDI mode)
- ✓ 1200 dpi using edge enhancement technology
- ✓ 6 ppm high speed printing
- ✓ Printing capability for Windows for Workgroups 3.11 via network
- ✓ Interactive on-screen status display monitors the printer's status and operations through graphic display messages on you PC
- ✓ Windows & PCL™ emulation
- ✓ 1 year on-site warranty



236455 Panasonic Printer KX-P6500 £235 (£276.13)

PR4440	KX-P2023 Dot Matrix Printer	£109.00	(£128.08)
EURPR1298	KX-P4430 Laser Printer	£455.00	(£534.63)
EURPR1432	KX-P3626 Dot Matrix Printer	£254.00	(£298.45)
224028	KX-P3696 Dot Matrix Printer	£255.00	(£299.63)
EURPR1690	KX-P1150 Dot Matrix Printer	£87.00	(£102.23)
PR12487	KX-P7200 Laser Printer	£1175.00	(£1380.63)
PR13298	KX-P8140 Colour Laser Printer	£2465.00	(£2869.38)

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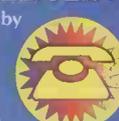


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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables



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- ✓ MPR-II and EPA Energy Star® compliant
- ✓ PC and Mac compatible



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- ✓ PC and Mac compatible



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Q51

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- ✓ 1024 x 768 max resolution
- ✓ Anti-static and anti-glare screen
- ✓ MPR-II and Energy Star compliant
- ✓ PC and Mac compatible



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- ✓ PC & Mac compatible

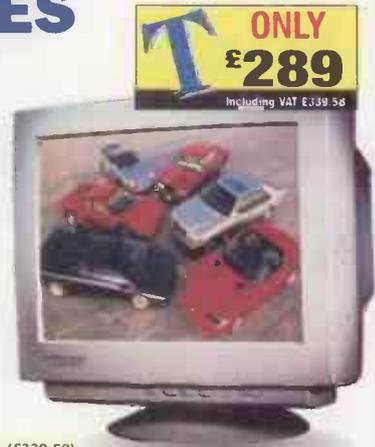


T ONLY
£149
Including VAT £175.08

MT1398 Optiquest V655 £149 (£175.08)

V773

- ✓ 17" colour monitor (15.8" diagonal viewable)
- ✓ 0.26mm dot pitch
- ✓ Maximum resolution 1280 x 1024
- ✓ ARAG®screen treatment
- ✓ PC and Mac compatible



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£289
Including VAT £339.58

MON0490 Optiquest V773 £289 (£339.58)
MT1401 Optiquest V775 £299 (£351.33)

V115

- ✓ 21" colour monitor (20" diagonal viewable)
- ✓ 0.26mm dot pitch
- ✓ 1600 x 1280 max resolution
- ✓ On View controls
- ✓ Anti-Static, anti-glare screen
- ✓ Super contrast screen
- ✓ PC and Mac compatible
- ✓ TCO 92



T ONLY
£679
Including VAT £797.83

MT1621 Optiquest V115 21" £679.00 (£797.83)

V115T

- ✓ 21" DiamondTron™ colour monitor (19.7" viewable area)
- ✓ 0.28mm aperture grille pitch
- ✓ 1600 x 1280 maximum resolution, 89Hz refresh at 1280 x 1024
- ✓ On view® controls
- ✓ ARAG screen treatment
- ✓ PC and Mac compatible
- ✓ TCO 92



T ONLY
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MT1212 Optiquest V115T £779.00 (£915.33)

V95

- ✓ 19" colour monitor (18" diagonal viewable)
- ✓ 0.26mm dot pitch
- ✓ 1280 x 1024 Max resolution @ 88Hz
- ✓ Anti-static, anti-reflection screen
- ✓ Super contrast, flat square screen
- ✓ On view controls - TCO 92
- ✓ PC and Mac compatible



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MT1620 Optiquest V95 £479.00 (£562.83)

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- ✓ 27-69KHz, 50-160KHz
- ✓ Windows 95 Plug 'n Play



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- ✓ High contrast 19" FST screen
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- ✓ Flicker Free display up to 1600 x 1200 @ 80Hz or 1280x1024 @ 100Hz
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- ✓ Windows 95 Plug & Play DDC compatible



MT1613	MT-9017T	17" Monitor	£349	(£410.08)
MT1186	MF-8617ES	17" Monitor	£365	(£428.88)
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MT12084	A101GT	21" Monitor	£759	(£891.83)
MT12085	S102GT	21" Monitor	£765	(£898.88)
MT12086	A102GT	21" Monitor	£789	(£927.08)
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The standard and ease of use and colour purity

Mitsubishi 15VX

Mitsubishi Diamond Scan 15VX is aimed to meet the needs of corporate customers looking for high levels of quality, performance and support. Optical quality, anti-static and anti-reflective CFT coating minimises reflected light. DDC compliant for Plug & Play performance-automatically sets graphic controllers,



producing optimal viewing characteristics. Complies with industry standards including quality, ergonomics, electrical, radiation and magnetic emissions. Meets MPR II, NUTEK and Energy Star standards.

The Diamondtron standard for a better picture than ever

Mitsubishi Diamond Pro 67TXV

This 17" (16" viewable) colour display monitor features:

- ✓ Mitsubishi DIAMONDTRON™ aperture grille CRT with anti-glare, anti-reflection, and anti-static coating
- ✓ MPU-based 30-69kHz auto-scan range
- ✓ 1152 x 864 resolution at 75Hz
- ✓ "Plug and Play" compatibility with Windows 95



- ✓ Fits in tight quarters! Only 42.5cm deep, which is unusually thin for a 17-in. monitor



MT1290	15VX 15"	£165	(£193.88)
MT2149	Scan 70 17"	£275	(£323.13)
MON0461	67TXV 17"	£325	(£381.88)
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MT2148	Scan 90 19"	£495	(£581.63)
MON0442	Pro 91TXM 21"	£765	(£898.88)
MT2141	Pro 1010 21"	£1195	(£1404.13)

Taxan - The UK's No.1 Monitor Manufacturer

ERGOVISION 760 TCO 95

- ✓ 17" "ZenTan" FST
- ✓ Footprint equivalent to 14" monitor
- ✓ AGRAS Face treatment
- ✓ 30-70 kHz (Multiscan)
- ✓ 1024 x 768 up to 86Hz
- ✓ Fully TCO 95 compliant
- ✓ Audio option available
- ✓ Easy one touch control



MT1824

ERGOVISION 750 TCO 95

- ✓ 17" Diamondtron monitor
- ✓ 0.25mm, Aperture Grille Pitch
- ✓ 30-86kHz (Multiscan)
- ✓ Fully TCO 95 Compliant
- ✓ 1280 x 1024 up to 80Hz
- ✓ Dual input
- ✓ Short Neck tube



MT1317

ERGOVISION 975 TCO 95

- ✓ 19" FST (18" viewable)
- ✓ 0.26mm dot pitch
- ✓ ARASC face treatment
- ✓ 30-95 kHz (Multiscan)
- ✓ 1600 x 1200 up to 75Hz
- ✓ Fully TCO 95 Compliant



MT1887



MT1679	Ergovision 430 LR 14"	£113	(£132.78)
MT1680	Ergovision 550 TCO 95 15"	£169	(£198.58)
MT1681	Ergovision 550 TCO 95-S 15"	£179	(£210.33)
MT1825	Ergovision 760 TCO 95-S 17"	£319	(£374.83)
MT1274	Ergovision 740 TCO 95	£349	(£410.08)
MT1239	Ergovision 740 TCO S 95	£359	(£421.83)
EURMT0517	Crystalvision 640 TCO-95 14.1" TFT	£849	(£997.58)
MT1170	Crystalvision 650 Plus 14.5" TFT	£1329	(£1561.58)
MT2146	Crystalvision 660 TCO-95 15.1" TFT	£1429	(£1679.08)

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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optique
- 17 Monitors
- 18 **Scanners/video conferencing/cameras**
- 19 **iomega**
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables



Umax Scanners

Umax Astra 610

Scanners
 The Affordable 30-Bit Desktop Scanner

- ✓ Optical resolution of 300 x 600dpi
- ✓ Maximum Resolution of 4800 x 4800dpi
- ✓ Choose either Parallel (EPP & SPP) or SCSI Models



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610P £59
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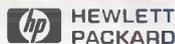


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IN6704	Astra 610P Parallel and Full Photoshop V4	£169.00	(£198.58)
IN6789	Astra 610S SCSI	£99.00	(£116.33)
IN6790	Astra 610S SCSI and Photoshop LE	£129.00	(£121.58)
IN6791	Astra 610S SCSI and Full Photoshop V4	£209.00	(£245.58)
IN6960	Astra 1220S SCSI	£229.00	(£269.08)
IN7066	Astra 1220S SCSI and Photoshop LE	£259.00	(£304.33)
IN7065	Astra 1220S SCSI and Full Photoshop V4	£339.00	(£398.33)
IN6697	Astra 1210P Parallel	£109.00	(£128.08)
IN6747	Astra 1210P Parallel and Photoshop LE	£139.00	(£163.33)
IN6748	Astra 1210P Parallel and Full Photoshop V4	£219.00	(£257.33)

HP SCANNERS

HP ScanJet 5100C Scanner



The ScanJet 5100C desktop scanner delivers the high-quality results you expect, even if you've never used a scanner.

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- ✓ Enhanced resolution 1200dpi, Optical Resolution 300dpi
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- ✓ Software includes: HP PrecisionScan with integrated OCR, Adobe PhotoDeluxe Image Editor & Caere's PageKeeper Lite document management software.



ONLY £149
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HP ScanJet 6100C Scanner

The perfect tool for capturing high-quality colour and monochrome images to create impressive presentations, reports, and promotional materials.

- ✓ High quality colour, black & white and greyscale scanning
- ✓ 2400dpi enhanced and 600dpi optical resolution
- ✓ 30-bit colour and 10-bit greyscale scanning
- ✓ Software suite includes Caere OCR, Corel Web GRAPHICS SUITE, Corel PHOTO-PAINT Select, Adobe Acrobat 3.0 and HP DeskScan II
- ✓ Kit includes HP ScanJet Slide adapter and SCSI controller
- ✓ Compatible with Windows 3.1, 95 and NT



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IN6805	HP ScanJet 5100C Parallel	£149.00	(£175.08)
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Video SphinxPro allows powerful and fully integrated video, audio and stills capture, editing and media management on a Pentium based PC or laptop. Using the Video SphinxPro it becomes possible to produce MPEG files for use with the eb, presentation software or for use within interactive CD ROM based products.

Features:

- ✓ Easy to use and fast to install
- ✓ Captures and plays back full-motion video in real-time
- ✓ Capture and view high-resolution still frame video
- ✓ Plug and play without opening your PC
- ✓ Encodes MPEG-1 compliant video and CD-quality audio
- ✓ Compresses movies up to 200:1 to save disk space
- ✓ Save movies in draft mode for faster internet and modem transfers
- ✓ Compresses in video CD quality
- ✓ User-adjustable image controls for brightness, contrast, hue and saturation
- ✓ User-adjustable audio balance and volume
- ✓ Replaceable audio track for voice over the background music
- ✓ Easy to use frame accurate MPEG editing and trimming



EX4545 Video SphinxPro £299.00 (£351.33)



DC210 Zoom Digital Camera

- Megapixel CCD(1152x864 pixels)
- 1.8" TFT colour LCD display
- Up to 1152x864 image resolution
- Kodak digital Science Picture easy software 2.0



INP0647	DC50 Digital Camera	£249	(£292.58)
IN6826	DCV300 Digital Camera	£129	(£151.58)
IN6952	DC-200 Digital Camera	£379	(£445.33)
IN6267	DC-120 Digital Camera	£425	(£499.38)
IN6713	DC-210 Digital Camera	£499	(£586.32)
AC20328	AC Adapter DC120	£57	(£66.98)
MY7100	4MB Flash Card	£99	(£116.33)
MY7103	20MB Flash Card	£169	(£198.58)

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www.intel.com/createshare



EX8424	Intel Create & Share USB	£129	(£151.58)
EX8423	Intel Create & Share PCI	£199	(£233.83)

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224426	Parallel Zip Drive	£85.00	(£99.88)
224425	SCSI Zip Drive	£85.00	(£99.88)
DRI2274	Parallel & SCSI Zip Plus Drive	£119.00	(£139.83)
ME7001	3-Pack	£27.00	(£31.73)
ME7028	6-Pack & Caddy	£49.00	(£57.58)
ME7460	10-Pack & 2 Caddies	£85.00	(£99.88)

The most affordable way to add a Zip drive to your PC

The new Zip Internal drive connects via your computers IDE controller which means you get the performance of ATAPI without the need for an extra controller card.



- ✓ All-in-one-solution
- ✓ Reduce desktop clutter and the need for an additional power point
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*Does not include any media

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Store 2GB on a single cartridge



- ✓ Faster than many hard drives - works as fast as you do!
- ✓ Provides up to 2GB of disk space on each compact cartridge - enough to back up your 4GB hard drive (with 2:1 compression)
- ✓ Transfer rate up to 8.7MB/sec (max with 2GB model), average seek time of 10ms read/12ms write (max with 2GB model)
- ✓ Ultra SCSI connection

2005001	Jaz 1GB Internal	£169.00	(£198.58)
2005002	Jaz 1GB External	£185.00	(£217.38)
DR7038	Jaz 2GB Internal	£339.00	(£398.33)
DR7039	Jaz 2GB External	£399.00	(£468.83)
236694	Single 1GB Cartridge	£55.00	(£64.63)
ME7527	Single 2GB Cartridge	£95.00	(£111.63)

DR6985	DittoMax Pro 10GB* Internal IDE	£139.00	(£163.33)
DR6984	DittoMax Pro 10GB* External Parallel	£169.00	(£198.58)
DR6064	Ditto 2GB* Internal IDE	£56.00	(£65.80)
ME6953	Ditto 2GB Singles	£14.00	(£16.45)
ME6954	Ditto 2GB 3-Pack	£39.00	(£45.83)
ME7454	DittoMax 3GB Singles	£15.00	(£17.63)
ME7455	DittoMax 3GB 3-Pack	£42.00	(£49.35)
ME7456	DittoMax 5GB Singles	£18.00	(£21.15)
ME7458	DittoMax 7GB Singles	£21.00	(£24.68)
ME7533	DittoMax 10GB Singles	£24.00	(£28.20)

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The easiest way to get multimedia into your PC

Make your own movies

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- ✓ Motion JPEG video capture and playback using onboard hardware compression technology; software selectable compression from 1:1 up to 80:1.
- ✓ PAL: 768 x 576 @ 25 frames per second @ 24 Bit colour 44.1kHz stereo audio
- ✓ Data transfer up to 20MB/sec
- ✓ Bundle software includes Videowave SE Plus for Windows 95, HotShots for Windows 95, Recordit for Windows 95, Buz basics & Moviemaking CD ROM Tutorial!

nb: The Buz board does not incorporate audio hardware, but allows capture via third party sound card

EX8161	Buz Multimedia Producer	£149.00	(£175.08)
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables



Adaptec SCSI Solutions The Ultra2 SCSI Controller

The SCSI Card 2940U2W can burst data up to 80 MB/sec on the Ultra2 SCSI bus, which doubles the maximum burst rate of Wide Ultra SCSI. This Ultra2 SCSI transfer rate translates into increased performance of data intensive applications.

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High performance UltraSCSI for desktop PCs and workstations

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- ✓ Supports up to seven SCSI devices



EX7250 AHA-2940 Ultra £145.00 (£170.38)

SlimSCSI 1480

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EX8385 Slim SCSI 1480 £135.00 (£158.63)



2005007	AVA-1505 Total CD	£34.00	(£39.95)
236129	AHA-2940UW PCI Ultra Wide SCSI	£169.00	(£198.58)
EU9EX2476	AHA-3940U PCI Multichannel	£245.00	(£287.88)
236131	AHA-3940UW PCI Wide Multichannel	£285.00	(£334.88)

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Easy CD Creator lets you make your own CDs! It creates audio, data and mixed mode CDs and is quite simply the most powerful easy to use CD-Recording Software ever developed! Supports Windows 95, and NT 4.0



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Network CD-ROM Tower

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- ✓ Minimum thirty-two speed
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- ✓ 1 year warranty

Access up to 14 Drives at the same time

Item	Description	Price	Inc VAT
DR7777	7- Drive 32X CD-Tower	£739.00	(£868.33)
DR7779	14- Drive 32X CD-Tower	£1549.00	(£1820.08)
DR7776	7- Drive CD-Tower configuration kit	£519.00	(£609.83)
DR7774	14- Drive CD-Tower configuration kit	£869.00	(£1021.08)



CD Recorders

The most affordable CD-Recorders Around

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CD Recorders

CDM4120
 Quad-Speed write, Twelve-Speed read CD recorder, CD recording software for Windows 95 & NT, SCSI Cable (Internal only), media (2) and documentation.

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 The CDM3000 range requires no additional hard disk space on the host PC which makes them ideal for CD mastering. The CDM3000 comes with a 4X writer and an AV Hard Drive to allow a complete CD-R mastering solution in one. Includes software, blank media (2) and documentation.

CDM3500

The CDM3500 offers the capability to perform CD to CD copies on a stand alone unit. The CDM3500 can also be used as a mastering unit where users will be able to master a CD and make further copies without tying up the PC. Includes software, blank media (2) and documentation.

CD Rewriters

CD Rewriters provide all the benefits of a CD Recorder with the additional facility of being able to rewrite to Rewritable media.

CD Rewriter kit includes, Quad-Speed write, Six-Speed read and Two Speed rewrite CD-RW Drive, and software for Windows 95 & NT, Audio Cable, 1 blank CD-R media, 1 blank CD-RW media and documentation. Internal IDE or Internal/External SCSI CD-RW drives are available.



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The Latest drives from Dynatek



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DR7393	4X Write 12X Read External SCSI CDM-4120	£299.00	£351.33
DR7962	CDM-3004 with 4GB HDD	£549.00	£645.08
DR7963	CDM-3009 with 9GB HDD	£899.00	£1056.33
DR8154	CDM-3500 Mastering Unit	£999.00	£1173.83
DR7396	4X Write 6X Read 2X Rewrite Internal IDE CDRW- 4001	£289.00	£339.58
DR7451	4X Write 6X Read 2X Rewrite Internal SCSI CDRW- 426	£279.00	£327.83
DR7784	4X Write 6X Read 2X Rewrite External SCSI CDRW- 426	£299.00	£351.33

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- ✓ Built-in shock absorbers for extra reliability
- ✓ Includes a suite of backup, restoration and compression software
- ✓ Ultra fast up to 360MB per minute via PCMCIA
- ✓ Incorporates reliable Toshiba 2.5" hard drive

AMACOM

Flip disk

DR7031	Flip Disk 4.2GB	£349.00	(£410.08)
DR7694	Flip Disk 6.4GB	£399.00	(£468.83)
DR9776	Flip Disk 8.0GB	£499.00	(£586.33)

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- ✓ Tray load mechanism
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DR7439	6X Read 4X Write 2x Rewrite Internal IDE	£289.00	(£339.58)
DR7465	6X Read 4X Write 2x Rewrite Internal SCSI	£299.00	(£351.33)
DR7467	6X Read 4X Write 2x Rewrite External SCSI	£315.00	(£370.13)

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EX8213	MxPro 200 Upgrade	£109.00	(£128.08)

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EX8304	2.1GB	Seagate	ST32122A	£85.00	£99.88
DR7415	2.1GB	Quantum	QM32100SE-A	£85.00	£99.88
DR7201	2.5GB	Seagate	ST32532A	£89.00	£104.58
EX8305	3.2GB	Seagate	ST33232A	£99.00	£116.33
DR6335	3.2GB	Western Digital	AC33200	£105.00	£123.38
DR7252	4.3GB	Seagate	ST34342A	£115.00	£135.13
DR7412	4.3GB	Quantum	QM34300SE-A	£125.00	£146.88
DR6976	4.3GB	Western Digital	AC34300	£125.00	£146.88
DR6912	5.1GB	Western Digital	AC35100	£145.00	£170.38
DR7335	6.4GB	Seagate	ST36451A	£145.00	£170.38
DR6918	6.4GB	IBM	09J0308	£165.00	£193.88
DR7434	8.0GB	Quantum	QM508000TX-A	£169.00	£198.58
DR8066	8.4GB	IBM	00K0394	£219.00	£257.33
DR8195	9.1GB	Seagate	ST39140A	£285.00	£334.88
DR7413	12.0GB	Quantum	QM512000TX-A	£239.00	£280.83
Ultra SCSI					
DR6624	2.1GB	IBM	09J1034	£115.00	£135.13
DR7417	3.2GB	Quantum	QM33200SE-S	£149.00	£175.08
DR6586	4.5GB	Seagate	ST34572N	£329.00	£386.58
DR7435	6.4GB	Quantum	QM36400SE-S	£253.00	£297.28
DR5830	9.1GB	Quantum	QM39100AL-S	£489.00	£574.58
DR8166	9.1GB	IBM	VD27H1714	£515.00	£605.13
DR8165	9.1GB	Seagate	ST39173N	£569.00	£668.58
Ultra Wide SCSI					
DR8169	2.1GB	IBM	09J1036	£119.00	£139.83
DR8238	4.3GB	IBM	09J1037	£199.00	£233.83
DR5831	4.5GB	Quantum	QM34550AL-SW	£295.00	£346.63
DR7042	4.5GB	Seagate	ST34572W	£345.00	£405.38
DR6100	9.1GB	Quantum	QM39100AL-SW	£499.00	£586.33
DR8038	9.1GB	Seagate	ST39173W	£579.00	£680.33

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AC22705

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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables



HP Storage Solutions

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DR7153	5000i Int SCSI	£469	(£551.08)
DR7154	5000e Ext SCSI	£545	(£640.38)
DR7155	DAT8i Int SCSI	£539	(£633.33)
DR7156	DAT8e Ext SCSI	£615	(£722.63)
DR7428	DAT24i Int SCSI	£755	(£887.13)
DR7427	DAT24e Ext SCSI	£835	(£981.13)
DR7034	Colorado 5GB Internal	£127	(£149.23)
DR7035	Colorado 5GB Parallel	£155	(£182.13)
DR8149	Colorado 8GB Internal	£165	(£193.88)
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AC23459	Standard	1	3.5"	SCSI-3	50W	£56.95	£66.92
AC23495	Premier	2	3.5"	SCSI	80W	£52.95	£62.22
AC22196	Premier	2	5.25"	SCSI	80W	£52.95	£62.22
AC22596	Premier	2	5.25"	SCSI-3	80W	£85.00	£99.88
AC22199	Premier	4	5.25"	SCSI	200W	£70.95	£83.37
AC22200	Premier	8	5.25"	SCSI	250W	£106.95	£125.67
AC22473	Deluxe	8	5.25"	SCSI	250W & 2 Fans	£122.00	£143.35
AC23475	Deluxe	8	5.25"	SCSI-2	250W & 2 Fans	£145.00	£170.38
AC23476	Deluxe	8	5.25"	SCSI-3	250W & 2 Fans	£165.00	£193.88
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NEW	Standard	1	3.5"	IDE	50W	£58.95	£69.27
NEW	Standard	2	5.25"	IDE	80W	£77.95	£91.59
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DMD2787	SpeedVoice 56K	£95.00	(£111.63)
DMD2351	SelfMemory 336	£79.00	(£92.83)
DMD3571	SelfMemory 56K Phone	£149.00	(£175.08)

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DMD2578	Gold Card Global V.34+Fax	£135.00	(£158.63)
DMD2583	GSM Nokia 2110 Upgrade	£89.00	(£104.58)
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquist
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables

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DMD2425	Accura 56K External	£89.00	(£104.58)
DMD2531	Accura 336 PC Card	£99.00	(£116.33)
DMD3281	Optima 56K PC Card	£165.00	(£193.88)
AC24394	Nokia 2110 GSM kit	£99.00	(£116.33)
MM4018	Optima 336 Business Ext	£159.00	(£186.83)
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DMD3129	Sportster ISDN TA	£99.00	(£116.33)
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DMD1316	Courier V34 33.6 Internal	£195.00	(£229.13)
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PR11932	BJC-620	£169.00	£198.58
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PR12592	STYLUS COLOUR 300	£83.00	£97.53
PR12406	STYLUS PHOTO	£177.00	£207.38
PR13450	STYLUS PHOTO 700	£207.00	£243.23
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PR12408	LQ-670 24 Pin	£230.00	£270.25
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PR4440	KX-P2023 24 Pin	£109.00	£128.08
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- 27 Hardware
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DR7501	Toshiba 32X IDE	£49.00	£57.58
DR7500	Toshiba 32X SCSI	£89.00	£98.08
DR7917	Plextor 32X SCSI (Tray)	£99.00	£118.33
DR7916	Plextor 32X SCSI (Caddy)	£129.00	£151.58
DR7947	LG Electronics 32X IDE	£49.00	£57.58
DR7993	Teac 32X IDE	£49.00	£57.58
DR7992	Teac 32X SCSI	£62.00	£72.85
DR6555	Teac 8X Disc IDE	£95.00	£111.83
DR6789	Nakamichi 16X 5 Disc IDE	£89.00	£104.58
DR6780	Nakamichi 16X 5 Disc SCSI	£119.00	£139.83
NEW	Nakamichi 16X 5 Disc SCSI Ext	£195.00	£229.13

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DVD DRIVES

DR6307	Creative DVD Encore Kit	£169.00	£198.58
DR7915	Hitachi DVD IDE Bare	£145.00	£170.38

EXTERNAL CD-ROM DRIVES

AMACOM

DR7029	EZCD 16X Ext Par	£119.00	£139.83
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DR7032	EZCD 16X Par & sound	£169.00	£198.58
DR7920	EZCD 24X Par & sound	£175.00	£205.83
DR7033	EZCD 16X Ext PCMCIA	£129.00	£151.58
DR7919	EZCD 24X Ext PCMCIA	£135.00	£158.83
DR8153	EZCD 10X PCMCIA/Audio	£159.00	£186.83
DR7918	EZCD 20X PCMCIA/Audio	£185.00	£217.38

COMPUTER CONNECTIONS

DR8655	24X Ext Parallel	£109.00	£128.08
DR7010	24X Ext PAR&SCSI	£129.00	£151.58
DR8264	32X Ext Parallel	£129.00	£151.58
DR8256	32X Ext PAR&SCSI	£159.00	£186.83

MICROSOLUTIONS

DR8229	32X Parallel	£159.00	£186.83
DR8243	32X Parallel & Sound	£185.00	£217.38
DR8241	24X Parallel Slimline	£159.00	£186.83
DR8242	24X Par & Sound Slim	£185.00	£217.38

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DR7089	Shuttle 24X Parallel	£179.00	£210.33
DR7392	Datavise 24X Parallel	£129.00	£151.58
DR8836	QuickCD 16X PCMCIA	£149.00	£175.08
DR8025	QuickCD 16X Parallel	£149.00	£175.08

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DR7963	4X CD-R & 9GB HDD	£899.00	£1,059.33
DR8154	4X CD-R & 4X CD-ROM	£999.00	£1,173.83

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DR6351	Shuttle 2X/6X	£355.00	£417.13
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TEAC

DR7499	4X/12X Int SCSI	£289.00	£338.58
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COMPUTER CONNECTIONS

DR7953	2X/2X/6X Int EIDE	£229.00	£269.08
DR7957	2X/2X/6X Int SCSI	£249.00	£292.58
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DR6943	2X/2X/6X Ext Parallel	£279.00	£327.83
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DR7396	4X/2X/6X Int EIDE	£289.00	£338.58
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DR7784	4X/2X/6X Ext SCSI	£299.00	£351.33

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DR7994	2X/2X/6X Int EIDE	£232.00	£272.08
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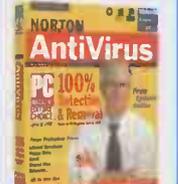
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables



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DR7090	EZFlyer 230 Int IDE	£94.95	£111.57
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DR7341	SparQ 1GB Ext Par	£159.95	£187.94
DR7342	SparQ 1GB Int IDE	£144.95	£170.32
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AC23468	5.25 SCSI-2	£54.95	£64.57
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquist
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables

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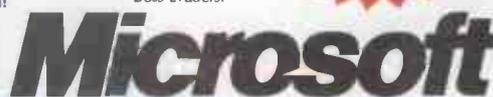
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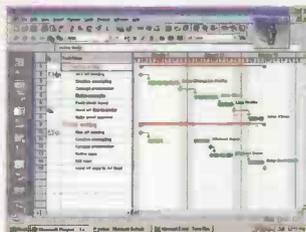


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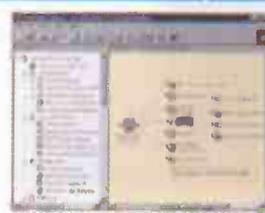
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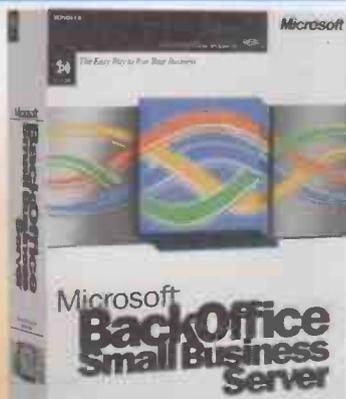


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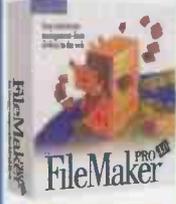
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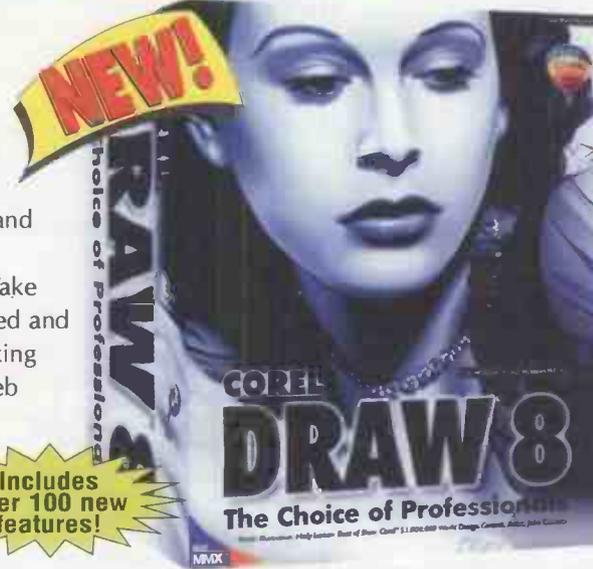
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquest
- 17 Monitors
- 18 Scanners/video
coniercing/
cameras
- 19 Iomega
- 20 Storage
- 21 Storage/
Processors
- 22 HP Storage
- 23 External Cases/
Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
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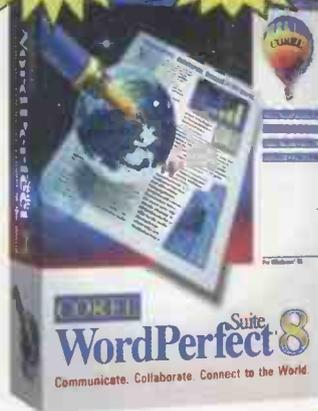
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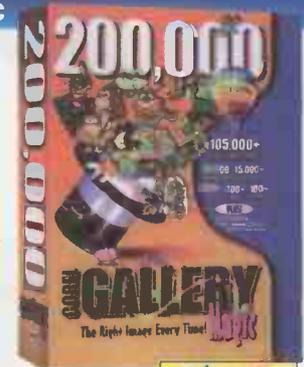
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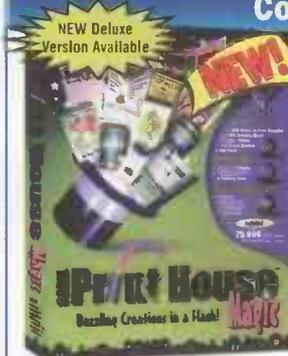
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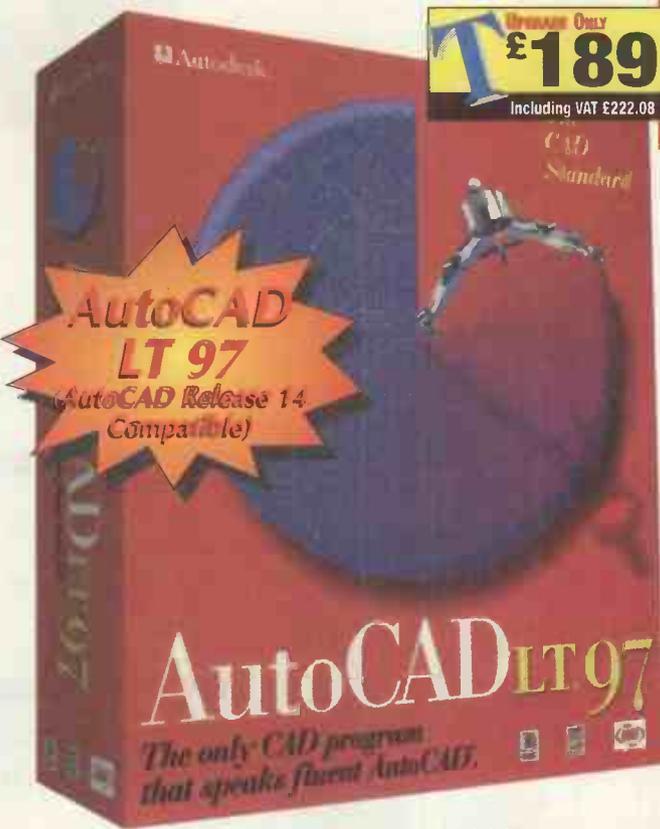
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Feature	Description	Benefit
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Symbol Explorer	Tool for previewing symbols by library. The display is formatted using the familiar Microsoft Windows Explorer	Complete visual identification of what symbols are where. Even reorganize symbols into custom collections that match your unique design
Office 97 Logo Compliant	Follows the standards required for Office 97 logo compliance	If you are one of the tens of millions who use Microsoft Office software then you already know the basic interface for using AutoSketch. Easily integrate, link and annotate your AutoSketch drawings with details in Word or Excel.
Hyperlinks	Links can be embedded in drawings that point to other drawings, Web sites, and Microsoft Office documents.	Any object or text in a new AutoSketch drawing can be a hot link to another AutoSketch drawing file or to a Microsoft Office Word or Excel file or take the viewer of your drawing out to a web page URL anywhere on the Internet.
DWF file support	DWF file export. 2D Vector format for publishing CAD data on the Web.	Now you can easily publish your drawings on the World Wide Web so that anyone, anywhere with the free DWF browser plug-in can view your drawings.
CAD Edit Bar	Displays the geometric properties of a selected entity. Also displays settings for drawing, editing, tools and inquire tools.	Provides unparalleled ease of editing with instant access to changing coordinates, lengths, angles and other parameters.
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables



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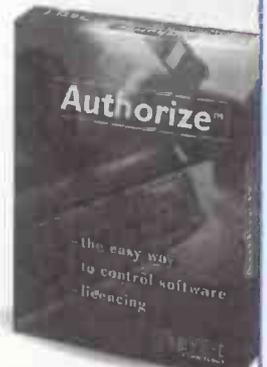
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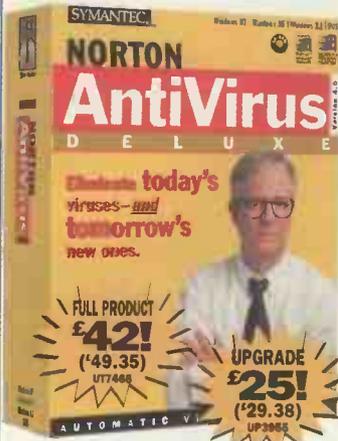
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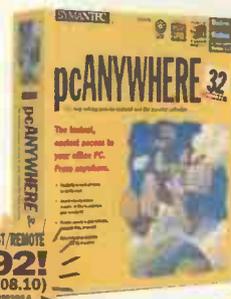
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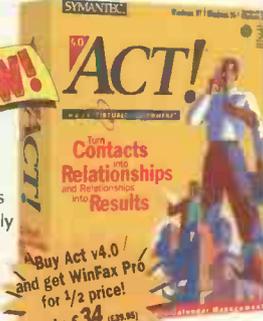


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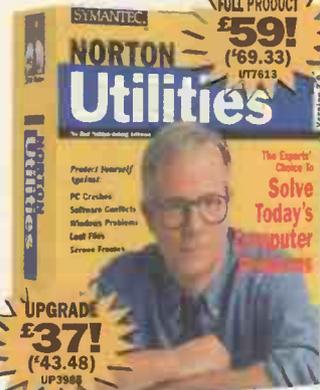
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PD's
- 15 Printers
- 16 Optiquist
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables

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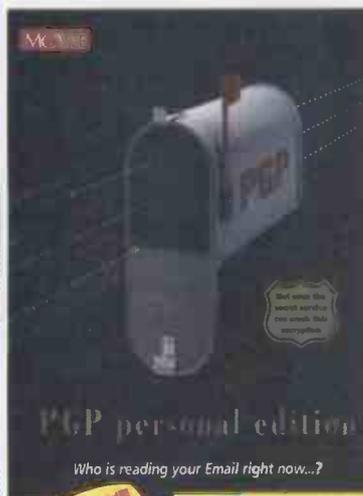
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CONTENTS

- 2 Microsoft
- 3 Microsoft
- 4 Services
- 5 Compaq
- 6 Toshiba
- 7 Toshiba
- 8 IBM
- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optiquist
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
- 30 Microsoft
- 31 Microsoft
- 32 Corel
- 33 Autodesk
- 34 Software
- 35 Software
- 36 McAfee
- 37 Software
- 38 Software
- 39 Software
- 40 Consumables

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- 9 AST
- 10 Simms
- 11 Simms
- 12 HP Printers
- 13 HP Printers
- 14 PDA's
- 15 Printers
- 16 Optquest
- 17 Monitors
- 18 Scanners/video conferencing/cameras
- 19 Iomega
- 20 Storage
- 21 Storage/Processors
- 22 HP Storage
- 23 External Cases/Modems
- 24 Modems
- 25 Hardware
- 26 Hardware
- 27 Hardware
- 28 Hardware
- 29 Networking
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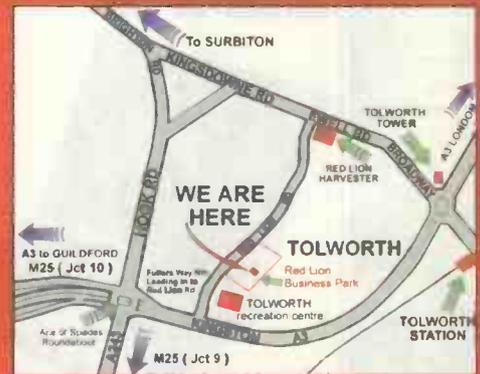
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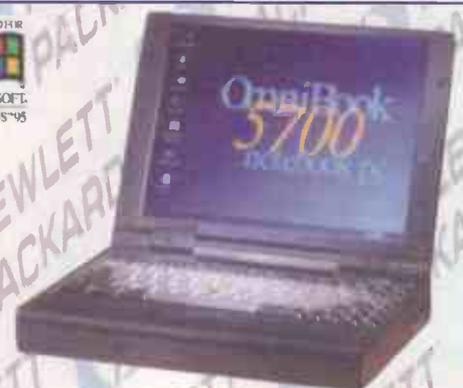


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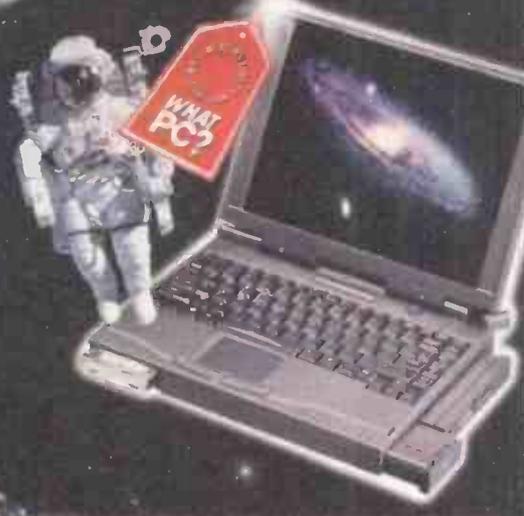
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**THE AWARD
WINNING
NOTEBOOKS**
www.anr.co.uk



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Portables & Accessories

WHY BUY FROM ANR?

- We fit the INTEL Mobile processor. Beware of inferior notebooks using normal desktop processors as these can overheat and use considerably more battery power.
- Design and construction. ANR notebooks are built to the highest standards. This is why we can confidently offer a 14 day no quibble money back guarantee.
- Smart Lithium Ion Battery. These batteries are at the cutting edge of technology. We do not use the older, less efficient NiMH batteries.
- Lifetime Technical Support. Simply call our support hotline on 01753 685008 should you need assistance after your purchase.
- International warranty now offered as standard on all ANR notebooks.
- TOSHIBA Hard drives fitted as standard.

WHAT PC?

Our Best Buy award has to go to the ANR Electron. It's one of the smallest and lightest notebooks on test, yet manages to fit both floppy and CD ROM drives into its diminutive case. It's convenience is unrivalled here, and when this is coupled with good performance and a competitive price it's a worthy winner.



"The ANR ELECTRON is an impressive machine... didn't disappoint in the slightest... especially as it comes with the protection of a 14 day money back guarantee". (Feb '98 issue)

NEW Pentium II Notebooks now available!!

Interest Free Credit Available on all orders over £500. SEE EXAMPLE



CREDIT EXAMPLE:

Electron P166 MMX £1173.00 - £117.30 deposit. Then after 6 months pay £1055.70 & no interest or choose to repay by 36 payments of £41.46 Total repayable £1609.86 A.P.R.26.9% Finance subject to status written quotation available on request.

ANR Electron P150MMX	
Build quality	★★★★★
Features	★★★★★
Performance	★★★★★
Value for money	★★★★★
Overall	★★★★★

LOW COST UPGRADES AND ACCESSORIES ARE AVAILABLE ON ALL NOTEBOOKS

NEUTRON MMX

- 13.3" XGA (1024 x 768) or 12.1" TFT Display (800 x 600)
- Intel Mobile Module Processor with MMX Technology
- Intel Mobile Trlton 82430 TX chipset • PCI Bus
- Upgradeable to Pentium II
- 48Mb SDRAM standard expandable to 144 Mb
- 512Kb Level 2 Cache
- NeoMagic 2160 128bit Graphics Accelerator
- Toshiba 2.1 Gb E-IDE hard drive 4200RPM, 128Kcache, 7.14ms
- 20xCD-ROM, 1.44 Floppy Drive
- Cardbus Ready
- Lithium Ion 45W Battery
- Intel P11X4 EIDE Ultra DMA Controller (33Mb p/s)
- USB port • Dimensions 303 x 234 x 51.5mm
- 16 Bit Crystal CS4237b WaveTable Audio Chip with SRS 3D Stereo Sound with Speakers Mic and MIDI • Synaptic Touchpad
- 86/87 Key Keyboard with Microsoft WIN95 Keys
- 2 PCMCIA Type II or type III slots
- Parallel (EPP/ECP), Serial (16650) & Infra Red, VGA, Docking Connector and PS/2 port
- International adaptor
- Deluxe carry case
- Lotus SmartSuite software bundle



From £1439+VAT

ELECTRON MMX

- 12.1" SVGA (800 x 600) DSTN or TFT Display
- Intel MMX Mobile Pentium Processors
- Intel 82430MX Chipset • PCI Bus
- 32 Mb EDO RAM (upgradeable to 80Mb)
- NeoMagic 128BIT Graphics Accelerator
- 2.1Gb Toshiba Hard Drive (Upgradeable)
- Combo 12xCD-ROM & 1.44" Floppy Drive
- 16 BSS 1878 wavetable Stereo Sound with speakers and MIDI
- Synaptic Touchpad
- 85 Key Keyboard with Microsoft WIN95 Keys
- 2 PCMCIA Type II or type III slots
- 256Kb Level 2 Cache
- Parallel (EPP/ECP), Serial (16650) & Infra Red, VGA, Docking Connector and PS/2 port
- International AC Adapter
- Deluxe carry case
- Lotus SmartSuite software



From £999+VAT

ELECTRON MMX WITH 32Mb, 2.1Gb, 12xCD

12.1" DSTN Screen 12.1" TFT Screen

	ex vat	inc vat	ex vat	inc vat
P166 MMX	£999	£1173.83	£1349	£1585.08

NEUTRON MMO MODELS WITH 48Mb, 2.1Gb, 20xCD

12.1" TFT Screen 13.3" TFT Screen

	ex vat	inc vat	ex vat	inc vat
P200MMX	£1439	£1690.83	£1589	£1867.08
P233MMX	£1499	£1761.33	£1649	£1937.58
P266MMX	£1599	£1878.83	£1749	£2055.08
P11 233MMX	£1649	£1937.58	£1799	£2113.83
P11 266MMX	£1799	£2113.83	£1999	£2348.83

2 & 3 Year International Warranty & All Risks Cover
All ANR notebooks are supplied with 1 Year International Warranty. ANR can also offer you cover to provide you with up to 3 Years Warranty and/or 3 Years all risk cover. This cover is arranged by CPU Finance underwritten and approved by Lloyds. All risks cover provides for any accidental loss or damage including theft to your equipment whilst anywhere in the World.

WORLDWIDE WARRANTY OPTIONS

- 1 Year worldwide warranty now as standard (we collect & return).
- 2 Year extended worldwide warranty £125+VAT.
- 2nd & 3rd Year extended worldwide warranty £230+VAT

**NEW
NEW**

OTHER FINANCE SCHEMES AVAILABLE WRITTEN DETAILS ON REQUEST.

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We will usually match or beat any price lower than our own

0%
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Technical Support: 0181 286 2236
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Twinhead

THE NOTEBOOK SPECIALISTS.



Slimnote 9T/TE



- Intel Pentium 166, 200, 233MMX processor
- SVGA 12.1" DSTN/TFT
- Up to 128Mb high-performance EDO SO-DIMM RAM
- Up to 3.1Gb replaceable Hard Disk Drive
- 2Mb Video RAM, Advanced 4000mAh Ni-MH Battery
- 20x CD-ROM MAX, and floppy drive built-in
- 16-bit stereo audio system with FM support & 3D sound
- Full size keyboard with Twintouch pointing device

Twinhead Slimnote 9T
from £967 ex vat
£1136 inc vat

SLT	P166MMX 16MB 2.1GB 20x CD max 12.1"DSN	£899	£1056.32
SLT	P166MMX 16MB 2.1GB 20x CD max 12.1"TFT	£985	£1157.37
SLTE	P200MMX 16MB 2.1GB 20x CD max 12.1"DSN	£985	£1157.37
SLTE	P233MMX 32MB 3.1GB 20x CD max 12.1"TFT	£	£
SLEX	MMO P233MMX 64MB 3.1GB 20x CD max 13.3"TFT	£1629	£1914.07
SLEX	MMO P266MMX 64MB 4.0GB 20x CD max 13.3"TFT	£1849	£2172.57
SLE2	PII P233 64MB3.1GB 20x CD max 13.3"TFT	£1805	£2120.87
SLE2	PII P266 64MB4.0GB 20x CD max 13.3"TFT	£2115	£2485.12

The Professional Desktop PC Alternative
Multimedia Notebook

Slimnote EX



- Intel Pentium MMO 200, 233 & 266 MHz MMX
- Intel 430TX chipset
- 13.3" TFT XGA Screen
- Up to 128Mb EDO SO-DIMM RAM
- Up to 4.0Gb replaceable HDD
- Built-in 20x CD-ROM
- 4Mb Video RAM, PCI Bus
- Advanced Li-ion Battery
- 16-bit stereo audio system with FM support and 3D sound
- Compact 3.3Kg Full size keyboard with Twintouch pointing device

Twinhead Slimnote EX
from £1671 ex vat
£1963 inc vat

DUAL TECHNOLOGY

The ERA 1000 won the Computer Shopper Best Buy (May 98) against some very tough opposition. We are confident that this same quality and value for money extends throughout the Dual range.

MINERVA MT - 6670

- 12.1" SVGA TFT True Colour Display
- Intel Pentium 200MHz MMX CPU
- 32Mb RAM (up to 128Mb)
- 2.1GB Hard Drive Toshiba
- 20X Internal CD-ROM drive
- Interchangeable Floppy drive & CD-ROM
- IrDA/USB/TV out function
- 2Mb Video Memory built-in
- SoundBlaster Pro compatible stereo sound
- 2X Type II or I X Type III PCMCIA slots

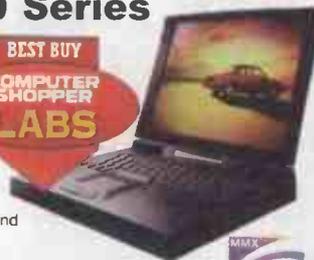


DUAL Minerva MT-6670
£999 ex vat
£1173.83 inc vat

"Guaranteed Year 2000 Compliant"
Michael J.A. Doherty
U.K. Channel Manager
Dual Technology Corporation Ltd.

ERA 1000/1100 Series

- 13.3" or 14.1" XGA TFT display
- Intel Pentium 233MHz MMX CPU
- 32Mb RAM (up to 128Mb)
- Intel 430TX Chipset
- 2.1GB Hard Drive Toshiba
- 20X Internal CD-ROM drive
- Internal Floppy drive fitted
- DVD Drive optional extra
- 2Mb Video Memory as standard
- SoundBlaster Pro compatible stereo sound
- 2 X Type II or 1 X Type III PCMCIA slots
- 320(W) x 260(D) x 43(H) mm



DUAL ERA 1100 14.1" TFT
£1549 ex vat
£1820.07 inc vat

DUAL ERA 1000 13.3" TFT
£149 ex vat
£1761.32 inc vat

DACOM

Europe's No.1 PC Card!



- K56flex technology
- Upgradeable via 2MB flash memory
- Globally approved with country switching software
- Compatible with telephone networks worldwide
- Ready for GSM Fax & Data
- Lifetime Warranty and unlimited technical support



Gold Card Global 56K+Fax
Gold Card Global V32 bis+Fax
GSM Nokia 2110 Upgrade
GSM Nokia 8110 Upgrade
GSM Panasonic Upgrade

ex vat	inc vat
£159	£186.83
£99	£116.33
£85	£99.88
£85	£99.88
£85	£99.88

FUJITSU

Fujitsu's award winning LifeBook portable computers are now available from Tech Direct as ever our prices are razor sharp please contact our sales team who will be happy to assist you with any enquiry.



Model	Processor	HDD	Screen	Memory	ex vat	inc vat
735DX	P133MMX	1.6Gb	12.1" DSTN	16Mb	£649	£762.57
735DX CD	P133MMX	1.6Gb	12.1" DSTN	16Mb	£729	£856.57
765TX	P166MMX	3.2Gb	12.1" TFT	32Mb	£1475	£1733.12
270DX	P200MMX	3.2Gb	12.1" HPA	32Mb	£1375	£1615.62
780TX	P233MMX	3.0Gb	12.1" TFT	32Mb	£1899	£2231.32
790TX	P266MMX	4.0Gb	12.1" TFT	32Mb	£2099	£2466.32
675TXLAN	P200MMX	3.0Gb	12.1" TFT	32Mb	£2399	£1818.82
690TXLAN	P266MMX	4.0Gb	12.1" TFT	32Mb	£2649	£3112.57
985TX	P233MMX	5.0Gb	13.3" TFT	32Mb	£2749	£3230.07

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PSION

SERIES 5

Take your office wherever you go. The PSION SERIES 5 gives you the computing power you need without the excess weight. With a fully featured, built in time manager, contact database, voice recorder and drawing package, the SERIES 5 is as valuable personally as it is professionally.



4MB	£334.87
8MB	£374.95



hp HEWLETT PACKARD

Options:

- 3 Year next-day exchange warranty
- Pack of 3 spare pens
- Leather case
- Compact Flash 2Mb inc adapter
- Compact Flash 4Mb inc adapter

£65	£76.95
£6	
£45	
£59	
£89	

HP 320LX Palmtop PC
HP 360LX Palmtop PC
HP 620LX Palmtop PC

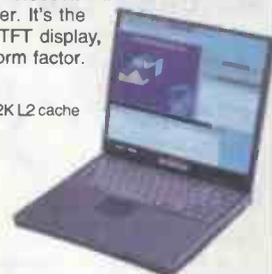
£299	£351.33
£349	£410.08
£535	£628.62

14.1" TFT IS HERE FROM

digital HI-NOTE ULTRA 2000

The truly revolutionary DIGITAL HiNote 2000 notebook will change the way you look at notebooks forever. It's the first premium notebook to offer a 14.1" XGA TFT display, and sizzling performance in a thin and light form factor.

- 14.1" XGA TFT Screen
- 166MHz Pentium processor with MMX technology, 512K L2 cache
- Outstanding graphics with 2MB VRAM
- 3.2 GB storage; user-removable hard disk drive
- Long life Lithium Ion battery
- Only 33mm thin and weighing only 3.0 kilos
- Windows95 and Windows NT Workstation 4.0 configurations available
- 32MB EDO RAM (max configuration 144MB)
- Three year limited international warranty



HiNote Ultra 2000	166MMX,32Mb,14.1TFT	3.2Gb,20xCD,33.6modem	£2299	£2701.32
HiNote Ultra 2000	233MMX,32Mb,14.1TFT,4Gb,20xCD,56Kmodem		£3125	£3671.87
HiNote Ultra 2000	266MMX,32Mb,14.1TFT,4Gb,20xCD,56Kmodem		£3999	£3993.82

SIEMENS NIXDORF



The Siemens Nixdorf SCENIC Mobile 700 and 710 models provide the ultimate high end multimedia notebook solution. Unique Pro view models come with detachable screens allowing you to deliver professional presentations in conjunction with an OHP display unit. You simply remove the 12.1" TFT SVGA display, place it on the projector and start your presentation. The projector in combination with Full screen/Full motion MPEG video playback and stereo audio function gets your message across in a big way!!

ProView Models:-

P166MMX	2.1Gb	12.1" Removable	32Mb 192Mb	20x	£3499	£4111.33
P166MMX	3.0Gb	12.1" Removable	32Mb 192Mb	20x	£3699	£4346.33
P233MMX	3.0Gb	12.1" Removable	32Mb 192Mb	20x	£3999	£4698.83

SHARP

HC-4500A

- 16Mb RAM
- 1 Type II PCMCIA slot
- 6.5" Colour screen
- Touch screen with pen
- 410g weight
- NiMH battery



CE-AG404 PCMCIA Digital camera £275+vat

SHARP HC-4500A	£579 ex vat
	£680.32 inc vat

nova MAX

Storage Products For Notebooks



Make	Replacement				Removable (inc fixings)				
	1.6	2.1	3.0	4.0	2.1	3.0	4.0	5.0	6.4
COMPAQ	£179	£199	£299	£375	£239	£349	£425	£549	Call
DEC	£179	£199	£299	£375	£239	£349	£425	£549	Call
DELL	£179	£199	£299	£375	£239	£349	£425	£549	Call
HP	£179	£199	£299	£375	£239	£349	£425	£549	Call
IBM	£179	£199	£299	£375	£239	£349	£425	£549	Call
NEC	£179	£199	£299	£375	£239	£349	£425	£549	Call
PANASONIC	£179	£199	£299	£375	£239	£349	£425	£549	Call
TOSHIBA	£179	£199	£299	£375	£239	£349	£425	£549	Call

Nova - diskMAX



3.2Gb	£299	£351.32
4.1Gb	£399	£468.82

Offering increased capacity and performance NOVAMAX hard drives are a complete storage upgrade for all leading brands. NOVAMAX drives are software encoded to ensure 100% compatibility and are supplied with a copy of PowerQuest Drive Image.

Pocket Size Design Mobile Hard Drive
Large True Capacity 5Gb Plus
High 16Bit Data Transfer 3.3Mb/s +

ALL NOVAMAX PRODUCTS ARE: PCMCIA TYPEII COMPATABLE, WINDOWS95 PLUG AND PLAY AND COVERED BY FREE TECHNICAL SUPPORT AND 3 YEAR WARRANTY

FLIP DISK MOBILE DATA STORAGE

2.8GB	
4.2GB	£326
6.4GB	£394
8.0GB	£494

AMACOM

- Unique flip PCMCIA card feature
- Unique, compact and light - weight design (weighs 188GR) - no need for cables
- Unique PCMCIA and Parallel interfaces for ultimate flexibility
- Ability to draw power from PC or notebook - use it anywhere
- High capacity - up to 6.4GB
- Access times and data transfer rates as fast as Internal hard drives
- Incorporates industry standard, very reliable 2.5" Hard Drives
- Built in shock absorbers for extra reliability
- Includes software which offers a comprehensive backup and restore utility as well as data compression software
- Extremely low cost
- Compatible with DOS, win 3.x, win 95, win NT, OS/2, UNIX, Apple Mac

AMACOM CD ROM DRIVES

External Parallel Port CD-ROM Drives		
16 speed CD-ROM	£124	£145.70
24 speed CD-ROM	£51	£157.45
External Parallel Port CD-ROM Drives with Sound		
16 X CD-ROM sound	£188	£193.87
24 X CD-ROM sound	£76	£205.62
External PCMCIA based CD-ROM Drives		
16 speed CD-ROM	£124	£157.45
24 sp CD-ROM	£51	£163.32
AMACOM EZCD PLUS - External PCMCIA CD-ROM & Audio CD Player		
EZCD PLUS x10 - Eight speed CD-ROM/Audio CD Player	£184	£197.20
EZCD PLUS x20 - Twenty speed CD-ROM/Audio CD Player	£184	£197.20

KENSINGTON

Leather Bag SaddleBag (Brown & Black)
£49 ex vat
£57.58 inc vat

£69 ex vat
£81.08 inc vat

The Kensington Leather Carrier, is a two compartment design featuring separate padded computer and printer compartments. It's numerous inside pockets hold a variety of business, computing and personal accessories

The Kensington SaddleBag is no ordinary notebook carrying case, with more compartments, pockets and holders than you will find in most other traditional cases, it is also looks good, and can carry a ton of stuff.

Microsaver £41.13 inc vat

Microsaver uses a custom security slot built into the CPU by leading PC manufacturers inc. Toshiba, Compaq, IBM, Dell & Apple

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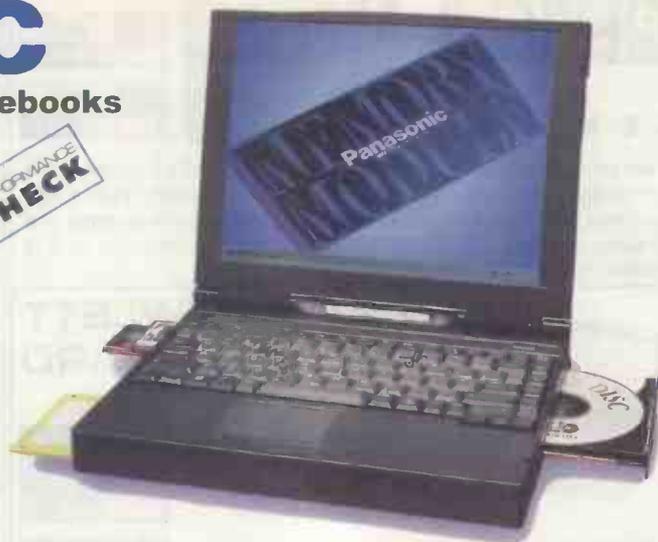
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We will usually match or beat any price lower than our own



Panasonic

Matched Tab Pack™ memory for Notebooks



Notebook Memory 4Mb 8Mb 16Mb 32Mb

COMPAQ

LTE Lite 4/25C, /33C, /25E, /25SL Mono Notebk
 LTE Lite 4/40C, /50E, /40CX, /50CX, /75CX
 LTE 5000 Series 5000 P75, 5100 P90, 5200 P120
 Concerto 4/25, 4/33
 Contura 4/25, 4/25c, 4/25cx
 Contura 400C, 400CX, 410, 410C, 410CX
 Contura 420Dx4/75, 430 DX4/100
 Contura Aero 4/25, 4/33C
 Armada 1100, 1120, 1130, 1500, 4100 series
 Presario 1010, 1020, 1030, 1060, 1070, 1080

DELL

Latitude 425, 433, 433c, 433cx, 450c, 450cx
 Latitude XP 450c, 475c, 4100c, 4100cx, XPI
 Latitude MX, MC, LX4100c
 Latitude XPI 100, 133
 Latitude LM P133ST, M166ST, LM CD P150ST

IBM

Thinkpad 701, 230C, 230CS
 Thinkpad 700, 700C, 720, 720C
 Thinkpad 730T, 730TE, 345C, 345CS, 355, 360
 Thinkpad 750, 755, 370C
 Thinkpad 760C, 760CD, 760L, 760LD
 Thinkpad 760EX, 760ED, 760EL, 365X, 365XD, 560, 535

Panasonic

CF21P, CF41mklI, mklII, Pentium

TEXAS INSTRUMENTS

Extensa 450, 455, 455T, 550, 555CD, 560, 565
 Extensa 510
 Extensa 600, 650, Travelmate, 6020, 6030, 6050
 Travelmate 5000, 5300

TOSHIBA

Portege 610, 620 series
 Satellite Pro 400, 410, 415, 420, 425, 430 Series
 Satellite Pro 100, 105, 110, 115, 200, 210 Series
 Dynabook Satellite Pro 430, 110, 200 Series
 Dynabook Satellite 220, 440
 Tecra T500, 510, Portege 650, 660
 Tecra T700CS, T700CT
 Tecra T710CS, T710CT, T720CS, T720CT, T730
 T2000, T2000SX, T2000Sx, T2200SX;
 T1000LE, T1800, T1850, T1850C Notebook
 T2100/CS/CT, T2105/CS/CT;
 T2150CDT, T2150CDS, T2155CDT, T2155CDS;
 T2110, T2115, T2130, T2135
 T4400, T6400, T6600 Notebook (ALL)
 T4500, T4600, T4700, T4800, T4850CT;
 T1900, T1910, T1950, 1960 (ALL), T4900CT;
 T2400, T2450, T3400, T3600

Why Buy Panasonic Tab Packs?

- ✓ Lifetime warranty with Warranty Card included
- ✓ Matched to your PC
- ✓ Installation guide included
- ✓ Free antistatic wrist band
- ✓ Memcheck hotline **01264356991**
- ✓ Every module is 100% performance tested at factory

Memory Size		4Mb	8Mb	16Mb	32Mb	
Panasonic	Chip 1	£38	£45	£61	£94	ex VAT
		£44.65	£52.87	£71.67	£110.45	inc VAT
Panasonic	Chip 2	£34	£44	£44	£64	ex VAT
		£39.95	£51.70	£51.70	£75.20	inc VAT
Panasonic	Chip 3	£37	£57	£90	£133	ex VAT
		£43.47	£66.97	£105.75	£156.27	inc VAT
Panasonic	Chip 4	£41	£54	£90	£180	ex VAT
		£48.17	£63.45	£105.75	£211.50	inc VAT
Panasonic	Chip 5	£46	£76	£142	£266	ex VAT
		£54.04	£89.30	£166.85	£312.55	inc VAT

Call Now for your FREE 240 Page Panasonic Memory Guide

It's easy to upgrade your computer with Panasonic Tab Pack. With over 8,000 different compatible upgrades for all major PC's listed in this 240 page guide, there is always a Panasonic solution you can depend on. Call tech direct for your free copy

As one of the world's largest manufacturers, Panasonic supply a complete range of memory solutions to OEMs around the world. For your volume supplies of SOJ, SODIMM, SIMM, TAB and specialist memory call tech direct

Panasonic No:1 for OEM supply

tech direct

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 Closed on Sunday



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 Technical Support: 0181 286 2236
 Lines open: 9am - 5pm Weekdays



Panasonic



It's easy to upgrade your computer with Tab Pack™ memory from **Panasonic**

If you require pricing for any PC listed below please call the Sales Team on **0181 286 2222**.



Tab Pack™

- LIFETIME WARRANTY
- MATCHED TO YOUR PC
- INSTALLATION GUIDE
- FREE ANTISTATIC WRIST BAND
- MEMCHECK HOTLINE
01264 356991
- EVERY MODULE IS
PERFORMANCE CHECKED AT
THE FACTORY

IF YOUR PC IS NOT LISTED OR IF YOU NEED FURTHER HELP OR ADVICE CALL MEMCHECK ON: 01264 356991 OR OUR MEMORY PRODUCT MANAGER ON: 0181 286 2222

NEW!! 100 MHz BX-DIMM's now available

Memory Type	4Mb	4MbTAB	8Mb	8MbTAB	16Mb	16MbTAB	32Mb	32MbTAB	64Mb	64MbTAB
30 Pin	£6.95 <small>£8.16</small>	£12 <small>£14.10</small> EUVR4	-	-	-	-	-	-	-	-
72 Pin Parity	-	-	£16 <small>£18.80</small>	£20 <small>£29.38</small> EUVRRAP	£22 <small>£25.85</small>	£27 <small>£31.72</small> EUVRRBP	£42 <small>£49.35</small>	£48 <small>£56.40</small> EUVRRCP	£99 <small>£116.33</small>	£120 <small>£141.00</small> EUVRRDP
72 Pin Non Parity	£5.50 <small>£6.46</small>	£9 <small>£10.57</small>	£9 <small>£10.58</small>	£13.9 <small>£16.33</small> EUVRRA	£19 <small>£22.32</small>	£22 <small>£25.85</small> EUVRRB	£34 <small>£39.95</small> EUVRRC	£39 <small>£45.82</small> EUVRRC	Call	Call <small>EUVRRD</small>
72 Pin EDO 60ns	£5.50 <small>£6.46</small>	£8 <small>£9.40</small>	£7.90 <small>£9.28</small>	£11.5 <small>£13.51</small> EUVRRAE	£13.9 <small>£16.33</small>	£17.5 <small>£20.56</small> EUVRRBE	£29 <small>£34.08</small>	£33 <small>£38.77</small> EUVRRCE	£89 <small>£104.57</small>	£115 <small>£135.12</small> EUVRRDE
168 Pin Sync. Dram	-	-	-	-	£19 <small>£22.33</small>	£23 <small>£27.02</small> EUW16SD	£29 <small>£34.07</small>	£34 <small>£39.95</small> EUW32SD	£69 <small>£81.07</small>	£85 <small>£99.87</small> EUW64SD
168 Pin BX Dimm	-	-	-	-	-	-	£49 <small>£57.57</small>	£54 <small>£63.45</small> EUW32SD/B	£99 <small>£116.33</small>	£105 <small>£123.37</small> EUW64SD/B
168 Pin FPM Dimm	Call for latest pricing									
168 Pin EDO Dimm (unbuffered)	Call for latest pricing									



LS 120 Floppy Disk Drive

The New Industry standard is now available from Tech Direct.

Advanced features:

- Provides 120MB storage in a familiar, easy to use format.
- Backwards compatible with conventional 3.5" HD and DD diskettes.
- Reads and writes up to 5 times the speed of conventional FDD.
- Holds over 80 times the storage capacity of standard HD diskettes.
- Supported by DOS, Windows, Windows 95 and Windows NT.

External version plugs directly in to your parallel port

LS 120

- LS - 120 Drive
£59.00
- LS - 120 Disk
£9.00
- SuperDisk Drive
£99.00

3.5 inch FDD compatible 120 MB CAPACITY



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PHILIPS

ProScreen 4700

The ProScreen 4700 Definition is the state-of-the-art, future proof multimedia projector designed for high resolution presentations including financial data, intricate graphics, and CAD/CAM applications

- Philips LIMESCO: unique and future-proof PC and MAC compatibility (SXGA, XGA, SVGA and VGA)
- UHP lamp: up to 4000 hour lamp life (600 ANSI Lumen)
- Full PC control via ergonomic trackball IR Remote Control supports 360 degree control of projector, notebook and PC
- Built-in loudspeaker for Multi-Media presentations
- Immediate on-off switch without cooling down of the UHP lamp



PHILIPS 4700
£4595 ex vat
£5399.13 inc vat

ProScreen 4100

The Philips ProScreen 4100 multimedia projector is an advanced SVGA LCD projector with the versatility to make light work of the most demanding presentation situation. The ProScreen 4100 gives you high edge-to-edge perceived picture brightness and colour accuracy that remain constant.

- Philips LIMESCO: unique and future-proof PC and MAC compatibility (SXGA, XGA, SVGA and VGA)
- Cost effective performance
- UHP lamp: up to 2000 hour lamp life with constant light output
- Intuitive controls put you confidently in control
- Keystone correction
- High reliability backed by professional service



PHILIPS 4100
£3749 ex vat
£4405.07 inc vat

ProScreen 4600

Philips offers two versions of its award winning ProScreen 4600 multimedia projector, each designed for different applications. Both feature the unique UHP lamp offering constant brightness.

The ProScreen 4600 Impact gives 30% brighter output (650 ANSI Lumen) for the ultimate performance for travelling presenters.

The ProScreen 4600 Endurance is perfect for intensive everyday use - and a lamp life of 8,000 hours is four times longer than the nearest competitive product.



PHILIPS Impact
£4995 ex vat
£5869.12 inc vat

PHILIPS Endurance
£4995 ex vat
£5869.12 inc vat



3 YEAR
EXTENDED
24 HOUR
SWAPOUT
WARRANTY

HITACHI



- True resolution 800 x 600
- Compressed resolution 1024 x 768
- 700 ANSI Lumens
- Remote mouse pointer
- 2w Stereo Speakers
- 16.7 million colours
- Remote control

The CPL850 (800x600 resolution) Hitachi Video data projector has stunning brightness with 700 ANSI lumens, the display on both models is incredible in bright rooms. With Polysilicon technology the projectors will astound and add to every corporate presentation and training session. The other unique feature about this model is that it includes 2 video and 2 VGA outputs.

HITACHI CPL 850
£2799 ex vat
£3288.82 inc vat

HITACHI CPX 950
£3795 ex vat
£4459.12 inc vat

PROJECTORS FOR HIRE BY TECH DIRECT

	VGA	SVGA	XGA
Per day	£125 ex vat	£150 ex vat	£225 ex vat
	£146.87 inc vat	£176.25 inc vat	£264.37 inc vat
Per week	£375 ex vat	£450 ex vat	£675 ex vat
	£440.62 inc vat	£528.75 inc vat	£793.12 inc vat

PROXIMA

MULTIMEDIA PROJECTORS



Successful presentations don't just happen. They're the result of a little sweat, a lot of practice and, of course the right presentation equipment. That's where Proxima makes a difference. For more than a decade we've brought award-winning presentation solutions to boardrooms, meeting rooms, and classrooms all over the globe.

We didn't just enter the market, we helped create it.

Desktop Projector 5900/9200



PROXIMA 5900
£3450 ex vat
£4053.75 inc vat

- 700 ANSI Lumens
- Laser F/X remote control
- Lightweight 6.4kg
- SVGA 832 x 624, XGA 1024 x 768 to VGA 640 x 480 res.
- Extra long lasting UHP metal halide lamp
- Projects images big enough for large training rooms or small auditoriums
- 500 ANSI Lumens
- True XGA resolution
- Bright enough to use virtually anywhere - even with lights on
- Motorized 1.6:1 precision Canon lens offers the widest range of zoom settings
- Extra long lasting metal halide lamp keeps costs down.

PROXIMA 9200
£4495 ex vat
£5281.62 inc vat

Ultra Light DS1 Projector



PROXIMA DS1
£3195 ex vat
£3754.12 inc vat

When you know you won't get a second chance to make a good impression, Proxima's UltraLight projector is the way to present. You can count on the remarkably bright UltraLight to make a big impact anywhere, anytime. It's surprisingly compact without sacrificing any features, like zoom lens that lets you set up your presentation nearly anywhere in the room.

- 600 ANSI Lumens
- SVGA (800x600) resolution and XGA (1024x768) to VGA (640x480) compatibility
- Lightweight under 5kg
- Laser F/X remote control
- Digital Light Processing by Texas Instruments for photo-realistic image quality

PROJECTORS FOR HIRE BY TECH DIRECT

	VGA	SVGA	XGA
Per day	£125 ex vat	£150 ex vat	£225 ex vat
	£146.87 inc vat	£176.25 inc vat	£264.37 inc vat
Per week	£375 ex vat	£450 ex vat	£675 ex vat
	£440.62 inc vat	£528.75 inc vat	£793.12 inc vat

SHARP

XGA
INTELLIGENT
COMPRESSION



300" 762 cm **SVGA** 800 X 600 **AMP** SPEAKER **AUTO** VOLTAGE

XG-NV2E

SHARP's NEW Compact Full SVGA High-Resolution Data Projector with 700 ANSI Lumen Brightness Expands Multimedia Presentation Possibilities

- 700 ANSI Lumens Brightness
- Full SVGA (832 x 624) High Resolution Images
- XGA (1024 x 768) Compression
- Wireless Remote Control with Mouse Control, Laser Pointer and Backlit Functions
- Built-in Amplifier and Stereo Speakers
- Large 300", 16.7 million Full-colour projection
- **NEW!** XGX-VIE £5799 + vat

SHARP XG-NV2E
£2995 ex vat
£3519.12 inc vat

SHARP VISION



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EPSON



BRING YOUR PRESENTATIONS TO LIGHT.

FREE!! Demonstration CD ROM
- available on request.



- How to set up your Epson Projector
- Features of EMP5100 & 7100
- How to best use your Epson Projector
- Rolling demonstration

NEW Projectors Ultra Light Ultra Bright 750 ANSI Lumens

The EPSON EMP 5100 & 7100 enable you to project screen images directly from your computer (laptop, Mac or workstation) and incorporate graphics, animated sequences, even live video - all with superb stereo sound. As brand leader EPSON are always at the forefront of development, using new lamp technology the EMP7300 shown above produces an amazing 1200 ANSI Lumens making it the brightest compact available.

NEW EPSON EMP7300

NEW Projector Ultra Bright 1200 ANSI Lumens

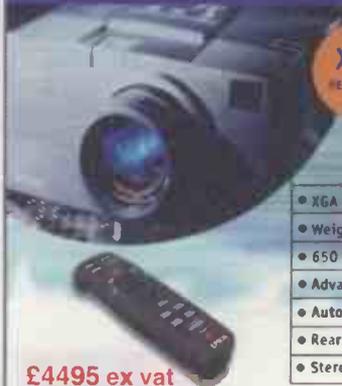
- Ultra Compact multimedia projector
- XGA 1024 x 768 Resolution
- Supports SXGA, SVGA and VGA
- Ultra bright 1200 ANSI Lumens
- Surround Sound audio capability
- Multiple Input Sources with Auto Recognition
- World Wide video format support
- Automatic setup, resizing and positioning
- Weighs only 6.2Kg
- Remote Control Operation from up to 10m



EPSON EMP 7300
£7995 ex vat
£9394.13 inc vat

Check Out www.maverick.co.uk for specs on lots more projectors.

EPSON EMP-7100



XGA
RESOLUTION

*Compact, light
and ultra bright*

- XGA resolution with VGA, SVGA and SXGA support
- Weighs only 6.7 Kg
- 650 ANSI lumens
- Advanced connectivity
- Auto Source recognition
- Rear and ceiling projection
- Stereo Speakers

£4495 ex vat
£5281.62 inc vat

EPSON

EPSON EMP-5100

*Compact, light
and ultra bright*

- SVGA with XGA and VGA support
- Weighs only 6.6 Kg
- 750 ANSI lumens
- Multi-connectivity
- Stereo Speakers
- Remote Control

£3495 ex vat
£4106.62 inc vat

EPSON

CTX



CTX - Can now offer a comprehensive range of Projectors - for every budget and every application.

Model	Weight	ANSI Lumens	Resolution	Compression	Lamp Type	Elevation & Keystone	Image Size	LoudSpeaker	Lamp Changer	PC & Mac Compatible	PAL/SECAM/NTSC/ Composite Video, S-Video	UPS
EZ Pro500	4.2Kg	350	640x480	800x600	400watt halogen lamp	Elevation 20 Keystone 25	40-160"	3watts x 2	✓	✓	✓	✓
EZ Pro550	4.2Kg	350	800x600		400watt halogen lamp	Elevation 20 Keystone 25	40-160"	3watts x 2	✓	✓	✓	✓
EZ Pro 550M	4.3Kg	350	800x600	1024x768	250watt metal halide	Elevation 20 Keystone 25	40-160"	3watts x 2		✓	✓	✓
EZ Pro600	5.4Kg	550	800x600	1024x768		Elevation 20 Keystone 25	40-160"	3watts x 2	✓	✓	✓	✓
EZ Pro680	5.4Kg	450	1024x768	1280x1024		Elevation 20 Keystone 25	40-160"	3watts x 2	✓	✓	✓	✓
EZ Pro700	5.4Kg	450	1024x768	1280x1024		Elevation 20 Keystone 25	40-160"	3watts x 2	✓	✓	✓	✓

EZPRO 550/550M



CTX EZPRO 550
£1599 ex vat
£1878.82 inc vat

CTX EZPRO 550M
£1999 ex vat
£2348.82 inc vat

- 350 ANSI lumens
- Compact design for portability
- High power, low cost 400W EVD halogen lamp
- Less than half the weight of most LCD projectors
- Pop-up lens folds into projector for extra durability
- Will play from PC, MAC or video source

EZPRO 500/600



CTX EZPRO 500
£1189 ex vat
£1397.07 inc vat

CTX EZPRO 600
£2645 ex vat
£3107.87 inc vat

- 550 ANSI lumens
- 800 x 600 SVGA resolution
- 1024 x 768 XGA (compressed)
- 16.7 million colours
- Weight 12lbs

NEW EZPRO 680 NEW

- 450 ANSI Lumens target brightness
- 1024 x 768 resolution
- 1280 x 1024 SXGA (compressed)
- Remote Control mouse function
- 16.7 million colours
- SXGA/XGA/SVGA/VGA/ VESA Mac/NEC PC - 98/ FM Towns compatible

CTX EZPRO 680
£3995 ex vat
£4694.12 inc vat

NEW EZPRO 700 NEW

- Single chip DMD Display
- 500 ANSI Lumens target brightness
- 800 x 600 resolution
- VGA (expansion), SVGA-XGA (compression)
- 16.7 million colours
- Weight only 4.3Kg
- Image size 24" - 300"

CTX EZPRO 700
£2995 ex vat
£3519.12 inc vat

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Lines open: 9am - 5pm Weekdays



AGFA



FREE technical support hotline:
0181 231 5511

ePHOTO 307 DIGITAL CAMERA



Now you can quickly and easily create digital photos and transfer them to your PC. The new Agfa ePhoto 307 is ideal for both business and home use. Not only is the ePhoto 307 efficient and economical, but it's also fun!

- Stores 36 high or 72 standard resolution images
- 640 x 480 or 320 x 240 pixels
- High quality 24-bit colour images
- Built-in auto flash from 3-10 feet

AGFA ePHOTO
£139 ex vat
£163.32 inc vat

NEW - ePhoto 1280 - NEW

The Agfa ePhoto 1280 digital camera offers demanding professionals advanced features, ease of use, and high quality output at a surprisingly affordable price. Five image quality settings are available for every picture taking purpose.



AGFA 1280
£499 ex vat
£586.33 inc vat

- Outstanding print quality, up to 1.2million colours (1280 x 960) with Agfa PhotoGenie technology
- The FlashTrack swivel zoom lens, for shooting from nearly any angle (280 degree swivel)
- Auto, fill-in, red-eye reduction and off flash modes
- Removable memory stores 6 - 60 images per 4MB SSFDC Card (one included)
- Agfa PhotoWise for quickly and easily accessing images.
- The ability to view pictures on television
- Includes 4 high-capacity lithium batteries

NEW - SNAPSCAN 310 - NEW



SnapScan is designed for use with every desktop PC or Mac, for home or office. A low cost, A4 flatbed scanner, which automatically captures images of outstanding quality within secs.

- Desktop, CCD flatbed, single pass colour scanner
- 300 x 600 ppi optical resolution
- 4800 x 4800 ppi through interpolation
- 30 bit colour depth, 10 ms/line scan speed
- FotoLook and FotoSnap 2.09 software
- On Site Warranty included

AGFA SnapScan 310
£89 ex vat
£104.57 inc vat

Improved version of the award winning SnapScan

NEW - SNAPSCAN 600 - NEW



AGFA SnapScan 600
£179 ex vat
£210.32 inc vat

AGFA SS 600 Artline
£269 ex vat
£316.08 inc vat

Low cost scanning is raised to superb quality levels by the SnapScan 600. It's an outright winner in the personal, A4 flatbed scanner market. Razor-sharp images are captured on the ultimate low-cost A4 flatbed scanner

- 600 x 1200 ppi resolution, 30 bit colour depth
- Interpolated resolution up to 4800 ppi
- FotoLook, FotoSnap + FotoFlavor software
- OmniPage LE OCR software

Studiostar Full version
Studiostar Limited Edition
Arcus II

£485 £546.38
£359 £421.83
£749 £880.08

UMAX

The Award Winning UMAX scanners

ASTRA 1200S/1220S FLATBED SCANNERS



Umax continues its run of PC Pro awards with the Astra 1200S. With a high 600x1200 optical resolution the Astra delivers the best quality scans of any of the devices on test. Detail was sharp, colour accurate and contrast realistic. Using a 30-bit sample, the Astra achieves a better tonal range than scanners with 24-bit processes.

At £219, the Umax is reasonably priced and is one of the better value scanners on test. But no corners have been cut in build quality, with solid, stylish chassis sporting extendable lid hinges which rise when a thick magazine or book is being scanned. You can also remove the lid for scanning very large objects.

In all, the Umax Astra 1200S is an amazing quality scanner at a very reasonable price, making it a worthy Quality winner.



- 1200S SCSI scanner
- 600 x 1200 dpi optical resolution
- New 1220S 36-Bit model
- Free Umax VistaScan software
- Easy-to-fit user friendly model
- Adobe Photoshop LE **£30 + vat**

UMAX Astra 1200S
£219 ex vat
£257.33 inc vat

UMAX Astra 1220S
£219 ex vat
£257.33 inc vat

PC QUALITY	○○○○○○
SPEED	○○○○○○
PRO VALUE FOR MONEY	○○○○○○
OVERALL	○○○○○○

Astra 1200S Flatbed Scanner	£219	£257.33
Astra 1200S with PhotoShop 4.0	£339	£398.32
With PhotoShop & Transparency Adapter	£548	£643.90
2nd year extended warranty for ASTRAS	£29.95	£35.25
Powerlook ColourStudio 2LE	£749	£880.08
Powerlook III	£1995	£2344.12
Mirage II Pro	£5999	£7048.82

(Powerlook II & III Inc. MetaCreations Painter 5 OEM version & Wacom Artpad II **FREE** while stocks last)

ASTRA 610S AND 610P INCLUDE ADOBE PHOTO DELUXE SOFTWARE - FREE!!

ASTRA 610P PARALLEL

The parallel version of the Astra 610 flatbed scanner features a through parallel port for printer connection, plus all the superb features of the Astra 610S SCSI version at a super low price!!

- Single pass colour scanner
- 30-bit, over one billion colours
- 600 x 300 dpi optical resolution
- Easy-to-fit user friendly model
- Presto file management software inc.



UMAX Astra 610P
£59 ex vat
£69.33 inc vat

ASTRA 610S SCSI

- Single pass colour scanner
- 30-bit, over one billion colours
- 600 x 300 dpi optical resolution
- Easy-to-fit user friendly model
- Presto file management software inc.



UMAX 610S SCSI
£89 ex vat
£104.57 inc vat

ASTRA 1210P FLATBED SCANNER

Amazing low price 30 bit scanner

- 1200P Parallel scanner
- 600 x 1200 dpi optical resolution
- New 30-Bit model
- Free Umax VistaScan software
- Easy-to-fit user friendly model
- Adobe Photoshop LE **£30 + vat**



UMAX Astra 1210P
£99 ex vat
£116.32 inc vat

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Nikon COOLSCAN II

high performance 35mm film scanner at an affordable price

- 2,700 dpi true optical resolution
- Fast 80 second scan time (approximate)
- Autofocus - consistently sharp scans
- Scans both slides and negatives
- Available with either Nikon Scan or SilverFast driver software (optional)
- Adaptec 1505 SCSI Card (optional)

Ext. Coolscan II with NikonScan	£425	£499.37
Int. Coolscan II with NikonScan	£340	£399.50
Ext. + Silverfast + Photoshop LE	£544	£639.20
Int. + Silverfast + Photoshop LE	£459	£539.32
LS1000 SuperCoolScan (Bare)	£995	£1169.12

SCANNERS



Another price crashing scanner deal from tech direct and genius!!



ColourPage View
£49 ex vat £57.57 inc vat

- Brand new parallel scanner from Genius
- 300 x 600 dpi optical resolution
- 4800 dpi maximum resolution
- 30 bit colour scanning, includes software



Freescan PageScan Colour parallel

£98	£115.15
£76	£86.30



Paperport 3000
Paperport 6000
Paperport Strobe
Paperport mx
Paperport ix

£97	£113.97
£169	£198.57
£129	£151.57
£69	£81.07
£69	£81.07

EPSON

GTX-9500	£383	£450.02
GTX-5000	£130	£152.75
GT-5500	£187	£219.72
PhotoFilmScan 200	£303	£356.02

MICROTEK

ScanMaker 6400XL	£999	£1173.82
ScanMaker 9600XL	£1699	£1996.32
ScanMaker 330 SCS	£99	£116.32
ScanMaker 35T+	£589	£692.07
ScanMaker 630 SCS	£199	£233.82
Phantom 330	£79	£92.82



HP Scanjet 5100C	£145	£170.37
HP Scanjet 6100C	£429	£504.07



OLYMPUS

"This looks like being the best digital camera available to consumers. Ever." - What Digital Camera on the C-1400L

C-420L

- 350,000 Pixel CCD
 - 640 x 480 VGA Resolution
 - Autofocus & Intelligent flash
 - 2Mb SmartMedia removable memory
 - 2" TFT High Res LCD Screen
 - Direct PAL, Video Output
- Comes with PhotoSoap software

OLYMPUS C-420L
£255.31 ex vat £299.99 inc vat

C-820L

- 810,000 Pixel CCD
 - 1024 x 768 XGA Resolution
 - Autofocus & Intelligent flash
 - 2Mb SmartMedia removable memory
 - 2" TFT High Res LCD Screen
 - Direct PAL, Video Output
- Comes with PhotoSoap software

OLYMPUS C-820L
£425.52 ex vat £499.99 inc vat

NEW C-840L

- 1.3 million Pixels
- 1280 x 960 Resolution
- Digital 2x zoom
- 4Mb card stores 9/18/60+ images
- NEW D-RAM faster processing tech
- Close focussing to 10cm

OLYMPUS C-840L
£510.62 ex vat £599.99 inc vat

C-1400L SLR Kit

- 1.4 Million Pixel CCD
- 1280 x 1024 SXGA Resolution
- 3x Optical zoom
- Autofocus & Intelligent flash
- 2" TFT High Res LCD Screen
- Two 4Mb SmartMedia cards
- Leather case, Charger Set, PhotoSoap

OLYMPUS C-1400L
£851.05 ex vat £999.99 inc vat

SONY Mavica Digital Still Cameras



There are two models to choose from, the Digital Mavica MVC-FD5 and the more advanced MVC-FD7

The MVC-FD7 has all the functions of the MVC-FD5, plus 10x optical zoom lens, manual focus, and five pre-programmed auto exposure modes.

SONY MVC-FD5
£344 ex vat £404.20 inc vat

SONY MVC-FD7
£459 ex vat £539.32 inc vat

- 2.5" TFT LCD display
- stores up to 20 high resolution or 40 standard resolution images on one 3.5" 2HD floppy
- 640 x 480 (VGS) image size

CAMERAS	ex vat	inc vat	ex vat	inc vat
Canon Powershot 600	£499	£586.33	SANYO VPCG 200	£275 £323.12
Powershot 350	£375	£440.62	VPCX 300	£439 £515.82
CASIO QV-70	£169	£198.57	FUJIFILM FUJI DX-9 NEW	£325 £381.87
QV-500SX NEW	£329	£386.57	FUJI DX-7	£198 £232.65
QV-200	£199	£233.83	FUJI DX-5	£169 £198.58
QV-700	£245	£287.87	NEW DS300	£1399 £1643.83

Kodak The Award Winning DC210 Zoom camera



- True megapixel CCD with 1152 x 864 image resolution
- 4Mb picture card included stores 16 - 60 pictures
- 1.8" TFT colour LCD for picture preview & review
- 2X Focus Free Zoom Lens with close-up mode
- easy function select via Mode Dial
- Finished File Format (JPEG or FLASHPIX)
- Drag & Drop image straight into application
- serial (RS232C), Infrared (IrDA) & Video Out (NTSC & PAL) interfaces display pictures straight to TV!
- Supplied with Kodak PictureEasy 2.0 Adobe PhotoDeluxe & PageMill software, Windows '95 mounter & TWAIN Acquire module
- Optional Macintosh Interface Kit

Kodak DC210
£429 ex vat £504.07 inc vat

Kodak DC200
£325 ex vat £381.88 inc vat

Also Available

Kodak DC50
£239 ex vat £280.83 inc vat

Kodak DC120
£369 ex vat £433.57 inc vat

DC200 is as DC210 except: No carry case; No Adobe software; No infrared interface; No zoom lens

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EUROPE



SMART MEDIA CARD

2Mb	8Mb
£18 £21.15	£48 £56.40
4Mb	Adapter
£21 £24.68	£19 £22.32



MINIATURE CARD

2Mb	4Mb
£49 £57.57	£69 £81.07
8Mb	
£119 £139.82	



COMPACT FLASH

8Mb	24Mb
£59 £69.33	£129 £151.58
12Mb	32Mb
£75 £88.13	£175 £205.63
16Mb	Adapter
£99 £116.32	£19 £22.32

ATA FLASH CARDS

4Mb	16Mb	40Mb
£50 £75	£97 £113.98	£199 £233.83
8Mb	20Mb	64Mb
£65 £76.38	£113 £132.78	£199 £233.83
12Mb	32Mb	80Mb
£85 £96.35	£159 £186.83	£199 £233.83
16Mb	Adapter	160Mb
£105 £122.32	£19 £22.32	£199 £233.83

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CRT MONITORS

Model	Size	Max. Resolution	Ex Vat	Inc Vat					
E641	14"	1024 x 768	£98	£115.15	P775	17"	1600 x 1280	£349	£410.07
E655	15"	1280 x 1024	£139	£163.33	PT775	17"	1600 x 1280	£409	£480.57
E771	17"	1280 x 1024	£229	£269.07	P810	21"	1600 x 1280	£749	£880.07
G653	15"	1280 x 1024	£149	£175.07	PT813	21"	1600 x 1280	£799	£938.82
15GA	15"	1280 x 1024	£189	£222.07	P815	21"	1800 x 1440	£825	£969.37
G771	17"	1280 x 1024	£289	£339.57					
GS771	17"	1280 x 1024	£319	£374.82					
G773	17"	1280 x 1024	£325	£381.87					
GT775	17"	1600 x 1280	£369	£433.57					
G790	19"	1600 x 1280	£489	£574.57					
G800	20"	1600 x 1280	£599	£703.82					

LCD DISPLAYS

VPA138	13.8"	1024 x 768	£849	£997.57
VP140	14"	1024 x 768	£849	£997.57
VPA145	14.5"	1024 x 768	£899	£1056.32
VPA150	15"	1024 x 768	£1099	£1291.32

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CTX	1769MS	£309
	CRT Size/Viewable Dot Pitch (mm) CRT Type Max. Resolution Horiz. Sync. (KHz) Special Features	17"/15.7" 0.28 FST 1280 x 1024 30-70 Dome Speakers
CTX	1769SE	£229
	CRT Size/Viewable Dot Pitch (mm) CRT Type Max. Resolution Horiz. Sync. (KHz) Special Features	17"/15.7" 0.28 FST 1280 x 1024 30-70 MPRII
CTX	1792SE	£329
	CRT Size/Viewable Dot Pitch (mm) CRT Type Max. Resolution Horiz. Sync. (KHz) Special Features	17"/15.7" 0.26 FST 1600 x 1200 30-92 Made in UK/TC095
CTX	1792UA	£369
	CRT Size/Viewable Dot Pitch (mm) CRT Type Max. Resolution Horiz. Sync. (KHz) Special Features	17"/16" 0.25 Trinitron® CRT 1600 x 1200 30-92 BNC/TC095
CTX	2185XE	£699
	CRT Size/Viewable Dot Pitch (mm) CRT Type Max. Resolution Horiz. Sync. (KHz) Special Features	21"/20" 0.26 FST 1600 x 1200 30-85 BNC/TC092



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DiamondPlus 72	£359	£421.82
DiamondScan 70	£269	£316.07
DiamondScan 17HX	£309	£363.07



The **Diamond Pro 91TXM** meets the needs of graphics and CAD users who require high resolution, high quality 21" monitors. Featuring Mitsubishi's latest 0.28mm CRT, the monitor reaches a maximum non-interlaced resolution of 1600 x 1280 at a refresh rate of 75Hz.

£729 ex vat £856.57 inc vat



The **Diamond Pro 700** is a 17" monitor, perfect for professionals in the corporate marketplace as well as CAD users, designers and multimedia experts. Featuring Mitsubishi's patented DIAMONDTRON technology, the monitor reaches a maximum non-interlaced resolution of 1280 x 1024 at a refresh rate of 85Hz.

£429 ex vat £504.07 inc vat



The **Diamond Pro 67TXV** is an advanced 17" monitor for the multimedia age delivering high-quality images in the finest detail thanks to Mitsubishi's patented DIAMONDTRON technology, the monitor reaches a maximum non-interlaced resolution of 1024 x 768 at a refresh rate of 75Hz with 0.25 grille pitch.

£329 ex vat £386.57 inc vat



The **Diamond Pro 15VX** 15" colour monitor offers an extensive array of features at a practical price, making it a staple for corporate environments. Featuring a flat-square CRT with Invar shadow mask, the monitor reaches a maximum non-interlaced resolution of 1024 x 768 at a refresh rate of 75Hz.

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- 14" Monitor
- Viewable screen 13.2"
- Anti-static coating
- Max resolution 1024 x 768 @ 60Hz
- Recommended resolution 800 x 600 @ 85Hz
- Plug & Play, Win 95 compatible
- 3 year On Site warranty

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viewpoint 15" Monitor
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- 17" Monitor
- Viewable screen 15.6"
- Anti-static coating, Anti-reflective coating
- Max resolution 1600 x 1200 @ 60Hz
- Recommended resolution 1024 x 768 @ 85Hz
- Plug & Play, Win 95 compatible
- 3 year On Site warranty

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 CM620 17" £249 £292.59
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 CM752 19" £515 £605.13
 CM802 21" £719 £844.83
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 PanaSync SG 17" £345 £405.37
 PanaSync 17MM 17" & Speakers £369 £433.57
 PanaSync Pro 5G 17" £399 £468.83
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 PanaSync S70 17" FST £264 £310.20
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SONY
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 CPD-100gat £214 £251.45
 CPD-120aa £305 £358.38
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 VM Pro 501 £699 £821.32
 VM 502 £725 £851.87
 VM Pro 502 £735 £863.62
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- Black Matrix CRT screen

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- Up to 1280 x 1024
- Autoscan & Tilt correction
- On Screen display
- Digital Control
- Black Matrix CRT screen

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 £280.83 inc vat



- 15" monitor (viewable size 13.8")
- Up to 1024 x 768
- Autoscan
- On Screen display
- Digital Control
- Black Matrix CRT screen

£119 ex vat
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 - Colour Balance Control
 - TCO 95 and MPRII compliant

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- 21" DiamondTron
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 - Colour Balance Control
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The newly available Righteous 3D II takes games players to yet another level of three dimensional entertainment. Both 8Mb and 12Mb cards are available.

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Creative Labs' latest entry in to the graphics market is available now from Tech direct

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All in Wonder Pro AGP 8mb	£169	£198.58
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XPERT@Work

XPERT@Work is the most powerful graphics accelerator for corporate and small business, with fast 2D and 3D performance, three times that of previous boards and the best video acceleration for the price on the market. Designed as the ideal accelerator for business applications, the XPERT@Work provides levels of visual display not previously available to the business user in a mainstream priced board.



- ▶ The fastest performance for greater productivity in Windows NT and Win 95
- ▶ Flicker-free images at up to 200Hz refresh rate to eliminate eye strain
- ▶ Up to 8MB of ultra fast SGRAM for high res-true colour acceleration
- ▶ Rock solid stability and worry free compatibility with ATI's Microsoft certified drivers
- ▶ Optimised for the best performance on Pentium II/PRO systems
- ▶ Available in 2MB and 4MB upgradeable or 8MB memory configurations
- ▶ AGI/PCI Bus available

XPERT@Play

XPERT@Play sets a new standard for 3D gaming, multimedia and entertainment applications. "Best of Breed" design uses a single card/slot solution to provide high powered, fully featured 3D performance for intense gaming.



- ▶ Microsoft certified drivers
- ▶ Brute force 3D acceleration with over 1 million triangles per second with setup engine, texture cache and more
- ▶ Up to 8Mb of ultra fast SGRAM for high resolution & true colour acceleration
- ▶ DVD quality full screen, full motion video
- ▶ Floating point set up engine, up to 1.2 million triangles per second
- ▶ Superior 3D quality with bilinear filtering, alpha blending and special effects
- ▶ Great gaming in Windows 95 (Direct 3D, DirectDraw) and DOS
- ▶ Connect to a large screen TV for truly engrossing game play, or record your stratospheric scores on a VCR
- ▶ AGI/PCI Bus available

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4Mb Millennium II OEM	£69	£81.07
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8Mb Millennium II Retail	£115	£135.12
Mystique Rainbow Runner Studio	£99	£116.32
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- Up to 12ppm print speed
- Duplex standard - two sided printing
- Two built-in 250 sheet universal trays
- Long-life recyclable cartridges

XEROX 4512 £699 ex vat £821.33 inc vat	XEROX 4512N £779 ex vat £915.32 inc vat	XEROX 4512MP £989 ex vat £1162.07 inc vat
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- 30Mb standard memory - upgradable
- Multiple media versatility
- PCL5C emulation, Adobe PostScript L2

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- Copying up to 99 pages
- Up to 6ppm mono
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XEROX HomeCentre £329 ex vat £386.57 inc vat	XEROX WorkCentre £329 ex vat £386.57 inc vat
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The XJ4C makes an excellent debut in the inkjet market for Xerox. Not only does it provide excellent value for money at £129 but its 4 colour head technology ensures running costs are kept low. Plus, the optional high capacity black turbo cartridge lets you print laser like quality at an incredible 6ppm. For superior colour documents, the XJ4C also utilises "SmartPrint" automatic image enhancement. If that's not enough, the XJ4C also provides "on screen feedback" to let you know when your ink is running low. No more "DOWN TIME" for your print jobs!



- 4 ink print head system
- On screen prompt for low ink
- Prints up to 6 ppm Mono 1.5 ppm Colour
- Suitable for both DOS and Windows Printers
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XEROX XJ4C £119 ex vat £139.82 inc vat

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510	£795	£934.12	4520	£1849	£2172.57
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4517	£689	£809.57	N24	£1499	£1761.32
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- 3 pages per minute full-colour laser printer
- 12 ppm high speed monochrome printing
- Intel 33MHz RISC processor & high speed parallel port
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- Optional 2nd 250 sheet paper cassette
- Optional Ethernet or Token Ring cards
- Upgradeable to Postscript Level 2
- Handles up to 157g/m² light card
- Simple to change consumables
- True 600 dpi colour resolution



Colour Laser only £1749



MINOLTA Colour PagePro £1749 ex vat £2055.07 inc vat

MINOLTA PAGE PRO 6E LASERPRINTER



- Minolta Super Fine Micro-Toning System
- 600 dots per inch resolution
- 2Mb standard memory (max 34Mb)
- Energy save and Toner save functions
- Multipurpose 150 sheet tray
- 6 pages per minute
- Two parallel ports
- INFRA - RED port

MINOLTA PagePro 6L £179 ex vat £210.32 inc vat	MINOLTA PagePro 6 £244 ex vat £286.70 inc vat	MINOLTA PagePro 6E £279 ex vat £327.82 inc vat	MINOLTA PagePro 12 £559 ex vat £656.82 inc vat	MINOLTA PagePro 20 £849 ex vat £997.57 inc vat
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<p>HP DESKJET 720c</p> <ul style="list-style-type: none"> Up to 8ppm mono, 4ppm colour 600dpi resolution Photo REI II HP ColourSmart II automatically adjusts colour settings, sharpens and enhances low res images Includes Kodak Image Enhancements 1 year unit exchange warranty <p>£165 ex vat £193.88 inc vat</p>	<p>HP DESKJET 890c</p> <ul style="list-style-type: none"> Up to 9ppm mono, 5ppm colour 600dpi resolution Photo REI II Handles up to 150 sheets Compatible with DOS, Windows 3.1x, Windows 95 and NT 4 1 year unit exchange warranty <p>£195 ex vat £229.13 inc vat</p>	<p>HP DESKJET 1100c</p> <ul style="list-style-type: none"> Wide format A3 colour printer Up to 6.5ppm mono, 4ppm colour REI for crisp black 600 x 600dpi C-REI and ColourSmart II for brilliant colour at 600 x 600dpi Supports Win NT 4.0, Win 95, Win 3.1x and MS-DOS 1 year unit exchange warranty <p>£239 ex vat £280.83 inc vat</p>	<p>HP OFFICEJET 635</p> <ul style="list-style-type: none"> Print, Copy, Scan in colour and a plain-paper fax all in one product Great colour images and black text printing Colour scanning to incorporate photographs into documents Print: 600x600dpi, Fax: Standard, fine, 300dpi, Photo Copier: 600x300dpi colour Scanner: 1200dpi enhanced, 300dpi optical resolution <p>£329 ex vat £386.58 inc vat</p>	<p>HP OFFICEJET 1150c</p> <ul style="list-style-type: none"> Print, Copy, Scan in colour all in one product Great colour images and black text printing 24-bit colour scanning, includes Adobe PhotoDeluxe image software Print: 600x600dpi black, 600x300dpi colour Copier: Up to 7ppm black, 3ppm colour Scanner: 1200dpi enhanced, 300dpi optical resolution <p>£479 ex vat £562.83 inc vat</p>
<p>HP LASERJET 6L</p> <ul style="list-style-type: none"> Up to 6ppm print speed 600x600dpi resolution plus REI and Microfine toner Up to 100 sheets Multi-platform compatible 1 year return to HP warranty, extendible to 3 year next day, on-site with HP SupportPack <p>£225 ex vat £264.38 inc vat</p>	<p>HP LASERJET 6P</p> <ul style="list-style-type: none"> Up to 8ppm print speed 600x600dpi resolution plus REI and Microfine toner Two paper trays holding 350 pages total 1 year return to HP warranty, extendible to 3 year next day, on-site with HP SupportPack <p>£449 ex vat £527.58 inc vat</p>	<p>HP LASERJET 3100</p> <ul style="list-style-type: none"> LASER printer, Fax, Copier & Scanner all in one! Up to 6ppm print speed 600x600dpi resolution plus REI and Microfine toner Up to 100 sheets Multi-platform compatible 1 year return to HP warranty <p>£465 ex vat £546.37 inc vat</p>	<p>HP LASERJET 4000</p> <ul style="list-style-type: none"> First page out in 15secs Up to 16ppm print speed 1200dpi resolution 500 sheet tray Up to 5 input bins (1,100 sheets) 1 year return to HP warranty <p>£695 ex vat £816.63 inc vat</p>	<p>HP LASERJET 5000</p> <ul style="list-style-type: none"> A3 printing, first page out in 13secs Up to 16ppm engine Capable of 1200dpi resolution plus REI and Microfine toner Up to four input bins with a total capacity of 1100 sheets 1 year return to HP warranty <p>£899 ex vat £1056.33 inc vat</p>

	ex vat	inc vat	with 3 year HP SupportPack		ex vat	inc vat	with 3 year HP SupportPack		ex vat	inc vat	with 3 year HP SupportPack
HP LASERJET 6L	£225	£264.38	£300	HP LASERJET 4000N	£891	£1046.83	£1071	HP DESKJET 670 Colour	£109	£128.06	£148
HP LASERJET 6P	£449	£527.58	£588	HP LASERJET 4000TN	£989	£1173.83	£1179	HP DESKJET 690C	£125	£146.87	£179
HP LASERJET 6MP	£549	£645.08	£688	HP LASERJET 5 COLOUR	£2440	£2867.00	£2940	HP DESKJET 720	£149	£175.07	Call
HP LASERJET COMPANION	£79	£92.83	Call	HP LASERJET 5M COLOUR	£3079	£3617.82	£3579	HP DESKJET 890c	£195	£229.13	£260
HP LASERJET 5S1	£1579	£1855.33	£2099	HP LASERJET 5N COLOUR	£2675	£3143.12	£3175	HP DESKJET 1100c	£239	£280.83	£278
HP LASERJET 5S1MX	£2159	£2536.83	£2261	HP LASERJET 5000N	£1299	£1526.32	Call	HP DESKJET 1120c New!!	£279	£327.82	£318
HP LASERJET 5S1NX	£1759	£2066.83	£2288	HP OFFICEJET 590	£289	£339.58	£354	HP DESKJET 1600 C	£839	£985.83	£944
HP LASERJET 5S1MOPHER	£4089	£4804.58	£4818	HP DESKJET 340 Colour	£129	£151.58	£168	HP DESKJET 1600 CM	£1245	£1482.88	£1350
HP LASERJET 4000	£695	£816.63	£885	HP DESKJET 340 CB1	£155	£182.13	£194	HP DESKJET 1600 CN	£1059	£1244.33	£1164
HP LASERJET 4000T	£799	£938.83	£979	HP DESKJET 400L Colour	£65	£78.37	£124	HP MOPHER 240 New!!	£225	£273.87	Call

<p>LEXMARK 1000 & Disney's print Studio</p> <ul style="list-style-type: none"> 600 x 600dpi 3ppm / 1ppm Windows 3.1x, 95 Head Swapper <p>LEXMARK 1000 £85 ex vat £99.87 inc vat</p>	<p>LEXMARK 5000</p> <ul style="list-style-type: none"> New EX2 technology. Laser crafted print cartridges deliver true 1200 x 600dpi printing Up to 5 ppm black, 2 ppm colour printing Upgradeable to 6-colour photographic printing Whisper-quiet printing and Accu-Feed perfect paper alignment Optimised for plain paper printing <p>LEXMARK 5000 £139 ex vat £163.33 inc vat</p>	<p>LEXMARK 5700</p> <ul style="list-style-type: none"> New EX2 technology. Laser crafted print cartridges deliver true 1200 x 1200dpi printing Up to 8ppm black, 4ppm colour Upgradeable to 6-colour photographic printing Whisper-quiet printing and Accu-Feed perfect paper alignment Optimised for plain paper printing <p>LEXMARK 5700 £178 ex vat £209.15 inc vat</p>	<p>LEXMARK 7200</p> <ul style="list-style-type: none"> 1200 x 1200dpi 8ppm / 3ppm Windows 3.1x, 95 & NT Dual ink cartridges with super sharp waterproof black ink Optimised for plain paper printing Comes with LivePix software <p>LEXMARK 7200 £199 ex vat £233.83 inc vat</p>	<p>NEW MODELS</p> <p>LEXMARK Optra S 1855 £739 ex vat £868.32 inc vat</p> <p>LEXMARK Optra S 2455 £1379 ex vat £1620.32 inc vat</p> <p>LEXMARK Optra S 1255 £649 ex vat £762.57 inc vat</p> <p>LEXMARK Optra S 1255N £799 ex vat £938.82 inc vat</p>
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Canon 'Extended warranties available for all Canon printers'

<p>Canon BJC-80</p> <ul style="list-style-type: none"> A4 portable Colour printer - Allows printing anywhere 720 x 360dpi 4.5ppm mono, 1.9ppm colour Image Optimiser technology 30 sheet auto sheet feeder Built-in IRDA infra-red sensor (Win 95 only) 1 year return to canon warranty Optional battery packs available BJC 80x-Scan head £181+vat <p>Canon BJC-80 £139 ex vat £163.33 inc vat</p>	<p>Canon LBP-660</p> <ul style="list-style-type: none"> Personal mono laser printer 600dpi resolution 6ppm print speed 100 sheet auto sheet feeder Uses Microsoft Windows printing system 1 year on site warranty <p>Canon LBP-660 £177 ex vat £207.98 inc vat</p>	<p>Canon BJC-250</p> <ul style="list-style-type: none"> A4 Colour printer - Ideal for home use 720 x 360dpi (mono) 360 x 360dpi colour Optional Photorealism cartridge FREE BC-02 ink cartridge while stocks last (£19.99RRP) FREE Thomas Cook voucher worth £140 (while stocks last, please check availability) 1 year return to canon warranty <p>Canon BJC-250 £69 ex vat £81.07 inc vat</p>	<p>Canon BJC-4300</p> <ul style="list-style-type: none"> A4 Colour printer - ideal for both home & business use 720 x 360dpi Up to 4.5ppm mono, 2ppm colour Image Optimiser technology FREE Thomas Cook voucher worth £200 (while stocks last, please check availability) optional colour image scanner cartridge 1 year return to canon warranty BJC 4300+Scan head £149+vat <p>Canon BJC-4300 £89 ex vat £104.57 inc vat</p>	<p>Canon BJC-4650</p> <ul style="list-style-type: none"> A3/A4 compatible Colour Printer - ideal for home or office 720 x 360dpi New colour & photo cartridges Increased media support Up to 4.8ppm mono, 2ppm colour Image optimiser technology 100 sheet ASF PC & MAC compatible Optional colour image scanner cartridge 1 year RTB warranty <p>Canon BJC-4650 £195 ex vat £229.13 inc vat</p>	<p>Canon BJC-7000</p> <ul style="list-style-type: none"> A4 Colour printer - ideal for high quality DTP & Graphics 1200 x 600dpi New P-POP printing technology Unrivaled plain paper output Prints on card up to 550gsm Image Optimiser technology New large capacity cartridges A4+ size paper support gives full A4 bleed 1 year return to Canon warranty <p>Canon BJC-7000 £175 ex vat £205.62 inc</p>
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KYOCERA FS-800 LASER PRINTER



KYOCERA FS-800
£415 ex vat
£487.62 inc vat

- High performance personal/small workgroup printer
- 8ppm print speed
- 4Mb RAM, upgradeable to 36Mb
- Ultra fast 50MHz power PC processor
- 600dpi plus resolution enhancement
- PCL5e and PostScript level 2 emulations as standard
- 150-sheet enclosed paper cassette
- Options include 250-sheet second cassette, network and serial interfaces

KYOCERA FS-1700 LASER PRINTER



- 12ppm and 18ppm network laser printers
- Optional multi-protocol Ethernet interface
- 2Mb Pre-installed Memory
- Fully SNMP compliant/Windows plug & play
- High speed parallel and serial interfaces
- 250 sheet standard cassette plus 100 sheet multi-purpose feed

KYOCERA FS-1700
£565 ex vat
£663.87 inc vat

KYOCERA FS-1700N
£720 ex vat
£846.00 inc vat

KYOCERA FS-1700T
£699 ex vat
£821.32 inc vat

KYOCERA FS-3700
£849 ex vat
£997.58 inc vat

KYOCERA FS-600 LASER PRINTER



- 600dpi, 6ppm laser printer
- Cartridge-free technology
- 50MHz PowerPC processor
- Internal 150 sheet cassette
- Ethernet/serial interface options

The PC Direct Verdict (Jan '98)

With a price of just £239, the FS-600 is great value for money. It easily attains its quoted speed of 6ppm, and has a very low time-to-first-page. Paper handling is a cut above most of its rivals thanks to an optional second cassette and print quality is also on a par with any 600dpi machine. The FS-600 is an excellent choice for personal use or to share among a small workgroup particularly in view of its highly competitive price.

KYOCERA FS-600
£239 ex vat **£280.82 inc vat**

EPSON

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 When you purchase any EPSON inkjet get HYPERBLADE for Windows 95 (RRP £29.99) **FREE!! (LIMITED OFFER).**



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EPSON STYLUS COLOR 600

The EPSON Stylus Color 600 produces high-definition 1440 dpi PhotoReal color printing at an affordable price, making it ideal for any application demanding the ultimate results.

- 1440 dpi PhotoReal color inkjet
- Up to 4 ppm color, Up to 6 ppm black
- Advanced dual ink cartridge system
- Fully Windows or Mac compatible
- Easy to use with in-built online help
- 3 Year Extended Warranty £65+VAT



£147 ex vat
£172.73 inc vat



EPSON STYLUS COLOR 400

The EPSON Stylus Color 400 produces 720 dpi output on plain paper providing superb colour output at an exceptional price.

- 720 dpi PhotoReal color inkjet
- Up to 3 ppm color, Up to 4 ppm black
- Windows compatible software with online help
- Class leading EPSON Micro Piezo Technology
- 3 Year Extended Warranty £65+VAT



£103 ex vat
£121.02 inc vat

EPSON STYLUS COLOR 850

- Ultra-fast Print Speed up to 9ppm mono , 8.5ppm Colour
- PhotoReal colour, Laser-sharp Black output standard
- 1440dpi colour printing on plain paper
- Win 3.1, Win 95, Win NT and Mac compatible
- High capacity dual ink cartridge system
- New full function status monitor
- 1 Year RTB warranty as standard



£243 ex vat **£285.53 inc vat**

EPL 5700 LASER PRINTER

- 8ppm with 100MHz RISC processor for fast, efficient printing
- True 600 x 600dpi
- 1200dpi with MicroGray 1200 and RITech
- 4Mb RAM as standard-upgradeable to 36Mb
- Up to 650 sheets capacity (optional paper cassette)
- Parallel & Serial interfaces as standard
- standard, Network & PostScript ready configurations
- 1 Year RTB Warranty



(featured with optional paper cassette)

£304 ex vat
£357.20 inc vat

EPSON STYLUS PHOTO

- Photo Reproduction Quality output
- Prints 4" x 6" format and enlargements to A4
- Optimised for photo reproduction
- Up to 720 x 720 dpi resolution
- Free LivePix software for Win95/MAC
- 3 Year Extended Warranty £65 + VAT



£177 ex vat **£207.98 inc vat**

EPSON STYLUS PHOTO 700

- Photo Reproduction Quality output
- Prints on a wide range of media
- EPSON PhotoEnhanced 2 - automatically optimises photo output
- Win 3.1, Win 95, Win NT and Mac compatible
- 1440dpi & Super MicroDot for highest photo quality output
- 1 Year RTB Warranty as standard



£207 ex vat **£243.22 inc vat**

	ex vat	inc vat		ex vat	inc vat
FilmScan 200	£303	£356.03	EPL-N1200	£593	£696.77
StylusColor 300	£83	£97.52	EPL-N1200EN	£791	£929.42
StylusColor 800	£207	£243.22	EPL-N1200PS	£986	£1158.55
StylusColor 1000	£292	£343.10	EPL-N2000	£1278	£1501.65
StylusColor 1520	£510	£599.25	EPL-N2000PS	£1582	£1858.85
StylusColor 3000	£1118	£1313.65	EPL-5700EN	Call	
PhotoPC 600	£455	£534.63	EPL-5700PS	Call	

EPSON DOT-MATRIX RANGE

	ex vat	inc vat		ex vat	inc vat
LX 300	£97	£113.97	LQ 300	£115	£135.12
LX 1050+	£154	£180.95	LQ 570+	£216	£253.80
FX 870	£247	£290.22	LQ 670	£230	£270.25
FX 880	£247	£290.22	LQ 870	£377	£442.97
FX 1170	£230	£270.25	LQ 2070	£330	£387.75
FX 2170	£395	£464.12	LQ 2170	£468	£549.90
DFX 5000+	£1226	£1440.55	NEW		
DFX 8000+	£1911	£2245.42	DLQ 3000+	£791	£929.43

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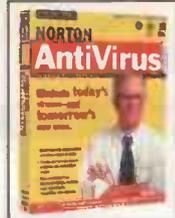
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We will usually match or beat any price lower than our own



OKI

People to People Technology



Norton Anti-Virus
FREE
with any OKI Printer

OKIPAGE 16N A super-fast printer which offers top-quality output. The ideal choice for demanding office environments, and a double award winner in the latest review.



QUALITY AND VALUE WINNER - PC PRO NOVEMBER '97



6 out of 6 for the OKIPAGE 16N

PERFORMANCE	○○○○○○
QUALITY	○○○○○○
VALUE FOR MONEY	○○○○○○
OVERALL	○○○○○○



- 16 pages per minute at 600 x 600 dpi
- Network and Postscript cards installable
- PCL5e (HP LaserJet 4 compatible)
- 6 Mb as standard (up to 66 Mb)
- 45 scalable fonts x 3 bitmap fonts
- High capacity 500 sheet tray plus 100 sheet manual feeder

OKI OKIPAGE 16N
£579 ex vat £680.32 inc vat

OKIPAGE 4W PLUS

- New LED 4ppm personal page printer from OKI
- Excellent alternative to a network laser
- Fast high quality text and graphics output
- Improved paper guide system and cover latch
- 600 dpi class printing
- Improved Windows 3.x/95 driver
- New Windows NT 4.0 driver



OKI 4W PLUS
£135 ex vat £158.63 inc vat

OKIPAGE 20N

- LED 20ppm page printer (PCL6)
- 1200dpi class printing
- Optional AdobePostScript Level II
- R3000 RISC processor
- Standard 8 Mb memory - upgradable to 68 Mb
- OKIVIEW network management software
- Bi-directional parallel interface and serial interface
- High capacity 530 sheet tray plus 100 sheet manual feeder



OKI OKIPAGE 20N
£729 ex vat £856.57 inc vat

OKIPAGE 10i

- LED 10ppm (PCL6)
- 600 x 1200dpi (600 dpi printhead)
- Optional AdobePostScript Level II
- Standard 2 Mb memory - upgradable to 35 Mb
- Upgrade path to full network capabilities



OKI OKIPAGE 10i
£359 ex vat £421.82 inc vat

THE RANGE OF OKI PRINTERS

OKIPAGE 6e - 600dpi, 6ppm, PCL5e	£189	£222.08
OKIPAGE 6ex - 1200dpi, 6ppm, PCL5e, 2Mb	£219	£257.33
OKIPAGE 10iS - with Serial I/F	£395	£464.12
OKIPAGE 10iEN - Ethernet Printer	£445	£522.87
OKIPAGE 16NPS - Postscript Printer	£699	£821.32
OKIPAGE 16EN - Ethernet Printer	£749	£880.07
OKIPAGE 16ENPS - EthernetPostscript	£869	£1021.07
OKIPAGE 20EN - Ethernet Printer	£889	£1044.57
OKIPAGE 20NPS - Postscript Printer	£899	£1056.32
OKIPAGE 20NDX - Duplex Printer	£909	£1068.07
OKIPAGE 20ENPS - Ethernet Postscript	£1039	£1220.82
OKIPAGE 20ENDX - Duplex Ethernet	£1069	£1256.07

OKI DOT-MATRIX RANGE



ML280	£179	£210.33	ML3320	£309	£363.08
ML320P	£295	£346.63	ML3390	£329	£386.58
ML321P	£355	£417.13	ML3321	£365	£428.88
ML380P	£209	£245.58	ML3391	£379	£445.33
ML385	£319	£374.83	ML521P	£385	£452.38
ML395M	£629	£739.08	ML590P	£429	£504.08
ML395C	£714	£838.95	ML591P	£495	£581.63
ML520P	£325	£381.88	ML3410	£795	£934.13

OKIFAX 4100

The OKIFAX 4100 is a high quality, high performance desktop LED facsimile, perfect for use in small and home offices and for personal desktop use.



- Fast 14.4k modem speed
- 100 sheet paper capacity
- Memory expandable to 75 pages
- Separate toner and drum
- Advanced dialling features
- Power save mode
- Energy saving system

£479 ex vat
£562.82 inc vat

OKIFAX 740

The OKIFAX 740 is ideal for the small office, workgroup or business, offering all the convenience of plain paper faxes with the quality and economy of inkjet printing.



- 150 page plain paper handling
- Telephone/facsimile auto switch
- Error correction mode (ECM)
- 512Kb memory (upgradeable to 1.5Mb)
- 18 seconds per A4 sheet
- 10 one touch numbers
- 50 autodial numbers

£339 ex vat
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OKIFAX 740MF

The OKIFAX 740mf is now offered at this incredible price for a limited period, offering 2 in 1 functionality for plain paper faxing and inkjet printing in mono or full colour!!



- 18 secs/page transmission speed
- 600 dpi mono/300dpi colour printing
- Autodial: 10 one-touch/50 speed-dial
- Print speeds up to 3 ppm mono
- Compact/space saving design
- Windows 3.11 and 95
- 150 sheet paper tray

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Just what you've always wanted is now available. The CD-Rewritable Kit from Philips. You get a 6X CD-ROM player that lets you create your own CD's. Play any CD-ROM, record information on low cost CD-Recordable (CD-R) media and write or rewrite standardized CD-Rewritable discs.

CD-ROM

Play any CD-Rom or CD-Audio at 6 speed.

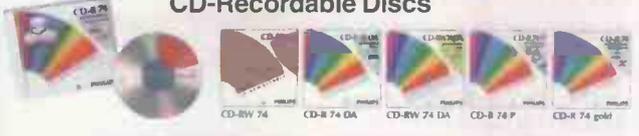
CD-Recordable

Create your own CD-Rom and CD-Audio using 650Mb CD-Recordable media. The CD-Rom that is produced with a CD-Recordable is compatible with more than 750 million CD-Rom drives and audio players. The CD-Recordable is ideal for archiving and exchanging any kind of information

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The Rewritable function allows you to use the 650Mb CD-Rewritable media over and over again, just like a floppy disk. CD-Rewritable media can be read in all "multiread" CD-Rom players and CD-Rewritable/DVD-Rom drives. Excellent for personal storage and backup of your hard disk.

CD-Recordable Discs



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DLT III XT



LS 120



CDR 74XL



HS 4



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LS 120	£9.99	£11.74	HS 4-120	£6.29	£7.39
CDR 74XL	£1.49	£1.75	HS 4-125	£14.99	£17.61
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DLT III	£23	£27.03	MA-M230	£4.99	£5.86
DLT CL	£25	£29.38	MA-132SO 1.3GB	£15.99	£18.79
HS 4-90	£2.99	£3.51	MA-172SO 2.6GB	£26.99	£31.71
			TRAVAN 1,3, & 4	£15.99	£18.79

KAO KAO are one of the worlds largest manufacturers of magnetic and optical storage media. Kao CD-R features the following:



CD-RW

1+	£12	£14.10
5+	£11	£12.93
10+	£10	£11.75
20+	£9	£10.58

- High Quality CDRW media
- Can be Re-Written more than 1,000 times
- Superior Re-Writable layer provides consistent performance



CD-R

1+	£1.39	£1.63
20+	£1.25	£1.47
50+	£1.09	£1.28
100+	£0.99	£1.16

- 74 minutes / 650Mb storage
- Pure gold reflective layer
- "HardCoat" surface gives protection from scratches
- Excellent resistance to UV light
- Guaranteed life of 70 years
- Complete with jewel case

Kodak
digital science



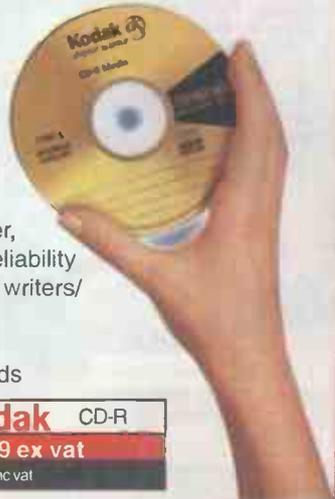
CD-RW Media

- INFOGUARD Protection Layer, exceptional durability and reliability
- Compatible with all leading writers/readers
- Allows multiple writing sessions
- Data life of over 100 years
- Lifetime Warranty

Kodak CD-RW
£9.20 ex vat
£10.81 inc vat

CD-R Media

- INFOGUARD Protection Layer, exceptional durability and reliability
- Compatible with all leading writers/readers
- Data life of over 100 years
- Reliable at all recording speeds
- Allows multiple writing sessions
- Lifetime Warranty

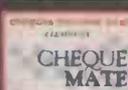


Kodak CD-R
£1.29 ex vat
£1.51 inc vat

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4x2x6

4 WRITE · 2 REWRITE · 6 READ

The Official retail box Yamaha Value kit - The World's first & fastest 4x2x6 CD-ReWritable drive from Yamaha. (IDE or SCSI)



Yamaha presents the CDR4000, the newest & most advanced in the CD EXPERT series. It merges the proven technology of the award-winning CDR400 with a host of powerful new features. It boasts the ability to write at 4X & read at 6X. It has a 2MB buffer for stabilized recording, & supports variable and fixed packet writing.

- 4x2x6 CD Re-Writer
- 1 piece of CDR media included
- Retail packaged with full fitting instructions and manuals
- Win on CD software V3.5
- SCSI card not included
- Adaptec 1505 SCSI card £29 + vat

YAMAHA 4260T
£269 ex vat £316.08 inc vat

YAMAHA CRW2260t-VK

The CRW2260t is a 2x write, 2x Re-Write, 6x read SCSI interface internal drive unit and will fit in to a standard drive bay in your desktop, midi or tower case.



YAMAHA 2260T
£269 ex vat £316.08 inc vat

OTHER YAMAHA CDRW MODELS

	ex vat	inc vat
CRW4260TX-VK Ext version of CRW 4260T(no SCSI)	£299	£351.32
CRW4001T-VK Int IDE 4x2x6 retail boxed CDRW	£279	£327.82
CRW2260T-VK Int SCSI 2x2x6 retail CDRW (no SCSI)	£204	£239.70
CRW2260TX-VK Ext SCSI 2x2x6 retail CDRW (no SCSI)	£228	£267.90

MITSUBISHI ELECTRIC

Complete CD-Rewritable 2x2x6x Kit

With SCSI
£279 ex vat £327.83 inc vat

With out SCSI
£259 ex vat £304.33 inc vat



- Multi-session recording made easy
- Packet writing software
- Available with SCSI interface
- Tray loading, Dust proof design
- Built-in 1Mb buffer
- Lower cost storage on CD-RW disks than Zip or Jaz carts
- Includes EZ CD Creator (PC) & Toast (MAC) CD creation software

FREE Stomper CD labelling kit (RRP£29.99)

8 speed, 6 disk, internal



TEAC 8x6 DISC IDE
£89 ex vat £104.58 inc vat

32X IDE CD-ROM FULL RETAIL KIT

The 24 speed CD-524E drive offers a combination of speed and multiple enhancement such as advanced noise/vibration control.

- IDE/ATAPI Interface
- 8x playback performance
- 1,200KBps data transfer rate
- 190ms average access time
- ATAPI interface for high speed data transfer 13.3Mb/sec
- Motosed tray loading mechanism for trouble-free operation with either vertical or horizontal mounting
- High loading durability
- 4 speed audio performance for high - quality sound reproduction
- Intelligent media handling

- Drive
- Cable set
- Device driver
- Hardware & Software installation manuals

TEAC 32X
SCSI retail £64 ex vat £75.20 inc vat
IDE retail £55 ex vat £64.63 inc vat



4X12 SCSI CD-R DRIVE FULL RETAIL KIT

- 4x write, 12x read CD recorder
- Cable set
- Adaptec authoring software
- 2 pieces of media
- Full installation manual
- Retail boxed Plug & Play
- SCSI card not included

TEAC 24x CD-R Bare
£39 ex vat £48.36 inc vat

TEAC 24x CD-R Retail
Call

TEAC 4 x 12
SCSI retail £239 ex vat £280.82 inc vat

In a period of less than 4 years the Traxdata Group of Companies has grown into an internationally recognised and respected digital optical company. The company is now a market leader in the field of CD-R and CD-RW media with the brand now established as the largest volume seller

TRAXDATA CDR4120 PRO Series

4X WRITE 12X READ
4 SPEED RECORD 12 SPEED PLAYBACK

CD RECORDERS
Models for Internal & External SCSI Connection

CDR4120EL PRO

- Internal 4x12 Recorder with:
- CD Recording Software
 - UDF Recording Software (Win 95)
 - 2 CD-R Discs & Marker pen
 - Int Power & SCSI Cables
 - Label Design templates

• CDR4120EL Pro 4x12 SCSI Int.
£245 ex vat £287.87 inc vat
(Inc SCSI cable. No card.)

• CDE4120EL Pro 4x12 SCSI Ext.
£275 ex vat £323.12 inc vat
(Inc SCSI cable. No card.)

The Traxdata CDR4120 PRO Series are the World's Fastest 4X Record 12X Playback CD Recorders

CDRW4260EL PRO

- Internal 4x2x6 Re-Writer
- CD Recording Software
 - UDF Recording Software (Win 95)
 - Int Power & SCSI Cables
 - Label Design templates
 - No SCSI card included

• CDRW 4260EL Pro SCSI Int.
£274 ex vat £321.95 inc vat

• CDEW 4260EL Pro SCSI Ext.
£309 ex vat £363.07 inc vat

• CDRW 4260+ IDE Int.
£299 ex vat £351.32 inc vat



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OUR BEST VALUE, BEST SELLING CD-RECORDER



Mitsumi's award winning CR-2800TE comes bundled with the "Mitsumi music centre" (including the original Magix Software for producing your own music) Also included is TO GO! V4.0 CD writer Software. At only £139 + vat, it's hardly surprising that this is our best selling CD writer.

Mitsumi's new CR-2800TE is the world's first ATAPI CD-recordable drive. It lets you easily create custom CD's holding up to 650Mb of data or 74 minutes of audio - In around 30 minutes!

- Combines a 2x writer and 8x reader
- Playback Speed: 900KB/s
- Write up to 650Mb of data per disk
- Easy installation
- Unique dust-proof design reduces the possibility of writing errors, increases reliability
- 1Mb buffer cuts underruns and gives high data accuracy
- ATAPI Enhanced IDE interface
- Windows 95 Compatible.
- Ideal for data intensive applications such as multimedia, electronic publishing, training, promotional tools, and data archiving
- Includes ToGo! CeQuadrat 4.0, Magix Music Maker & Magix Music Editor software, audio cable, IDE data cable, instruction manual, 3 recordable CD's
- 1 year warranty

MITSUMI CR 2801TE
 £139 ex vat £163.32 inc vat

MITSUMI CR 2600TE
 £129 ex vat £151.57 inc vat

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CREATIVE LABS



Just **£149** ex vat

- Reads both the new DVD's and all old CD's
- Incorporates advanced DynamicXtended Resolution (Dxr2) picture enhancement technology for high definition video and smoother full-screen video images
- Back-panel connectors for RCA jack S/PDIF out; VGA output, VGA input, S-Video and composite video output
- TV output includes support for: NTSC & PAL

	ex vat	inc vat
AWE 64 GOLD £24 rebate available - call sales for details	£102	£119.85
AWE 64 4Mb Memory Upgrade	£25	£29.37
AWE 64 8Mb Memory Upgrade	£45	£52.88
AWE 64 12Mb Memory Upgrade	£75	£88.13
AWE 64 24Mb Memory Upgrade	£124	£145.70
AWE 64 Value £12 rebate available - call sales for details	£54	£63.45
SB16 NON IDE	£27	£31.72
Blaster CD 24X	£45	£52.88
Discovery 24X Kit	£88	£103.40
3D Blaster Voodoo 2 8Mb	£124	£145.70
3D Blaster Voodoo 2 12Mb	£144	£169.20
Creative 'Encore' DVD Kit (inc DXR2 Card)	£149	£175.08
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VideoBlaster PCI	£89	£104.58
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Simple as a floppy with the qualities of a CD!



£255 ex vat

£264.38 inc vat

£275 ex vat

£323.13 inc vat

- Write, update and rewrite CD's up to 650Mb
- Easy to use 'drag and drop' functionality
- Create CD's for CD-ROM drives and audio players
- Included Software: Adaptec DirectCD & mastering software, HP SimpleTrax, Norton AntiVirus, DocuMagix PaperMaster Live, Adobe Photo Deluxe, Digital Now Photo Album, Corel PrintHouse Magic

SureStore CD-Writer PLUS 7200 external
 SureStore CD-Writer PLUS 7200 internal
 HP Rewritable CD
 HP Rewritable CD X3

ex vat	inc vat
£275	£323.13
£225	£264.38
£19	£22.32
£39	£45.82

Models	Interface	Speed	Int/Ext	ex vat	inc vat
MITSUMI					
FX-320 Retail	IDE	24	Int	£39	£45.82
FX-320 OEM	IDE	32	Int	£35	£41.12
Panasonic					
CR-586	IDE	32	Int	£49	£57.58
PHILIPS					
PCA 24xCD Multi read	IDE	24	Int	£45	£52.88
PCA 32xCD Multi read	IDE	32	Int	£55	£64.63
DRD 5200 DVD drive	IDE	24	Int	£145	£170.38
PLEXTOR					
PX-32TS1 Tray Loading	SCSI	32	Int	£89	£104.58
PX-32TSE Tray Loading	SCSI	32	Ext	£109	£128.07
SAMSUNG					
SCR 2341	IDE	24	Int	£34	£39.95
SCR 3230	IDE	32	Int	£45	£52.88
TEAC					
	IDE	24	Int	£39	£45.83
	IDE	32	Int	£55	£64.63
	SCSI	32	Int	£69	£81.08
	IDE	8	Int	£89	£104.58
8 Disc CD Changer					

DYNATEK The most affordable CD-Recorders Around

Experts in data storage



The Latest drives from Dynatek



from **£279+vat**

from **£299+vat**

All Dynatek CD Recorders are IDE or SCSI devices with Internal or External options. CD Recorders allow you to master your own data or audio CD's using friendly drag and drop software.

CD Recorders

CDM4120

Quad-Speed write, Twelve-Speed read CD Recorder, CD Recording software for Windows 3.11/95 & NT, SCSI Cable (Internal only), media (2) and documentation.

CDM3000

The CDM3000 range requires no additional hard disk space on the host PC which makes them ideal for CD mastering. The CDM3000 comes with a 4X writer and an AV Hard drive to allow a complete CD-R mastering solution in one. Includes software, blank media (2) and documentation.

CDM3500

The CDM3500 offers the capability to perform CD to CD copies on a stand alone unit. The CDM3500 can also be used as a mastering unit where users will be able to master a CD and make further copies without tying up the PC further. Includes software, blank media (2) and documentation.

CD ReWriters

CD ReWriters provide all the benefits of a CD Recorder with the additional facility of being able to rewrite to Rewritable media. All operate as reader, writer & rewriter, delivering high capacity storage on cost effective media.

CD ReWriter kit includes, Quad-Speed write, Six-Speed read & Two Speed rewrite CD-RW Drive, and software for Windows 3.11/95 & NT, Internal IDE Cable, Audio Cable, 1 blank CD-R media, 1 blank CD-RW media & documentation.

Internal IDE or Internal/External SCSI CD-RW drives are available.

4X Write 12X Read Internal SCSI CDM-4120

4X Write 12X Read External SCSI CDM-4120

CDM-3002 with 2GB HDD

CDM-3004 with 4GB HDD

CDM-3008 with 9GB HDD

CDM-3500 Mastering Unit

4X Write 6X Read 2X ReWrite Internal IDE CDRW-4001

4X Write 6X Read 2X ReWrite Internal SCSI CDRW-426

4X Write 6X Read 2X ReWrite External IDE CDRW-426

ex vat	inc vat
£279	£327.83
£299	£351.33
£549	£645.08
£769	£903.58
£1059	£1244.33
£999	£1173.83
£299	£339.58
£279	£327.83
£299	£351.33

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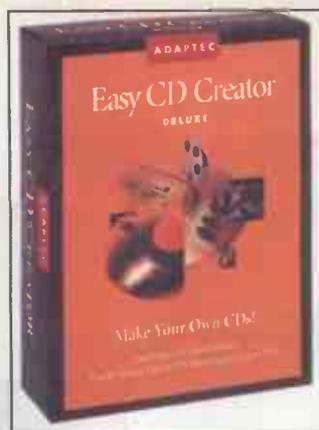
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adaptec

Adaptec Easy CD Creator Deluxe

Adaptec Easy CD Creator deluxe software for Windows 95 and NT - the easiest way to publish, copy, backup and archive with your CD-R drive

- Easy to use drag-and-drop interface
- Multitrack audio or mixed mode disc recording for versatility
- Multisession capability allows incremental updates, saving on media costs
- Converts WAV files into CD-DA standard files for audio CDs
- Supports virtually all CD recorders
- Supports long file names on CD for Windows 95 projects
- CD Spin Doctor makes it easy and fun to turn scratchy LP's into crystal clear CDs
- PictureCD Creator and Video CD Creator save the family photos and video to CD
- Jewel Case Creator and CD Label Pack make your finished CD's look great.

Easy CD Creator Deluxe
£65 ex vat
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PIONEER
The Art of Entertainment

DR -A04S/DR-U06S
Super 32X CD-ROM

Pioneer, world famous for in-car sound systems and one of the leaders in CD-Rom technology, bring you a range of superb quality CD-Rom drives with the slot loading mechanism which not only looks great but prevents damage to your software too!

- Advanced Slot Loading Mechanism
- Fast Average Access Time: 70msecs
- Quick Random Seek Time: 65msecs
- Sustained Data transfer Rate: 4,950KB/sec (32X)
- Choice of ATAPI (IDE) or SCSI Interface
- New Anti-dust Design

DR-A04S ATAPI	£45 ex vat
	£52.87 inc vat
DR-U06S SCSI	£59 ex vat
	£69.32 inc vat

SONY CD-R Media

Sony 74 minute CDR Media

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PRESSIT The complete CD-Labeling-kit

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LabelIT!

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adaptec

AHA-2920 kit PCI

- Easy Plug-and-Play installation of up to 7 SCSI drives, scanners, CD-ROMS and other devices
- Fast PCI data transfer for desktop applications
- Complete with Adaptec EZ-SCSI software

adaptec AHA-2920
£88 ex vat £103.40 inc vat

AHA-2940AU / 2940UW kit PCI

- RISC processor, Fast SCSI and bus master DMA support transfer rates of up to 133MB/second
- Supports up to 7 SCSI devices including bootable Hard drives
- Supports Ultra SCSI (AHA-2940AU) & Ultra-Wide SCSI (AHA-2940UW)
- Complete with Adaptec EZ-SCSI software

adaptec AHA-2940U
£139 ex vat £163.32 inc vat

adaptec AHA-2940UW
£162 ex vat £190.35 inc vat

Other SCSI adapters

AVA-1505 kit ISA	£32	£37.60	AHA-2910 kit PCI	£64	£75.20
AHA-1542CP PnP bare ISA	£112	£131.60	AHA-3940U kit PCI	£244	£286.70
AHA-1542CP PnP ISA	£149	£175.07	AHA-3940UW kit PCI	£284	£333.70
AVA-2825 kit VLB	£74	£86.95	AAA-131 Ultra SCSI Array	£268	£314.90
AHA-2742 kit EISA	£214	£251.45	AAA-133 Ultra Wide RAID kit	£495	£511.13
AHA-2742W kit EISA	£234	£274.95	Adaptec SlimSCSI 1480 kit	£139	£163.32

ADVANSYS **ABP5140 BUS MASTERING ISA CARD**

The highest performance I/O you can buy.

- Optimised for the multi-tasking environment
- Windows 95 Ready - Full Plug & Play compatibility
- Easy to Install - SCAM support
- No prior PC knowledge required
- DOS/Windows drivers - autoload program
- AdvanceWare menu driven configuration program

£89 ex vat
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ABP980U ULTRA 4 PORT SCSI CONTROLLER

Able to handle data bursts of up to 133Mbytes per sec using PCI to PCI bridge technology

- 4 Independent SCSI Channels
- Up to 28 devices supported
- Up to 80Mb p/s transfer
- Plug n Play
- True multi-tasking SCSI b/master
- Supports most common O/S

£299 ex vat
£351.33 inc vat

RICOH **MP6200S/DP SCSI ReWritable Drive**

MP6200S Int Kit	£249 ex vat	CDRW Media	£15 ex vat
	£292.58 inc vat		£17.63 inc vat

(Including Card £269+ vat)

- MP6200S SCSI internal CD-R/RW drive
- 1 CD-ReWritable blank disk
- 5 CD-Recordable blank disks
- Audio Cable
- User's Manual (English, German, French, Italian and Spanish)
- DirectCD (Packet write file system)
- GEAR Windows (CD Mastering software)
- Trial sample software (time locked version) GEAR WebGrabber, GEAR Audio, GEAR Replicator

MP6200A/DP IDE ReWritable Drive

MP6200A/DP	£225 ex vat
	£264.38 inc vat

- MP6200A E-IDE (ATAPI) internal CD-R/RW drive
- 1 CD-ReWritable blank disk
- 5 CD-Recordable blank disks
- Audio Cable
- User's Manual (English, German, French, Italian and Spanish)
- DirectCD (Packet write file system)

NOMAI **680.RW CD-Recordable/ReWritable Compact Disc Drive**

- Drag and drop your files (UDF standard file management) and create your own CD
- Easy to use and carry
- Easy to install

External SCSI Kit	£289 ex vat
	£339.58 inc vat
External Parallel Port	£315 ex vat
	£370.13 inc vat



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MSN 56K MODEM

Hayes legendary modems and the Microsoft Network MSN have teamed up to deliver The Complete Internet Solution, offering one easy path to the Internet.



The package includes a special easy to use guide to the Internet in the form of a mouse mat with flip-out tab guides. It provides a step-by-step guide to navigating the Internet, to ensure you get the most from your Internet experience.

- Download from the Internet at up to 56,000 bit/s
Flash upgradeable
High Speed send and receive fax
FAX-on-demand
Voice answerphone
Speakerphone facility for hands free telephone
V.90 COMPATIBLE

ACCURA 56K MODEM

- Flash upgradeable
FAX send and receive
FAX-on-demand
Voice answer phone
Microphone included
Software and cables included
K56Flex technology allows download speeds from the Internet at up to 56,000 bit/s.
Dial-in to collect your messages while you're away
V.90 COMPATIBLE



OPTIMA 56K PCMCIA

- Throughputs of up to 115,200 bit/s, reliable data and fax communications, all from a credit card sized modem that plugs easily into the PCMCIA slot (Type II or III) on your portable PC
Data/FAX discrimination
Flash ROM allows fast, convenient upgrades via software and immediate access to new features
Group 3 FAX (Class 1 & 2)
Free SmartCom communication and Internet software with free access
V.90 COMPATIBLE

Table with 5 columns: Hayes 56K Int, Hayes 56K Ext, Hayes 56K PCMCIA, Hayes MSN 56K Int, Hayes MSN 56K Ext. Prices listed in ex vat and inc vat.

Table with 2 columns: Optima 33.6K Global PCMCIA, Optima 33.6K Business Ext. Prices listed in ex vat and inc vat.

DIAMOND section table with 2 columns: Product name, Price (ex vat, inc vat). Includes Supra Express 33.6I Internal, Supra Express 56I Internal, Supra Express 56e External.

DYNALINK section table with 2 columns: Product name, Price (ex vat, inc vat). Includes 33k6 Voice Internal, 33k6 Voice External, 33k6 PCMCIA, 56K Voice Internal, 56K Voice External, 56K PCMCIA.

Grey Cell Systems section table with 2 columns: Product name, Price (ex vat, inc vat). Includes GCS 4000 33k6 PCMCIA, GSM Upgrade.

pace section table with 2 columns: Product name, Price (ex vat, inc vat). Includes MicroIn PCMCIA, Pace Voice 56k Internal, Pace Voice 56k External.

Xircom section table with 2 columns: Product name, Price (ex vat, inc vat). Includes Credit Card 33k6 PCMCIA, Credit Card 56k PCMCIA.



Sportster Flash

Download from the Internet at an amazing 56Kbps with the New Sportster Flash faxmodem - this modem now comes with 56Kbps capability as standard from U.S. Robotics and runs nearly 100% faster than the 28.8Kbps speed currently available over ordinary telephone lines. Sportster Flash is the #1 modem!



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Sportster Winmodem

Designed exclusively for the Windows environment Sportster Winmodem 33.6 Faxmodem provides you with Internet access at up to 33,600bps, fax, e-mail, personal voice mail, fax-on-demand and speakerphone facilities all in one compact unit.



£69 ex vat, £81.08 inc vat

USRobotics Range table with 2 columns: Product name, Price (ex vat, inc vat). Includes Courier ISDN 33.6, Courier V34 33.6, PCMCIA Winmodem, 56K V90 Voice, 56K V90 Message, 56k Global PCMCIA.



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tech direct price of just £199 + vat

WebPal Internet Box

The WebPal Internet Box converts a television set (or VGA monitor) into a device that can access the Internet. The box is operated by it's own hand held remote control unit, but an optional wireless keyboard is also available for use. WebPal's built-in 33.6Kbps modem lets you surf the net, through a regular voice grade telephone line, at very high speeds. Our product is more versatile than many others, e.g. you can use the Internet Service Provider we recommend or specify your own PPP/PAP or CHAP provider. The WebPal box contains its own built-in web browser, e-mail software, and windowed operating environment developed exclusively for embedded systems. Browser, e-mail, and operating system software are stored in flash (upgradeable) memory, so that software improvements can be downloaded to it from the Internet. WebPal's hardware is also designed for expansion and utility. It's 32-bit RISC multimedia Processor operates with standard 4Mb DRAM (SIMM upgradeable) memory. The WebPal front panel includes message, activity, and power indicators, a slot for future "smart" credit cards, and a window for receiving remote control signals. It's rear panel includes an input jack for the supplied 8-volt power adapter, a power on/off switch with reset button, and external ports for connecting an S-Video (S-VHS) or composite TV, TV audio cables, and telephone lines. There are also ports for connecting a VGA computer monitor, a standard PS/2 style computer keyboard and PS/2 mouse, and parallel (EPP, ECP) printer.

Wireless Keyboard

This Wireless Keyboard is a battery operated infrared device designed to work with the WebPal Internet Box. To operate the Keyboard, point the unit at the WebPal Internet Box and start typing or keying in the desired information.



Table with 2 columns: Product name, Price (ex vat, inc vat). Includes Internet Box.

Table with 2 columns: Product name, Price (ex vat, inc vat). Includes Keyboard.

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The 100Mb Power Diskette

Zip is 20 times as fast and offers 70 times the space of a traditional floppy.

- 100Mb and 25Mb capacity
- Affordable personal storage and backup
- Fast, Easy, Worry-free back-up
- Zip Tools software included
- Move your work easily to any location

Zip Drive Int retail	£55	£64.62	Zip Zoom Card	£25	£29.37
Zip Drive Int OEM	£49.95	£58.69	Zip 100Mb Disk	£7.49	£8.80
Zip Drive Ext	£79.95	£93.94	Zip Disk 6 Pack	£42	£49.35
Zip Drive SCSI	£79.95	£93.94			



The 100Mb ZipPlus Drive

ZipPlus drive is the easiest way and most economical way to expand your hard drive, move your files and backup

- Fast - up to 50 times faster than a floppy drive
- one drive fits all - only one version for SCSI and parallel port interfaces
- Lightweight universal power supply
- Great media software



Zip Plus Ext	£109	£128.07
Zip 10 pack multicoloured with Recordit software	£69	£81.08

Ditto 2Gb

Ditto 2Gb Int	£55	£64.62
Ditto 2Gb Ext	£95	£111.62



- Int version fits any standard 5.25" bay
- 2Gb with data compression
- Win 3.1, 95, NT and OS/2 Compatible
- Ext version sits horizontally or vertically

Ditto 2Gb Bundle consists of:

- One Ditto 2Gb tape drive - inc usual software etc.
- One large Ditto carry case. FREE!
- Three Ditto 2Gb pieces of media
- One Ditto NT driver. FREE!

Ditto 2Gb Bundle	£119	£139.83
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Ditto Max and Ditto Max Pro

Powerful desktop storage and tape backup in one simple device

- Customise capacity with 3.5Gb, 5Gb, 7Gb and 10" cartridges
- Back up while you work
- Easy 1-step software
- Flash!File - 5 second average access time
- FullBack system recovery software



Ditto Max Int	£89	£104.57	Ditto Max Pro Ext (10Gb)	£175	£205.62
Ditto Max Ext	£119	£139.83	Ditto Max Pro Int (10Gb)	£175	£205.62

The 1Gb Removable

Jaz has no limits. With 1Gb capacity per disk Jaz is revolutionising storage technology.

- 1Gb per disk, from less than 6p per MB
- 10-12 millisecond access time, faster than most HD
- Available as an Ext drive for Max portability
- Jaz Tools utility software



Internal	£159	£186.82
External	£174	£204.45
1Gb Jaz Cart	£49	£57.57

The 2Gb Removable

The Super-Fast, Extremely Vast personal storage Drive that gives you a whopping 2Gb per disk

- 2Gb of storage space on each Jaz cartridge
- Fast - 7.35Mb/s average transfer rate
- deal as a HD backup. Provides 4Gb capacity with 2.1 compression
- Complete set of software
- Packaged to suit you



Jaz 2Gb Int	£315	£370.12
Jaz 2Gb Ext	£369	£433.57



SparQ Your Imagination!



NEW! SparQ 1.0Gb drive... The "Personal Solution" is the latest from SyQuest! - a superb combination of performance and value, it's the ideal choice for small / home offices, business travellers, families, students, web surfers, gamers, presenters, and writers. Gain unlimited capacity at a fraction of the cost of buying an additional computer

- Backup your system in minutes!
- Store 1,000+ digital photos!
- 12ms access time, 512K buffer!
- Play games 2x faster than a CD!

SparQ 1.0GB Internal EIDE drive	£109	£128.07
SparQ 1.0GB External Parallel port	£109	£128.07
SparQ 1.0GB Cartridge - single	£25	£29.38
SparQ 1.0GB Cartridge - 3 pack	£49	£57.57
SparQ 1.0GB Cartridge - 10 pack	£179	£210.33

nexus



The internal SuperDisk drive from NEXUS Peripherals looks like a conventional floppy, yet is faster, smarter and more reliable. At 120MB, you get the capacity needed for today's multimedia environments - yet maintain read/write compatibility with 720KB and 1.44MB floppy diskettes; protecting your investment in the world's most popular removable media.

- 80 times the capacity of 1.44Mb floppy drives
- 5 times the speed of 1.44Mb floppy drives
- Up to 120Mb formatted capacity using LS-120 media
- Reads and writes 1.4Mb HD and 720KB
- 1" high, 3.5" form factor
- 565KB/ sec data transfer rate
- Industry standard ATAPI IDE interface

nexus LS-120 Ext	£89 ex vat	£104.57 inc vat
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nexus LS-120 Int	£69 ex vat	£81.07 inc vat
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LS-120 Disk	£9 ex vat	£10.58 inc vat
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FireBall EL - The NEW Super Fast HD!

With a 9.5ms access time and a 512kb buffer the enhanced performance of the new FireBall EL Series is an attractive option for those users wanting to attain near-SCSI performance through the IDE interface. Drives are available from 2.5GB to a massive 10.2GB.

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Fireball Stratus 3240 EL	2.5Gb	EIDE/Ultra DMA	9.5ms	5400	£94	£98.70
Fireball Stratus 4320 EL	5.1Gb	EIDE/Ultra DMA	9.5ms	5400	£118	£138.65
Fireball Stratus 6480 EL	7.6Gb	EIDE/Ultra DMA	9.5ms	5400	£148	£173.90
Fireball Stratus 8400 EL	10.2Gb	EIDE/Ultra DMA	9.5ms	5400	£194	£227.95

FireBall SE - The Choice for Power Users!

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Fireball Stratus 3240 SE	3.2Gb	EIDE/Ultra DMA	9.5ms	5400	£88	£103.40
Fireball Stratus 4320 SE	4.3Gb	EIDE/Ultra DMA	9.5ms	5400	£99	£116.33
Fireball Stratus 6480 SE	6.4Gb	EIDE/Ultra DMA	9.5ms	5400	£134	£157.45
Fireball Stratus 8400 SE	8.4Gb	EIDE/Ultra DMA	9.5ms	5400	£178	£209.15
Fireball Stratus 2160	2.1Gb	UltraSCSI	9.5ms	5400	£77	£90.48
Fireball Stratus 3240	3.2Gb	UltraSCSI	9.5ms	5400	£93	£109.28
Fireball Stratus 4320	4.3Gb	UltraSCSI	9.5ms	5400	£106	£124.55
Fireball Stratus 6480	6.4Gb	UltraSCSI	9.5ms	5400	£129	£151.58

Atlas III - Ideal for workstation and high-end Users!

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Atlas III	9.1Gb	SCAUSCSI	8ms	7200	£494	£580.45
Atlas III	9.1Gb	UltraWide SCSI	8ms	7200	£504	£592.20
Atlas III	18.2Gb	SCAUSCSI	8ms	7200	£839	£985.82
Atlas III	18.2Gb	UltraWideSCSI	8ms	7200	£789	£927.07

Viking - For Maximum Storage Potential!

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Viking II	4.5Gb	SCAUSCSI II	7.5ms	7200	£259	£304.32
Viking II	4.5Gb	UESCSI	7.5ms	7200	£259	£304.32
Viking II	9.1Gb	SCAUSCSI II	7.5ms	7200	£425	£499.37
Viking II	9.1Gb	UltraWide SCSI	7.5ms	7200	£439	£515.82

Bigfoot T-REX - For the personal computer user!

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Bigfoot TX	4.0Gb	EIDE/Ultra DMA 33	12ms	4000	£89	£104.57
Bigfoot TX	6.0Gb	EIDE/Ultra DMA 33	12ms	4000	£115	£135.12
Bigfoot TX	8.0Gb	EIDE/Ultra DMA 33	12ms	4000	£142	£166.85
Bigfoot TX	12Gb	EIDE/Ultra DMA 33	12ms	4000	£189	£222.07



**HEWLETT
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- HP COLORADO T3000I Internal 3.2GB
- T4000S Internal 8GB
- T4000ES External 8GB
- T4I 8GB Internal Streamer
- HP SURESTORE DAT PRODUCTS
- HP SURESTORE 2000I
- HP SURESTORE 2000E
- HP SURESTORE 5000I
- HP SURESTORE 5000E
- HP SURESTORE DAT 8i
- HP SURESTORE DAT 8E

ex vat	inc vat
£99	£116.32
£219	£257.32
£278	£326.65
£215	£252.62
£438	£514.65
£515	£605.12
£459	£539.32
£528	£620.40
£558	£655.65
£638	£749.65



Seagate

- All Tapestor products come with one free tape except Tapestor 3200ext parallel
- Seagate Tape Products**
- Tapestor 3200 INT TR3
 - Tapestor 3200 EXT Parallel
 - Tapestor 8000 INT SCSI
 - Tapestor 8000 INT IDE
 - Tapestor 8000 EXT SCSI
 - Scorpion STD 2400N 4GB
 - Scorpion STD 2800N 8GB

ex vat	inc vat
£89	£104.57
£109	£128.07
£185	£217.37
£159	£186.82
£225	£264.37
£344	£404.20
£448	£527.57



SyQuest

- SparQ 1.0Gb Internal EIDE
- SparQ 1.0Gb External Parallel
- SyJet 1.5Gb Parallel Port - Ext
- SyJet 1.5Gb SCSI - Ext
- SyJet 1.5Gb SCSI - Int
- SyJet 1.5Gb EIDE - Int
- EZFlyer 230Mb Parallel Port - Ext
- EZFlyer 230Mb SCSI - Ext
- EZFlyer 230Mb EIDE - Int
- SYQUEST MEDIA
- SparQ 1.0Gb Cartridge
- SyJet 1.5Gb Cartridge
- SyJet 1.5Gb Cartridge - 3 pack
- EZFlyer 230Mb Cartridge
- EZFlyer 230Mb Cartridge - 5 pack

ex vat	inc vat
£109	£128.07
£109	£128.07
£189	£222.07
£189	£222.07
£184	£216.20
£184	£216.20
£89	£104.57
£89	£104.57
£114	£133.95
£25	£29.38
£49	£57.57
£119	£139.82
£14.95	£17.57
£65	£76.37



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- Supported by all major BIOS providers
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- Fits virtually any computer chassis

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- Five times faster than standard 1.44Mb drives when using LS-120 diskettes
- Three times faster than standard drives when using existing 1.44Mb diskettes
- Interchange
- 120Mb interchange among LS-120 users
- Data interchange operations identical to existing diskettes - 120Mb/1.44Mb/720Kb
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- Can act as a Boot drive
- Viewed as Drive A for any diskette

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EIDE Hard Drives

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Medalist ST32122A	2.1Gb	EIDE/Ultra ATA3	12.5ms	4500	£75	£88.12
Medalist ST33232A	3.2Gb	EIDE/Ultra ATA3	10.5ms	4500	£85	£99.87
Medalist ST34342A	4.3Gb	EIDE/Ultra ATA3	14ms	4500	£99	£116.33
Medalist Pro ST36451A	6.4Gb	EIDE/Ultra ATA3	10.5ms	5400	£124	£145.70

SCSI Hard Drives

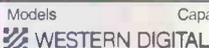
Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Cheetah ST34501N	4.5Gb	UltraSCSI	8ms	10000	£329	£386.58
Cheetah ST34501W	4.5Gb	UltraWideSCSI	8ms	10000	£339	£398.33
Cheetah ST19101N	9.0Gb	UltraSCSI	8ms	10000	£625	£734.38
Cheetah ST19101W	9.0Gb	UltraWideSCSI	8ms	10000	£625	£734.38
Barracuda ST32272N	2.2Gb	UltraSCSI	9ms	7200	£195	£229.13
Barracuda ST32272W	2.2Gb	UltraWideSCSI	9ms	7200	£209	£245.58
Barracuda ST34572N	4.5Gb	UltraSCSI	9ms	7200	£289	£339.58
Barracuda ST34572W	4.5Gb	UltraWideSCSI	9ms	7200	£314	£368.95
Barracuda ST19171N	9.0Gb	UltraSCSI	9ms	7200	£449	£527.58
Barracuda ST19171W	9.0Gb	UltraWideSCSI	9ms	7200	£459	£539.33



Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
00K0400	4.3Gb	EIDE/Ultra DMA/33	9.5ms	5400	£119	£139.82
09J0308	6.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	£139	£163.32
00K0394	8.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	£185	£217.37



Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
MPB3021	2.1Gb	Ultra DMA	10ms	5400	£79	£92.82
MPB3032	3.2Gb	Ultra DMA	10ms	5400	£89	£104.57
MPB3043	4.3Gb	Ultra DMA	10ms	5400	£99	£116.33
MPB3052	5.2Gb	Ultra DMA	10ms	5400	£119	£139.82
MPB3064	6.4Gb	Ultra DMA	10ms	5400	£135	£158.62



Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
AC22500-UD	2.5Gb	EIDE/Ultra DMA/33	12ms	5400	£89	£104.58
AC33200-UD	3.2Gb	EIDE/Ultra DMA/33	12ms	5400	£99	£116.33
AC34000-UD	4.0Gb	EIDE/Ultra DMA/33	12ms	5400	£109	£128.07
AC35000-UD	5.1Gb	EIDE/Ultra DMA/33	12ms	5400	£129	£151.57
AC36400-UD	6.4Gb	EIDE/Ultra DMA/33	12ms	5400	£145	£170.37



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- ATA power saving commands
- Supports EPA Energy Star standards (Green PC friendly)
- S.M.A.R.T. System Compliant

DiamondMax 2880 Series ULTRA DMA33

Capacity	Interface	Access time	Speed	ex vat	inc vat
2.8Gb	ULTRA DMA	9ms	5200	£84	£98.70
4.3Gb	ULTRA DMA	9ms	5200	£98	£115.15
5.7Gb	ULTRA DMA	9ms	5200	£109	£128.07
8.4Gb	ULTRA DMA	9ms	5200	£165	£193.87
11.5Gb	ULTRA DMA	9ms	5200	£224	£263.20

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graphics cards.

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AWE 64 GOLD £24 rebate available - call sales for details	£102	£119.85
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AWE 64 12Mb Memory Upgrade	£75	£88.13
AWE 64 24Mb Memory Upgrade	£124	£145.70
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Discovery 24X Kit	£88	£103.40
3D Blaster Voodoo 2 8Mb	£124	£145.70
3D Blaster Voodoo 2 12Mb	£144	£169.20
Creative 'Encore' DVD Kit (inc DXR2 Card)	£149	£175.08
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VideoBlaster RT300	£198	£232.65

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- Fast PCI data transfer for desktop applications
- Complete with Adaptec EZ-SCSI software



Adaptec AHA-2920	£88 ex vat	£103.40 inc vat
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AHA-2940AU / 2940UW kit PCI

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- Supports up to 7 SCSI devices including bootable Hard drives
- Supports Ultra SCSI (AHA-2940AU) & Ultra Wide SCSI (AHA-2940UW)
- Complete with Adaptec EZ-SCSI software

Adaptec AHA-2940AU	£139 ex vat	£163.32 inc vat
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Adaptec AHA-2940UW	£162 ex vat	£190.35 inc vat
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Other SCSI adapters

AVA-1505 kit ISA	£32	£37.60	AHA-2910 kit PCI	£64	£75.20
AHA-1542CP PnP bare ISA	£112	£131.60	AHA-3940U kit PCI	£244	£286.70
AHA-1542CP PnP ISA	£149	£175.07	AHA-3940UW kit PCI	£284	£333.70
AVA-2825 kit VLB	£74	£86.95	AAA-131 Ultra SCSI Array	£268	£314.90
AHA-2742 kit EISA	£214	£251.45	AAA-133 Ultra Wide RAID kit	£435	£511.13
AHA-2742W kit EISA	£234	£274.95	Adaptec SlimSCSI 1480 kit	£139	£163.32



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Pentium II 300MHz	£238	£279.65
Pentium II 333MHz	£306	£361.90
INTEL OVERDRIVE P100/133-186MMX	£95	£111.62
P75/120/150-180MMX	£129	£151.57
P100/133/166-200MMX	£148	£173.90

MOTHERBOARDS

SEE PAGE 27 for QDI / Micronics

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AX5 Pentium 430TX + 512k	£62	£72.85
PX5 Pentium 430TX + 512k	£49	£57.57
TX5 Pentium 430TX + 512k	£55	£64.62
INTEL ATX Lone Tree Pentium 430TX	£99	£116.32
Anchorage 430TX+ sound	£119	£139.82
Venus Pentium Pro 440FX	£112	£131.60
Portland Pentium II 440FX	£135	£158.62
Atlanta Pentium II 440LX	£99	£116.32
Pentium II 440LX + sound	£119	£139.83
Dual Pentium Pro 440FX	£298	£350.15
Redwood R440LX	£365	£428.88

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ADAPTEC SCSI AHA-1505 kit ISA	£32	£37.60
AHA-1542CP PnP bare ISA	£112	£131.60
AHA-1542CP PnP ISA	£149	£175.07
AVA-2825 kit VLB	£74	£86.95
AHA-2742 kit EISA	£214	£251.45
AHA-2742W kit EISA	£234	£274.95
AHA-2910 kit PCI	£64	£75.20
AHA-2920 kit PCI	£88	£103.40
AHA-2940U kit PCI	£139	£163.32
AHA-2940UW kit PCI	£162	£190.35
AHA-3940U kit PCI	£244	£286.70
AHA-3940UW kit PCI	£284	£333.70
AAA-131 Ultra SCSI Adapter	£268	£314.90
AAA-133 Ultra Wide RAID kit	£435	£511.13
Adaptec SlimSCSI 1480 kit	£139	£163.32

KEYBOARDS

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MITSUMI 105 Key Windows 95	£9	£10.57
105 Key Windows 95 PS/2	£9	£10.57
CHERRY 105 Key W 95 Soft Touch	£16	£18.80
105 Key W 95 PS/2 Soft Touch	£16	£18.80
105 Key W 95 Non-Click	£22	£25.85
105 Key W 95 PS/2 Non-Click	£25	£29.37
105 Key W 95 Click	£34	£39.95
MICROSOFT Natural Windows 95	£40	£47.00

MICE

	ex vat	inc vat
MICROSOFT Home	£15	£17.62
Easyball Trackball	£19	£22.33
Intellipoint	£22	£25.85
IntelliMouse	£31	£36.42
Intellipoint Trackball	£32	£37.60
MITSUMI 2button Serial	£5	£5.87
LOGITECH Pilot (Serial or PS/2)	£14	£16.45
MouseMan+ (scrolling mouse)	£24	£28.20
Trackman Portable	£32	£37.60
Trackman Marble	£42	£49.35
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MouseMan 96 Combo	£26	£30.55
MouseMan Cordless Pro	£35	£41.12
GENIUS NetMouse Pro (scroll mouse)	£14	£16.45

JOYSTICKS

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CH PRODUCTS Flight Stick	£26	£30.55
Flight Stick Pro	£44	£51.70
F-16 Flight Stick	£34	£39.95
F-16 Combat Stick	£54	£63.45
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Sidewinder GamePad	£23	£27.03
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Sidewinder Precision Pro	£35	£41.13
Sidewinder Force Feed Pro	£78	£91.65
GENIUS F-20 Flight 2000 with SU-27	£19.5	£22.91

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CREATIVE LABS SoundBlaster 16 Value Non IDE	£27	£31.72
SoundBlaster AWE 64 Value	£54	£63.45
SoundBlaster AWE 64 Gold	£102	£119.85
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PCI Wavetable Sound Card	£27	£31.73
VIDEOLÓGIC SonicStorm PCI Wavetable	£49	£57.58
GENIUS SoundMaker 3DX PnP	£19	£22.33

SPEAKERS

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LABTEC LCS-800 5W	£18	£21.15
LCS-1014 4W	£19	£22.33
LCS-1020 10W	£25	£29.38
LCS-1224 10W 3D	£39	£45.82
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LCS-3210 20W 3D	£49	£57.58
LCS-2612 20W 3D & Subwoofer	£59	£69.32
TYPHOON 25W	£9	£10.57
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80W Subwoofer	£35	£41.12
Headphones	£8	£9.40
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CASES

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Whale AT Desktop	£33	£38.77
Whale AT Mini Tower	£31	£36.42
Whale AT Midi Tower	£35	£41.12
Whale AT Full Tower	£59	£69.32
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Xpert@work 8Mb PCI Retail	£119	£139.82
Xpert@work 4Mb PCI OEM	£49	£57.57
Xpert@work 8Mb PCI OEM	£65	£76.37
Xpert@play 4Mb PCI Retail	£105	£123.37
Xpert@play 8Mb PCI Retail	£129	£151.58
Xpert@play 4Mb PCI OEM	£59	£69.33
Xpert@play 8Mb PCI OEM	£75	£88.12
Xpert@work 4Mb AGP OEM	£53	£62.27
Xpert@work 8Mb AGP OEM	£69	£81.07
Xpert@play 4Mb AGP OEM	£63	£74.02

Xpert@play 8Mb AGP OEM	£79	£92.82
CREATIVE LABS 3D Blaster Voodoo 2 8Mb	£124	£145.70
3D Blaster Voodoo 2 12Mb	£144	£169.20
DIAMOND Monster 3D	£63	£74.02
Viper V330	£54	£63.45

SEE PAGE 13 FOR FULL LISTING ON DIAMOND GRAPHICS CARDS

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Terminator 3D/DX	£56	£65.80
Terminator 3D/DX	£64	£75.20
Thriller 3D 4Mb PCI	£119	£139.82
Thriller 3D 8Mb PCI	£165	£193.80
Thriller 3D 4Mb AGP	£129	£151.57
Thriller 3D 8Mb AGP	£179	£210.32
Dynamite 3D/GL 4Mb PCI	£129	£151.57
Dynamite 3D/GL 8Mb PCI	£169	£198.55
Dynamite 3D/GL 4Mb AGP	£139	£163.33
Dynamite 3D/GL 8Mb AGP	£179	£210.32
Stingray 128/3D	£149	£175.07
Stingray 128/3D + TV out	£179	£210.32

MATROX - SEE PAGE 14

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Mystique 220 4Mb PCI OEM	£49	£57.58
Millennium II 4Mb OEM	£69	£81.07
Millennium II 8Mb Retail	£115	£135.12
Millennium II 4Mb Retail	£89	£104.57
Millennium II 8Mb OEM	£99	£116.33
m3D Accelerator	£37	£43.47
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ORCHID Righteous 3D	£79	£92.82

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	ex vat	inc vat
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WinTV Radio PCI	£89	£104.57
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Pentium II 266MHz	£158	£185.65
Pentium II 300MHz	£238	£279.65
Pentium II 333MHz	£308	£361.90

		ex vat	inc vat
Pentium 100, 133	Pentium OverDrive 166 W/MMX	£95	£111.62
Pentium 75	Pentium OverDrive 150 W/MMX	£128	£150.40
Pentium 90, 120, 150	Pentium OverDrive 180 W/MMX	£128	£150.40
Pentium 100, 133, 166	Pentium OverDrive 200 W/MMX	£148	£173.90

*200MHz Pentium OverDrive processor with MMX Technology are designed for upgradeable socket 7 systems

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Finance Available
see page 3 for example.



Formula 1 performance

New Intel 440BX Chipset



- P6BX-A Pentium II 133MHz Bus
 - Intel 440BX Chipset
 - 233-450MHz Pentium II
 - Memory: 3x DIMM (PC-100 spec)
 - AGP Slot
 - 3x ISA, 3x PCI Slots
 - ATX Form factor
- £119 ex vat**
£139.82 inc vat

- Intel I740 8Mb SDRAM AGP Card
- £69 ex vat**
£81.07 inc vat

- P5SD-B Super Socket 7 100MHz Bus
 - All CPU's 100-300MHz & Upwards
 - 512KB PBS Cache
 - AGP Slot
 - Memory: 2x DIMM 4x SIMM
 - 3x ISA, 3x PCI Slots
 - Baby-AT Form factor
- £69 ex vat**
£81.07 inc vat



PX5 Pentium MMX
AX5 Pentium MMX

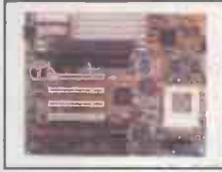
£49	£57.57
£55	£64.62



LX 6 Motherboard

- Jumperless Pentium II 440LX chipset motherboard
- 4X DIMM sockets, 4X PCI slots, 3X ISA slots
- Supports Ultra DMA/33 and AGP
- 512Mb max onboard memory
- ATX form factor

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TX 5 Motherboard

- Jumperless Pentium and Pentium MMX
- Intel 430 TX chipset
- 2X DIMM sockets, 4X SIMM sockets, 4X PCI slots, 3X ISA slots
- Supports Ultra DMA/33 and ACPI
- 256Mb max onboard memory
- Baby AT form factor

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MICRONICS

TIGERCAT

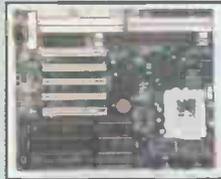
- Supports Intel PII 233-300 Mhz VRM integrated
- Intel 440LX chipset
- 4 PCI slots, 2 ISA slots
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- ATX form factor with PS2 style keyboard/mouse connectors



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- Supports Intel 75 200mhz Intel MMX 166-233 (Integrated VRM), Cyrix, AMD K5 / K6
- Intel 440TX chipset
- 4 PCI slots, 4 ISA slots
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- 6 (ATX) 4 (AT) x 72 pin SIMMS, 2 x 3.3v unbuffered DIMMS, Max memory 256Mb
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TWISTER ATX
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- Supports Dual Intel PII233-300 Mhz
- Intel 440LX chipset
- 1 AGP Slot
- Supports Ultra DMA 3Mb
- 4 PCI, 2 ISA slots
- 4 x 3.3v unbuffered DIMM
- Sound Blaster compatible 16-bit stereo...
- 1Gb max memory



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Tech Direct are delighted to offer the full range of Micronics high quality motherboards. These boards offer a comprehensive choice right up to the top-of-the-range "Duel Fortress". Your motherboard is the very heart of your system so ensure you choose the best on the market - MICRONICS!!



Legend V Motherboard

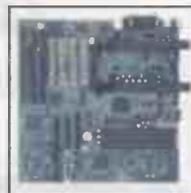
- Intel PII processor up to 333MHz
- 1x AGP, 4x PCI, 3x ISA slots
- Supports IrDA, USB, ACPI
- Intelligent monitoring system for system voltage, temperature, chassis intrusion and fan speed (optional)
- DMI compliance and built-in NCR 53C810 BIOS support
- SpeedEasy for jumperless CPU upgrade or jumper emulation mode
- Supports Win 95 software Power-Down



QDI Legend V
£75 ex vat £88.12 inc vat

Legend IV Motherboard

- Dual PII processor up to 333MHz
- AGP, onboard Adaptec SCSI, onboard Intel LAN
- Supports IrDA, USB, ACPI
- Intelligent monitoring system for system voltage, temperature, chassis intrusion and fan speed (optional)
- DMI compliance and built-in NCR 53C810 BIOS support
- Supports Win 95 software Power-Down



QDI Legend IV
£299 ex vat £351.32 inc vat

Titanium II Motherboard

- Supports Intel Pentium/Pentium MMX, AMD K5/K6 and Cyrix processors up to 233MHz
- 2X DIMM sockets, 4X SIMM sockets
- Supports IrDA, USB, ACPI
- Intelligent monitoring system for system voltage, temperature, chassis intrusion and fan speed (optional)
- 4X PCI slots 4X ISA slots
- SpeedEasy for jumperless CPU upgrade or jumper emulation mode
- Supports Win 95 software Power-Down
- ATX form factor



QDI Titanium II
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P61440LX/DP Legend IV (Dual PII)	£299	£351.32
P61440LX Legend V (PII)	£89	£104.57
P51430TX-250 Titanium IB (PMMX)	£64	£75.20
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3C-900TPO RJ45 PCI bare card	£39		£45.82	
3C-900 Combo PCI bare card	£59		£69.32	
3C-905 10/100 PCI bare card	£45		£52.87	
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3C-509B Combo ISA	£75		£88.12	
3C-509B RJ45 PCI	£65		£76.37	
3C-900 Combo PCI	£75		£88.12	
3C-905 10/100 PCI	£55		£64.62	
3C-575TX 10/100 PCMCIA cardBus	£89		£104.57	
3C-589 RJ45 PCMCIA	£79		£92.85	
3C-589 Combo PCMCIA	£105		£123.37	
3C-592 Combo EISA	£135		£158.62	
3C-597TX 10/100 EISA	£159		£186.82	
3C-563 RJ45 & 33k6 Modem PCMCIA	£175		£205.62	
3C-563 Combo/33k6 Modem PCMCIA	£199		£233.82	
TECH DIRECT				
Combo ISA PnP	£11.5		£13.51	
Combo PCI	£14.5		£17.03	
10/100 PCI	£25		£29.37	
Combo PCMCIA	£45		£52.87	
DLINK				
DE-220PCT Combo ISA PnP	£16		£18.80	
DE-530CT Combo PCI	£21		£24.67	
DFE-500TX 100Mb PCI	£31		£36.42	
DE-660TX Combo PCMCIA	£42		£49.35	
DE-620CT Combo Parallel	£71		£83.43	
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16bit Combo PnP	£20		£23.50	
32bit Combo PCI	£25		£29.37	
10/100 PCI	£42		£49.35	
Pocket Parallel	£46		£54.05	
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Combo PCMCIA	£105		£123.37	
RJ45 Ethernet & 33k6 Modem PCMCIA	£219		£257.32	
Combo Ethernet, 33k6 Modem PCMCIA	£249		£292.57	
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Ether Express Pro 10+ Combo PCI	£65		£76.37	
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Ether Express Pro 100 EISA	£165		£193.87	
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GoldCard Combo PCMCIA	£85		£99.87	
GoldCard Combo/V34 Modem PCMCIA	£199		£233.82	
SMC				
8416BT EtherEZ Combo ISA PnP	£39		£45.82	
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Combo Parallel	£189		£222.07	
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Combo PCMCIA (10/100 upgradeable)	£85		£99.87	
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3C16701 8TPC 8port	£68		£79.90	
3C16710 8TPM 8port	£23		£27.37	
3C16720 8TP100 8port 100TX	£39		£45.07	
3C16702 16TPC 16port	£129		£151.57	
SuperStack II				
3C18580 Dual Speed 12port	£739		£868.92	
3C18591 Dual Speed 24port	£1169		£1373.5	
3C18670A 12port	£275		£323.12	
3C18671A 24port	£475		£558.12	
3C250TX 12port 100TX	£1075		£1263.12	
BAY NETWORKS NETGEAR				
EN104UK 4port	£39		£45.82	
EN108UK 8port & AUI	£49		£57.57	
EN116UK 16port & AUI	£129		£151.57	
EN308UK 8port & BNC & AUI	£79		£92.85	
EN316UK 16port & BNC & AUI	£159		£186.82	
FE104UK 4port 100Mb	£149		£175.07	
GENIUS				
GH4080 8port	£59		£69.32	
GH4160 16port	£99		£116.32	
GH4080R 8port 100TX	£399		£468.82	
GH4120R 12port 100TX	£585		£687.37	
FE508UK 8port 100baseTX	£289		£339.57	
FE516UK 16port 100baseTX	£529		£621.57	
£899		£1056.32		
TECH DIRECT				
5port	£30		£35.25	
8port	£45		£52.87	
16port	£95		£109.87	
8port 100TX	£175		£205.62	
DLINK				
DE805TP 5port	£29		£34.07	
DE905 2 User starter kit	£59		£69.32	
DE809TC 8port & BNC	£39		£45.82	
DE809TP 8port	£49		£57.57	
DE812P+ 12port	£75		£88.12	
DE816TP16port	£89		£104.57	
DE824TP 24port	£129		£151.57	
DE1812 12port	£175		£205.62	
DE1824 24port	£219		£257.32	
DFE808TX 8port 100TX	£415		£487.62	
DFE812TX 12port 100TX	£399		£468.82	
DFE816 16port 100TX	£52		£61.10	
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3616TC-EZ EtherEZ 16TC 16port	£392		£460.60	
5208TX-EZ EtherEZ 8port 100TX	£370		£445.32	
FMS II 12port	£679		£787.25	
FMS II 24port	£1029		£1209.32	
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3C16406 Port Switch 24port	£379		£445.32	
3C16901A Switch 1000 12port	£949		£1115.07	
3C16900A Switch 1000 24port	£1379		£1620.32	
3C16941A Switch 3000TX 18port	£1635		£1921.12	
3C16942A Switch 3000TX 12port	£1969		£2313.57	
BAY NETWORKS NETGEAR				
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SW507UK 7port 10/100	£679		£797.82	
DLINK				
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DES810 10port 10/100	£335		£374.62	
DES1004 4port N-Way	£399		£468.82	
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DES2205 5port 10/100	£545		£640.37	
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APC also offer another range of UPS's which Tech direct are able to offer at exceptionally competitive prices. Please call us for any technical information on the BackUPS range shown below.

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GH4080 Mini 8pt, 1xBNC	£43.95	£51.64
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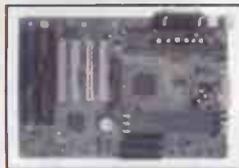
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NEW !! K6-3D Processors - call for pricing!

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All prices exclude VAT

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- Intel PII processor up to 333MHz
- 1x AGP, 4x PCI, 3x ISA slots
- Supports IRDA, USB, ACPI
- Intelligent monitoring system for system voltage, temperature, chassis intrusion and fan speed (optional)
- DMI compliance and built-in NCR 53C810 BIOS support
- SpeedEasy for jumperless CPU upgrade or jumper emulation mode
- Supports Win 95 software Power-Down

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£104.58 inc vat

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£163.33 inc vat

Offer Price: £220 ex vat
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- 16Mb DIMM
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FREE	

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MultiMedia PC's

Entry Level

- PII LX Chipset Chaintech Motherboard
- Quality Midi Tower ATX Case
- 32Mb Sync DIMM
- 3.2Gb UltraDMA Hard Disk Drive
- ATI 3D Charger 4Mb Graphics Card
- Creative SoundBlaster 16 Sound Card
- 24 Speed CD ROM, 120 watt Speakers
- Keytronic Keyboard, Logitech Mouse
- Lotus Smartsuite, Hyperblade Game
- Windows 95 & Norton AntiVirus
- 3 year Labour Warranty
- 1 year Collect/Return Parts & Labour Warranty



Mid Range

- PII LX Chipset Chaintech Motherboard
- Quality Midi Tower ATX Case
- 32Mb Sync DIMM
- 4.3Gb UltraDMA Hard Disk Drive
- Diamond Stealth 3D AGP 4Mb Graphics Card
- Creative SoundBlaster 16 Sound Card
- DTEC 56K Modem Internal
- 24 Speed CD ROM, 120 watt Speakers
- Keytronic Keyboard, Logitech Mouse
- Lotus Smartsuite, Hyperblade Game
- Windows 95 & Norton AntiVirus
- 3 year Labour Warranty
- 1 year Collect/Return Parts & Labour Warranty



	inc. 15" Monitor	17" Monitor
PII 233	£769	£903.57
PII 266	£909	£950.57
PII 300	£899	£1056.32

	inc. 15" Monitor	17" Monitor
PII 233	£835	£981.12
PII 266	£875	£1028.12
PII 300	£969	£1138.57

High End

- PII LX Chipset Chaintech Motherboard
- Quality Midi Tower ATX Case
- 64Mb Sync DIMM
- 4.3Gb UltraDMA Hard Disk Drive
- Creative SoundBlaster AWE64V Sound Card
- ATI@Work AGP 4Mb Graphics Card
- DTEC 56K Modem Internal
- 24 Speed CD ROM, 320 watt Speakers
- Keytronic Keyboard, Logitech Mouse
- Lotus Smartsuite, Hyperblade Game
- Windows 95 & Norton AntiVirus
- 3 year Labour Warranty
- 1 year Collect/Return Parts & Labour Warranty



Super High End

- PII LX Chipset Chaintech Motherboard
- Quality Midi Tower ATX Case
- 64Mb Sync DIMM
- 6.4Gb UltraDMA Hard Disk Drive
- Creative SoundBlaster AWE64V Sound Card
- ATI@Work AGP 8Mb Graphics Card
- DTEC 56K Modem Internal
- 24 Speed CD ROM, 320 watt Speakers
- Keytronic Keyboard, Logitech Mouse
- Lotus Smartsuite, Hyperblade Game
- Windows 95 & Norton AntiVirus
- 3 year Labour Warranty
- 1 year Collect/Return Parts & Labour Warranty



	inc. 15" Monitor	17" Monitor
PII 233	£929	£1091.57
PII 266	£969	£1138.57
PII 300	£1059	£1244.32

	inc. 15" Monitor	17" Monitor
PII 233	£979	£1150.32
PII 266	£1019	£1197.32
PII 300	£1119	£1314.82

Work Station PC's

Entry Level

- PII LX Chipset Chaintech Motherboard
- Quality Midi Tower ATX Case
- 32Mb Sync DIMM
- 2.5Gb UltraDMA Hard Disk Drive
- ATI 3D Charger 2Mb Graphics card
- 24 Speed CD ROM
- Keytronic Keyboard, Logitech Mouse
- Lotus Smartsuite, Hyperblade Game
- Windows 95 & Norton AntiVirus
- 3 year Labour Warranty
- 1 year Collect/Return Parts & Labour Warranty



	inc. 15" Monitor	17" Monitor
PII 233	£719	£844.82
PII 266	£759	£891.82
PII 300	£849	£997.57

High End

- PII LX Chipset Chaintech Motherboard
- Quality Midi Tower ATX Case
- 64Mb Sync DIMM
- 4.3Gb UltraDMA Hard Disk Drive
- Diamond Stealth 3D AGP 4Mb Graphics Card
- 24 Speed CD ROM
- Keytronic Keyboard, Logitech Mouse
- Lotus Smartsuite, Hyperblade Game
- Windows 95 & Norton AntiVirus
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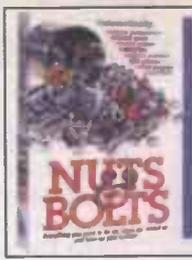
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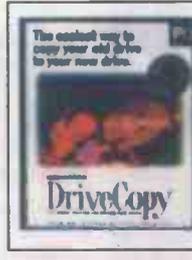


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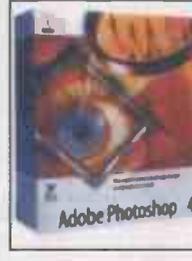
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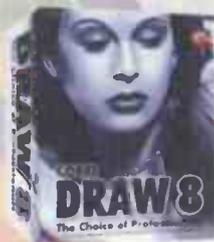


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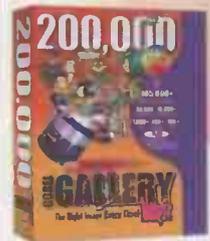
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Office 98 SBE	-	-	-
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- Visual J++ 1.1
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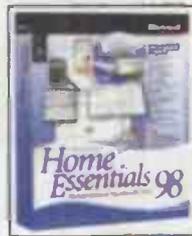
Visual Basic 5	£60	£70.50	£34	£39.95	£34	£39.95
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Visual J++ 1.1	£60	£70.50	£34	£39.95	-	-
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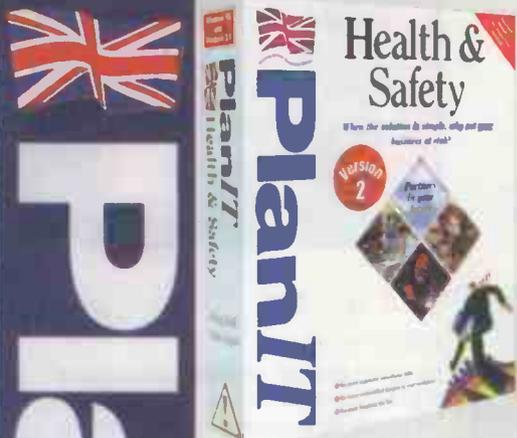
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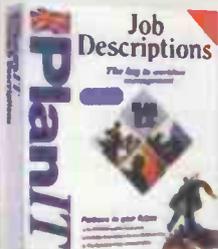
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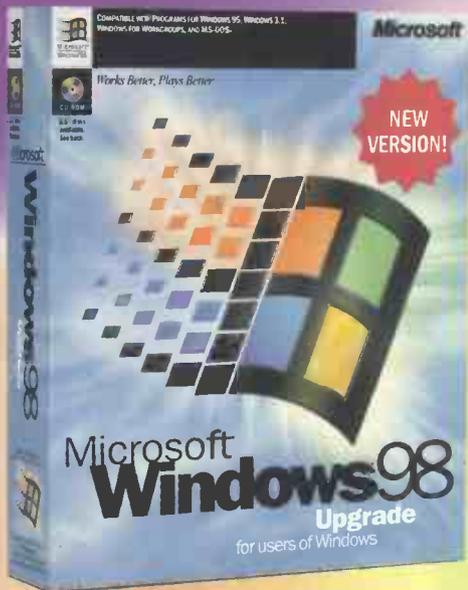
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FEATURES INDEX

3Com	p11, 13, 42
Abit	p16
Acer	p11, 13, 37
ADI	p32
Agfa	p39
Amacom	p22
APC	p12
ATI	p28
Autodesk	p62
Avro Pacific	p43
Baraka	p59
Belinea	p31
Borland	p63
Brother	p44 - 45
Canon	p53
Casio	p40
CD Revolution	p21
Chaintech	p16
Claris	p56
Computer Connections	p21
Connectix	p41, 58
Corel	p63
Creative Labs	p23
CTX	p34
Dacom	p43
Dabs	p22
Dabs PC Systems	p4 - 7
Daewoo	p31
Diamond	p30, 42
Dr Solomans	p63
Epson	p36, 54
Evergreen	p17
Fujitsu	p10, 39
Hayes	p43
Hewlett Packard	p22, 26, 37, 44, 48 - 50
Hitachi	p32
HP Card	p27
IBM	p15, 19
Iiyama	p31
IMSI	p57
Intel	p12
Intuit	p59
Iomega	p25
Kingston	p8
Kodak	p40
Kyocera	p46
Leaf	p15
Lexmark	p55
LG	p35
Matrox	p28
Maxtor	p15
Micronics	p16
Microsoft	p60 - 61
Microtek	p38
Mitsubishi	p34
Mitsumi	p23
Modular Technology	p40, 42
Multitech	p43
Mustek	p39
Nexus	p24
Nikon	p37
Nokia	p34
Nomai	p21
Ok!	p51
Olivetti	p52
Orange	p56
Orchid	p28
Pace	p42
Panasonic	p24
Philips	p31
Plexor	p22
Princeton	p32, 34
PS Group	p52
Psion	p10
QMS	p55
Quantum	p15
Ricoh	p22
Samsung	p35
Sanyo	p41
Seagate	p15
STB	p30
SuperMicro	p18
Syquest	p26
Tally	p45
Targus	p11
Taxan	p34
Toshiba	p9
Traxdata	p22
Twinhead	p2
Umax	p36
Videologic	p28
Viewsonic	p35
Visioneer	p39
Wacom	p40
Waitec	p22
Xerox	p43, 47
Xircom	p12

INTRODUCTION



Welcome to the July issue of Direct Focus. As always in summer business is quieter so we have some mega-deals. Checkout our Acer laptops and the new STB Nitro DVD cards. The catalogue increases this month to 64 pages due to our continued expansion.

The long awaited launch of Windows 98 has been announced as 25th June, but the release for PC manufacturers has not been clarified at the time of writing. Please phone for full details, or check the news pages on www.dabs.com

David Atherton

David Atherton, Managing Director, Dabs Direct PLC
da@dabs.com

OPENING TIMES

	GENERAL SALES	COUNTER	OTHER DEPTS
Monday	08.00 - 19.00	09.00 - 17.00	09.00 - 17.00
Tuesday	08.00 - 19.00	09.00 - 17.00	09.00 - 17.00
Wednesday	08.00 - 19.00	09.00 - 17.00	09.00 - 17.00
Thursday	08.00 - 19.00	09.00 - 17.00	09.00 - 17.00
Friday	08.00 - 17.00	09.00 - 17.00	09.00 - 17.00
Saturday	09.00 - 15.00	10.00 - 15.00	Closed
Sunday	Closed	Closed	Closed

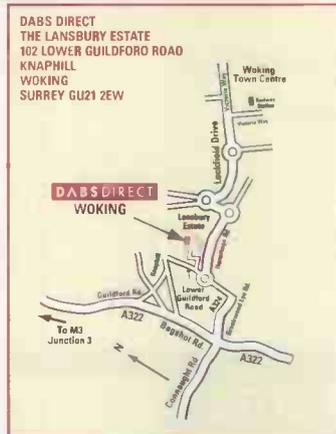
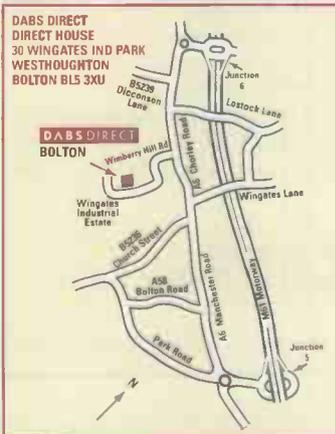
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HOW TO FIND US



DIRECT focus

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If you have any comments or suggestions about Direct Focus please write to me at the Bolton address or email me on:
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CONTENTS

DABS DIRECT PC SYSTEMS

p4-7

PC PERIPHERALS & SOFTWARE

Branded PCs	p4 - 8, 10
Buy Now Pay 1999	p6
Cables/Connectors	p55
Carry Cases	p11
Cartridges/Discs/CDs	p20, 55
Cases	p17
CD Recorders / CD ReWriters	p20, 21 - 23
CD-Rom / DVD Drives	p20, 21 - 23
Consumables	p55
Credit Card - IT Purchases	p27
Data Switches	p55
Digital Cameras	p40 - 41
Dot Matrix Printers	p52
Fax	p44, 51
Graphics Tablets	p40
Handhelds	p10 - 11
Hard Discs	p14 - 15
Inkjets	p49, 52 - 55
Interface Cards	p21, 23
ISDN Adaptors	p42 - 43
Joysticks	p23
Keyboards	p15, 17, 23
Lasers	p45 - 51, 55
Memory	p8
Mice	p15, 17
Mobile Phones	p56
Modems	p15, 42 - 43
Monitors	p15, 31 - 35
Motherboards	p15 - 18
Multifunction Devices	p43 - 44
Multimedia Cards	p15
Network Cards	p12 - 13, 15
Network Hubs	p12 - 13
Network Routers	p11 - 13
Network Switches	p12 - 13
Plotters	p47
Portables	p2, 8 - 9, 11
Printer Servers	p11
Processors	p17 - 19
Projectors	p41
Removable Drives / Streamers	p21, 24 - 26
Scanners	p36 - 39
Software	p56 - 63
Sound Cards	p15, 23
Speakers	p15, 23
Stationery	p52
Support packs	p50
Terminals	p47
UPS	p11 - 12
Video Cards	p15, 28 - 30
Video Conferencing	p40 - 41

FEATURES

Customer Services	p27
Order Form	p48

IMPORTANT NUMBERS

EDINBURGH Sales	0131-556 4114
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Apple & MacOS Sales	0870 129 3040
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- 16Mb SDRAM Memory (Expandable)
- Seagate 2.1Gb UltraDMA Hard Disk Drive
- Dabs 24x EIDE CD Drive
- Dabs 2Mb PCI Graphics Card
- Mitsumi 1.44Mb Floppy Disk Drive
- Belinea 14" Digital SVGA Monitor
- Mitsumi 105 Key Windows 95 Keyboard
- Mitsumi Serial Mouse
- Dabs 16bit ISA RJ45/BNC Network Card
- Microsoft Windows 95
- Lotus SmartSuite 97
- Multimedia upgrade option (Sound Card & Speakers) add £25 (£29.38)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)



DABS Atlantis Value

Multimedia Internet Ready Mini Tower PC

- Mini Tower AT Case
- Abit PX5 Intel 430TX Chipset Motherboard
- 512Kb Pipeline Burst Cache Memory
- Intel Pentium 233MHz Processor with MMX technology
- 16Mb SDRAM Memory (Expandable)
- Seagate 2.1Gb UltraDMA Hard Disk Drive
- Dabs 33.6Kbps Internal Voice/Data/Fax Modem (inc 1 months free Internet Access)
- Dabs 24x EIDE CD Drive
- Dabs 2Mb PCI Graphics Card
- Pine Schubert 3D Max 16bit Sound Card
- Mitsumi 1.44Mb Floppy Disk Drive
- Belinea 14" Digital SVGA Monitor
- Mitsumi 105 Key Windows 95 Keyboard
- Mitsumi Serial Mouse
- Logic3 20w Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)



£519 (£609.82)



£559 (£656.82)



Prices shown in brackets are inclusive of VAT

Dabs PC Systems

As we eagerly await the launch of Microsoft® Windows 98 at the end of June; all Dabs PCs are sold this month with a version of Windows 95 which allows you (via a voucher) to upgrade free to Windows 98 upon it's release.

Prices have continued to fall in line with Intel's strategy to make Pentium II an affordable option for the first time PC buyer. Check out our Atlantis range to see just how much you can now get for your money.

Our Professional range of machines on pages 6 and 7 includes 64Mb memory and AGP graphics as standard to give you the ultimate in power and performance.

With so many options now available, Dabs are happy to offer custom built machines. Our highly trained sales team will be pleased to help you select a model tailored to suit your individual requirements.

We want you to be totally satisfied with the PC you have chosen and ensure that it meets all your requirements now and in

the future. All models offer the latest in today's technology and are designed to be fully expandable to keep up with industry developments.



Karen Lucas
Karen Lucas
PC Business Manager
klucas@dabs.com



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- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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PERSONAL COMPUTER SYSTEMS

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Atlantis Family

Multimedia Internet Ready Pentium II PC

- Mini or Midi Tower ATX Case
- Intel 440EX Chipset Motherboard
- No Cache Memory
- Intel Pentium II 266MHz Celeron Processor with MMX
- 32Mb SDRAM Memory (Expandable)
- Seagate 3.2Gb UltraDMA Hard Disk Drive
- Dabs 33.6Kbps Internal Voice/Date/Fax Modem (inc 1 months free Internet Access)
- Dabs 24x EIDE CD Drive
- Dabs 4Mb AGP Graphics Card
- Pine Schubert 3D Pro 16bit Sound Card
- Mitsumi 1.44Mb Floppy Disk Drive
- Belinea 15" Digital SVGA Monitor
- Mitsumi 105 Key Windows 95 PS/2 Keyboard
- Mitsumi PS/2 Mouse
- Logic3 Joystick
- Logic3 30w Active Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)



£699 (£821.32)

Atlantis Value / WS

* 3.2 UltraDMA HDD	£10	(£11.75)
* 4.3 UltraDMA HDD	£20	(£23.50)
* 6.4 UltraDMA HDD	£55	(£64.62)
* 32Mb SDRAM Memory	£13	(£15.27)
* 64Mb SDRAM Memory	£40	(£47.00)
* Belinea 15" Digital monitor	£23	(£27.02)
* Belinea 17" Digital monitor	£110	(£129.25)
* ADI E40 15" Digital monitor	£46	(£54.05)

PCMA MEMBER
 Dabs Direct are a responsible member of the industry's trade association. We were a founder member of the "Personal Computer Association", and abide by their terms & conditions.

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Atlantis Family

* 4.3 UltraDMA HDD	£10	(£11.75)
* 6.4 UltraDMA HDD	£45	(£52.87)
* 8.6 UltraDMA HDD	£89	(£104.57)
* 64Mb SDRAM Memory	£28	(£32.90)
* 128Mb SDRAM Memory	£106	(£124.55)
* Belinea 17" Digital monitor	£86	(£101.05)
* ADI E40 15" Digital monitor	£20	(£23.50)

Atlantis Home Office

* 6.4 UltraDMA HDD	£34	(£39.95)
* 8.6 UltraDMA HDD	£79	(£92.82)
* 64Mb SDRAM Memory	£28	(£32.90)
* 128Mb SDRAM Memory	£106	(£124.55)
* Belinea 17" Digital monitor	£86	(£101.05)
* ADI E40 15" Digital monitor	£20	(£23.50)

Atlantis Home Office

Home Office Pentium II PC with Printer

- Mini or Midi Tower ATX Case
- Abit AH6 Intel 440LX Chipset Motherboard
- 512Kb On Chip Cache Memory
- Intel Pentium II 266MHz Processor with MMX Technology
- 32Mb SDRAM Memory (Expandable)
- Seagate 4.3Gb UltraDMA Hard Disk Drive
- Dabs 56Kbps Internal Voice/Date/Fax Modem (inc 1 months free Internet Access)
- Dabs 24x EIDE CD Drive
- Dabs 4Mb AGP Graphics Card
- Pine 32 PCI Sound Card
- Mitsumi 1.44Mb Floppy Disk Drive
- Belinea 15" Digital SVGA Monitor
- Mitsumi 105 Key Windows 95 PS/2 Keyboard
- Mitsumi PS/2 Mouse
- Logic3 30w Active Speakers & Logic3 Joystick
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)
- Canon BJC-250 A4 Colour Inkjet Printer



£859 (£1009.32)

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If for any reason you are not completely satisfied with your Dabs PC, you may return it for a full refund up to 14 days after delivery. You do not have to give a reason for the return, simply call our customer service department (01942 794020) and ask for a returns number under the 14-day guarantee.

1. The guarantee applies to the PC, monitor, keyboard and any bundled software offered as standard, and not to any printer, other software or other items ordered at the same time.
2. The PC and monitor must be returned correctly and securely packed in the original packing as delivered. It must be undamaged, and all parts (manuals, bags etc.) must be included
3. You are responsible for the return freight and delivery. We can arrange collection which will cost £10+VAT.

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- AMD K6 300MHz Processor with MMX technology
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- Dabs 32x EIDE CD Drive
- Dabs 56Kbps Internal Voice/Date/Fax Modem including 1 months free Internet Access
- Matrox Productiva 8Mb AGP Graphics Card
- Creative Labs SoundBlaster AWE-64 Value Sound Card
- Mitsumi 1.44Mb Floppy Disk Drive
- ADI E40 15" Digital Monitor
- Cherry Soft Touch Windows 95 105 Key PS/2 Keyboard
- Microsoft PS/2 Mouse
- Labtec LCS-1020 10w Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)



DABS Navigator AGP ATX

Pentium II Multimedia & Internet Ready PC

- Midi or Full Tower ATX case
- Abit LX6 Intel 440LX Chipset Motherboard
- 512Kb On Chip Cache Memory
- Intel Pentium II 300MHz Processor with MMX technology
- 64Mb SDRAM Memory
- Seagate 6.4Gb EIDE Ultra DMA Hard Disk Drive
- Dabs 32x EIDE CD Drive
- Dabs 56Kbps Internal Voice/Date/Fax Modem including 1 months free Internet Access
- ATI 8Mb Xpert@Play AGP Graphics Card
- Creative Labs SoundBlaster AWE-64 Value Sound Card
- Mitsumi 1.44Mb Floppy Disk Drive
- ADI E40 15" Digital Monitor
- Cherry Soft Touch Windows 95 105 Key PS/2 Keyboard
- Microsoft PS/2 Mouse
- Labtec LCS-1020 10w Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
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- 5 Year Labour Warranty (excluding monitor & software)



£869 (£1021.07)



£1029 (£1209.07)



Challenger

Hard Disk Drive Upgrades

* 4.3Gb EIDE Ultra DMA	£10	(£11.75)
* 6.4Gb EIDE Ultra DMA	£44	(£51.70)
* 8.6Gb EIDE Ultra DMA	£90	(£105.75)

SCSI Drive Options also available

Monitor Upgrades

* Belinea 17" Digital Monitor	£66	(£77.55)
* ADI 5P 17"	£106	(£124.55)

Removable Drive Upgrades

* Iomega Zip Drive Int	£59	(£69.32)
* LS120 Drive Internal	£55	(£64.82)

CUSTOM BUILT PC DIVISION

Everyone has different needs for their PC and we try to cater for as many as possible with our Atlantis & Professional range of PCs.

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Navigator

Hard Disk Drive Upgrades

* 8.6Gb EIDE Ultra DMA	£45	(£52.87)
* 11.5Gb EIDE Ultra DMA	£131	(£153.92)

SCSI Drive Options also available

Memory Upgrades

* 128Mb SDRAM	£79	(£92.82)
---------------	-----	----------

Monitor Upgrades

* Belinea 17" Digital	£66	(£77.55)
* ADI 5P 17"	£106	(£124.55)

Removable Drive Upgrades

* Iomega Zip Drive Int	£59	(£69.32)
* LS120 Drive Internal	£55	(£64.82)

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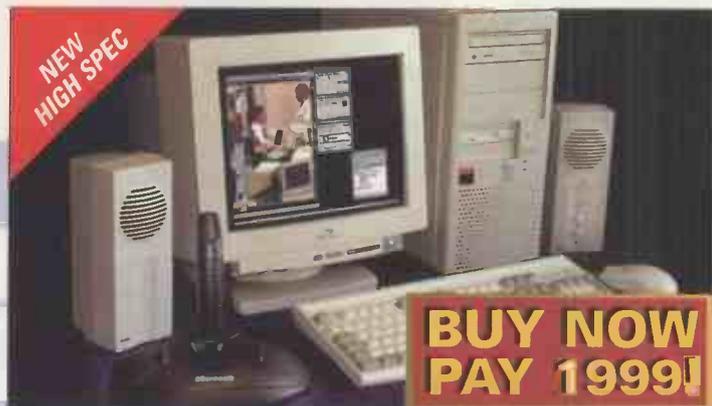


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Discovery ATX

Pentium II® Multimedia and Internet Ready PC

- Midi or Full Tower ATX case
- Abit LX6 Intel 440LX Chipset Motherboard
- 512Kb on chip Cache Memory
- Intel Pentium II 333MHz Processor with MMX technology
- 64Mb SDRAM Memory
- Seagate 8.8Gb Ultra DMA Hard Disk Drive
- Dabs 32x EIDE CD Drive
- Dabs 56Kbps Internal Voice/Date/Fax Modem including 1 months free Internet Access
- ATI 8Mb Xpert@Play AGP Graphics Card
- Creative Labs SoundBlaster AWE-64 Value Sound Card
- Mitsumi 1.44Mb Floppy Disk Drive
- ADI E40 15" Digital Monitor
- Cherry Soft Touch Windows 95 105 Key PS/2 Keyboard
- Microsoft PS/2 Mouse
- MS Sidewinder Joystick
- Labtec LCS-1020 10w Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)



Voyager PII AGP ATX

Ultimate Pentium II® PC

- Midi or Full Tower ATX case
- Intel 440BX Chipset Motherboard
- 512Kb on chip Cache Memory
- Intel Pentium II 400MHz Processor with MMX technology
- 128Mb SDRAM Memory
- Maxtor 11.5Gb EIDE Ultra DMA Hard Disk Drive
- Creative DVD Drive
- Dabs 56Kbps Internal Voice/Date/Fax Modem including 1 months free Internet Access
- Matrox Productiva 8Mb AGP Graphics Card
- Creative Labs SoundBlaster AWE-64 Gold Sound Card
- Mitsumi 1.44Mb Floppy Disk Drive
- Iomega Internal Zip Drive 100Mb
- ADI 5P 17" Digital Monitor
- Cherry Soft Touch Windows 95 105 Key PS/2 Keyboard
- Microsoft PS/2 Mouse
- Labtec LCS-2612 20w RMS Speakers & 3D Subwoofer
- Microsoft Windows 95
- Microsoft Office Small Business Edition
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)



£1159 (£1361.82)



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Discovery

Hard Disk Drive Upgrades

- * 11.5Gb EIDE Ultra DMA £86 (£101.05)

SCSI Drive Options also available, please call for details

Memory Upgrades

- * 128Mb SDRAM £79 (£92.82)

Monitor Upgrades

- * Belnea 17" Digital £66 (£77.55)
- * ADI MicroScan 5P 17" £106 (£124.55)

Removable Drive Upgrades

- * Creative DVD-Rom Internal £75 (£88.12)
- * Iomega Zip 100Mb Internal £59 (£69.32)
- * Syquest SparQ 1Gb Internal £125 (£146.87)

PLATINUM CARE

DABS PC's are custom built by our trained engineers to your specification using only the very best components. This is why every DABS PC comes with a 5 year limited warranty and during the first year we will send an engineer out to your location to find and fix the fault swiftly and efficiently, over 90% of reported faults are fixed the next working day of them being reported. For complete peace of mind you can upgrade to either a 3 or 5 year on-site warranty at the extremely competitive price of £149/£175.07 for 3 years or £229/£269.07 for 5 years. This can work out at less than £1 per week for a complete On-Site Parts and Labour Warranty with service second to none.

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COMPAG	ex VAT	inc VAT
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6233x PII 233 32/2100	749	880.07
6233x PII 233 32/3200CDS	889	1044.57
6266x PII 266 32/3200CDS	979	1150.32
Deskpro 4000		
6233x PII 233 32/2400	939	1103.32
6233x PII 233 32/3200CDS	1039	1220.82
6266x PII 266 32/3200CDS	1115	1310.12
6300x PII 300 32/3200CDS	1275	1498.12
6333x PII 333 32/3200CDS	1449	1702.57
Deskpro EP		
6350x PII 350 64/6400CDS W95	1199	1408.82
6350x PII 350 64/6400CD S WinNT	1249	1467.57
6400x PII 400 64/6400CDS W95	1389	1632.07
6400x PII 400 64/6400CDS WinNT	1439	1690.82
ProSignia		
200 PII 233 32/0 EIDE	839	985.82
200 PII 233 32/3200 EIDE	1095	1286.62
200 PII 233 32/0 SCSI	985	1157.37
200 PII 233 32/4300 SCSI	1279	1620.32
200 PII 266 32/0 SCSI	1219	1432.32
200 PII 266 32/4300 SCSI	1615	1897.62
200 PII 300 32/0 SCSI	1399	1643.82
200 PII 300 32/4300 SCSI	1795	2109.12
Proliant		
800 PPro 180 32/0	1199	1408.82
800 PPro 180 32/2100	1585	1882.37
800 PPro 180 32/4300	1809	2125.57
800 PPro 200 32/0	1309	1538.07
800 PPro 200 32/2100	1609	1890.57
800 PPro 200 32/4300	1709	2008.07
1200 PII 233 32/0	1559	1831.82
1600 PII 266 64/0	2179	2560.32
1600 PII 300 64/0	2385	2802.37

HEWLETT PACKARD	ex VAT	inc VAT
Brio Mini Tower		
8014 200MMX 16/2100	529	621.57
8017 233MMX 16/3200	589	692.07
8034 200MMX 16/2100CD	619	727.32
8174 200MMX 16/2100CD	949	1115.07
8177 233MMX 32/4000CD	1179	1385.32
8178 233MMX 32/4000CD	1365	1603.87
8316 PII 233 16/4000CD	679	797.82
8317 PII 266 16/4000CD	869	1021.07
8336 PII 233 16/4000CD	899	1056.32
8338 PII 300 32/4000CD	1119	1314.82
8376 PII 233 16/4000CD	959	1126.82
8377 PII 266 32/4000CD	1095	1286.62
8378 PII 300 32/8000CD	1425	1674.37
Vectra VL Desktop		
VL7 PII 233 32/3200	725	851.87
VL7 PII 233 32/3200 NT	769	903.57
VL7 PII 233 32/3200 LAN	769	903.57
VL7 PII 233 32/3200CD Word97	799	938.82
VL7 PII 266 32/3200	845	992.87
VL7 PII 266 32/3200 NT	885	1039.87
VL7 PII 266 32/3200 LAN	929	1091.57
VL7 PII 300 32/3200 NT	1009	1185.57
Vectra VL MultiMedia Desktop		
VL7 PII 266 32/4300	935	1098.62
VL7 PII 266 64/4300 NT	1179	1385.32
VL7 PII 300 64/4300 NT	1299	1526.32
VL7 PII 333 32/4300	1199	1408.82
Vectra VL MultiMedia Mini Tower		
VL7 PII 233 32/4300	865	1016.37
VL7 PII 266 32/4300	959	1126.82
VL7 PII 266 32/4300 Word97	999	1173.82
VL7 PII 266 64/6400 NT	1249	1467.57
VL7 PII 300 64/4300	1089	1279.57
VL7 PII 333 32/6400 NT	1515	1780.12
Kayak Desktop		
XA 6/233 PII 233 32/2500	979	1150.32
XA 6/233 PII 233 32/2500CD	1089	1279.57
XA 6/233 PII 233 32/2500CD 100BT	1069	1256.07
XA 6/266 PII 266 32/4300CD 100BT	1185	1392.37
XA 6/266 PII 266 32/2100CD 100BT	1645	1932.87
XA 6/300 PII 300 32/6400CD 100BT	1449	1702.57
XA 6/333 PII 333 32/6400CD 100BT	1595	1874.12
Kayak Mini Tower		
XA 6/233 PII 233 32/2500CD 100BT	1095	1286.62
XA 6/233 PII 233 32/4300CD 100BT	1215	1427.62
XA 6/266 PII 266 32/4500CD 100BT	1775	2085.62
XA 6/300 PII 300 32/4300CD 100BT	1799	2113.82
XA 6/300 PII 300 64/4500CD 100BT	1735	2038.62
XA 6/333 PII 333 32/6400CD 100BT	1625	1909.37
XA 6/333 PII 333 32/4500CD 100BT	1845	2167.87
Netserver		
E45 PII 233 32/0	1045	1227.87
E45 PII 233 32/2400	1275	1498.12
E45 PII 266 32/0	1219	1432.32
E45 PII 266 32/2400	1439	1690.82
E45 PII 266 64/4200	1539	1808.32
LCII PII 266 32/0	1589	1867.07
LCII PII 266 32/4200	1849	2172.57
LCII PII 300 64/0	1919	2254.82
LCII PII 300 64/0 HotSwap	1815	2132.62

Kingston TECHNOLOGY

COMPUTING WITHOUT LIMITS



Upgrading memory is the single most cost effective way of increasing system performance and productivity. All Kingston memory products are guaranteed 100% compatible and come with a full lifetime warranty.

MODEL	SIZE	KINGSTON PART	MANU. PART	EXC. VAT
Compaq Deskpro 2000, 4000 & 6000 series	16Mb	KTC2430/16	243012-002	40
	32Mb	KTC2430/32	243013-002	70
	64Mb	KTC2430/64	243014-002	136
Compaq Deskpro 2000, 4000 & 6000 MMX series	16Mb	KTC2428/16	242803-B21	42
	32Mb	KTC2428/32	242804-B21	68
	64Mb	KTC2428/64	242805-B21	162
	128Mb	KTC2428/128	270812-B21	339
Compaq Armada 7000 series, 1500 series, 1130	16Mb	KTC2721/16	272109-001	37
	32Mb	KTC2721/32	220580-001	74
	64Mb	KTC2721/64	220685-001	149
HP LaserJet 4000 series	16Mb	KTH-LJ4000/16	C4142A	45
	32Mb	KTH-LJ4000/32	C4143A	108
HP Vectra VL7 series	16Mb	KTH-5361/16	D5361A	49
	32Mb	KTH-5361/32	D5362A	87
	64Mb	KTH-5361/64	D5363A	206
Toshiba Tecra 750 & Satellite 230CX, 300CDS, 300CDT, 310CDS, 310CDT	32Mb	KTT650/16i	PA2039U	43
	64Mb	KTT650/32i	PA2043U	83
	128Mb	KTT650/64i	PA2044U	155
Toshiba Satellite 110CS/CT, 200CDS	8Mb	KTT610/8i	PA2031U	42
	16Mb	KTT610/16i	PA2032U	59
	32Mb	KTT610/32i	PA2034U	95
Toshiba Satellite Pro 420, 430CDS/CDT	8Mb	KTT500/8i	PA2041U	128
	128Mb	KTT500/128i	PA2042U	345
Toshiba Tecra 500, 510CDS/CDT	32Mb	KTT500/32i	PA2040U	92
	64Mb	KTT500/64i	PA2041U	128
	128Mb	KTT500/128i	PA2042U	345

Kingston manufactures memory for nearly every PC, Notebook, Workstation and Server in use today.



Call for details of memory for your system or check Kingston's configuration guide at www.kingston.com

MEMORY

30pin parity SIMM

1Mb x 9 (1MB) 3chip	£3	(3.52)
4Mb x 9 (4MB) 3chip	£7	(8.22)

72pin FPM or EDO SIMM

1Mb x 32 (4MB) 60ns	£5	(5.87)
2Mb x 32 (8MB) 60ns	£8	(9.40)
4Mb x 32 (16MB) 60ns	£14	(16.45)
8Mb x 32 (32MB) 60ns	£25	(29.38)
16Mb x 32 (64MB) 60ns	£113	(132.77)
32Mb x 32 (128MB) 60ns	£Call	(Call)

72pin FPM parity SIMM

1Mb x 36 (4MB) 60ns	£8	(9.40)
2Mb x 36 (8MB) 60ns	£14	(16.45)
4Mb x 36 (16MB) 60ns	£18	(21.15)
8Mb x 36 (32MB) 60ns	£32	(37.60)
16Mb x 36 (64MB) 60ns	£58	(68.45)
32Mb x 36 (128MB) 60ns	£Call	(Call)

168pin FPM or EDO DIMM 5v

1Mb x 64 (8MB) 60ns	£12	(14.10)
2Mb x 64 (16MB) 60ns	£19	(22.32)
4Mb x 64 (32MB) 60ns	£32	(37.60)

168pin FPM or EDO continued

8Mb x 64 (64MB) 60ns	£58	(68.15)
16Mb x 64 (128MB) 60ns	£Call	(Call)
2Mb x 64 (16MB) 60ns	£19	(22.33)
4Mb x 64 (32MB) 60ns	£34	(39.95)
8Mb x 64 (64MB) 60ns	£66	(77.55)
16Mb x 64 (128MB) 60ns	£Call	(Call)

168pin EDO DIMM 3.3v

2Mb x 64 (16MB) 60ns	£19	(22.33)
4Mb x 64 (32MB) 60ns	£34	(39.95)
8Mb x 64 (64MB) 60ns	£66	(77.55)
16Mb x 64 (128MB) 60ns	£Call	(Call)

168pin SDRAM DIMM 3.3v

2Mb x 64 (16MB) 10ns	£15	(17.63)
4Mb x 64 (32MB) 10ns	£28	(32.90)
8Mb x 64 (64MB) 10ns	£55	(64.62)
16Mb x 64 (128MB) 10ns	£120	(141.00)
2Mb x 64 (16MB) 10ns	£15	(17.63)
8MB 60ns	£15	(17.63)
16MB 60ns	£27	(31.73)
32MB 60ns	£62	(72.85)

144pin SODIMM EDO 3.3v

8MB 60ns	£19	(22.33)
16MB 60ns	£29	(34.07)
32MB 60ns	£55	(64.63)

* The price of memory is very volatile, please call to confirm prices *

PORTABLES

ACER / Texas Instruments	ex VAT	inc VAT
Extensa 355MMX P166MMX 16/1400	699	-821.32
Extensa 390C P133MMX 16/1600CD	899	1056.32
Extensa 390C P166MMX 16/2100CD	959	1126.82
Extensa 390CX P133MMX 16/1600CD	1119	1314.82
Extensa 390CX P166MMX 16/2100CD	1249	1467.57
TM7123 P233MMX 32/4000CD TFT	2049	2407.57
TM7126 P266MMX 32/4000CD TFT	2179	2560.32
COMPAG ARMADA		
Presario		
1220 P200MMX 32/2100CD	1255	1474.62
1630 P233MMX 32/2100CD	1569	1843.57
Armada		
1560 P166MMX 16/3200 DSTN	1015	1192.62
1560D P166MMX 16/3200CD DSTN	1195	1404.12
1590DT P166MMX 16/2000CD TFT	1579	1855.32
1592DT P233MMX 32/3200CD TFT	1659	1949.32
4210T P233MMX 32/3000 TFT	1839	2160.82
4220T P233MMX 32/4000 TFT	2119	2489.82
7330T P150MMX 16/2100CD TFT	1559	1831.82
7350MT P166MMX 32/2100CD TFT	1735	2038.62
7360DMT P200MMX 32/3000CD TFT	2365	2778.82
7370DMT P233MMX 32/4000CD TFT	2429	2854.07
7380DMT P266MMX 32/4000CD TFT	2599	3053.82
7710MT P150MMX 16/1600CD TFT	1749	2055.07
7750MT P166MMX 32/2100CD TFT	2189	2572.07
7770DMT P233MMX 32/3000CD TFT	2239	2630.82
7790DMT P233MMX 32/5000CD TFT	2599	3053.82
7792DMT P266MMX 32/5000CD TFT	2769	3253.57
CTX CYBERNOTE		
P200MMX 24/2100CD DSTN	999	1173.82
P200MMX 40/3200CD DSTN	1169	1373.57
P200MMX 32/2100CD TFT	1339	1573.32
P200MMX 40/2100CD TFT	1389	1632.07
P200MMX 72/3200CD TFT	1609	1890.57
HEWLETT PACKARD OMNIBOOK		
800ct P166MMX 16/1440 TFT	2099	2466.32
2000cs P166MMX 16/2000 DSTN	1089	1279.57
3000ctx P200 16/2100 TFT	1699	1996.32
3000ctx P233 16/4000 TFT	2085	2449.87
3000ctx P266 16/4000 TFT	2209	2595.57
5700ct P150MMX 16/2000 TFT	999	1173.82
5700ct P166MMX 32/3000 TFT	1529	1796.57
5700ctx P166MMX 16/2000 TFT	1369	1608.57
Sojourn P233MMX 64/2100 TFT	1639	1925.82
IBM THINKPAD		
310 P133MMX 32/2100CD DSTN	1219	1432.32
310 P166MMX 16/2100 DSTN	1029	1209.07
310 P166MMX 12/2100 TFT	1439	1690.82
380E P150MMX 16/2100	999	1173.82
380D P150MMX 16/2100	1849	2172.57
380ED P166MMX 16/2100CD	1229	1444.07
380ED P166MMX 16/3000CD	1675	1968.12
380ED P166MMX 16/5100CD	1845	2167.87
380XD P233MMX 32/3200CD	1615	1897.62
380XD P233MMX 32/4000CD	2199	2583.82
380XD P266MMX 32/5100CD	2429	2854.07
560 P150MMX 16/2100	1429	1679.07
560 P200MMX 32/2100	1899	2231.32
560 P233MMX 32/4000	2559	3006.82
770 P200MMX 32/3000	2769	3253.57
770 P233MMX 32/4000	2995	3519.12
770 P233MMX 32/5100	3939	4628.32
OPTI		
Talisman P120MMX 24/810 TFT	999	1173.82
Phoenix P166		



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"Value for money"



Satellite

Satellite from Toshiba means 'value for money' without compromising performance. Products in the Satellite family feature Pentium® processors, plus a choice of screen types, hard drives and CD-ROM drives on the Satellite 300 series.

Satellite 300CDS £929 (£1091.57)

- Intel Pentium 166MHz with MMX
- 16MB EDO RAM (expandable to 144MB)
- 2GB Hard Drive
- 16xSpeed CD-ROM
- 12.1" DSTN Colour Display
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

LOWER PRICE

Satellite 300CDT £1185 (£1392.37)

- Intel Pentium 166MHz with MMX
- 16MB EDO RAM (expandable to 144MB)
- 2GB Hard Drive
- 16xSpeed CD-ROM
- 12.1" TFT Colour Display
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

LOWER PRICE

Satellite 310CDS £1185 (£1392.37)

- Intel Pentium 200MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 2GB Hard Drive
- 16xSpeed CD-ROM
- 12.1" DSTN Colour Display
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

LOWER PRICE

Satellite 310CDT £1339 (£1573.32)

- Intel Pentium 200MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 2GB Hard Drive
- 16xSpeed CD-ROM
- 12.1" TFT Colour Display
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

LOWER PRICE

Satellite 320CDS £1439 (£1690.82)

- Intel Pentium 233MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 3.8GB Hard Drive
- 20xSpeed CD-ROM
- 12.1" DSTN Colour Display
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

NEW

Satellite 320CDT £1695 (£1991.62)

- Intel Pentium 233MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 3.8GB Hard Drive
- 20xSpeed CD-ROM
- 12.1" TFT Colour Display
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

NEW

"Dazzling power and speed"



Satellite Pro

The Satellite Pro family offers the latest features at attractive prices with multimedia throughout. High performance Pentium II® processors, MMX™ technology, hard disk and CD-ROM drives deliver outstanding speed and performance. Products are available with either TFT or FastScan (HPD) screens.

Satellite Pro 480CDT £1949 (£2290.07)

- Intel Pentium 233MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 4.1GB Hard Drive
- Swappable 10xSpeed CD-ROM
- 12.1" TFT Colour Display
- 800x600 resolution with up to 16.7 million colours

LOWER PRICE

Satellite Pro 490CDT £2199 (£2583.82)

- Intel Pentium II 233MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 3.8GB Hard Drive
- 20xSpeed CD-ROM
- 12.1" TFT Colour Display
- 800x600 resolution with up to 16.7 million colours

NEW

Satellite Pro 490xCDT £2459 (£2889.32)

- Intel Pentium II 266MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 3.8GB Hard Drive
- 20xSpeed CD-ROM
- 13.3" XGA TFT Colour Display
- 1024x768 resolution with up to 16.7 million colours

NEW

Accessories	Satellite	Satellite Pro
Card Station III (not for 300 series)	£249 (€292.57)	£249 (€292.57)
MPEG PC Card	£199 (€233.82)	£199 (€233.82)
In-Car Adaptor	£59 (€69.32)	£59 (€69.32)

"The world's smallest, lightest Windows 95 PC"



Libretto

The Libretto family represents Toshiba's most spectacular example of miniaturised PC technology to date and underlines the company's ability to deliver innovative mobile solutions to its customers. The world's smallest, lightest Windows95 PC, the Libretto mini notebooks weigh less than two pounds and offer unprecedented portability and full functionality.

Libretto 70CT £929 (£1091.57)

- Intel Pentium 120MHz with MMX
- 16MB EDO RAM (expandable to 32MB)
- 1.5GB Hard Drive
- 4.1" TFT Colour Display
- 40x4 resolution with up to 16.7 million colours
- SoundBlaster Pro compatible sound system
- 1x 16bit PC Card slot
- IrDA compliant infrared interface

LOWER PRICE

Libretto 100CT £1269 (£1491.07)

- Intel Pentium 166MHz with MMX
- 32MB EDO RAM
- 2.1GB Hard Drive
- 7.1" TFT Colour Display
- 800x480 resolution with up to 16.7 million colours
- SoundBlaster Pro compatible stereo sound system
- 1x 16bit PC Card slot
- IrDA compliant infrared interface
- Optional Libretto Enhanced Port replicator

NEW

"Perfect performer"



TECRA

The Tecra family means 'performance'. From the outstanding features and value for money of the Tecra 540CDT to the technologically groundbreaking Tecra 780DVD with its Pentium II®, 266MHz processor, 4.77GB hard disk and DVD-ROM Drive.

TECRA 540CDT £2035 (€2391.12)

- Intel Pentium 233MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 4.1GB Hard Drive
- Swappable 20xSpeed CD-ROM
- 12.1" TFT Colour Display
- 1024x768 resolution with up to 16.7 million colours
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

LOWER PRICE

TECRA 550CDT £2199 (€2583.82)

- Intel Pentium 266MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 4.1GB Hard Drive
- Swappable 20xSpeed CD-ROM
- 12.1" TFT Colour Display
- 1024x768 resolution with up to 16.7 million colours
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

NEW

TECRA 750DVD £2969 (€3488.57)

- Intel Pentium 233MHz with MMX
- 64MB EDO RAM (expandable to 160MB)
- 5.1GB Hard Drive
- DVD-ROM Drive
- 13.3" XGA TFT Colour Display
- 1024x768 resolution with up to 16.7 million colours
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

LOWER PRICE

TECRA 780DVD £3395 (€3989.12)

- Intel Pentium 266MHz with MMX
- 64MB EDO RAM (expandable to 160MB)
- 5.1GB Hard Drive
- DVD-ROM Drive
- 13.3" XGA TFT Colour Display
- 1024x768 resolution with up to 16.7 million colours
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

NEW

Accessories	TECRA	Libretto
Card Station III	£275 (€323.12)	-
Mini Card Station	-	£159 (€186.82)
MPEG PC Card	£199 (€233.82)	£199 (€233.82)
In-Car Adaptor	£59 (€69.32)	£59 (€69.32)

COMPUTING WITHOUT LIMITS

Upgrading memory is the single most cost effective way of increasing system performance and productivity. All Kingston memory products are guaranteed 100% compatible and come with a full lifetime warranty.

Size	8MB	16MB	32MB	64MB	128MB
ex VAT	£30	£43	£83	£155	£303
(inc VAT)	(€35.25)	(€50.52)	(€97.52)	(€182.12)	(€356.02)

Please check compatibility before ordering memory

TOSHIBA

freephone
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TECHNICAL

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- 233 MHz Intel Pentium® Processor with MMX™ technology
- 512k Pipeline Burst Cache
- 32Mb EDO RAM (128Mb max)
- 2.0Gb EIDE Hard Disk
- 2Mb ATI 3D Graphics
- Premier Desktop Case
- Fujitsu 105 Key PS/2 Keyboard
- Fujitsu 2 button PS/2 Mouse
- Microsoft Windows™ 95

Fujitsu TechnICL X233 (inc MS Word & Works 4) **£549** (£645.07)

MULTIMEDIA SYSTEMS



- 200 & 233 MHz Intel Pentium® Processor with MMX™ technology
- 512k Pipeline Burst Cache
- 32Mb EDO RAM
- 2.0Gb EIDE Hard Disk
- 12-24 Speed CD ROM
- 16 Bit Sound Card & Speakers
- 33.6 Data / Fax / Voice Modem
- 2Mb ATI 3D Graphics
- Premier Desktop Case
- Fujitsu 105 Key PS/2 Keyboard
- Fujitsu 2 button PS/2 Mouse
- Microsoft Windows 95
- Microsoft Word '97 and Works 4

Fujitsu TechnICL X200M **£535** (£628.62)

Fujitsu TechnICL X233M **£585** (£687.37)

POWER SYSTEMS



- 233, 266 & 300 MHz Intel Pentium® II Processor with MMX™ technology
- 512k Cache
- 12-24 Speed CD ROM
- 4Mb ATI 3D Graphics
- Executive ATX Mini Tower Case
- Fujitsu 105 Key PS/2 Keyboard
- Fujitsu 2 button PS/2 Mouse
- Microsoft Windows 95
- Microsoft Word '97 and Works 4

Fujitsu TechnICL MT233SW 2GB Hard Disk, 32MB RAM **£675** (£793.12)

Fujitsu TechnICL MT266SW 4.3GB Hard Disk, 64MB RAM **£875** (£1028.12)

Fujitsu TechnICL MT300SW 6.4GB Hard Disk, 64MB RAM **£995** (£1169.12)

NEW FUJITSU MONITORS

Fujitsu 413 - 14" Colour Monitor **£125** (£146.87)

Fujitsu 515 - 15" Colour Monitor **£155** (£182.12)

MULTIMEDIA UPGRADE KIT

CD ROM Drive plus 16 Bit Soundcard with Powered Speakers (4x CD) **£59** (£69.32)

and MS 10 Titles Software Suite (8x CD) **£79** (£92.82)

All machines shown with optional 15" monitor, models may vary. Prices in brackets include VAT.

PSION

The Psion Series 5 gives you the computing power that you need without the excess weight. It has a touch type keyboard and full page width touch-sensitive screen, yet weighs less than 13 ounces (or less than 360g), has around 35 hours of battery life and fits into your pocket.

The Series 5 handheld computer is compatible with all leading Windows 95/NT4 word processors, spreadsheets and databases, and synchronises with schedule and contacts software on your desktop PC, including Microsoft, Lotus, Corel, WordPerfect and other applications. PsiWin 2 - included as standard - docks your Series 5 to your PC.

Working with you. Everywhere.

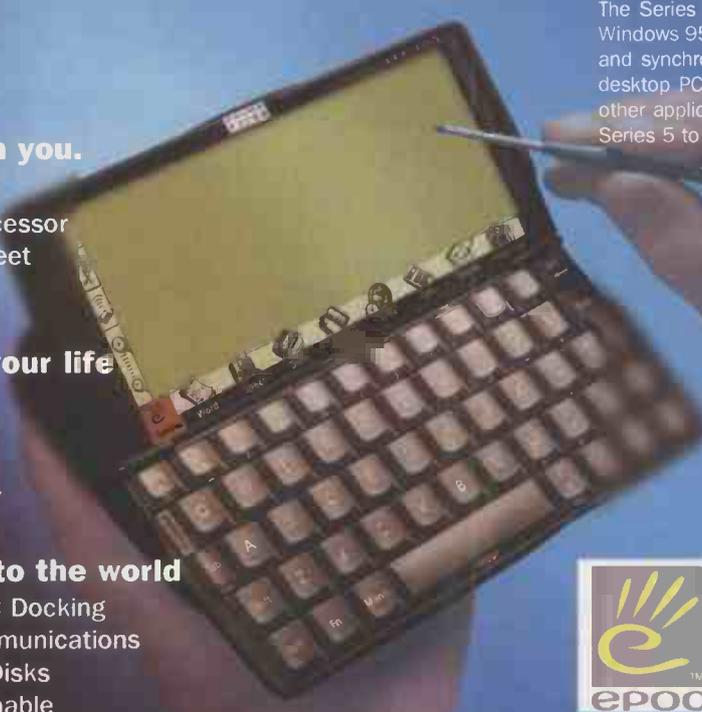
- Word Processor
- Spreadsheet
- Printing
- Sketch

Organising your life

- Agenda
- Database
- Record
- Calculator
- Time

Connecting to the world

- PsiWin PC Docking
- Free Communications
- Memory Disks
- Programmable



Series 5	Ex Vat	Inc Vat
Series 5 - 4Mb	£319	£374.82
Series 5 - 8Mb	£339	£398.32

Memory Flash upgrades		
4Mb Card	£49	£57.57
8Mb Card	£59	£69.32
12Mb Card	£85	£99.87
16Mb Card	£99	£116.32
32Mb Card	£199	£233.82

Series 5 Accessories		
Leather Case	£25	£29.37
Mains Adaptor	£15	£17.62
Parallel Printer Cable	£29	£34.07
PCMCIA Adaptor	£79	£92.82
PsiWin Mac Connection Kit	£32	£37.60





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HANDHELDS

CASIO	ex VAT	inc VAT
Cassiopia Windows CE v2.0	379	445.32
HEWLETT PACKARD		
360LX 8Mb Windows CE v2.0	359	421.82
620LX Colour Windows CE v2.0	549	645.07
Accessories		
320LX AC Adaptor	25	29.37
320LX Windows CE v2.0 Upgrade	89	104.57
320LX Leather Case	49	57.57
320LX/360LX/620LX Li-Ion Battery	49	57.57
360LX AC Adaptor	29	34.07
620LX AC Adaptor	25	29.37
620LX Docking Cradle	25	29.37
620LX Battery Charger	49	57.57
620LX Video Output	79	92.82
PHILIPS		
Velo 1 4Mb Windows CE	249	292.57
PSION		
Siena 512k	99	116.32
Siena 1Mb	149	175.07
Series 3c 2Mb Backlit	215	252.62
Series 5 4Mb	319	274.82
Series 5 8Mb	339	398.32
Series 3/Siena Accessories		
1Mb Flash SSD	55	64.62
2Mb Flash SSD	79	92.82
1Mb RAM SSD	119	139.82
Desk Stand	14	16.45
Leather Case	20	23.50
Mains Adaptor	12	14.10
Parallel Cable	29	34.07
PCMCIA Modem adaptor	79	92.82
PsiWin Comms Link	65	76.37
Siena SSD Drive	64	75.20
Series 5 Accessories		
Leather Case	25	29.37
Mains Adaptor	15	17.62
Parallel Cable	29	34.07
PCMCIA Modem Adaptor	79	92.82
Ericsson GS18 Cable	20	23.50
4MB Compact Flash	49	57.57
8MB Compact Flash	59	69.32
12MB Compact Flash	85	99.87
16MB Compact Flash	99	116.32
32MB Compact Flash	199	233.82
Series 5 Software		
Allegro	35	41.12
Arcade Games	35	29.37
Backgammon/Chinese Chess	35	41.12
Chess	35	41.12
En Route	39	45.82
Expense Manager	39	45.82
Financial Calculator	39	45.82
Monopoly	25	29.37
Navigator	29	34.07
Presentation Manager	39	45.82
SHARP		
HC-4100	389	457.07
HC-4500 Colour Windows CE v2.0	589	692.07
US ROBOTICS/3COM		
PalmPilot Personal	109	128.07
PalmPilot Professional	159	186.82
Palm III	219	257.32
Accessories		
14k4 Data/Modem	69	81.07
1Mb RAM card	85	99.87
Docking Station	23	27.02
Leather case	19	22.32
Mac Pack	15	17.62
Option GSM Adaptor	89	104.57
Sync Cable	16	18.80
Modem Cable	16	18.80
Palm III Cradle PC	25	29.37
Palm III Cradle Mac	25	29.37
Palm III Colour Pack	19	22.32
Palm III Leather Carry Case	25	29.37
Palm III Leather Case Deluxe	49	57.57
Palm III Leather Belt Clip	25	29.37

CARRY CASES

TARGUS	ex VAT	inc VAT
Air Universal	70	82.25
Digital Camera	35	41.12
FolioPac.3	35	41.12
Leather Wallet	19	22.32
Leather Mini Notebook	29	34.07
Leather Notebook	69	81.07
Leather Organiser	35	41.12
Leather Portfolio	49	57.57
NotePac	26	30.55
NotePac Plus	49	57.57
Pilot	85	99.87
Universal Notebook	49	57.57
Universal Deluxe	69	81.07

Extensa 390cx NOW 166MHz MMX!

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- Enhanced HotSync technology
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- Scientifically proven to be the most protective notebook computer carry case solution available.
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Please see Carry Case line listing for the full Targus range



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BackUPS 300MI	55	64.62
BackUPS 500MI	85	99.87
BackUPS 650MI	125	146.87
BackUPS Pro 280i PnP	85	99.87
BackUPS Pro 420i PnP	115	135.12
BackUPS Pro 650i PnP	155	182.12
BackUPS Pro 1000i	245	287.87
BackUPS Pro 1400i	309	363.07
SmartUPS v/s 420VA	125	146.87
SmartUPS v/s 650VA	159	186.82
SmartUPS 450VA & PowerChute	149	175.07
SmartUPS 700VA & PowerChute	235	276.12
SmartUPS 1000VA & PowerChute	259	304.32
SmartUPS 1400VA & PowerChute	375	440.82
SmartUPS 2200VA & PowerChute	539	633.32
SmartUPS 3000VA & PowerChute	899	1056.32
SmartUPS 700VA Rack Mount	299	351.32
SmartUPS 1000VA Rack Mount	439	515.82
SmartUPS 1400VA Rack Mount	589	692.07
SmartUPS 2200VA Rack Mount	919	1079.82
SmartUPS 3000VA Rack Mount	1049	1232.57
SmartUPS 700VA Extended Run	349	410.07
SmartUPS 1000VA Extended Run	429	504.07
SmartUPS 2200VA Extended Run	819	962.32
Matrix 3000VA	1449	1702.57
Matrix 5000VA	2099	2466.32

Please call for pricing on SmartSlot, Batteries and software

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Powerure 250VA	85	99.87
Powerure 400VA	115	135.12
Powerure 600VA	159	186.82
Powerure 700VA	209	245.57
Powerure 1000VA	289	339.57
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Internal EIO/MIO		
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J2552B JetDirect Combo/LocalTalk MIO	225	264.37
J2556B JetDirect 10/100 RJ45 MIO	245	287.87
J3110A JetDirect 600N RJ45 EIO	165	193.87
J3113A JetDirect 600N 10/100 RJ45 EIO	265	311.37
External		
J2590A JetDirect External Plus3 10/100	349	410.07
J2591A JetDirect External Plus Combo	175	205.62
J2592A JetDirect 150X Ext RJ45	99	116.32
J2593A JetDirect External Plus 3 Combo	229	269.07
J3263A JetDirect 300X Ext 10/100 RJ45	185	217.37
INTEL		
Netport Express Pro Combo	229	269.07
Netport Express Pro 100 1port	189	222.07
Netport Express Pro 100 3port	239	280.82

NETWORK SWITCHES

3COM	ex VAT	inc VAT
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3C16730 140 4x10MB, 1x100MB	449	527.57
3C16731 140M 4x10MB, 1x100MB	599	703.82
3C16732 280 8x10MB, 2x10/100MB	379	445.32
SuperStack II		
3C16460 Switch 320 12port	599	703.82
3C16901 1000 12x10MB	949	1115.07
3C16900 1000 24x10MB	1299	1526.32
3C16942 3000TX 12x10/100MB	1049	1232.57
3C16951 1100 12x10MB, 2x10/100MB	649	762.57
3C16950 1100 24x10MB, 2x10/100MB	849	997.57
3C16980 3300 24x10/100MB, 2x10/100	1799	2113.82
ACER NETXUS		
ALW-3002E 2x10/100MB	159	186.82
ALW-1083E 8x10MB, 2x100MB	549	645.07
ALW-1123E 12x10MB, 2x100MB	649	762.57
DLINK		
DES802 1x10MB, 1x10/100MB	149	175.07
DES805 4x10MB, 1x10/100MB	245	287.87
DES810 8x10MB, 2x10/100MB	279	327.82
DES1004 N-Way 4x10/100MB	295	346.62
DES1008 N-Way 8x10/100MB	495	581.62
DES2208 6x10MB, 2x10/100MB	845	992.87
DES3208 8x10/100MB	1035	1216.12
INTEL		
Express 10 Switch 24port	1099	1291.32
Express 10/100 Switch 8port	1289	1514.57
Express 10/100 Switch 24port	1449	1702.57
INTEL INBUSINESS		
SH10T8 8port	309	363.07
SH110TX8 8x10MB, 2x10/100MB	449	527.57

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3C-509B Combo ISA	49	57.57
3C-900TPO RJ45 PCI	39	45.82
3C-900 Combo PCI	59	69.32
3C-905TX 10/100 PCI	45	52.87
Retail Boxed		
3C-509TPO RJ45 ISA	65	76.37
3C-509B Combo ISA	75	88.12
3C-515TX 10/100 ISA	95	111.62
3C-900TPO RJ45 PCI	65	76.37
3C-900 Combo PCI	79	92.85
3C-905BTX 10/100 PCI	55	64.62
3C-980TX 10/100 Server PCI	99	116.32
3C-574 10/100 PCMCIA	89	104.57
3C-575TX 10/100 CardBus PCMCIA	89	104.57
3C-589TP RJ45 PCMCIA	79	92.82
3C-589 Combo PCMCIA	105	123.37
3C-563DTP RJ45 & 33k6 Modem PCMCIA	169	198.57
3C-563D Combo & 33k6 Modem PCMCIA	189	204.57

ACER NETXUS

ALN-101 Combo ISA PnP	15	17.62
ALN-201 Combo PCI PnP	17	19.97
ALN-310 10/100 PCI PnP	28	32.90

DABS

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Combo PCI	15	17.62
10/100 PCI	26	30.55
Combo PCMCIA	45	52.87

DLINK

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DE-530CT Combo PCI	25	29.37
DFE-500TX 100MHz PCI	29	34.07
DE-620CT Combo Parallel	72	84.60
DE-660CT Combo PCMCIA	42	49.35
DE-650TX 10/100 PCMCIA	85	99.87
DE-660TX 10/100 CardBus PCMCIA	99	116.32

GENIUS

16bit Combo PnP	20	23.50
32bit Combo PCI	25	29.37
10/100 PCI	35	41.12
Pocket Parallel	45	52.87
Combo PCMCIA	55	64.62

GREYCELL

GCS-2210 RJ45 PCMCIA	89	104.57
GCS-2220 Combo PCMCIA	105	123.37

INTEL

Ether Express Pro 10+ Combo	65	76.37
Ether Express Pro 10+ Combo PCI	69	81.07
Ether Express Pro 100 ISA	99	116.32
Ether Express Pro 100+ PCI	49	57.57
Ether Express Pro 100 Mobile PCMCIA	89	104.57
Ether Express Pro 100 Mobile CardBus	95	111.62
Ether Exp Pro 100 & 56K Modem PCMCIA	185	217.37

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GoldCard Combo PCMCIA	85	99.87
GoldCard Combo & V34 Modem PCMCIA	159	186.82

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SMC

1660T EZ Card 10 RJ45 ISA	19	22.32
1660BT EZ Card 10 Combo ISA	22	25.85
1208T EZ Card 10 RJ45 PCI	19	22.32
1208BT EZ Card 10 Combo ISA	22	25.85
8416BT EtherEZ Combo ISA PnP	39	45.82
8432BT EtherPower Combo PCI	49	57.57
9432BT EtherPower II 10/100 PCI	45	52.87
8020T EtherEZ RJ45 PCMCIA	79	92.82
8020BT EtherEZ Combo PCMCIA	105	123.37

XIRCUM

RJ45 PCMCIA (10/100 upgradeable)	79	92.82
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RJ45 & 33k6 Modem PCMCIA	169	198.57
Combo & 33k6 Modem PCMCIA	195	229.12
10/100 & 56K Modem PCMCIA	195	229.12
RealPort 10/100 & 56K Modem PCMCIA	215	252.62

NETWORK ROUTERS

3COM	ex VAT	inc VAT
Officeconnect		
3C410002 Remote 511S Data	349	410.07
3C410007 Remote 521S Data/Voice	449	527.57
3C410012 Remote 531S Data/Voice/WAN	689	809.57
3C410011 Gateway 535	899	1056.32
AccessBuilder		
3C400000 Remote Office 600 1port	1499	1761.32
3C400010 Remote Office 600 2port	1995	2344.12
3C400020 Remote Office 700	1699	1996.32

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CPA765	439	515.82
CPA771	419	492.32
CPA1603	879	1032.82
CPA2501	1319	1549.82
DLINK		
DI-1132P-11 IP Data	279	327.82
DI-1133PX-11 IP/IPX Data	399	468.82
DI-1133PX-11V IP/IPX Data/Voice	459	539.32
INTEL		
Internet Station	245	287.82
Espress 8100	349	410.07
Espress 9100	599	703.82
Espress 9201	599	703.82
Espress 9300	599	703.82
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WebRamp M3	329	386.57
WebRamp M3t	549	645.07
WebRamp Entre ISDN	579	680.32

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Fastest total system performance for networked clients and servers.

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InBusiness 8-Port Switch	£309	(£363.07 inc VAT)
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intel www.intel.com/network

NETWORK HUBS

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Officeconnect		
3C16700 8TPO 8port	49	57.57
3C16701 8TPC 8port	69	81.07
3C16702 TP16C 16port	129	151.57
3C16703 TP4 Combo 4port	49	57.57
3C16704 TP4 4port	39	45.82
3C16710 8TPM 8port	209	245.57
3C16721 TP1200 12port 100TX	329	386.57
3C16722 TP800 8port 100TX	219	257.32
3C16723 TP400 4port 100TX	125	146.87
SuperStack II		
3C16405 Port Switch 12port	215	252.62
3C16406 Port Switch 24port	379	445.32
3C1625 10port BNC	845	992.87
3C16440 Entry Hub 12port	135	158.62
3C16441 Entry Hub 24port	209	245.57
3C16590 Dual Speed 12port	739	868.32
3C16591 Dual Speed 24port	1169	1373.57
3C16610 Dual Speed 500 12port	579	680.32
3C16611 Dual Speed 500 24port	869	1021.07
3C16670 Hub10 12port	275	323.12
3C16671 Hub10 24port	475	558.12
3C250TX 100TX 12port	549	645.07
3C250TX 100TX 24port	709	833.07

ACER NETXUS

ALH-509 9port	42	49.35
ALH-116 16port	95	111.62
ALH-308 8port 100TX	299	351.32

BAY NETGEAR

EN104 4port	39	45.82
EN108 8port	49	57.57
EN116 16port	129	151.57
FE104 4port 100TX	149	175.07
FE108 8port 100TX	289	339.57

DABS

5port	30	35.25
8port	45	52.87
16port	85	99.87
8port 100TX	179	210.32

DLINK

DEB05TP 5port	29	34.07
DE905 2 user starter kit	59	69.32
DEB09TC 8port & BNC	39	45.82
DEB09TP 8port	49	57.57
DEB12TP+ 12port	75	88.12
DEB16TP 16port	89	104.57
DEB24TP 24port	129	151.57
DE1812 12port	175	205.62
DE1824 24port	175	205.62
DFE805TXS 5port 100TX	149	175.07
DFE808TX 8port 100TX	199	233.82
DFE812TX 12port 100TX	399	468.82
DFE816 16port 100TX	369	433.57

HP

AdvanceStack Hub 8E 8port	99	116.32
AdvanceStack Hub 8U 8port	129	151.57
AdvanceStack Hub 16U 16port	269	316.07
AdvanceStack Hub 24T 24port	569	668.57

INTEL

Express 10/100 8port	299	351.32
Express 10/100 12port	589	692.07
Express 10/100 24port	875	1028.12

INTEL INBUSINESS

SH10T5 5port	39	45.82
SH10T8B 8port & BNC	55	64.62
SH100TX4 4port 100TX	119	139.82
SH100TX8 8port 100TX	219	257.32
SH100TX8 8port 100TX Plus	429	504.07

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Xircum RealPort 10/100 + Modem 56, the Integrated PC Card

Xircum's RealPort Ethernet 10/100 + Modem 56 Integrated PC Card connects your notebook to information anytime, anywhere in the world. With no cables to lose and no moving parts to break, the RealPort Ethernet 10/100 + Modem 56 won't leave you stranded. It combines 10/100 Mbps, Ethernet, 56Kbps modem, GSM and cellular capabilities in a single device. All connectors are integrated into the card providing a robust, reliable and easy-to-use solution.

£215 (£252.62)

CEM56-100BTX **£195** (£229.12)
A 10/100 Ethernet adaptor and a 33k6 modem with K56 Flex and onboard DAA shipped as standard. The card is also GSM upgradeable for most GSM phones.

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Autonegotiation of 10Mbps or 100Mbps speeds provides a seamless connection in both network environments.

CM56 **£139** (£163.32)
The GlobalACCESS CreditCard GSM provides notebook users with data and fax communications over GSM networks worldwide.



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3Com



OfficeConnect Ethernet Hubs TP4, TP4Combo, 8/TPO, 8/TPC, TP16C

Ethernet hubs for small businesses or offices

No office should be an island. With 3Coms™ family of products, you can enjoy the same seamless access to information and computer resources provided to larger organisations, but at a price and convenience designed for smaller offices and workgroups. OfficeConnect hubs provide a central point of connection that makes resource sharing possible. OfficeConnect hubs offer a range of features and costs to meet the needs of any small but growing organisation, from an economical basic unit to a full-function model with network monitoring and management capabilities.

3C16704	Hub TP4	4port	£39	(£45.82 inc VAT)
3C16703	Hub TP4C	4port & BNC & AUI	£42	(£49.35 inc VAT)
3C16700	Hub 8/TPO	8port	£49	(£57.57 inc VAT)
3C16701	Hub 8/TPC	8port & BNC	£69	(£81.07 inc VAT)
3C16702	Hub TP16C	16port & BNC	£129	(£151.57 inc VAT)

OfficeConnect Network Starter Kit

£89 (€104.57 inc VAT)

The most reliable way to build your network

3Com™ understands the importance of a reliable, compatible, and affordable network. Sharing information and peripherals is what makes your office more productive and your business more successful. The OfficeConnect Networking Kit was designed with these needs in mind. Whether you are networking your office for the first time or expanding your existing network, the OfficeConnect Networking Kit is the right connection for you.

- For 10BASE-T Ethernet networks
- 3 EtherLink® III ISA Network Interface Cards
- 1 OfficeConnect 8-Port Ethernet Hub
- Connecting Cabling & Instructions



Network Interface Cards

Ever since local area networking began, 3Com™ network interface cards (NIC's) have set the standard for excellence. Broad compatibility, reliability, superior performance, and value make 3Com™ NIC's the most popular LAN Network Interface Cards in the world.



EtherLink® III

3C509B-TP	16-bit ISA 10BASE-T	£65	(£76.37 inc VAT)
3C509B-COMBO	16-bit ISA Combo	£75	(£88.12 inc VAT)



EtherLink® XL

3C900-TP	10BASE-T PCI	£65	(£76.37 inc VAT)
3C900-COMBO	BNC & 10BASE-T PCI	£79	(£92.82 inc VAT)



EtherLink® III LAN PC Card

3C589D-TP	LAN PC Card 10BASE-T	£79	(£92.82 inc VAT)
3C589D-COMBO	LAN PC Card BNC and 10BASE-T	£105	(£123.37 inc VAT)
3C563D-TP	LAN+33.6 Modem PC Card 10BASE-T	£169	(£198.57 inc VAT)
3C563D-COMBO	LAN+33.6 Modem PC Card BNC & 10BASE-T	£189	(£222.07 inc VAT)

Fast EtherLink® XL

3C905B-TX	10/100BASE-TX PCI	£55	(£64.62 inc VAT)
3C575-TX	10/100BASE-TX PC Card CardBus	£89	(£104.57 inc VAT)

Fast EtherLink®

3C574-TX	10/100BASE-TX PC Card	£89	(£104.57 inc VAT)
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Networking

Acer

ALH-509 9-Port Ethernet Hub



ALH-509u is a mini size Ethernet hub. The hub provides nine (9) 10Base-T ports (RJ-45 connector) for twisted-pair cable connection and one 10Base2 (BNC) port for backbone coaxial cable connection. The hub can be used as stand-alone one, or can be cascaded by BNC cable or twisted pair wire to other hubs.

- Compact design for SOHO network
- Provide network utilization monitoring function
- 9-port Ethernet hub with one BNC port trunk connection

£42 (€49.35 inc VAT)

ALH-308 8-Port Fast Ethernet Hub



ALH-308 is an 8-port 100 Base-TX Ethernet hub with one crossover 100Mbps port for cascade or up-link purpose. The hub is of 19-inch size and meets the industrial rack mount standard. The hub can be used as a stand-alone one, or can be cascaded by twisted pair-wire to another hub.

- Industry design for standard installation
- Meet 100 Base-TX class II repeater specifications and allow for two hub cascading
- LEDs indicate real-time status of Power, Collision, Link, Activity and Partition

£229 (€269.07 inc VAT)

Switch

ALW-1123 10/100 12-Port Ethernet Switch



ALW-1123 is an Ethernet switch with 12-port 10 Mbps plus 2-port 100 Mbps interfaces, and one optional 100 Base-TX/T4/FX port. It provides full-rate speed for every Ethernet and Fast Ethernet port. The switch is the best solution to resolve the traffic congestion between desktop PCs and servers. The two 100 Mbps ports can be used to connect to servers, or up-linked to other 100 Mbps switches/hubs.

- 2 Gbps switching engine
- Two forwarding method : runt-free cut-through and store-and-forward
- Support port-based VLAN via parallel port
- LEDs indicate real-time status of Power, Link, and Traffic

£649 (€762.57 inc VAT)

LAN Card

ALN-101 ISA PnP Ethernet Adapter Card



ALN-101 adapter card is a 10Mbps 16 bit Ethernet network interface card for Industry-Standard Architecture (ISA) bus computer. It is fully compatible and certified with Microsoft Plug and Play function.

- Comply with Windows 95 Plug and Play
- Support full-duplex 10Mbps Ethernet function
- Setup program includes a powerful diagnostic software for easy troubleshooting
- Provides on-board socket for remote Boot ROM
- LED diagnostic indicators monitor link status and traffic activities
- Acer Magic-Probe network monitoring software available
- Lifetime Warranty

£15 (€17.62 inc VAT)

LAN Card

ALN-201 PCI Ethernet Adapter Card



ALN-201 adapter card is a 10Mbps based 32-bit Ethernet network interface card for Peripheral Component Interconnect (PCI) bus computer. With the high speed PCI architecture, the adapter provides better and more robust performance than ISA adapter cards in a heavy throughput computer system.

- Cost effective PCI bus networking solution
- Support full-duplex 10Mbps Ethernet function
- Setup program includes a powerful diagnostic software for easy troubleshooting
- Provides on-board socket for remote Boot ROM
- LED diagnostic indicators monitor link status and traffic activities
- Acer Magic-Probe network monitoring software available
- Lifetime Warranty

£17 (€19.97 inc VAT)

LAN Card

ALN-310 Fast Ethernet Adapter Card



ALN-310 is a 10/100Mbps PCI bus adapter card using advanced single-chip PHY (physical layer & tranceiver) technology. It is designed for desktop or server system. The adapter card can operate at 10Mbps or 100Mbps with auto-negotiation function automatically.

- Auto-negotiation function for 10Mbps & 100Mbps
- Single-chip PHY (physical layer & tranceiver) technology
- Support full-duplex mode in 10Mbps & 100Mbps
- Setup program includes a powerful diagnostic software for easy troubleshooting
- Provides on-board socket for remote Boot ROM
- LED diagnostic indicators monitor link status and traffic activities
- Acer Magic-Probe network monitoring software available
- Lifetime Warranty

£28 (€32.90 inc VAT)

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SCSI HARD DISCS

Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
IBM						
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Ultrastar 2ES	4.3Gb	UltraWideSCSI	8.5ms	5400	164	192.70
Ultrastar 2ES	4.3Gb	UltraWideSCSI SCA	8.5ms	5400	164	192.70
Ultrastar 9ES 1"	4.5Gb	UltraSCSI	7.5ms	7200	205	240.87
Ultrastar 9ES 1"	4.5Gb	UltraWideSCSI	7.5ms	7200	205	240.87
Ultrastar 9ES 1"	4.5Gb	UltraWide SCISI SCA	7.5ms	7200	205	240.87
Ultrastar 9ES 1"	9.1Gb	UltraSCSI	7.5ms	7200	397	466.47
Ultrastar 9ES 1"	9.1Gb	UltraWide SCISI SCA	7.5ms	7200	397	466.47
Ultrastar 9LP 1"	9.0Gb	UltraSCSI	6.5ms	7200	475	558.12
Ultrastar 9LP 1"	9.0Gb	UltraWideSCSI	6.5ms	7200	475	558.12
Ultrastar 9LP 1"	9.0Gb	UltraWideSCSI SCA	6.5ms	7200	475	558.12
Ultrastar 9ZX 1.6"	9.0Gb	UltraWideSCSI	6.3ms	10020	625	734.37
Ultrastar 9ZX 1.6"	9.0Gb	UltraWideSCSI SCA	6.3ms	10020	625	734.37
Ultrastar 18XP 1.6"	18Gb	UltraSCSI	7.5ms	7200	865	1,016.37
Ultrastar 18XP 1.6"	18Gb	UltraWideSCSI	7.5ms	7200	865	1,016.37
Ultrastar 18XP 1.6"	18Gb	UltraWide SCISI SCA	7.5ms	7200	865	1,016.37
FUJITSU						
Allegro 3	4.5Gb 1"	UltraWideSCSI	9ms	7200	287	337.22
Allegro 3	4.5Gb 1"	UltraWideSCSI SCA	9ms	7200	292	343.10
Allegro 3	9.1Gb 1"	UltraWideSCSI	9ms	7200	477	560.47
Allegro 3	9.1Gb 1"	UltraWideSCSI SCA	9ms	7200	484	568.70
Allegro 3	18.2Gb	UltraWideSCSI	9ms	7200	923	1,084.52
Allegro 3	18.2Gb	UltraWideSCSI SCA	9ms	7200	923	1,084.52
QUANTUM						
Fireball SE 2100S	2.1Gb	UltraSCSI	9.5ms	5400	108	126.90
Fireball SE 3200S	3.2Gb	UltraSCSI	9.5ms	5400	124	145.70
Fireball SE 4300S	4.3Gb	UltraSCSI	9.5ms	5400	149	175.07
Fireball SE 6400S	6.4Gb	UltraSCSI	9.5ms	5400	207	243.22
Fireball SE 8400S	8.4Gb	UltraSCSI	9.5ms	5400	278	326.65
Viking II	4.5Gb	UltraWideSCSI LVD	7.5ms	7200	266	312.55
Viking II	4.5Gb	UltraWide SCISI SCA	7.5ms	7200	266	312.55
Viking II	9.1Gb	UltraWide SCISI LVD	7.5ms	7200	435	511.12
Viking II	9.1Gb	UltraWide SCISI SCA	7.5ms	7200	435	511.12
Atlas III	9.1Gb	UltraSCSI	7.5ms	7200	489	574.57
Atlas III	9.1Gb	UltraWide SCISI LVD	7.5ms	7200	489	574.57
Atlas III	9.1Gb	UltraWide SCISI SCA	7.5ms	7200	489	574.57
Atlas III	18.2Gb	UltraSCSI	7.5ms	7200	808	949.40
Atlas III	18.2Gb	UltraWide SCISI LVD	7.5ms	7200	808	949.40
Atlas III	18.2Gb	UltraWide SCISI SCA	7.5ms	7200	808	949.40
SEAGATE						
Medalist Pro ST34520N	4.5Gb		14ms	7200	Call	Call
Medalist Pro ST34520W	4.5Gb		14ms	7200	Call	Call
Medalist Pro ST34520WC	4.5Gb		14ms	7200	Call	Call
Medalist Pro ST36530N	6.5Gb		14ms	7200	Call	Call
Medalist Pro ST36530W	6.5Gb		14ms	7200	Call	Call
Medalist Pro ST36530WC	6.5Gb		14ms	7200	Call	Call
Medalist Pro ST39140N	9.1Gb		14ms	7200	Call	Call
Medalist Pro ST39140W	9.1Gb		14ms	7200	Call	Call
Medalist Pro ST39140WC	9.1Gb		14ms	7200	Call	Call
Barracuda 9LP ST34573N	4.5Gb	UltraSCSI	7.1/7.8ms	7200	338	397.15
Barracuda 9LP ST34573W	4.5Gb	UltraWideSCSI	7.1/7.8ms	7200	323	379.52
Barracuda 9LP ST34573WC	4.5Gb	UltraWideSCSI SCA	7.1/7.8ms	7200	323	379.52
Barracuda 9LP ST34573LW	4.5Gb	LVD	7.1/7.8ms	7200	358	420.65
Barracuda 9LP ST34573LC	4.5Gb	LVD SCA	7.1/7.8ms	7200	358	420.65
Barracuda 9LP ST34573FC	4.5Gb	Fibre Channel	7.1/7.8ms	7200	358	420.65
Barracuda 9LP ST39173N	9.1Gb	UltraSCSI	7.1/7.8ms	7200	460	540.50
Barracuda 9LP ST39173W	9.1Gb	UltraWideSCSI	7.1/7.8ms	7200	460	540.50
Barracuda 9LP ST39173WC	9.1Gb	UltraWideSCSI SCA	7.1/7.8ms	7200	506	594.55
Barracuda 9LP ST39173WD	9.1Gb	Wide Differential	7.1/7.8ms	7200	551	647.42
Barracuda 9LP ST39173LW	9.1Gb	LVD	7.1/7.8ms	7200	520	611.00
Barracuda 9LP ST39173LC	9.1Gb	LVD SCA	7.1/7.8ms	7200	520	611.00
Barracuda 9LP ST39173FC	9.1Gb	Fibre Channel	7.1/7.8ms	7200	520	611.00
Barracuda 18 ST118273N	18.2Gb	UltraSCSI	7.6/8.3ms	7200	865	1,016.37
Barracuda 18 ST118273W	18.2Gb	UltraWideSCSI	7.6/8.3ms	7200	865	1,016.37
Barracuda 18 ST118273WC	18.2Gb	UltraWideSCSI SCA	7.6/8.3ms	7200	865	1,016.37
Barracuda 18 ST118273WD	18.2Gb	Wide Differential	7.6/8.3ms	7200	910	1,069.25
Barracuda 18 ST118273LW	18.2Gb	LVD	7.6/8.3ms	7200	877	1,030.47
Barracuda 18 ST118273LC	18.2Gb	LVD SCA	7.6/8.3ms	7200	877	1,030.47
Barracuda 18 ST118273FC	18.2Gb	Fibre Channel	7.6/8.3ms	7200	877	1,030.47
Cheetah 4LP ST34501N	4.5Gb	UltraSCSI	7.5/8.5ms	10000	351	412.42
Cheetah 4LP ST34501W	4.5Gb	UltraWideSCSI	7.5/8.5ms	10000	357	419.47
Cheetah 4LPST34501WC	4.5Gb	UltraWide SCISI SCA	7.5/8.5ms	10000	367	431.22
Cheetah 9LP ST39102LW	9.1Gb	LVD	5.2/6.0ms	10000	637	748.47
Cheetah 9LP ST39102LC	9.1Gb	LVD SCA	5.2/6.0ms	10000	637	748.47
Cheetah 9LP ST39102FC	9.1Gb	Fibre Channel	5.2/6.0ms	10000	632	742.60
Cheetah 18 ST118202LW	18.2Gb	LVD	5.7/6.5ms	10000	1078	1,266.65
Cheetah 18 ST118202LC	18.2Gb	LVD SCA	5.7/6.5ms	10000	1078	1,266.65
Cheetah 18 ST118202FC	18.2Gb	Fibre Channel	5.7/6.5ms	10000	1097	1,288.97
WESTERN DIGITAL						
Enterprise E4360	4.3Gb	UltraSCSI	8ms	7200	277	325.47
Enterprise E4360	4.3Gb	UltraWideSCSI	8ms	7200	336	394.80
Enterprise E9100	9.1Gb	UltraSCSI	8ms	7200	436	512.30
Enterprise E9100	9.1Gb	UltraWideSCSI	8ms	7200	451	529.92

HARD DISCS



EIDE HARD DISCS

Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
IBM						
09J0308	6.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	134	157.45
0KK0394	8.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	174	204.45
FUJITSU						
PicoBird	2.1Gb	EIDE/Ultra DMA	11ms	5400	81	95.17
PicoBird	3.2Gb	EIDE/Ultra DMA	11ms	5400	93	109.27
PicoBird	4.3Gb	EIDE/Ultra DMA	11ms	5400	103	121.02
PicoBird	6.4Gb	EIDE/Ultra DMA	11ms	5400	136	159.80
MAXTOR						
90288D2 Diamond Max 2880	2.8Gb	EIDE/Ultra DMA/33	9ms	5400	85	99.87
90432D3 Diamond Max 2880	4.3Gb	EIDE/Ultra DMA/33	9ms	5400	102	119.85
90576D4 Diamond Max 2880	5.7Gb	EIDE/Ultra DMA/33	9ms	5400	126	148.05
86480D6 Diamond Max 2160	6.4Gb	EIDE/Ultra DMA/33	10ms	5200	127	149.22
88400D8 Diamond Max 2160	8.4Gb	EIDE/Ultra DMA/33	10ms	5200	174	204.45
91152D8 Diamond Max 2880	11.5Gb	EIDE/UltraDMA/33	9ms	5400	244	286.70
QUANTUM						
Fireball SE 2100AT	2.1Gb	EIDE/Ultra DMA ATA	9.5ms	5400	79	92.82
Fireball SE 3200AT	3.2Gb	EIDE/Ultra DMA ATA	9.5ms	5400	86	101.05
Fireball SE 4300AT	4.3Gb	EIDE/Ultra DMA ATA	9.5ms	5400	101	118.67
Fireball SE 6400AT	6.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	153	179.77
Fireball SE 8400AT	8.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	186	218.55
Fireball EL	2.5Gb	EIDE/Ultra DMA ATA	9.5ms	5400	88	103.40
Fireball EL	5.1Gb	EIDE/Ultra DMA ATA	9.5ms	5400	126	148.05
Fireball EL	7.6Gb	EIDE/Ultra DMA ATA	9.5ms	5400	162	190.35
Fireball EL	10.2Gb	EIDE/Ultra DMA ATA	9.5ms	5400	237	278.47
Bigfoot TX	4.0Gb	EIDE/Ultra DMA ATA	12ms	4000	95	111.62
Bigfoot TX	6.0Gb	EIDE/Ultra DMA 33	12ms	4000	120	141.00
Bigfoot TX	8.0Gb	EIDE/Ultra DMA 33	12ms	4000	141	165.67
Bigfoot TX	12.0Gb	EIDE/Ultra DMA 33	12ms	4000	201	236.17
SEAGATE						
Medalist ST32122A	2.1GbEIDE/Ultra ATA3 DMA		12ms	4500	74	86.95
Medalist ST33232A	3.2GbEIDE/Ultra ATA3 DMA		12ms	4500	83	97.52
Medalist ST33221A	3.2GbEIDE/Ultra ATA3 DMA		10.5ms	5400	Call	Call
Medalist ST34321A	4.3GbEIDE/Ultra ATA3 DMA		10.5ms	5400	95	111.62
Medalist Pro ST34520A	4.5GbEIDE/Ultra ATA3 DMA		9.5/10.5	7200	122	143.35
ST36531A	6.5GbEIDE/Ultra ATA3 DMA		10.5/11.5	5400	124	145.70
ST36530A	6.5GbEIDE/Ultra ATA3 DMA		9.5ms	7200	153	179.77
ST38641A	8.6GbEIDE/Ultra ATA3 DMA		10.5ms	5400	155	182.12
ST39140A	9.1GbEIDE/Ultra ATA3 DMA		9.5ms	7200	211	247.92
WESTERN DIGITAL						
AC22000-UD	2.0Gb	EIDE/Ultra DMA/33	11ms	5400	82	96.35
AC22500-UD	2.5Gb	EIDE/Ultra DMA/33	11ms	5400	85	99.87
AC33200-UD	3.2Gb	EIDE/Ultra DMA/33	11ms	5400	93	109.27
AC34300-UD	4.3Gb	EIDE/Ultra DMA/33	11ms	5400	107	125.72
AC35100-UD	5.1Gb	EIDE/Ultra DMA/33	11ms	5400	125	146.87
AC36400-UD	6.4Gb	EIDE/Ultra DMA/33	11ms	5400	135	158.62
2.5" EIDE HARD DISCS						
Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
HITACHI						
MDK226A-21U 12.7mm	2.1Gb	EIDE/Ultra DMA/33	12ms	4500	110	129.25
DK226A-32U 12.7mm	3.2Gb	EIDE/Ultra DMA/33	12ms	4500	156	183.30
DK227A-41U 12.7mm	4.1Gb	EIDE/Ultra DMA/33	12ms	4500	228	267.90
IBM						
Travelstar VP 9.5mm	1.62Gb	EIDE	13ms	4000	107	125.72
Travelstar 4LP 12.5mm	2.16Gb	EIDE	13ms	4000	122	143.35
Travelstar 3XP 17mm	3.08Gb	EIDE	12ms	4900	158	185.65
Travelstar 4GT 12.5mm	4.0Gb	EIDE/Ultra DMA/33	13ms	4000	275	323.12
Travelstar 5GS 17mm	5.1Gb	EIDE/Ultra DMA/33	12ms	4900	299	351.32
TOSHIBA						
MK2103 LP 12.7mm	2.1Gb	EIDE	13ms	4200	119	139.82
MK3205 LP 12.7mm	3.2Gb	EIDE	13ms	4200	146	171.55
MK4006 LP 12.7mm	4.0Gb	EIDE	13ms	4200	218	256.15



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Motherboards

- Intel 430 TX chipset motherboard 512 P/burst cache AT **£49** (€57.57)
- Intel 440 LX chipset Pentium II motherboard ATX **£69** (€81.07)



Monitors

- 14" 0.28dp monitor **£89** (€104.57)
- 15" 0.28dp monitor **£119** (€139.82)
- 17" 0.28dp monitor y **£229** (€269.07)

All monitors include 3 years onsite warranty



Modems

- 33.6k internal Rockwell chipset BAPT modem **£29** (€34.07)
- 56k internal Rockwell chipset BAPT modem **£42** (€49.35)



Sound Cards

- 16-bit 32 Wavetable 3D Yamaha sound card **£12** (€14.10)



Video Cards

- 1Mb S3 Trio 64-bit **£14** (€16.45)
- 2Mb S3 Trio 64-bit **£19** (€22.32)
- 4Mb S3 Virge DX 64-bit **£30** (€35.25)



Speakers

- 50w mains powered speakers **£7** (€8.22)
- 80w mains powered speakers **£12** (€14.10)
- 200w mains powered speakers **£17** (€19.97)
- 300w mains powered speakers **£30** (€35.25)
- 500w mains powered speakers & subwoofer **£45** (€52.87)



Network Cards

- 16-bit ISA Combo network card **£14** (€16.45)
- 32-bit PCI Combo network card **£16** (€18.80)



Keyboards

- Windows® 95 compatible Serial keyboard **£7** (€8.22)
- Windows® 95 compatible PS/2 keyboard **£7** (€8.22)



Mice

- Boxed mouse - Serial 3 button **£3** (€3.52)
- Boxed Mouse - PS/2 3 button **£3** (€3.52)



TV Tuner

- PC TV Tuner with Teletext (Internal) **£59** (€69.32)

Prices shown in brackets are inclusive of VAT



The Medalist family of drives

Seagate continues to lead the market with high-capacity, high-performance Ultra ATA disc drives for midrange and high-end desktop PCs.

Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
Medalist ST32122A	2.1Gb	EIDE/Ultra ATA3	12ms	4500	74 (€86.95)	
Medalist ST33232A	3.2Gb	EIDE/Ultra ATA3	12ms	4500	83 (€97.52)	
Medalist ST33221A	3.2Gb	EIDE/Ultra ATA3	10.5ms	5400	Call (€Call)	
Medalist ST34321A	4.3Gb	EIDE/Ultra ATA3	10.5/11.5ms	5400	95 (€111.62)	
Medalist Pro ST34520A	4.5Gb	EIDE/Ultra ATA3	9.5/10.5ms	7200	122 (€143.35)	
Medalist ST36531A	6.4Gb	EIDE/Ultra ATA3	9.5ms	5400	124 (€145.70)	
Medalist Pro ST36530A	6.5Gb	EIDE/Ultra ATA3	9.5/10.5ms	7200	153 (€179.77)	
Medalist ST38641A	8.6Gb	EIDE/Ultra ATA3	10.5/11.5ms	5400	155 (€182.12)	
Medalist Pro ST39140A	9.1Gb	EIDE/Ultra ATA3	9.5/10.5ms	7200	211 (€247.92)	

Prices shown in brackets are inclusive of VAT

The Medalist family of drives are backed by a 3 year limited warranty



High performance Ultra DMA

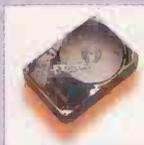
Model	Capacity	Interface	Access-Time	Speed	Exc Vat	Inc Vat
90288D2	2.8Gb	EIDE/Ultra DMA	9ms	5400	£85 (€99.87)	
90432D3	4.3Gb	EIDE/Ultra DMA	9ms	5400	£102 (€119.85)	
90576D4	5.7Gb	EIDE/Ultra DMA	9ms	5400	£126 (€148.05)	
86480D6	6.4Gb	EIDE/Ultra DMA	9ms	5200	£127 (€149.22)	
90840D6	8.4Gb	EIDE/Ultra DMA	9ms	5400	£174 (€204.45)	
91152D8	11.5Gb	EIDE/Ultra DMA	9ms	5400	£244 (€286.70)	

No Quibble 3 Year Warranty - Ask for details



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A range of quality hard drives at affordable prices



Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
Fireball SE 2100AT	2.1Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£79 (€92.82)	
Fireball SE 3200AT	3.2Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£86 (€101.05)	
Fireball SE 4300AT	4.3Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£101 (€118.67)	
Fireball SE 6400AT	6.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£153 (€179.77)	
Fireball SE 8400AT	8.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£186 (€218.55)	
Fireball SE 2100S	2.1Gb	UltraSCSI	9.5ms	5400	£108 (€126.90)	
Fireball SE 3200S	3.2Gb	UltraSCSI	9.5ms	5400	£124 (€145.70)	
Fireball SE 4300S	4.3Gb	UltraSCSI	9.5ms	5400	£149 (€175.07)	
Fireball SE 6400S	6.4Gb	UltraSCSI	9.5ms	5400	£207 (€243.22)	
Fireball SE 8400S	8.4Gb	UltraSCSI	9.5ms	5400	£278 (€326.65)	

IBM hard disk drives

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Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
09J0308	6.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	£134 (€157.45)	
00K0394	8.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	£174 (€204.45)	
Ultrastar 2ES	4.3Gb	UltraSCSI	8.5ms	5400	£164 (€192.70)	
Ultrastar 2ES	4.3Gb	UltraWideSCSI	8.5ms	5400	£164 (€192.70)	
Ultrastar 2ES	4.3Gb	UltraWideSCSI SCA	8.5ms	5400	£164 (€192.70)	
Ultrastar 9ES 1"	9.1Gb	UltraSCSI	7.5ms	7200	£397 (€466.47)	
Ultrastar 9ES 1"	9.1Gb	UltraWide SCSI	7.5ms	7200	£397 (€466.47)	
Ultrastar 9ES 1"	9.1Gb	UltraWide SCSI SCA	7.5ms	7200	£397 (€466.47)	
Ultrastar 18XP 1.6"	18Gb	UltraSCSI	7.5ms	7200	£865 (€1,016.37)	
Ultrastar 18XP 1.6"	18Gb	UltraWideSCSI	7.5ms	7200	£865 (€1,016.37)	
Ultrastar 18XP 1.6"	18Gb	UltraWide SCSI SCA	7.5ms	7200	£865 (€1,016.37)	

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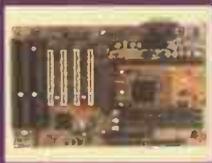


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Chaintech 6LTM Intel 440LX £95 (£111.62)

- 68/75/83 MHz system clock speeds for over-clocking possibility
- Innovative SeePU Jumperless CPU setup, no extra installation efforts
- Provides full memory size DRAM cacheability
- Double-height I/O connector for rapid system installation
- Hardware design meets Microsoft PC98 requirements
- The most powerful PC platform for a 32-bit environment in the high-end business or home market



Chaintech 6LTM

Chaintech 6BTM Intel 440BX £116 (£136.30)

- 68/75/83/103/112 MHz system clock speeds for over-clocking possibility
- On-board foldable CPU retention kit to ease the system assembly
- Innovative SeePU Jumperless CPU installation
- Double-height I/O connector for rapid system installation
- Hardware design meets Microsoft PC98 requirements
- Supports SB-link header for creative PC audio
- Supports Wake-on-LAN function to simplify network management even in off-hours

Model	Chipset	Memory	PCI/ISA/AGP	Form Factor	Sound	VGA	SCSI	Price
5SIM	SIS	2 DIMM, 2 SIMM	4/3/0	AT	No	No	No	£49 (£57.57)
5DM2	Intel 430TX	2 DIMM, 4 SIMM	4/4/0	AT	No	No	No	£65 (£76.37)
5TTL	Intel 430TX	3 DIMM	4/4/0	ATX	No	No	No	£65 (£76.37)
6LTM	Intel 440LX	3 DIMM	4/3/1	ATX	No	No	No	£95 (£111.62)
6BTM	Intel 440BX	4 DIMM	4/3/1	ATX	No	No	No	£116 (£136.30)

Prices shown in brackets are inclusive of VAT



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**BX6 ATX Motherboard
with Intel 440BX chipset
and CPU SOFT MENU™**

- CPU**
- Supports Pentium® II 350 - 400MHz processor (Based on 100MHz clock)
 - Supports Pentium® II 233 - 333MHz processor (Based on 66MHz clock)
- Chipset**
- Intel 430BX chipset (82443BX and 82371EB)
 - Supports Ultra DMA/33 IDE protocol
 - Supports Advanced Configuration and Power Management Interface (ACPI)
 - Supports AGP 66MHz/133MHz (Sideband) 3.3v device
- Memory (DRAM)**
- Four 168-pin DIMM sockets support SDRAM module
 - Supports up to 512MB MAX. (8, 16, 32, 64, 128MB SDRAM)
- ECC support**
- L2 Cache Memory**
- Level 1 and Level 2 cache built into Intel Pentium® II processor cache
- System BIOS**
- Built-in CPU SOFT MENU™ sets all CPU parameters
 - Award Plug and Play BIOS Supports APM, DMI, and ACPI
 - Write-Protect Anti-Virus function by AWARD BIOS
 - Year 2000 compliant
- Multi I/O Functions**
- One floppy port supporting up to 2.88MB FDD + 3 mode floppy drive
 - Two channels of bus master IDE ports connectors for up to four IDE devices (including LS-120MB floppy drive)
 - One Built-in Standard/EPP/ECP parallel port connectors
 - Two built-in 16550 fast UART compatible serial ports connectors
 - Built-in PS/2 keyboard and PS/2 mouse ports connectors
 - Built-in standard I/O TX/RX header
 - Built-in two USB connector
- Miscellaneous**
- ATX form factor
 - One AGP slot, four PCI slots and three ISA slots
 - Hardware monitoring-included fan speed, voltage and systems environment temperature

**LX6 ATX PII Motherboard
with Intel 440LX chipset
and CPU SOFT MENU™**

- CPU**
- Employs switching type regulator to stabilize CPU operation
 - Supports 66MHz CPU external clock speeds
 - Supports Pentium II 233 - 300MHz CPU
- Chipset**
- Intel 440LX chipset (82443LX and 82371AB)
 - Supports Ultra DMA/33 IDE protocol
 - Supports Advanced Configuration and Power Management Interface (ACPI)
 - Supports AGP 66MHz/133MHz Sideband 3.3v device
- Memory (DRAM)**
- Four 168-pin DIMM sockets support SDRAM, EDO DRAM modules
 - Supports up to 512MB (EDO DRAM up to 1GB)
- ECC support**
- L2 Cache Memory**
- Level 1 and Level 2 cache built into Intel Pentium II processor card
- System BIOS**
- Award Plug and Play BIOS Supports APM, DMI, and ACPI
- Multi I/O Functions**
- One floppy port supporting up to 2.88MB, 3 mode FDD + LS-120
 - Ultra DMA/33 bus master IDE supports up to 4 IDE devices
 - Built-in Standard/EPP/ECP parallel port
 - Two 16550 compatible serial ports connectors
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M1-SBR**



Pentium II Intel 440BX Chipset

- Intel PII 233-333MHz (66MHz FSB) 350-400MHz (100MHz FSB)
- Intel 440BX AGP chipset
- Supports 66MHz and 100MHz FSB
- Phoenix 4.06 BIOS
- Optimised for PC100 compliant SDRAM
- 3 x 3.3v DIMMS (Max 768MB PC100 SDRAM)
- 4 PCI slots, 2 ISA slots, 1 AGP slot
- LM79 Systems Hardware Monitoring
- Wake-on-LAN
- Soundblaster 16 compatible
- Mini ATX form factor (PS/2 style keyboard & PS/2 mouse)

no sound **£125** (£146.87)

with sound **£135** (£158.62)

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Dual Pentium II Intel 440BX Chipset

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- Intel 440BX AGP chipset
- Supports 66MHz and 100MHz FSB
- Phoenix 4.06 BIOS
- 4 x 3.3v Unbuffered DIMMS (Max 1GB EDO/SDRAM)
- 5 PCI slots, 1 ISA slot, 1 AGP slot
- LM79 Systems Hardware Monitoring
- Wake-on-LAN
- Soundblaster 16 compatible
- ATX form factor (PS/2 keyboard and mouse)

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MX Pro 200MHz MMX	109	128.07

IBM	ex VAT	inc VAT
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PR233 6X86MX & Heatsink	56	65.80
PR266 6X86MX & Heatsink	81	95.17
PR300 6X86MX & Heatsink	127	149.22

INTEL PENTIUM	ex VAT	inc VAT
Pentium MMX 200MHz	82	96.35
Pentium MMX 233MHz	90	105.75
Pentium II 233MHz	135	158.62
Pentium II 266MHz (Celeron)	102	119.85
Pentium II 266MHz	133	156.27
Pentium II 300MHz	205	240.87
Pentium II 333MHz	275	323.12
Pentium II 350MHz	347	407.72
Pentium II 400MHz	483	567.52

INTEL OVERDRIVE	ex VAT	inc VAT
Pentium 100, 133 → Pentium 166MMX	103	121.02
Pentium 90, 120, 150 → 180MMX	125	146.87
Pentium 100, 133, 166 → 200MMX	150	176.25

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Midi Tower	42	49.35
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ATX Midi Tower	51	59.92

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Mini Tower	65	76.37
Full Tower	89	104.57
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ATX Midi Tower	79	92.82
ATX Full Tower	89	104.57
ATXFileServer	685	804.87

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IntelliMouse	28	32.90
IntelliMouse Trackball	39	45.82

MITSUMI	ex VAT	inc VAT
2 button Serial / PS/2	6	5.87

MOTHERBOARDS

ABIT	Intel Chipset	Memory SIMM, DIMM	Slots PCI/ISA/AGP	Form Factor	with Sound	with VGA	with SCSI	with HW Health Monitoring	Exc Vat	Inc Vat
PX5	430TX	2S, 2D	4/4/0	AT	No	No	No	No	49	57.57
AX5	430TX	4S, 3D	3/2/0	ATX	No	No	No	No	56	65.80
TX5	430TX	4S, 2D	3/2/0	AT	No	No	No	No	56	65.80
AH6	440LX	3D	3/2/1	ATX	No	No	No	No	68	79.90
LX6	440LX	4D	4/3/1	ATX	No	No	No	No	75	88.12
BX6	440BX	4D	4/3/1	ATX	No	No	No	Yes	100	117.50
EX6	440EX	2D	3/2/1	ATX	No	No	No	No	Call	Call

ASUSTEK	Intel Chipset	Memory SIMM, DIMM	Slots PCI/ISA/AGP	Form Factor	with Sound	with VGA	with SCSI	with HW Health Monitoring	Exc Vat	Inc Vat
TX97-E	430TX	4S, 2D	4/3/0	AT	No	No	No	Yes	74	86.95
TX97-X	430TX	3D	4/4/0	ATX	No	No	No	Yes	78	91.65
TX97-XE	430TX	4S, 2D	4/4/0	ATX	No	No	No	Yes	78	91.65
TX97-XE	430TX	4S, 2D	4/4/0	ATX	Yes	No	No	Yes	99	116.32
SP97-V	SIS 5598	4S	4/3/0	AT	No	Yes	No	No	58	68.15
P2L97	440LX	3D	5/2/1	ATX	No	No	No	Yes	90	105.75
P2L97-S	440LX	3D	4/2/1	ATX	No	No	Yes	Yes	152	178.60
P2L97-DS	Dual 440LX	4D	4/2/1	ATX	No	No	Yes	Yes	234	274.95
P2L97-A	440LX	3D	4/2/OnboardAGP	ATX	No	Yes	No	No	144	169.20
P2B	440BX	3D	4/3/1	ATX	No	No	No	Yes	119	139.82
P2B-S	440BX	4D	4/2/1	ATX	No	No	Yes	Yes	210	246.75
P2B-DS	Dual 440BX	4D	4/2/1	ATX	No	No	Yes	Yes	311	365.42

CHAINTECH	Intel Chipset	Memory SIMM, DIMM	Slots PCI/ISA/AGP	Form Factor	with Sound	with VGA	with SCSI	with HW Health Monitoring	Exc Vat	Inc Vat
5SIM	SIS	2S, 2D	4/3/0	AT	No	No	No	No	49	57.57
5TDM2	430TX	4S, 2D	4/4/0	AT	No	No	No	No	65	76.37
5TTL	430TX	3D	4/4/0	ATX	No	No	No	No	65	76.37
6LTM	440LX	3D	4/3/1	ATX	No	No	No	Yes	95	111.62
6BTM	440BX	4D	4/3/1	ATX	No	No	No	Yes	116	136.30

GIGABYTE	Intel Chipset	Memory SIMM, DIMM	Slots PCI/ISA/AGP	Form Factor	with Sound	with VGA	with SCSI	with HW Health Monitoring	Exc Vat	Inc Vat
GA586TX2	430TX	4S, 2D	4/3/0	AT	No	No	No	Yes	73	85.77
GA586TX3	430TX	2S, 3D	4/3/0	AT	No	No	No	Yes	73	85.77
GA586TX4	430TX	4D	4/4/0	ATX	No	No	No	Yes	61	71.67
GA686LX4	440LX	4D	4/2/1	ATX	No	No	No	Yes	88	103.40
GA686BLX	440LX	4D	4/2/1	AT	No	No	No	Yes	88	103.40
GA686DLX	Dual 440LX	4D	4/3/1	ATX	No	No	Yes	Yes	187	219.72
GA686BX	440BX	4D	4/3/1	ATX	No	No	No	Yes	112	131.60

MOTHERBOARDS

INTEL - Retail boxed	Intel Chipset	Memory SIMM, DIMM	Slots PCI/ISA/AGP	Form Factor	with Sound	with VGA	with SCSI	with HW Health Monitoring	Exc Vat	Inc Vat
Atlanta AL440LX	440LX	3D	4/2/1	ATX	No	No	No	Yes	99	116.32
Atlanta AL440LX	440LX	3D	4/2/1	ATX	Yes	No	No	Yes	100	117.50
SE440BX	440BX	3D	4/2/1	ATX	No	No	No	Yes	117	137.47
MU440EX	440EX	3D	4/2/1	ATX	Yes	No	No	Yes	133	156.27

MICRONICS	Intel Chipset	Memory SIMM, DIMM	Slots PCI/ISA/AGP	Form Factor	with Sound	with VGA	with SCSI	with HW Health Monitoring	Exc Vat	Inc Vat
Twister M7STA	430TX	4S, 2D	5/4/0	AT	No	No	No	Yes	73	85.77
Twister M7STW	430TX	4S, 2D	4/4/0	ATX	No	No	No	Yes	73	85.77
Twister M1SLAT	440LX	3D	3/2/1	AT	No	No	No	Yes	80	94.00
Tigercat M1SLT	440LX	4D	4/2/1	ATX	No	No	No	Yes	116	136.30
Tigercat M1SLT	440LX	4D	4/2/1	ATX	Yes	No	No	Yes	126	148.05
Spitfire M1DLS	Dual 440LX	4D	3/2/1	ATX	Yes	No	Yes	Yes	267	313.72
Redstone M1SBR	440BX	3D	4/2/1	ATX	No	No	No	Yes	125	146.87
Redstone M1SBR	440BX	3D	4/2/1	ATX	Yes	No	No	Yes	135	158.62
Helios M10BH	Dual 440BX	4D	5/1/1	ATX	No	No	No	Yes	202	237.35
Helios M10BH	Dual 440BX	4D	5/1/1	ATX	Yes	No	No	Yes	212	249.10

ODI	Intel Chipset	Memory SIMM, DIMM	Slots PCI/ISA/AGP	Form Factor	with Sound	with VGA	with SCSI	with HW Health Monitoring	Exc Vat	Inc Vat
Titanium 1B+	440TX	4S, 2D	4/3/0	AT	No	No	No	No	64	75.195
Legend III	440LX	4D	4/2/1	ATX	Yes	Yes	No	Yes	177	207.97
Legend IV	Dual 440LX	4D	4/3/1	ATX	No	No	Yes	No	324	380.70
Legend V	440LX	3D	4/3/1	ATX	No	No	No	No	83	97.52
Brilliant I	440BX	3D	4/3/1	ATX	No	No	No	No	110	129.25
Brilliant IV	Dual 440BX	4D	4/2/1	ATX	No	No	Yes	No	335	393.62

SMICRO	Intel Chipset	Memory SIMM, DIMM	Slots PCI/ISA/AGP	Form Factor	with Sound	with VGA	with SCSI	with HW Health Monitoring	Exc Vat	Inc Vat
P5MMA98	430TX	2D	4/4/0	AT	No	No	No	Yes	75	88.12
P5MMS98	430TX	2D	4/4/0	AT	No	No	No	Yes	75	88.12
P6SLA	440LX	3D	4/3/1	ATX	No	No	No	Yes	85	99.87
P6SLS	440LX	3D	4/3/1	ATX						

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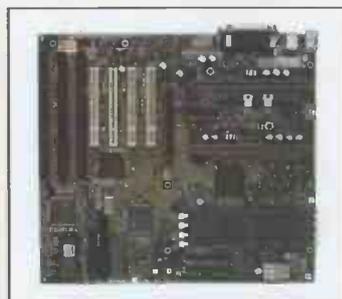
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- Ultra DMA Bus Master with 33Mb/s burst data transfer rate, supports PIO Mode 4, DMA Mode 2 and up to 4 IDE devices
- 1 ECP/EPP Parallel Port, 2 USB Connectors, PS/2 Mouse and PS/2 Keyboard
- ACPI-Ready/PC 98 Ready
- PC Health Monitoring
- ATX Form Factor



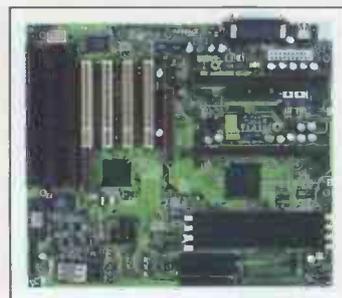
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- Pentium II 233-400MHz (66/100MHz CPU and DRAM Buses)
- 3 DIMM Sockets
- 4 PCI/3 ISA/1 AGP slots
- 2Mb flash BIOS, Plug and Play, APM 1.2, DMI 2.01
- 2 Ultra DMA Bus Master with 33Mb/s burst data transfer rate, supports PI Mode 4, DMA Mode 2 and up to 4 IDE devices and LS-120 optical Floppy
- 1 ECP/EPP Parallel Port, 2 USB Connectors, PS/2 Mouse and PS/2 Keyboard
- ACPI 1.0/PC 98 Ready
- PC Health Monitoring
- ATX Form Factor



P6SBE Pentium II 440BX

P6 DBE Pentium II 440BX
P6 DBS Pentium II 440BX
with Adaptec Dual Channel UWSCSI

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- Intel 440BX Chipset
- Dual Pentium II 233-400MHz (66/100MHz CPU and DRAM Buses), (works with one or two CPUs)
- 4 DIMM Sockets
- 4 PCI/3 ISA/1 AGP slots
- 2Mb flash BIOS, Plug and Play, APM 1.2, DMI 2.01
- 2 Ultra DMA Bus Master with 33Mb/s burst data transfer rate, supports PI Mode 4, DMA Mode 2 and up to 4 IDE devices and LS-120 optical Floppy
- 1 ECP/EPP Parallel Port, 2 USB Connectors, PS/2 Mouse and PS/2 Keyboard
- ACPI 1.0/PC 98 Ready
- PC Health Monitoring
- ATX Form Factor



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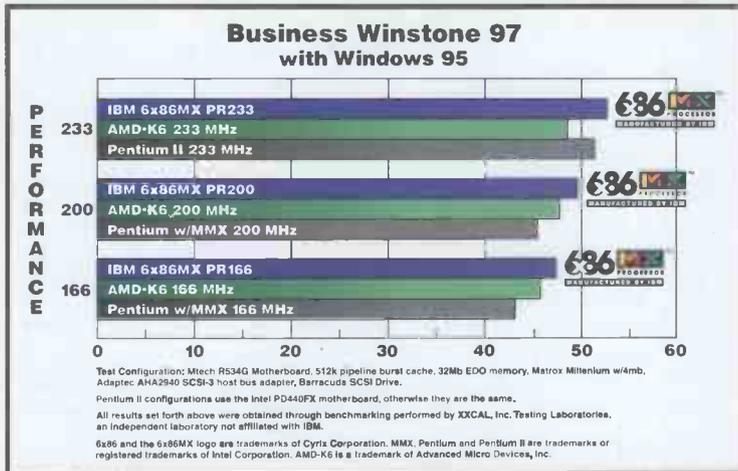
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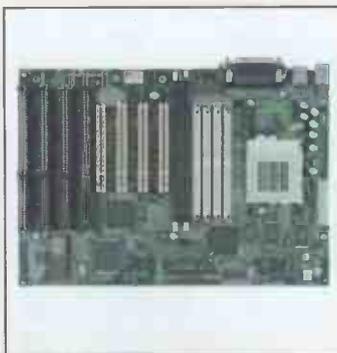
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EZCD x24	Parallel	Twenty Four	Ext	125	146.87	CDRW Satellite 12250	Parallel/IDE	6x 2x 2x	Ext	Yes	N/a	2 CDR, 1 CDRW	229	269.07
EZCD Sound x16	Parallel	Sixteen	Ext	160	188.00	CDRW Satellite 12018	Parallel/SCSI	6x 2x 2x	Ext	Yes	No	2 CDR, 1 CDRW	249	292.57
EZCD Sound x24	Parallel	Twenty Four	Ext	170	199.75	CDRW Satellite 12133	Parallel/SCSI	6x 2x 2x	Ext	Yes	No	2 CDR, 1 CDRW	309	363.07
EZCD Card x16	PCMCIA	Sixteen	Ext	165	193.87	CDRW Satellite 12134	Parallel/IDE	6x 2x 2x	Ext	Yes	N/a	2 CDR, 1 CDRW	289	339.57
EZCD Plus x10	PCMCIA	Ten	Ext	160	188.00	CDRW Satellite 12257	Parallel/SCSI	6x 2x 2x	Ext	Yes	No	2 CDR, 1 CDRW	325	381.87
EZCD Plus x20	PCMCIA	Twenty	Ext	180	211.50	CDRW Satellite 11625	Parallel/IDE	6x 2x	Ext	Yes	N/a	1 CDRW	279	327.82
COMPUTER CONNECTIONS						CDRW Connect 11626	Parallel/SCSI	6x 2x	Ext	Yes	No	1 CDRW	285	334.87
Connect 24 (11631)	Parallel/IDE	Twenty Four	Ext	109	128.07	CDRW Connect 12027	Parallel/SCSI	6x 4x 2x	Ext	Yes	No	1 CDRW	365	428.87
Connect 32 (12306)	Parallel/IDE	Thirty Two	Ext	129	151.57	HEWLETT PACKARD								
Connect 24 (11633)	Parallel/SCSI	Twenty Four	Ext	129	151.57	Surestore 7200i CDRW	IDE	6x 2x 2x	Int	Yes	N/a	1 CDRW, 1 CDR	234	274.95
Connect 32 (12307)	Parallel/SCSI	Thirty Two	Ext	159	186.82	Surestore 7200e CDRW	Parallel	6x 2x 2x	Ext	Yes	No	1 CDRW, 1 CDR	288	338.40
CREATIVE LABS						MITSUMI								
CR-585B	IDE	Twenty Four	Int	35	41.12	CR2B01TE	IDE	8x 2x	Int	Yes	N/a	3 CDR	155	182.12
Discovery 64 Kit	IDE	Twenty Four	Int	83	97.52	NOMAI								
Blaster DVD	IDE		Int	84	98.70	WB5000 Bare	IDE	6x 2x 2x	Int	No	N/a	No	235	276.12
Performance Gold DVD	IDE		Int	199	233.82	W15000 Kit	IDE	6x 2x 2x	Int	Yes	N/a	5 CDR	245	287.87
PC-DVD Encore DXR2	IDE		Int	170	199.75	WB2200 Bare	SCSI	6x 2x 2x	Int	No	No	No	250	293.75
DABS						W12200Soft	SCSI	6x 2x 2x	Int	Yes	No	5 CDR	259	304.32
Dabs 24x	IDE	Twenty Four	Int	34	39.95	W12000 Kit	SCSI	6x 2x 2x	Int	Yes	Yes	5 CDR	280	329.00
Dabs 32x	IDE	Thirty Two	Int	36	42.30	WA2200 Bare	SCSI	6x 2x 2x	Ext	No	No	No	280	329.00
MITSUMI						WE2200UK	SCSI	6x 2x 2x	Ext	Yes	No	5 CDR	285	334.87
FX-240	IDE	Twenty Four	Int	35	41.12	WE2000UK Kit	SCSI	6x 2x 2x	Ext	Yes	Yes	5 CDR	325	381.87
FX-320	IDE	Thirty Two	Int	37	43.47	WE2100UK	Parallel	6x 2x 2x	Ext	Yes	No	5 CDR	315	370.12
PANASONIC						WE1000UK	SCSI	6x 2x 2x	Ext Mac	Yes	No	5 CDR	315	370.12
CR588	IDE	Thirty Two	Int	47	55.22	PHILIPS								
CR508	SCSI	Twenty Four	Int	68	79.90	CDD-3610	IDE	6x 2x 2x	Int	Yes (recording)	n/a	1 CDRW, 1 CDR	210	246.75
PIONEER						CDD-3600	SCSI	6x 2x 2x	Int	Yes (recording)	n/a	1 CDRW, 1 CDR	Call	Call
DRA-24x	IDE	Twenty Four	Int	37	43.47	RICOH								
DRA-32x	IDE	Thirty Two	Int	48	56.40	MP-6200A Bare	IDE	6x 2x 2x	Int	Yes (Data)	N/a	1 CDRW, 5 CDR	245	287.87
PLEXTOR						MP-6200S Bare	SCSI	6x 2x 2x	Int	Yes (Data)	No	No	225	264.37
UltraPlex PX32TSI	SCSI	Thirty Two	Int	83	97.52	MP-6200S Soft	SCSI	6x 2x 2x	Int	Yes	No	1 CDRW, 5 CDR	255	299.62
UltraPlex PX32CSI	SCSI	Thirty Two	Int	119	139.82	MP-6200S/PK1 Kit	SCSI	6x 2x 2x	Int	Yes	Yes	1 CDRW, 5 CDR	285	334.87
UltraPlex PX32TSE	SCSI	Thirty Two	Ext	126	148.05	MP-6200S Bare	SCSI	6x 2x 2x	Ext	Yes (Data)	No	No	270	317.25
SAMSUNG						MP-6200S Soft	SCSI	6x 2x 2x	Ext	Yes	No	1 CDRW, 5 CDR	295	346.62
SCR-3230	IDE	Thirty Two	Int	37	43.47	MP-6200S Kit	SCSI	6x 2x 2x	Ext	Yes	Yes	1 CDRW, 1 CDR	325	381.87
TEAC						MP-6200S Mac Kit	SCSI	6x 2x 2x	Ext	Yes	No	1 CDRW, 5 CDR	305	358.37
CD-524E	IDE	Twenty Four	Int	38	44.65	TRAXDATA								
CD-532E	IDE	Thirty Two	Int	47	55.22	CDR-4120Pro	SCSI	12x 4x	Int	Yes (recording)	Yes	1 CDRW, 1 CDR	275	323.12
CD-532S	SCSI	Thirty Two	Int	57	66.97	CDR4120ELPro	SCSI	12x 4x	Int	Yes (recording)	No	1 CDRW, 1 CDR	245	287.87
TOSHIBA						CDR4120ELPro	SCSI	12x 4x	Ext	Yes (recording)	No	1 CDRW, 1 CDR	275	323.12
XM62028	IDE	Thirty Two	Int	43	50.52	CDRW-2260ELPRO	SCSI	6x 2x 2x	Int	Yes	Yes	No	269	316.07
XM62018	SCSI	Thirty Two	Int	55	64.62	CDRW-2260EL	SCSI	6x 2x 2x	Int	Yes	No	No	229	269.07
CD MEDIA						CDRW-2260PLUS	IDE	6x 2x 2x	Int	Yes	No	1 CDRW, 1 CDR	234	274.95
DABS						CDRW-4260	SCSI	6x 4x 2x	Int	Yes	No	No	270	317.25
650Mb CD Recordable x 1				2.00	2.35	CDRW-4260	IDE	6x 4x 2x	Int	Yes	No	1 CDRW, 1 CDR	Call	Call
650Mb CD Recordable x 10 each				1.80	2.11	YAMAHA								
650Mb CD Recordable x 100 each				1.50	1.76	CDRW 2260T Bare	SCSI	6x 2x 2x	Int	No	No	No	205	240.87
650Mb CD ReWriteable x 1				16	18.80	CDRW 2260T with S/W	SCSI	6x 2x 2x	Int	Yes	No	No	215	252.62
650Mb CD ReWriteable x 10 each				14	16.45	CDRW 2260T Kit	SCSI	6x 2x 2x	Int	Yes	Yes	1 CDRW, 1 CDR	245	287.87
650Mb CD ReWriteable x 100 each				13	15.27	CDRW 2260TX Bare	SCSI	6x 2x 2x	Ext	No	No	No	230	270.25
WAITEC						CDRW 2260TX with S/W	SCSI	6x 2x 2x	Ext	Yes	No	No	240	282.00
WT-412S	SCSI	12x 4x	Int	Yes	No	CDRW 2260TX Kit	SCSI	6x 2x 2x	Ext	Yes	Yes	1 CDRW, 1 CDR	275	323.12
WT-412S	SCSI	12x 4x	Int	Yes	Yes	CDRW 4260T Bare	SCSI	6x 4x 2x	Int	No	No	No	260	305.50
WT-412S	SCSI	12x 4x	Ext	Yes	No	CDRW 4260T with S/W	SCSI	6x 4x 2x	Int	Yes	No	No	275	323.12
WT-412S	SCSI	12x 4x	Ext	Yes	No	CDRW 4260T Kit	SCSI	6x 4x 2x	Int	Yes	Yes	1 CDRW, 1 CDR	305	358.37
WT-412S	SCSI	12x 4x	Ext	Yes	Yes	CDRW 4260TX Bare	SCSI	6x 4x 2x	Ext	No	No	No	305	358.37
WT-412S	SCSI	12x 4x	Ext	Yes	No	CDRW 4260TX with S/W	SCSI	6x 4x 2x	Ext	Yes	No	No	315	370.12
WT-412S	SCSI	12x 4x	Ext	Yes	Yes	CDRW 4260TX Kit	SCSI	6x 4x 2x	Ext	Yes	Yes	1 CDRW, 1 CDR	345	405.37

CD MEDIA			
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DABS			
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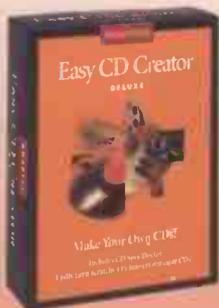
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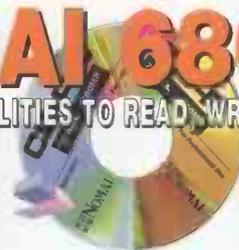
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CDR-4120ELPro*	£245	£293.87	CDR-4260EL*	£266	£312.55
CDE-4120ELPro*	£275	£323.12	CDR-4260EL*	£272	£319.50
CDRW-2260	£269	£316.07	CDR-4260EL*	£299	£351.52
CDRW-2260EL	£229	£276.07			
CDRW-2260EL*	£234	£274.95			
CDRW-4260	£270	£317.25			

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Model	Interface	read/Write	Int/Ext	Software included	SCSI card included	Media	Price
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MP-6200S Bare	SCSI	6x2x2x	Int	Yes(Data)	No	No	£225 (€264.37)
MP-6200S Soft	SCSI	6x2x2x	Int	Yes	No	1CDRW,5 CDR	£255 (€299.62)
MP-6200S/PK1 Kit	SCSI	6x2x2x	Int	Yes	Yes	1CDRW,5 CDR	£285 (€334.87)
MP-6200S Bare	SCSI	6x2x2x	Ext	Yes(Data)	No	No	£270 (€317.25)
MP-6200S Soft	SCSI	6x2x2x	Ext	Yes	No	1CDRW,5 CDR	£295 (€346.62)
MP-6200S Kit	SCSI	6x2x2x	Ext	Yes	Yes	1CDRW,5 CDR	£325 (€381.87)
MP-6200SMac Kit	SCSI	6x2x2x	Ext	Yes	No	1CDRW,5 CDR	£305 (€358.37)

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Internal SCSI Drive	2 x CDR	Manual	Audio & SCSI cable	S/W	CD Direct	CD Creator	PCI controller card	£266 (€312.55)
External SCSI Drive	2 x CDR	Manual	Audio & SCSI cable	S/W	CD Direct	CD Creator	£272 (€319.50)	
External SCSI Drive	2 x CDR	Manual	Audio & SCSI cable	S/W	CD Direct	CD Creator	PCI controller card	£299 (€351.52)

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- HP's SimpleTrax software for file tracking and efficient file management
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- Use Corel PrintHouse Magic and Multimedia Content to make an impact with your presentations
- Adobe Photo Deluxe for exciting photographic projects and screen savers
- Adaptec's Audio CD for creating audio CD's
- Digital Now Photo Album for cataloguing pictures and photos
- Includes Norton AntiVirus, which provides virus-free CD creation and distribution

Internal EIDE	£234	(€274.95 inc VAT)
External Parallel	£288	(€338.40 inc VAT)

ULTRAPLEX

PX-32TSi internal	£83	(€97.52)
PX-32CSi internal	£119	(€139.82)
PX-32TSe external	£126	(€148.05)

The PX-32TSi/CSi/TSe CD-ROM drives, use a highly reliable Caddy or Tray mechanism. The ULTRA-SCSI interface offers you a higher reliability for multimedia applications. Combined with a quick random access time of 85ms, it will increase multi-user and multi-tasking performance.

CD-ROM drives have two years warranty.

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The CD-Recorder includes a one year warranty.

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32x Speed IDE	IDE	Thirty Two	Int	£36	£42.30



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AHA-2940U kit PCI	149	175.07
AHA-2940UW kit PCI	175	205.62
AHA-2940U2W kit PCI	249	292.57
AHA-3940U kit PCI	249	292.57
AHA-3940UW kit PCI	285	334.87
AHA-8920 Firewire kit PCI	179	210.32
AAA-131 RAID kit PCI	269	316.07
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APA-1450 SlimSCSI PCMCIA	62	72.85
APA-1460 SlimSCSI PCMCIA	99	116.32
APA-1480 SlimSCSI CardBus	149	175.07

ADVANSYS		
ABP-940U PCI SCSI	49	57.57

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LOGITECH		
Wingman Lite	17	19.97

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Sidewinder Precision Pro	35	41.12
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Mitsumi FX240 24x CD-ROM Drive	£35	(£41.12)
Mitsumi FX320 32x CD-ROM Drive	£37	(£43.47)
Mitsumi 1.44Mb Floppy Disk Drive	£12	(£14.10)
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Monster Sound MX100 PCI	call	call
Sonic Impact 3D	call	call

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16bit 32 Wavetable 3D Yamaha	12	14.10

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Schubert 3D Pro	24	28.20
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VIDEOLOGIC		
SonicStorm PCI	49	57.57

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CSW-50 50W	24	28.20
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CSW-200 200W Sound Works	69	81.07
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LCS-1224 10W 3D	49	57.57
LCS-3210 20W 3D	50	58.75
LCS-2612 20W 3D & Subwoofer	65	76.37

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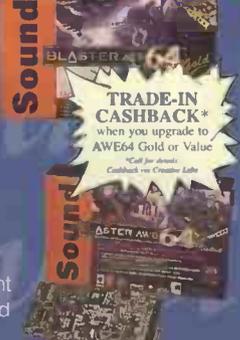
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nexus



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Features

- Full retail kit includes software, manual cables
- Enhanced IDE ATAPI interface, access time 88ms, 512KB buffer
- Supports DOS/ Win 3.1, 95, NT 3.5/5.0
- Includes Seagate Backup Exec software for unattended and scheduled backups
- PD Media compatible with Panasonic DVD RAM

IDE Internal
LF-1196 **£199**
(£233.82 inc VAT)

SCSI Internal
(24x CD ROM)
LF-1097 **£249**
(£292.57 inc VAT)

Parallel
LF-1500 **£249**
(£292.57 inc VAT)

Panasonic

REMOVABLE DRIVES & STREAMERS



REMOVABLE DRIVES

	Capacity	Interface	Internal	inc vat	External	inc vat
OMEGA						
Zip	100Mb	EIDE	69	81.07	-	-
Zip	100Mb	SCSI	86	101.05	86	101.05
Zip	100Mb	Parallel	-	-	86	101.05
Zip Plus	100Mb	Parallel/SCSI	-	-	129	151.57
Jaz 1Gb	1Gb	SCSI	162	190.35	175	205.62
Jaz 2Gb	2Gb	SCSI	339	398.32	399	468.82
SUPERDISK						
LS-120 bare	120Mb	IDE	60	70.50	-	-
LS-120 kit	120Mb	IDE Parallel	74	86.95	107	125.72
PANASONIC						
PD Drive	650Mb	IDE	199	233.82	-	-
PD Drive	650Mb	Parallel	-	-	259	304.32
SYQUEST						
EZFlyer	230Mb	Parallel	-	-	95	111.62
EZFlyer	230Mb	SCSI	-	-	95	111.62
Syjet	1.5Gb	Parallel	-	-	199	233.82
Syjet	1.5Gb	IDE	199	233.82	-	-
Syjet	1.5Gb	SCSI	199	233.82	199	233.82
SparQ	1Gb	IDE	131	153.92	-	-
SparQ	1Gb	Parallel	-	-	131	153.92

STREAMERS

	Capacity	Interface	Internal	inc vat	External	inc vat	Parallel	inc vat
HEWLETT PACKARD								
Colorado T3000	1.6/3.2Gb	Floppy	98	115.15	-	-	-	-
Colorado 5Gb	2.5/5Gb	Floppy	117	137.47	-	-	144	169.20
Colorado 8Gb	4/8Gb	Floppy	140	164.50	-	-	168	197.40
Colorado T4	4/8Gb	SCSI	219	257.32	288	338.40	-	-
2Gb DAT Internal	2Gb	SCSI	335	393.62	-	-	-	-
2/4Gb DAT Internal	2/4Gb	SCSI	355	417.12	-	-	-	-
SureStore 2000	2Gb	SCSI	303	356.02	388	455.90	-	-
SureStore 5000	2/4Gb	SCSI	330	387.75	419	492.32	-	-
SureStore 8	4/8Gb	SCSI	528	620.40	599	703.82	-	-
SureStore 24	12/24Gb	SCSI	741	870.67	815	957.62	-	-
SureStore DLT40	20/40Gb	SCSI	1902	2234.85	2105	2473.37	-	-
SureStore DLT70	70Gb	SCSI	-	-	4252	4996.10	-	-
OMEGA								
Ditto 2000	1/2Gb	Floppy	56	65.80	-	-	86	101.05
Ditto Max	3/7Gb	IDE	99	116.32	-	-	129	151.57
Ditto Max Pro	3/10Gb	IDE	189	222.07	-	-	189	222.07
QUANTUM								
DLT 4000	20/40Gb	SCSI	2000	2350.00	2195	2579.12	-	-
DLT 7000	35/70Gb	SCSI	4755	5587.12	5075	5963.12	-	-
SEAGATE								
Tapestor 3200	1.6/3.2Gb	Floppy	89	104.57	-	-	110	129.25
Tapestor 8000I	4/8Gb	IDE	169	198.57	-	-	-	-
Tapestor 8000S	4/8Gb	SCSI	195	229.12	265	311.37	-	-
SEAGATE DAT								
STD22000N	2Gb	SCSI	329	386.57	399	468.82	-	-
STD24000N	2/4Gb	SCSI	345	405.37	429	504.07	-	-
STD22400N	12/24Gb	SCSI	710	834.25	-	-	-	-
STD28000N	4/8Gb	SCSI	455	534.62	529	621.57	-	-
STD62400N	12/24Gb	SCSI	-	-	805	945.87	-	-
SONY								
SDT-5200	2/4Gb	SCSI	375	440.62	449	527.57	-	-
SDT-5000	4/8Gb	SCSI	445	522.87	519	609.82	-	-
SDT-7000	4/8Gb	SCSI	485	569.87	559	656.82	-	-
SDT-9000	12/24Gb	SCSI	625	734.37	699	821.32	-	-
TSL-7000 Autoloader	4/8Gb	SCSI	1459	1714.32	1659	1949.32	-	-



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- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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The 100Mb Power Diskette



The light weight Zip is 20 times as fast and offers 70 times the space of a traditional floppy. Ideal for mobile users Zip allows you to archive huge multimedia projects with ease.



Zip Atapi Internal	£69	(£81.07)
Zip Parallel	£86	(£101.05)
Zip Parallel Bundle (Includes Zip 6pk media and Logitech Pilot plus mouse)	£139	(£163.32)
Zip SCSI	£87	(£102.22)
Zip 100MB disk	£9	(£10.57)
Zip 6 disk pack	£48	(£56.40)

The 100Mb ZipPlus Drive



ZipPlus drive is the easiest way and most economical way to expand your hard drive, move your files and backup

- Fast - up to 50 times faster than a floppy drive
- One drive fits all, one version for SCSI & parallel port interfaces
- Lightweight universal power supply
- Great media software

Zip Plus	£119	(£139.82)
Zip 10 pk multicoloured with Recordit software	£89	(£104.57)

Ditto 2GB

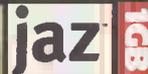


- Internal version fits any standard 5.25" bay
- 5 minute install guides
- 1-Step backup software
- Customised routines to allow you to backup while working
- 2GB with data compression
- Windows 3.1, 95, NT and OS/2 compatible
- External version sits horizontally or vertically

Ditto 2GB Internal	£56	(£65.80)
Ditto 2GB External	£86	(£101.05)



The 1GB Removable



Jaz has no limits. With 1GB capacity per disk Jaz is revolutionising storage technology.

- 1GB per disk, from less than 6p per megabyte
- 10-12 millisecond access time, faster than most hard drives
- Weighs only 2lb
- Available as an external drive for maximum portability
- Transport huge files for multimedia projects, outputting high resolution images at bureaux, perform backups, capture video to disk and much more
- Jaz Tools™ utility software



Internal	£162	(£190.35)
External	£175	(£205.62)
1GB Jaz Cart	£55	(£64.62)



Prices shown in brackets are inclusive of VAT

The Buz Multimedia



The easiest way to get multimedia into your PC, personalise it, and share it with others!

SCSI

- Ultra SCSI technology
- Data transfer rate of up to 20MB/sec

VIDEO

- Motion JPEG video capture and playback
- Onboard hardware compression up to 80.1
- 768 x 576 @ 25 frames per second
- In/out connectors for S-video, composite video and stereo audio
- Videowave SE Plue, Hotshots, RecordIt



Buz Multimedia	£149	(£175.07)
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Ditto Max and Ditto Max Pro



Powerful desktop storage and tape backup in one simple device

- Customise capacity with 3.5GB, 5GB, 7GB and 10* cartridges
- Back up while you work
- Easy 1-Step software
- Flash!File - 5 second average access time
- FullBack system recovery software



Ditto Max Internal	£99	(£116.32)
Ditto Max External	£129	(£151.57)
Ditto Max Pro Internal (10GB)	£139	(£163.32)
Ditto Max Pro External (10GB)	£169	(£198.57)

* Ditto Max Pro only

The 2GB Removable



The Super-Fast, Extremely Vast Personal Storage Drive that gives you a whopping 2GB per disk

- 2GB of storage space on each compact Jaz cartridge
- Fast - 7.35MB/s average transfer rate
- Ideal as a hard drive backup. Provides 4GB capacity with 2.1 compression
- Share data between PCs or from Mac to a PC
- Complete set of software utilities and tools make Jaz versatile and easy to use
- Packaged to suit you



Jaz 2GB Internal	£339	(£398.32)
Jaz 2GB External	£399	(£468.82)

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SparQ Your Imagination!

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INTERNAL EIDE DRIVE
£131
(£153.92 inc VAT)

£22.66
(£26.63 inc VAT)
Per Cartridge
when purchased in 3-Pack

Sylet 1.5
INTERNAL EIDE DRIVE
£199
(£233.82 inc VAT)

"The Professional Solution"
Award winning, high performance drive with enormous capacity and blazing speed. The perfect choice for musicians, graphics / dtp, publishers, webmasters & multimedia gurus.

NEW! SparQ 1.0 GB Drive... The "Personal Solution" is the latest from SyQuest – A superb combination of performance and value, it's the ideal choice for small/home offices, business travelers, families, students, web surfers, gamers, presenters, and writers. Gain unlimited capacity at a fraction of the cost of buying an additional computer.

- Backup Your System In Minutes!
- Store 1000+ Digital Photos!
- 12ms Access Time, 512K Buffer!
- Play Games 2x Faster Than a CD!

SparQ 1.0 GB Drives	Price	(inc VAT)
SparQ 1.0 GB Internal EIDE Drive	£131	(£153.92)
SparQ 1.0 GB External Parallel Port Drive	£131	(£153.92)

Sylet 1.5 GB Drives	Price	(inc VAT)
Sylet Internal EIDE Drive	£199	(£233.82)
Sylet Internal SCSI Drive	£199	(£233.82)
Sylet External Parallel Port Drive	£199	(£233.82)
Sylet External SCSI Drive	£199	(£233.82)

SyQuest Removable Cartridges	Price	(inc VAT)
SparQ 1.0 GB Cartridge - Single	£28	(£32.90)
SparQ 1.0 GB Cartridge - 3-Pack	£68	(£79.90)
SparQ 1.0 GB Cartridge - 10-Pack	£195	(£229.12)
Sylet 1.5 GB Cartridge - Single	£51	(£59.92)
Sylet 1.5 GB Cartridge - 3-pack	£127	(£149.22)
44 MB Cartridge - Single	£25	(£29.37)
88 MB Cartridge - Single	£25	(£29.37)
200 MB Cartridge - Single	£39	(£45.82)
270 MB Cartridge - Single	£28	(£32.90)



Data Storage

HP Colorado Travan Backup

Affordable, reliable full-system PC protection



C4341B	HP Colorado T3000 + media	£108	£126.90
C4376B	HP Colorado T3000	£98	£115.15
<i>Media</i>			
C4427A	Single	£20	£23.50
<i>Media</i>			
C4354A	HP Colorado 5Gb Internal + media	£127	£149.22
C4355A	HP Colorado 5Gb Internal	£117	£137.47
C4361A	HP Colorado 5Gb External + media	£158	£185.65
C4362A	HP Colorado 5Gb External	£144	£169.20
<i>Media</i>			
C4429A	Single	£20	£23.50
<i>Media</i>			
C4386A	HP Colorado 8Gb Internal + media	£161	£189.17
C4387A	HP Colorado 8Gb Internal	£140	£164.50
C4388A	HP Colorado 8Gb External + media	£189	£222.07
C4389A	HP Colorado 8Gb External	£168	£197.40
<i>Media</i>			
	8Gb Minicartridge	£Call	£Call

HP DAT

Outstanding value for network backup



C1525H	HP Surestore Tape 2000i + media	£303	£356.02
C1520H	HP Surestore Tape 2000e + media	£388	£455.90
C1526H	HP Surestore Tape 5000i + media	£330	£387.75
C1521H	HP Surestore Tape 5000e + media	£419	£492.32
<i>Media</i>			
92283B	5 pack	£39	£45.82
<i>Media</i>			
C1534A	HP 2Gb Internal DAT Internal SCSI OEM	£335	£393.62
C1536A	HP 2/4Gb Internal DAT Internal SCSI OEM	£355	£417.12
<i>Media</i>			
92283A	5 pack	£39	£45.82
<i>Media</i>			
C1528H	HP Surestore DAT8i Internal 4/8Gb	£528	£620.40
C1529H	HP Surestore DAT8e External 4/8Gb	£599	£703.82
<i>Media</i>			
92300A	5 pack	£69	£81.07
<i>Media</i>			
C1555B	HP Surestore DAT24i Internal 12/24Gb	£741	£870.67
C1556B	HP Surestore DAT24e External 12/24Gb	£815	£957.62
<i>Media</i>			
C1517A	5 pack	£85	£99.87
<i>Media</i>			
C5648A	HP DAT24x6e 144Gb External Autoloader	£1628	£1912.90
C1559A	HP Surestore DAT 24x6e 144Gb External Autoloader + media	£1927	£2264.22

HP SureStore T4i/e

Cost-effective backup with a complete software solution for entry-level LANs



C5644C	Surestore T4i Internal SCSI + media	£219	£257.32
C5645B	Surestore T4e External SCSI + media	£288	£338.40
<i>Media</i>			
C4425A	TR4 Single	£24	£28.20

HP Surestore DLT

High-performance backup for high-end servers



C5647A	HP DLT 40i 40Gb DLT Internal + media	£1902	£2234.85
C1579A	HP DLT 40e 40Gb DLT External + media	£2105	£2473.37
C5658A	HP DLT 70e 70Gb DLT External + media	£4252	£4996.10
C6280F	HP DLT Autoloader 418 External	£3723	£4374.52
<i>Media</i>			
C5141F		£55	£64.62



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CUSTOMER SERVICES

The CS section of your 'Direct Focus' aims to help you get efficient service and effective results from the CS department. If you would like to know more our service commitment to you, or if you need to access that service please read on...

What do I do if my order is late in arriving?

1. Ring the sales number where you originally placed the order (or use our general sales number 01942 794000)

2. Quote your sales order number, account number or post code (this will enable us to find your account). We first have to establish if we have sent the order out or not. If not, usually because the product was out of stock when you ordered, and has still not arrived from our supplier, the salesperson will try to give you an up-to-date delivery date. You can then decide whether to wait, cancel, or buy an alternative product. This doesn't happen often, but when it does, the actual lead time is often indeterminate (ie the dates given to us by suppliers are not reliable).

If we have sent out the product, then the problem will be with the carrier, and your call will be passed to Customer Service Department, who will take the details, call the carrier, and then call you back. Please note that our carrier Amtrak normally delivers by 1pm, so we are only able to trace late deliveries after that time.

What if the carrier arrives but the box looks damaged?

1. Sign for the box as 'Unchecked'. Failure to do so will mean we have no claim on the carrier if the item inside is damaged in any way.

2. Ring the Customer Service number to report even if there is no damage. If your item is damaged, we will issue a returns number and arrange the collection and replacement. Please note that the collection and replacement delivery may not be on the same carrier visit.

What do I do if the carrier arrives but the note says two boxes and he only has one?

1. Cross out the number 2 and change it to read 1. If necessary write "only one received" on the note.

2. Ring Customer Service to report and they will contact the carrier/supplier and keep you informed.

What do I do if it's not the correct product - the delivery note does not match the goods?

1. Ring Customer Service. We will check the part number on the delivery note with the part number on your product. If the product has been shipped incorrectly a returns number will be issued and a collection and replacement arranged.

What do I do if it's not the correct product - I ordered the wrong thing?

1. Ring us before opening or using the product. Provided the package has not been opened at all it may be accepted back with a re-stocking fee. If an agreement has been reached to take the product back a returns number will be issued. You will be responsible for the cost of returning the product and only if it is in pristine condition will a credit be raised.

What do I do if it's not the correct product - you have not sent what I ordered?

1. Initially ring the sales number and speak to the original salesperson you ordered from.

2. Go through it with them to check that it is our misunderstanding and not yours. If we have misunderstood your requirements, you will be passed through to Customer Service, who will issue a returns number and arrange a collection and replacement.

What if my order has just arrived but won't work?

1. Ring Technical Support on 01942 794230. If possible have your product close to hand to enable you to try out any fixes technical may give you. If it has been established your product is faulty you will be issued with a returns number.

2. We will arrange collection of the goods and arrange a replacement. Provided that stock is available we will try to collect and replace within 24 hours.

What do I do if my equipment has stopped working - how do I action my warranty?

1. Ring Technical Support. They will try to establish what the fault is and offer you the warranty procedure for that product. A returns number will be issued.

2. You will return the goods to us and in turn we will send off for warranty repair. In some instances the warranty asks for the customer to ring the repair agent direct, this will be relayed to you when you call.

PC's only
 Any software fault ring 01942 794230
 Hardware fault within 14 days ring 01942 794230
 Hardware fault outside 14 days ring 0990 133322

What do I do if I experience a problem with software?

1. Please note that once a software package is opened you have accepted the package under the manufacturer's software licensing agreement and therefore no opened packages will be accepted back.

2. Check the details on the box are correct before opening. If a fault occurs with any disc the manufacturer will exchange. If a manual or disc is missing or incomplete the manufacturer will supply these.

When you buy from us we are here to support you...

HELP US TO HELP YOU.

NOTE: If our Technical lines are busy and your product has direct support from the manufacturer (vendor) please ring them.

The following manufacturers (Vendors) offer technical support/DOA/warranty direct to customers.

Vendor	Number	Technical	DOA	Warranty
3COM	0800-966197	✓		✓
ADL	0181-236-0064	✓	✓	✓
Agfa	0891-615770	✓		✓
Amacom	0181-993-7373	✓		✓
APC	0800-132990	✓		✓
Brother	0161-330-6531	✓		✓
Canon	0990-143723	✓		✓
Casio	0181-450-9131	✓	✓	✓
Claris	0800-422322	✓	✓	✓
Compaq	0541-541555	✓		✓
Creative	01734-344744	✓		✓
CTX	01923-810801	✓	✓	✓
Diamond	01189-444444	✓	✓	✓
Epson	01442-227277	✓		✓
Evergreen	07000-808586	✓		✓
Hayes	01252-775533	✓		✓
HP	0171-512-5202	✓		✓
Hitachi	0181-849 2092	✓		✓
IBM	0990-500900	✓		✓
Iiyama	01438-314416	✓	✓	✓
Intel	01793-404900	✓		✓
Iomega	0800-973194	✓		✓
Kyocera	01606-867017	✓	✓	✓
Macromedia	0800-374128	✓	✓	✓
Matrox	01793-441100	✓		✓
Mastor	003531-204-1111	✓		✓
Microsoft	01189-270000	✓	✓	✓
Mitsubishi	01707-278782	✓	✓	✓
Motorola	0990-134810	✓		✓
Mustek	01386-769429	✓	✓	✓
NEC	0181-993-8111	✓		✓
Nikon	0181-541-4440	✓		✓
Nokia	01794-830775	✓		✓
OKI	01753-819819	✓	✓	✓
Orchid	01256-844899	✓		✓
Pace	01274-537031	✓		✓
Panasonic	01344-853508	✓		✓
Quantum	01344-353500	✓		✓
Ricoh	01782-717100	✓	✓	✓
Samsung(Monitors)	01525-718444	✓	✓	✓
Sanyo	01483-301970	✓	✓	✓
Seagate	01628-894083	✓		✓
Sharp (Sharpserve)	01623-413800	✓	✓	✓
Sony (Monitors Only)	0990-168648	✓		✓
Tally	01734-771688	✓		✓
Taxan	01344-484646	✓		✓
Twinhead	01256-300300	✓		✓
UMAX Scanners	0891-647730	✓		✓
UMAX MacOS	01344-871300	✓		✓
US Robotics	01734-441000	✓		✓
Videologic	01923-271300	✓		✓
Visioneer	0171-519-5023	✓		✓

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ATI All-in-Wonder Pro

The all-in-one TV, video and graphics multimedia upgrade
Award-winning all-in-one graphics and multimedia upgrade offering everything you need for explosive multimedia on your PC

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- An intelligent TV tuner featuring DBX™ stereo
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- Still and motion video capture and TV set display



All-in-Wonder Pro PCI 4Mb £165 (€193.87) 8Mb £195 (€229.12)

ATI XPERT@Play

XPERT@Play sets a new standard for 3D gaming, multimedia and entertainment applications
Uses a single card/slot solution to provide industry leading full screen, full motion MPEG-2 video acceleration with motion compensation as well as TV-out for large screen game play.

- Superior 3D quality with bilinear filtering, alpha blending and special effects for intense gaming
- Brute force 3D acceleration with over 1 million triangles per second with set-up engine, texture cache and more
- Great gaming in Windows 95 (Direct3D, DirectDraw) and DOS
- DVD-quality full-screen, full-motion video
- Floating point set up engine, up to 1.2 million triangles per second
- Bonus software including the hottest 3D games: Formula 1, Terceiro, and WIRL
- 4KN on-chip texture cache
- Microsoft certified drivers



XPERT@Play PCI 4Mb SGRAM £105 (€123.37) 8Mb SGRAM £129 (€151.57)

ATI XPERT@Work

XPERT@Work is the most powerful graphics acceleration for corporate and small business
Fast 2D, 3D performance, three times that of previous boards and the best video acceleration for the price.

- The fastest performance for greater productivity in Windows NT and Windows 95
- Flicker-free images at up to 200Hz refresh rate to eliminate eyestrain
- Rock-solid stability and worry-free compatibility with ATI's Microsoft certified drivers
- Optimized for the best performance on Pentium II/PRO systems
- Available in 2MB and 4MB upgradeable or 8MB memory configurations



XPERT@Work PCI 4Mb SGRAM £95 (€111.62) 8Mb SGRAM £119 (€139.82)

Prices shown in brackets are inclusive of VAT

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RIGHTEOUS 3D II™
BASED ON THE NEW VOODOO² CHIPSET
FROM 3DFX INTERACTIVE

Based on 3Dfx Interactive's new Voodoo² chipset the New Righteous 3D II Graphic Accelerator Card takes game players to yet another level of three dimensional entertainment. Working with your existing graphics card to give you the fastest game play ever! Includes very high speed, single cycle DRAM and delivers a phenomenal 3 million triangles per second and 90 million (180 million pixels in SLI configuration) dual-textured, bilinear-filtered, per-pixel MIP-mapped, alpha-blended, Z-buffered pixels per second.

INCLUDES 4 FULL GAMES..
Battlezone, JediKnight, Incoming & G-Police

- 12MB high-performance single-cycle DRAM
- 192-bit, multi-way interleaved memory interface providing more than 2.2Gsecond total bandwidth
- Compatible with any graphics card, including AGP cards, using video pass-through
- Single slot PCI card capable of 33MHz and 66MHz operation
- Effective 180 million two-texture, bilinear-filtered, MIP mapped texel/second fill rate
- 360 million two-texture, bilinear-filtered, MIP mapped texels per second in dual-board configuration
- Triangle-based raster engine with Gouraud modulation

12Mb £190 (€223.25 inc VAT)

Righteous 3D £83 (€97.52 inc VAT)

- Revolutionary 3D technology • Transparent operation with VGA accelerators • Full feature simultaneous 3D acceleration
- Full motion frame rate performance • Windows 95 Direct3D support • Real-time interactive rendering

SoundCard 3D £45 (€52.87 inc VAT)



matrox

Matrox Mystique 220

The Complete Windows, 3D and Video Accelerator
• The best graphics value for home and SOHO
• Ideal for 2D Windows, 3D games, MPEG movies
• Up to 8MB of SGRAM memory
• Up to 1600 x 1200 resolution
• 220 MHz RAMDAC
• Includes Disney's Toy Story, Electronic Arts' Moto Racer™ Kai's Power Glove™ and more!



4Mb £65 (€76.37)

Matrox Rainbow Runner Studio

Affordable video editing and much more!

Rainbow Runner Studio for Mystique £105 (€123.37)

Rainbow Runner Studio for Millennium £129 (€151.57)

Matrox m3D

Low cost 3D accelerator for games
• 30 frames per second of blazing speed
• Support for resolutions up to 1024 x 768
• Support for a wide number of Direct 3D games
• Works with your existing graphics card
• Includes Ultim@te Race, MDK: Mission Laguna Beach and over 20 game demos



£45 (€52.87)

Matrox Productiva G100

Acceleration for demanding business graphics
• 64-bit AGP-ATX graphics card
• 8MB of powerful graphics memory
• High performance 2D business productivity
• 1600 x 1200 desktop in true colour
• 3D acceleration with excellent API support - ideal for computer based training
• High speed 230MHz RAMDAC for flicker-free displays
• Fully multimedia upgradeable

NEW PRODUCT



£55 (€64.62)

Prices shown in brackets are inclusive of VAT

AWARD-WINNING 3D SOUND AND VISION

Apocalypse 3DX

£51 (€59.92 inc VAT)

Dedicated 3D accelerator for arcade-level performance with PowerVR PCX2 chipset and 4MB SDRAM on-board

Includes over £70 worth of top selling games:

- FIFA The Road To World Cup 98
- Nightmare Creatures
- Ultimate Race



Also available:

Apocalypse 3DX Value Pack

£36 (€42.30 inc VAT)

- Includes demo games CD (no full games)

SonicStorm PCI

Wavetable Sound Card

£49 (€57.57 inc VAT)

Advanced PCI sound card

- HiFi quality sound
- 3D positional audio for the latest games
- Soundblaster support for DOS games
- Hardware accelerated 64 voice wavetable
- Includes JetAudio and music/3D sound software



Apocalypse 5D Sonic

£Call (€Call inc VAT)

- Combines 128-bit blisteringly fast 2D acceleration, arcade-level 3D and award-winning 3D audio all on one single PCI board

VideoLogic



- ✓ Serving you since 1987
- ✓ Over £50m annual turnover
- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

DABS DIRECT

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Corporate **0870 129 3010** Sales fax **0870 129 7000** Web Site www.dabs.com Email sales@dabs.com
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VIDEO CARDS

ATI	Memory/Type	Chipset	RAMDAC	Ex VAT	Inc VAT	PCI		AGP		MATROX	Memory/Type	Chipset	RAMDAC	Ex VAT	Inc VAT	PCI		AGP	
						Ex VAT	Inc VAT	Ex VAT	Inc VAT							Ex VAT	Inc VAT	Ex VAT	Inc VAT
Xpert@Work OEM	4Mb SGRAM	Rage Pro	230Mhz	49	57.57	53	62.27			M3d	4Mb SDRAM	NEC Power VR2	-	42	49.35	-	-		
Xpert@Work OEM	8Mb SGRAM	Rage Pro	230Mhz	65	76.37	69	81.07			Millennium II OEM	4Mb WRAM	MGA 2164W	250Mhz	89	104.57	89	104.57	89	104.57
Xpert@Play OEM	4Mb SGRAM	Rage Pro	230Mhz	59	69.32	63	74.02			Millennium II OEM	8Mb WRAM	MGA 2164W	250Mhz	125	146.87	125	146.87		
Xpert@Play OEM	8Mb SGRAM	Rage Pro	230Mhz	75	88.12	79	92.82			Mystique 220 Home	4Mb SGRAM	MGA 1064SG	220Mhz	65	76.38	-	-		
All In Wonder Pro OEM	4Mb SGRAM	Rage Pro	230Mhz	145	170.37	149	175.07			Millennium II	4Mb WRAM	MGA 2164W	250Mhz	99	116.32	99	116.32		
All In Wonder Pro OEM	8Mb SGRAM	Rage Pro	230Mhz	165	193.87	169	198.57			Millennium II	8Mb WRAM	MGA 2164W	250Mhz	139	163.32	139	163.32		
Xpert@Work	4Mb SGRAM	Rage Pro	230Mhz	95	111.62	-	-			Productiva G100	8Mb SDRAM	G100	230Mhz	-	-	55	64.62		
Xpert@Work	8Mb SGRAM	Rage Pro	230Mhz	119	139.82	-	-			Productiva G100 OEM	4Mb SDRAM	G100	230Mhz	-	-	40	47.00		
All In Wonder Pro	4Mb SGRAM	Rage Pro	230Mhz	165	193.87	-	-			Productiva G100 OEM	8Mb SDRAM	G100	230Mhz	-	-	46	54.05		
All In Wonder Pro	8Mb SGRAM	Rage Pro	230Mhz	195	229.12	-	-			NUMBER 9									
										Revolution 3D	4MB	Ticket To Ride	-	209	245.57	209	245.57		
										Revolution 3D	8MB	Ticket To Ride	-	275	323.12	275	323.12		
CREATIVE LABS										ORCHID									
Graphics Blaster Extreme	SGRAM	3D Labs Peramedia 2	230Mhz	70	82.25	-	-			Righteous 3D	4MB EDO DRAM	3DFX Voodoo 3D	-	86	101.05	-	-		
3D Blaster Voodoo II	8 EDO DRAM	3DFX Voodoo2	-	129	151.57	-	-			Righteous 3D II	8MB EDO DRAM	3DFX Voodoo 2	-	190	223.25	-	-		
										Righteous 3D II	12MB EDO DRAM	3DFX Voodoo 2	-	Call	Call	-	-		
DABS										PINE									
S3 Trio64V + 765	2Mb EDO DRAM	S3 Trio 64V+	135Mhz	23	27.02	-	-			S3 Trio64V+765	1MB EDO DRAM	S3Trio64V+	135Mhz	16	18.80	-	-		
S3 Virge DX	4Mb EDO DRAM	S3 Virge DX	170Mhz	39	45.82	-	-			S3 Trio64V+765	2Mb EDO DRAM	S3Trio64V+	135Mhz	20	23.50	-	-		
3Dfx	4Mb EDO DRAM	3DFX Voodoo 3D	-	79	92.82	-	-			Mega 3D	2MB EDO DRAM	Cirrus Logic Laguna	-	35	41.12	-	-		
										Mega 3D	4MB EDO DRAM	Cirrus Logic Laguna	-	45	52.87	-	-		
DIAMOND										STB									
Stealth 3D 4200	2MB SGRAM	S3 Virge GX2	-	-	-	31	36.42			Nitro 3D OEM	2MB VRAM	S3 Virge GX	135Mhz	45	52.87	-	-		
Stealth 3D 4400	4MB SGRAM	S3 Virge GX2	-	-	-	36	42.30			Nitro 3D OEM	4MB VRAM	S3 Virge GX	135Mhz	53	62.27	-	-		
Stealth II S220	4MB	-	-	57	66.97	-	-			Velocity 128	4MB SGRAM	Nvidia Riva 128	230Mhz	95	111.62	-	-		
Viper V330	4MB SGRAM	Nvidia Riva 128	230Mhz	55	64.62	55	64.62			Black Magic 3D Voodoo 2	12MB EDO RAM	3DFX Voodoo 2	135Mhz	195	229.12	-	-		
Fire GL 1800 Pro	8MB SGRAM	3D Labs Peramedia 2	230Mhz	109	128.07	109	128.07			Nitro DVO	4MB RAMBUS DRAM	Mpact 2	230Mhz	-	-	75	88.12		
Monster 3D	4MB EDO DRAM	3DFX Voodoo 3D	-	69	81.07	-	-			VIDEOLOGIC									
Monster 3D II X100	8MB EDO DRAM	3DFX Voodoo2	-	129	151.58	-	-			GrafixStar 410	2MB EDO DRAM	S3 Trio64V2	135Mhz	29	34.07	-	-		
Monster 3D II X200	12MB EDO DRAM	3DFX Voodoo2	-	Call	Call	-	-			GrafixStar 450 Pro	2MB EDO DRAM	S3 Virge DX	170Mhz	45	52.87	-	-		
Stealth G460	8MB SDRAM	Intel 740	203Mhz	Call	Call	-	-			GrafixStar 560 Pro	4MB EDO DRAM	Cirrus Logic Laguna	-	59	69.32	59	69.32		
										GrafixStar 600 Pro	2MB MDRAM	Tseng Labs ET6000	135Mhz	48	56.40	-	-		
HERCULES										Apocalypse 3Dx Value Pack	4MB SDRAM	NEC Power VR2	-	36	42.30	-	-		
Thriller 3D	4MB	-	-	85	99.87	85	99.87			Apocalypse 3Dx	4MB SDRAM	NEC Power VR2	-	51	59.92	-	-		
Thriller 3D	8MB	-	-	159	186.82	159	186.82			Apocalypse 5D	6MB	ET6100 + Power VR2	-	125	146.87	-	-		
Oynamite 3D/GL	4MB SGRAM	3D Labs Permedia 2	250Mhz	129	151.57	129	151.57			Apocalypse 50	8MB	ET6100 + Power VR2	-	145	170.37	-	-		
Dynamite 3D/GL	8MB SGRAM	3D Labs Permedia 2	250Mhz	165	193.87	165	193.87			Apocalypse 50 Sonic	8MB	ET6100 + Power VR2 + Sound	-	159	186.82	-	-		
Stingray 128/3D + TV out	8MB EDO DRAM	AT3D/Voodoo Rush	-	169	198.57	-	-			Apocalypse 50 Sonic	8MB	ET6100 + Power VR2 + Sound	-	179	210.32	-	-		

MULTIMEDIA CARDS

ATI	ex VAT	inc VAT	MIRO	ex VAT	inc VAT
TV Tuner	55	64.62	miroMEDIA PCTV PCI	50	58.75
DABS			Video Director Studio 200	169	198.57
TV/Teletext PCI	49	57.57	miroVIDEO OC10	189	222.07
HAUPPAUGE			miroVIDEO DC30	499	586.32
WinTV Primio PCI	55	64.62	miroVIDEO DV300	659	774.32
WinTV PCI NICAM	75	88.12	miroVIDEO DC30 Plus	989	1162.07
WinTV Radio PCI NICAM	89	104.57	SIGMA		
WinTV Cinema Pro	199	233.82	Hollywood MPEG2/AC-3	199	233.82
Video Wizard	115	135.12	Ventura MPEG2	89	104.57
MATROX			TYPHOON		
Rainbow Runner TV Tuner	69	81.07	TV/Teletext PCI	55	64.62
Mystique Rainbow Runner Studio	105	123.37	Video Capture PCI	69	81.07
Millennium II Rainbow Runner Studio	129	151.57	VIDEOLOGIC		
			Captivator PCI	49	57.57
			Captivator PCI/VC	149	175.07

DABS DIRECT

PERSONAL COMPUTER SYSTEMS

DABS DIRECT
World Wide Web

site

The Dabs World Wide Web site goes from strength to strength and now contains daily updates straight from our main AlphaAXP front office system (so it does get updated even if no-one remembers!). The daily updates include:

- A complete listing of all products that we sell listed by manufacturer
- The same listing ordered by product type
- All new product included and obsolete product removed on a daily basis
- A link to every single manufacturer's Web site for further information
- A daily 'special offers' list
- Spot prices on volatile commodities
- Staff lists with email and telephone numbers
- Trading statistics about Dabs Direct

Important new launches are also added to the Web site in advance of appearing in print. We have now got one full time member of staff working on the Web site, with more coming. Planned soon is:

- An HTML based order screen with stock confirmation
- A query system allowing you to check if your order has gone out (including carrier details)
- Named contact (email and phone) details for who 'owns' your order or your service problem
- An HTML-based fault reporting system
- Live screen status of how busy we are on the phones
- Check the status of your account
- Check the status of customer service problems, repairs etc.
- Direct email (if requested) with latest releases, special offers etc.

We are also working on a PC quotation system to beat all others. This will allow you to

- Include any component Dabs sells
- Not only get a price, but check whether all the parts are in for that PC and get a estimated delivery time.
- Get prices without monitor, hard disk etc. if you have some old parts to recycle



freephone

0800 558866



PRICE MATCHING
We can usually match competitors prices, please call for details.

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DIAMOND MULTIMEDIA

Monster 3D



High Performance 3D Acceleration - Brings The Arcade To Your PC

- 3Dfx Voodoo chipset
- 4MB EDO DRAM with dual 64bit memory architecture
- 45 million pixels per second fill rate
- 2 million triangles rendering per second
- Perspective correct texture mapping
- Bi-linear & advanced texture filtering

£79 (£92.82)

Monster Sound



Next Generation DirectSound™ 3D Acceleration

- Windows® 95, DirectSound™ support
- Easy Plug & Play installation
- Special effects supported (Reverb, Chorus, Pitch Shift)
- Multi-stream support for interactive real-time mixing of up to 24 different audio streams
- Advanced speaker configuration tool (stereo, quad speaker, headphones etc.)
- Virtual Sound Blaster™, FM, MIDI and Joystick support (for Windows® 95)
- 4 speakers support to provide true 3D positional sound effects

£85 (£99.87)

Prices shown in brackets are inclusive of VAT.
Retail boxes shown for illustrative purposes only.

Stealth 3D 2000 Pro



First class graphics and 3D performance

- High-performance 64 bit graphics accelerator with maximum 4MB EDO DRAM
- TrueColour acceleration up to 1280 x 1024 @ 120Hz
- Flicker-free refresh up to 120Mhz
- High-quality video playback
- Supports DirectX™ and Direct3D™

2 Mb £31 (£36.42) 4 Mb £36 (£42.30)

2 Mb version with TV-out £41 (£48.17)

Viper V330



Break Your Limits in 3D

- True 128-bit graphics for high-end, no compromise 2D & 3D
- Resolutions up to max. 1600 x 1200
- Refresh rates up to 200 Hz max
- Drivers for Windows 95, Windows NT™ 3.51 and Windows NT™ 4.0
- Supports DirectX™ and Direct3D™
- DVD and TV extensions available (external)

4 Mb AGP £90 (£105.75)

4 Mb PCI £90 (£105.75)

Fire GL 1000 Pro



Ultimate 2D and 3D Graphics for Windows NT™

- High-speed 2D & 3D rendering processor with integrated setup processor
- Up to 1 million texture mapped polygons/sec
- Refresh rate up to 120Hz
- Resolution up to 1920 x 1200
- TrueColor up to 1600 x 1200
- Includes AutoCAD productivity tools

8 Mb AGP £120 (£141.00)

8 Mb PCI £120 (£141.00)



VELOCITY 128

MULTIMEDIA ACCELERATOR

NITRO DVD

2D/3D Accelerator & MPEG Decoder

BLACKMAGIC 3D

VOODOO2

Velocity 128

128-bit 3D Multimedia Accelerator

- * NVIDIA RIVA 1283D Graphics and Multimedia Engine
- * True 128-bit Processing Power
- * 8MB of 128-bit sgram Memory with 1600MB/Sec Bandwidth
- * MPEG-2 Compatible Digital Video Engine
- * 250MHz RAMDAC Supports Refresh Rates Up to 160Hz and Resolutions Up to 1600 x 1200
- * Microsoft Windows 95 and NT 4.0 Compatible
- * AGP 2X or PCI bus

£119 (£139.82)

Nitro DVD

Awesome 3D Performance with DVD Playback

- * Chromatic Research Mpac 2 Median Processor
- * High Performance 2D/3D Acceleration
- * 4 or 8MB RAMBUS
- * Integrated Video Playback with Full XY Interpolation
- * Up to 16.7 Million Colours
- * Up to 200Hz Refresh Rate
- * Up to 1600 x 1200 Resolution in 2D
- * Plug-and-Play for Easy Installation
- * AGP Bus

£Call (£Call)

Blackmagic 3D Voodoo 2

STB presents the ultimate in dedicated 3D processing for gaming and entertainment titles

- * 3Dfx Voodoo2 Chipset with Dual Texture Engines
- * 8MB or 12MB of High Performance EDO DRAM
- * 4MB Frame Buffer Memory or 8MB of Texture Processing Buffer
- * Up to 800 x 600 Resolution with Full Hardware 3D Acceleration
- * Plays Direct 3D and Glide Titles
- * Compatible with Any SVGA Multimedia Accelerator

£Call (£Call)



- ✓ Serving you since 1987
- ✓ Over £50m annual turnover
- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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109S 19" COLOR 1600 X 1200 MONITOR



19"(17.9" VIS) Colour monitor with excellent front screen performance for use with PC, workstations and Apple computers

Anti-glare, Anti-static and Anti-reflection, high contrast screen coating eliminate any bad effects caused by the screen surface such as reflection of room lights and dust attraction

Colour adjustment for choice of colour temperatures, 3 x presets or own customised setting

Green design includes automatic power saving function (NUTEK) and low emission compliance

£459
(£539.32 inc VAT)

- DDC1/DDC2B optimises video configuration between monitor and PC
- Moire Cancellation function serves to eliminate diffraction
- Horizontal frequency from 30KHz - 95KHz
- 1600 x 1200 @ 75Hz & 280 x 1024 @ 85Hz
- High bandwidth at 203MHz
- 0.22mm horizontal dot pitch
- Newly developed high contrast coating with Dynamic Focus for sharp character representation even in corners of screen
- Six window "On Screen Display" with Quick X'it to adjust numerous screen parameters via digital rotary knob on control panel
- Direct access to brightness and contrast through digital rotary control
- Three years warranty with 1st year On Site Swap, 2nd and 3rd years RTB



PHILIPS

Belinea



Belinea 10 40 10

- 14" 0.28mm
- up to 1024 x 768 NI
- 640 x 480 @ 85Hz
- Digital Front Panel
- MPRII Compliant

£89 (€104.57)



Belinea 10 50 35

- 15" FST 0.28mm
- up to 1280 x 1024 NI
- 800 x 600 @ 85Hz
- Digital Electronics
- MPRII Compliant

£109 (€128.07)



Belinea 10 70 20

- 17" FST 0.28mm
- up to 1280 x 1024 NI
- 1024 x 768 @ 85Hz
- On-Screen Display
- TCO 95

£179 (€210.32)



Belinea 10 70 50

- 17" FST 0.25mm
- DiamondTron CRT
- up to 1600 x 1200 NI
- 1024 x 768 @ 100Hz
- On-Screen Display
- TCO 95

£309 (€363.07)



Belinea 10 60 90

- 19" FST 0.26mm
- up to 1600 x 1200 NI
- 1280 x 1024 @ 88Hz
- Professional On-Screen Display
- TCO 95

£409 (€480.57)



Belinea 10 80 95

- 21" FST 0.25mm
- up to 1600 x 1200 NI
- 1600 x 1200 @ 75Hz
- On-Screen Display
- TCO 95

£609 (€715.57)

All monitors include 3 years warranty - 1st year on-site exchange.

Prices shown in brackets are inclusive of VAT



iivama

a visible difference

TXAV3601GT

only £899 (€1056.32)

36cm (14.1") TFT Colour LCD Monitor

- High brightness, high contrast flat panel Liquid Crystal Display
- 1024 x 768 (XGA) display resolution
- 262,144 unlimited colours
- No geometric display distortion, misfocus or misconvergence
- Space saving, lightweight design
- No radiation, unaffected by external magnetic fields



MF-8617T

£299 (€351.32)

- 17" 0.26mm FST
- Up to 1280x1024 NI@80Hz
- On-Screen Display Menu
- Colour Balance Control



MT-9017T

£349 (€410.07)

- 17" 0.25mm DiamondTron
- Up to 1600x1200 NI@72Hz
- On-Screen Display Menu
- Colour Balance Control



S102GT

£765 (€898.87)

- 21" 0.27mm Enhanced dp FST
- 1800x1440 @ 75Hz
- On-Screen Display Menu
- All CE Ergonomic, safety and environmental approvals



MF-8515G

£169 (€198.57)

- Digital control and on-screen display for full picture geometry and colour balance control



A102GT

£765 (€898.87)

- 21" 0.28mm AG DiamondTron
- 1800x1440 @ 75Hz
- On-Screen Display Menu
- All CE Ergonomic, safety and environmental approvals



S901GT

£499 (€586.32)

- 19" 0.26mm FST
- Up to 1280 x 1024 @100Hz NI
- On-Screen Display Menu
- All CE Ergonomic, safety and environmental approvals

All iivama monitors are with a 3yr warranty, 1st yr On-Site, 2nd, 3rd RTB or upgrade to our VisionCare warranty, 3yr On-Site

Prices shown in brackets are inclusive of VAT

DAEWOO

DISPLAY MONITORS

431x

£87 (€102.22)

- 14" 0.28mm
- Up to 1024 x 768 NI
- Digital on-Screen Display
- MPR II compliant
- 800 x 600 @ 75Hz

511x

£99 (€116.32)

- 15" FST 0.28mm
- Up to 1024 x 768 NI
- Digital on-Screen Display
- MPR II compliant
- 800 x 600 @ 75Hz

518b

£109 (€128.07)

- 15" FST 0.28mm
- Up to 1024 x 768 NI
- Digital on-Screen Display
- MPR II compliant
- 1024 x 768 @ 75Hz

1509b

£135 (€158.62)

- 15" FST 0.28mm
- Up to 1024 x 768 NI
- Digital on-Screen Display
- MPR II compliant
- 1024 x 768 @ 75Hz

1705b

£219 (€257.32)

- 17" FST 0.28mm
- Up to 1028 x 1024 NI
- Digital on-Screen Display
- MPR II compliant
- 1024 x 768 @ 85Hz

1707b

£195 (€229.12)

- 17" FST 0.28mm
- Up to 1028 x 1024 NI
- Digital on-Screen Display
- MPR II compliant
- 1024 x 768 @ 85Hz

1707bTC095

£205 (€240.87)

- 17" FST 0.28mm
- Up to 1028 x 1024 NI
- Digital on-Screen Display
- TCO 95
- 1024 x 768 @ 85Hz

All Daewoo monitors supplied with 3 years on site warranty

Monitors

All prices in brackets are inclusive of VAT

freephone
0800 558866



PRICE MATCHING
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CM500ET

15" COLOUR DISPLAY MONITOR

- Fully featured compact desktop monitor
 - 0.23mm horizontal mask pitch
 - Flicker Free (75Hz) at up to 1152 x 870 resolution
 - PC, Mac and Workstation compatible
 - TCO '92 compliance
- £159** (£186.82)



CM641ET

17" COLOUR DISPLAY MONITOR

- New High Contrast Tube provides superior performance
 - 0.21mm horizontal mask pitch
 - Flicker Free (75Hz) at resolutions up to 1600 x 1200
 - PC, Mac and Workstation compatible
 - TCO '95 compliance
- £345** (£405.37)



CM751ET

19" COLOUR DISPLAY MONITOR

- Space saving - same depth as standard 17"
 - 0.21mm horizontal mask pitch for true 1600 x 1200 res.
 - Flicker Free (75Hz) at up to 1600 x 1200 resolution
 - PC, Mac and Workstation compatible
 - TCO '95 compliance
- £499** (£586.32)



CM620ET

17" COLOUR DISPLAY MONITOR

£265 (£311.37)

- Best value colour monitor for GUI applications
- 0.22mm horizontal mask pitch
- Flicker Free (75Hz) at up to 1152 x 770 resolution
- PC, Mac and Workstation compatible
- TCO '92 compliance



CM802ET

21" COLOUR DISPLAY MONITOR

£759 (£891.82)

- 0.21mm horizontal mask pitch for true 1600 x 1280
- Flicker Free (75Hz) at up to 1600 x 1280 resolution
- PC, Mac and Workstation compatible
- TCO '95 compliance



CM752ET

19" MULTIMEDIA COLOUR DISPLAY MONITOR

- As CM751ET plus Flicker Free (75Hz) at up to 1600 x 1280
 - As CM500ET plus Speakers & Microphone
- £539** (£633.32)

CM500ES **£179** (£210.32)

DT3131 **£1159** (£1361.82)

13.3" SUPER TFT FLAT LCD PANEL

- Up to 1024 x 768, 16.2 million colours 140° view angle

CM803ET **£939** (£1103.32)

21" COLOUR DISPLAY MONITOR

- Up to 1800 x 1440 @ 75Hz

All prices shown in brackets are inclusive of VAT ALL HITACHI MONITORS INCLUDE 3 YEAR ON-SITE REPLACEMENT WARRANTY

Masters of Monitor Technology

HITACHI

15 inch

DISPLAY EXCELLENCE

15" ProVista E40 (13.8"V)

- Use a resolution of 1024x768 flicker free @ 85Hz
- Brilliant FST tube with 13.8" viewable area
- 0.28mm professional dot pitch
- Microprocessor Intelligent for easy controls
- 3 Year Warranty (2 Year On Site, 3rd Year Return To Base)

£115 (£146.87 inc VAT)

17 inch

17" MicroScan 5GT (16"V)

- Resolutions up to 1600 x 1200 flicker free
- 0.25mm Aperture Grille sharp focus
- Sony Trinitron CRT™
- On screen display and colour adjustment
- TCO 95 approval as standard
- 3 Year On Site (Next Day Exchange) Warranty

£319 (£374.82 inc VAT)

19 inch

19" MicroScan 6P (18"V)

- 1600 x 1200 @75Hz or 1280 x 1024 @85Hz
- 0.26mm dot pitch (0.21 Horizontal mask pitch)
- On screen display and colour adjustment
- Built-in microphone, stereo speaker option
- In built USB hub (4 downstream, 1 upstream port)
- TCO 95 approval as standard
- 3 Year On Site (Next Day Exchange) Warranty

£439 (£515.82 inc VAT)



PRINCETON
GRAPHIC SYSTEMS



E040

- 14" Invar Shadow Mask CRT for crisp, clear images
- Dot Pitch: 0.28mm (0.24mm h) for fine image resolution
- Flicker-free (75Hz) @ up to 800 x 600 / Maximum Resolution: 1024 x 768 NI
- Energy Star™ compliant for power-saving
- Max. Horizontal Frequency: 48 kHz

£109 (£128.07 inc VAT)



E050

- 15" Invar Shadow Mask CRT for crisp, clear images
- Dot Pitch: 0.28mm (0.24mm h) for fine image resolution
- Flicker-free (75Hz) @ up to 1152 x 864 / Maximum Resolution: 1280 x 1024 NI
- PreVu™ On-Screen Display and Coloright™ Controls
- Max. Horizontal Frequency: 70 kHz

£159 (£186.82 inc VAT)



E017

- 17" Invar Shadow Mask CRT for crisp, clear images
- 0.26mm (0.22mm h) dot pitch for excellent image definition
- Flicker-free (75Hz) @ up to 1152 x 864 / Maximum Resolution: 1280 x 1024 NI
- PreVu™ On-Screen Display and Coloright™ Controls
- Max. Horizontal Frequency: 70 kHz

£299 (£351.32 inc VAT)



E075

- 17" High Contrast CRT for perfect contrast, brightness & focus
- 0.26mm (0.22mm h) dot pitch for excellent image definition
- Flicker-free (75Hz) @ up to 1600 x 1200 / Maximum Resolution: 1600 x 1200 NI
- PreVu™ On-Screen Display and Coloright™ Controls
- Max. Horizontal Frequency: 95 kHz

£399 (£468.82 inc VAT)



E090

- 19" High Contrast CRT for perfect contrast, brightness & focus
- Dot Pitch: 0.26mm (0.22mm h) for excellent image definition
- Flicker-free (75Hz) @ up to 1600 x 1200 / Maximum Resolution: 1600 x 1200 NI
- PreVu™ On-Screen Display and Coloright™ Controls
- Max. Horizontal Frequency: 95 kHz

£529 (£621.57 inc VAT)

Arcadia

- 29" Entertainment Monitor (27" visible diagonal)
- 800 x 600 max resolution, 640 x 480 @ 75Hz refresh recommended
- On Screen Display, Remote Control
- Ideal for Presentations, Home Applications, Games, Multimedia, ...
- 1 year warranty

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MONITORS

ADI	Tube Size	VA DP(mm)	Max Res	H(Hz)	V(KHz)	Rec Res	S	Safety	Exc	Inc VAT
ProVista V30	14" CRT	13.3 0.28	1024 X 768	30-48	50-100	800 x 600 72Hz		MPR II	90	105.75
ProVista E30	14" CRT	13.3 0.28	1024 X 768	30-54	50-100	800 x 600 85Hz		MPR II	95	111.62
ProVista E40	15" FST	13.8 0.28	1280 X 1024	30-69	50-100	1024 x 768 85Hz		MPR II	115	135.12
MicroScan 4P	15" FST	13.8 0.28	1280 x 1024	30-69	50-120	1024 x 768 85Hz		MPR II	129	151.57
MicroScan 5P	17" FST	16.0 0.28	1280 x 1024	30-69	50-120	1024 x 768 85Hz		MPR II	229	269.07
MicroScan 5G	17" FST	16.0 0.26	1600 x 1200	30-95	50-160	1280 x 1024 85Hz		TC095	289	339.57
MicroScan 5GT	17" TT	16.0 0.25	1600 x 1200	30-95	50-160	1280 x 1024 85Hz		TC095	319	374.82
MicroScan 6P	19" FST	18.0 0.26	1600 x 1200	30-95	50-160	1600 x 1200 75Hz		TC095	439	515.82
MicroScan 6G	21" FST	20.0 0.28	1600 x 1200	30-95	50-160	1600 x 1200 75Hz		TC095	699	821.32
BELINEA										
10 40 10	14" CRT	13.2 0.28	1024 x 768	30-54	50-120	640 x 480 85Hz		MPR II	89	104.57
10 50 35	15" FST	13.6 0.28	1280 x 1024	30-69	50-120	800 x 600 100Hz		MPR II	109	128.07
10 50 45	15" FST	13.7 0.27	1280 x 1024	30-70	50-120	800 x 600 100Hz		TC095	119	139.82
10 50 76	15" FST	13.7 0.27	1280 x 1024	30-69	50-120	800 x 600 100Hz		TC095	139	163.32
10 70 20	15" FST	15.6 0.28	1280 x 1024	30-70	50-120	1024 x 768 85Hz		TC095	175	205.62
10 70 15	17" FST	16.0 0.27	1280 x 1024	30-70	50-180	1024 x 768 85Hz		TC095	219	257.32
10 70 35	17" FST	16.0 0.27	1600 x 1200	30-95	50-180	1024 x 768 100Hz		TC095	249	292.57
10 55 96	17" FST	15.5 0.26	1600 x 1200	30-95	50-120	1024 x 768 100Hz		TC095	259	304.32
10 70 40	17" FST	15.6 0.26	1600 x 1200	30-95	50-120	1024 x 768 100Hz		TC095	199	233.82
10 70 50	17" DT	15.9 0.25	1600 x 1200	30-95	50-160	1024 x 768 100Hz		TC095	309	363.07
10 60 90	19" FST	17.8 0.26	1600 x 1200	30-95	50-160	1280 x 1024 85 Hz		TC095	409	480.57
10 80 95	21" FST	20.0 0.25	1600 x 1200	30-95	50-160	1280 x 1024 75 Hz		TC095	609	715.57
10 80 15	21" FST	20.0 0.25	1600 x 1200	30-115	50-160	1600 x 1200 85 Hz		TC095	699	821.32
CTX										
1451E	14" CRT	13.2 0.28	1024 X 768	30-50	50-120	800 X 600 75Hz		MPR II	99	116.32
1555E	15" FST	13.8 0.28	1280 X 1024	30-55	50-110	800 x 600 85Hz		MPR II	119	139.82
1569 SE	15" FST	13.8 0.28	1280 x 1024	30-70	50-120	1024 x 768 85Hz		MPR II	129	151.57
1569 MS/ME	15" FST	13.8 0.28	1280 x 1024	30-70	50-120	1024 x 768 85Hz		MPR II	169	198.57
1569 UA	15" TT	14.0 0.25	1280 x 1024	30-70	50-120	1024 x 768 85Hz		MPR II	189	222.07
1769SE	17" FST	15.7 0.28	1280 x 1024	30-70	50-120	1024 x 768 85Hz		MPR II	229	269.07
1769MS	17" FST	15.7 0.28	1280 x 1024	30-70	50-160	1024 x 768 85Hz		MPR II	309	363.07
1792 UA	15" TT	16.0 0.25	1600 x 1200	30-92	50-160	1280 x 1024 85 Hz		TC095	369	433.57
1792SE	17" FST	15.7 0.26	1600 x 1200	30-92	50-160	1280 x 1024 85 Hz		TC095	329	386.57
1785XE	17" FST	15.7 0.26	1600 x 1200	30-95	50-120	1024 x 768 85Hz		TC095	359	421.82
1995 UE	19" CRT	18.0 0.26	1152 x 870	30-85	50-160	1600 x 1200 85 Hz		TC095	449	527.57
2085 XE	20" FST	18.7 0.28	1600 x 1200	30-95	50-120	1280 x 1024 80 Hz		TC092	699	821.32
2185XE	21" FST	20.0 0.26	1600 x 1200	30-95	50-120	1280 x 1024 85 Hz		TC092	799	938.82
2195XE	21" CRT	20.0 0.26	1600 x 1200	30-95	50-160	1280 x 1024 85 Hz		TC092	899	1056.32
DAEWOO										
431X	14" CRT	13.2 0.28	1024 X 768	30-54	50-120	800 x 600 75Hz		MPR II	87	102.22
511X	15" FST	14.0 0.28	1280 X 768	30-69	50-120	800 x 600 75Hz		MPR II	99	116.32
518B	15" FST	14.0 0.28	1280 x 1024	30-69	50-120	1024 X 768 75Hz		MPR II	109	128.07
1509B	15" FST	14.0 0.28	1280 x 1024	30-69	50-120	1024 X 768 75Hz		MPR II	135	158.82
1707B	17" FST	16.2 0.28	1280 x 1024	30-69	50-120	1024 X 768 85Hz		MPR II	195	229.12
1707B TC095	17" FST	16.2 0.28	1280 x 1024	30-69	50-120	1024 X 768 85Hz		TC095	205	240.87
1705B	17" FST	16.2 0.28	1280 x 1024	30-69	50-120	1024 X 768 85Hz		MPR II	219	257.32
HITACHI										
CM500ET	15" FST	13.7 0.23	1152 X 870	30-69	50-100	1024 X 768 85Hz		TC095	159	186.82
CM500ES	15" FST	13.7 0.23	1152 X 870	30-69	50-100	1024 X 768 85Hz		TC095	179	210.32
CM620ET	17" FST	15.9 0.22	1152 X 870	31-69	47-130	1024 X 768 85Hz		TC095	265	311.37
CM641ET	17" FST	15.9 0.21	1600 x 1200	31-95	50-130	1280 x 1024 85Hz		TC095	345	405.37
CM751ET	19" FST	18.0 0.21	1280 x 1024	31-94	50-130	1280 x 1024 85Hz		TC095	499	586.32
CM752ET	19" FST	18.0 0.21	1280 x 1024	31-94	50-130	1280 x 1024 90Hz		TC095	539	633.32
CM802ET	21" FST	20.0 0.21	1600 x 1280	31-100	50-160	1280 x 1024 85Hz		TC095	759	891.82
CM803ET	21" FST	20.0 0.21	1800 X 1440	31-115	50-160	1600 x 1280 85Hz		TC095	939	1103.32
IYAMA										
MF-8515G	15" FST	13.8 0.28	1280 X 1024	27-69	50-160	800 X 600 100Hz		MPR II	169	198.57
MF-8617T	17" FST	15.7 0.26	1600 x 1200	27-86	50-160	1152 x 864 85Hz		TC095	299	351.32
MF-8617ES	17" FST	15.7 0.26	1600 x 1200	27-86	50-160	1152 x 864 85Hz		MPR II	365	428.87
MT-9017T	17" DT	16.0 0.25	1600 x 1200	27-92	50-160	1152 x 864 85Hz		TC095	349	410.07
S9016GT	19" FST	18.0 0.26	1600 x 1200	27-102	50-160	1280 x 1024 85Hz		TC095	499	586.32
S1016GT	21" FST	20.0 0.27	1600 x 1200	27-96	50-160	1280 X 1024 85Hz		TC095	729	856.57
A1016GT	21" DT	20.0 0.28	1600 x 1200	27-96	50-160	1280 X 1024 85Hz		TC095	759	891.82
S1026GT	21" FST	20.0 0.27	1800 X 1440	27-110	50-160	1600 X 1200 80Hz		TC095	765	898.87
A1026GT	21" DT	20.0 0.28	1800 X 1440	27-110	50-160	1600 X 1200 80Hz		TC095	789	927.07
TS15G 15" Touch	15" FST	13.8 0.28	1280 X 1024	27-69	50-160	800 X 600 100Hz		MPR II	699	821.32
TS17T 17" Touch	17" FST	15.7 0.26	1600 x 1200	27-86	50-160	1024 x 768 75Hz		TC095	999	1173.82
TS17T 21" Touch	21" DT	19.5 0.28	1800 X 1440	27-110	50-160	1024 x 768 75Hz		TC095	1499	1761.32
LG										
SW44i	14" CRT	13.2 0.28	1024 x 768	30-50	50-90	800 x 600 80Hz		MPR II	96	112.80
SW55i	15" FST	13.8 0.28	1024 x 768	30-50	50-90	800 x 600 85Hz		MPR II	117	137.47
Studioworks 57i	15" FST	13.8 0.28	1280 X 1024	30-69	50-110	1024 x 768 85Hz		MPR II	129	151.57
Studioworks 5D	15" FST	13.8 0.28	1280 x 1024	30-65	50-110	1024 x 768 80Hz		MPR II	157	184.47
Studioworks 77i	17" FST	15.8 0.28	1280 x 1024	30-69	50-160	1024 x 768 85Hz		MPR II	229	269.07
Studioworks 78M	17" FST	15.7 0.28	1280 x 1024	30-69	50-160	1024 x 768 85Hz		TC095	312	366.60
Studioworks 78 T	17" FST	15.8 0.26	1600 X 1200	30-95	50-120	1280 x 1024 80Hz		TC095	312	366.60
Studioworks 78 D	17" DT	16.1 0.25	1600 X 1200	30-95	50-120	1280 x 1024 80Hz		TC095	376	441.80
Studioworks 98T	19" FST	18.0 0.26	1600 X 1200	30-95	50-160	1600 x 1200 75Hz		TC095	489	574.57
Studioworks 99T	21" FST	19.8 0.26	1800 X 1200	30-95	50-120	1280 x 1024 80Hz		MPR II	699	821.32
MITSUBISHI										
DiamondScan 15VX	15" FST	13.8 0.28	1280 X 1024	30-65	50-100	1024 X 768 70Hz		TC092	176	193.60
DiamondPro 67TXV	17" DT	16.0 0.25	1280 x 1024	30-69	55-125	1024 X 768 85Hz		TC092	322	378.35
DiamondScan 70	17" FST	16.0 0.25	1280 X 1024	30-70	50-180	1024 X 768 85Hz		TC095	Call	Call
DiamondPlus 72	17" DT	16.0 0.25	1280 X 1024	30-86	50-130	1024 X 768 75Hz		TC095	359	421.82
DiamondPro 700	17" DT	16.0 0.25	1280 X 1024	30-95	50-152	1024 X 768 75Hz		TC095	422	495.85
DiamondPro 91TXM	21" DT	20.0 0.28	1600 X 1200	30-95	50-152	1600 X 1280 70Hz		TC095	749	880.07
DiamondPro 1010c	21" DT	20.0 0.26	1800 x 1440	30-115	50-152	1800 x 1440 76Hz		TC095	Call	Call

MONITORS CONTINUED

NEC	Tube Size	VA DP(mm)	Max Res	H(Hz)	V(KHz)	Rec Res	S	Safety	Exc	Inc
Multisync A500	15" FST	13.8 0.28	1280 X 1024	31-65	55-120	1024 X 768 80Hz		MPR II	169	198.57
Multisync E500	15" FST	13.8 0.25	1280 X 1024	31-69	56-120	1024 X 768 86Hz		TC095	209	245.57
Multisync M500	15" FST	13.8 0.25	1280 X 1024	30-69	57-120	1024 X 768 86Hz		TC092	292	343.10
Multisync A700	1									

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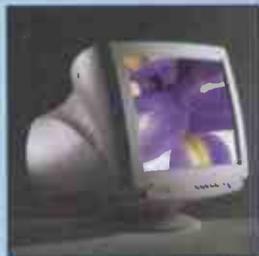
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17" monitor

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(£346.62 inc VAT)



NOKIA

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- Built-in directional microphone
- Dynamic Focus
- TCO-95
- Windows 95 Plug n Play

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The DIAMONDTRON CRT takes Trinitron technology to new levels of excellence delivering more accurate, sharper images.

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Mitsubishi offers a 3 year return to base warranty, with 24-hour product replacement in the first year. Buy a DIAMONDTRON monitor made by Mitsubishi for guaranteed 100% pure DIAMONDTRON



The **Diamond Pro 91TXM** meets the needs of graphics and CAD users who require high resolution, high quality 21" monitors. Featuring Mitsubishi's latest 0.28mm CRT, the monitor reaches a maximum non-interlaced resolution of 1600 x 1280 at a refresh rate of 75Hz. **£749** (£880.07 inc VAT)



The **Diamond Pro 700** is a 17" monitor perfect for the corporate market place as well as CAD users, designers and multimedia experts. Featuring Mitsubishi's patented DIAMONDTRON™ technology, the monitor reaches a maximum resolution of 1600 x 1200 at a refresh rate of 75Hz. **£422** (£495.85 inc VAT)



The **Diamond Scan 70** is a 17" FST colour monitor aimed at meeting the needs of corporate customer looking for high levels of quality performance and support. The monitor reaches a maximum non-interlaced resolution of 1080 x 1024 at a refresh rate of 65Hz with a 0.25 grille pitch. **£295** (£346.62 inc VAT)



The **Diamond Pro 15VX 15"** colour monitor offers an extensive array of features at a practical price, making it a staple for corporate environments. Featuring a flat-square CRT with Invar shadow mask, the monitor reaches a maximum non-interlaced resolution of 1024 x 768 at a refresh rate of 75Hz. **£176** (£206.80 inc VAT)

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TAXAN



Ergovision 550 TCO 95
• 15" FST Digital Monitor
• 0.27mm Dot Pitch
• Fully TCO 95 Compliant
• AGRAS Face Treatment
• 30 - 69kHz (Multiscan)
• 1024 x 768 up to 85Hz
• Windows 95 Plug and Play
£169 (£198.57)



Ergovision 760 TCO 95
• 17" ZenTan® FST Tube
• Footprint equivalent to a 14" monitor
• AGRAS Face Treatment
• 0.27mm dot pitch
• 1024 x 768 up to 86Hz
• Fully TCO 95 compliant
• Easy One-Touch Control
£309 (£363.07)



Ergovision 750 TCO 95
• 17" Diamondtron® Monitor
• 0.25mm Aperture Grille Pitch
• Short-Neck Tube
• Fully TCO 95 Compliant
• 30 - 86kHz (Multiscan)
• 1280 x 1024 up to 80Hz
• Dual Input
£425 (£499.37)



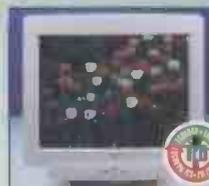
Ergovision 760 TCO 95-S Multimedia Version
As Ergovision 760 TCO 95 plus
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• Headphone socket
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• 19" FST Tube
• ARASC Face Treatment
• 0.26mm dot pitch
• 30 - 95kHz Horizontal Scan Frequency
• 1600 x 1200 @ 75Hz
• Fully TCO 95 Compliant
• BRAND NEW FROM TAXAN!!!
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Crystalvision 640 TCO 95
• 14.1" TFT Flat Panel Monitor
• Equivalent to 17" CRT Monitor
• Fully TCO 95 Compliant
• 1024 x 768 Flicker Free
• 16.7 million colours (24-bit)
• 200cd/m² Brightness
• Model shown is CV550-S
£849 (£997.57)



Ergovision 2150 TCO 95
• 21" Diamondtron® Monitor
• 0.28mm Aperture Grille Pitch
• Short-Neck Tube
• Fully TCO 95 Compliant
• 30 - 95kHz (Multiscan)
• 1600 x 1200 up to 75Hz
• Dual Input
£879 (£1032.82)



Ergovision 795 TCO 95
• 17" ZenTan® FST Tube
• Footprint equivalent to a 14" monitor
• AGRAS Face Treatment
• 0.27mm dot pitch
• 1024 x 768 up to 86Hz
• Fully TCO 95 compliant
• Easy One-Touch Control
£309 (£363.07)



Ergovision 750 TCO 95
• 17" Diamondtron® Monitor
• 0.25mm Aperture Grille Pitch
• Short-Neck Tube
• Fully TCO 95 Compliant
• 30 - 86kHz (Multiscan)
• 1280 x 1024 up to 80Hz
• Dual Input
£425 (£499.37)

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ViewSonic GS771

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- 0.27mm dot pitch
- 1024 x 768 @ 87Hz
- Plug & Play
- TCO '95

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ViewSonic G790

- 17" Flat screen monitor (18" Viewable area)
- 0.26mm dot pitch
- 1080 x 1024 @ 88Hz
- Plug & Play
- TCO '95

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ViewSonic VP140

- 14" LCD ViewPanel
- 1024 x 768 @ 76Hz
- Slimline monitor, 2.5" deep
- OnView Controls
- Plug & Play
- TCO '95

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3 Year "Express Exchange" warranty available on all new ViewSonic monitors, excluding ViewSonic's Optique® product range, presentation and LCD ranges. Limited to the UK mainland, the 24 hour service is available in most areas.

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Studioworks 15" SW57i Colour Monitor

- Multi-sync support from 640 x 480 up to 1280 x 1024 @ 85Hz
- Flicker-free up to 1024 x 768 NI @ 85Hz
- 0.28mm Dot Pitch
- 13.8" Viewable diagonal
- Digital microprocessor controls with on-screen displays
- Windows 95 Plug and Play, VESA DDC compatible
- EPA Energy Star, NUTEK and VESA DPMS compliant Power Management system
- MPR II low emission compliance
- 3 Year on site swap out warranty



SW77i only £229 (£269.07 inc VAT)

Studioworks 17" SW77i Colour Monitor

- Multi-sync support from 640 x 480 up to 1280 x 1024 @ 85Hz
- Ultra Contrast Tube for clearer picture
- Flicker-free up to 1024 x 768 NI @ 85Hz
- 0.28mm Dot Pitch
- 15.8" Viewable diagonal
- Digital microprocessor controls with on-screen displays
- Windows 95 Plug and Play, VESA DDC compatible
- EPA Energy Star, NUTEK and VESA DPMS compliant Power Management system
- MPR II low emission compliance
- 3 Year on site swap out warranty



SW99T only £489 (£574.58 inc VAT)

Studioworks 19" High Resolution Colour Monitor

- Multi-sync support from 640 x 480 up to 1600 x 1200 @ 75Hz
- Flicker-free up to 1600 x 1200 NI @ 75Hz NI
- 0.26mm Dot Pitch with Double Focus Circuitry
- 18" Viewable diagonal
- On-screen digital microprocessor controls
- VESA DDC1, DDC2AB and DDC2B Plug & Play compatible for windows
- PC, Mac and SPARC compatible
- TCO'95 and MPR-II low emission compliance
- 3 Year on site swap out warranty

SAMSUNG

SyncMaster 500s

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- 15" Diagonal FST (13.8" Viewable Image Size)
- 0.28mm Dot Pitch
- INVAR Shadow Mask
- Up to 800 x 600 @ 85Hz
- Anti-Reflective, Anti-Static UltraClear™ coating
- Ergonomic on-screen display
- Plug and Play compatibility
- EPA Energy Star, NUTEK and VESA DPMS compliant Power Management System
- 3 Years warranty (Parts and Labour, CRT)



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- 17" Diagonal FST (15.7" Viewable Image Size)
- 0.28mm Dot Pitch
- INVAR Shadow Mask
- Up to 1024 x 768 @ 85Hz
- Anti-Reflective, Anti-Static UltraClear™ coating
- Ergonomic on-screen display
- Completely Flicker Free Viewing
- Plug and Play compatibility
- EPA Energy Star, NUTEK and VESA DPMS compliant Power Management System
- 3 Years warranty (Parts and Labour, CRT)



SyncMaster 900p

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- 19" Diagonal FST (18" Viewable Image Size)
- 0.26mm Dot Pitch
- INVAR Shadow Mask
- Up to 1280 x 1200 @ 85Hz
- Anti-Reflective, Anti-Static UltraClear™ coating
- Ergonomic on-screen display
- Completely Flicker Free Viewing
- Plug and Play compatibility
- EPA Energy Star, NUTEK and VESA DPMS compliant Power Management System
- 3 Years warranty (Parts and Labour, CRT)



SyncMaster 1000p

£739 (£868.32)

- 21" Diagonal FST (19.7" Viewable Image Size)
- 0.25mm Dot Pitch
- INVAR Shadow Mask
- Up to 1600 x 1200 @ 85Hz
- Anti-Reflective, Anti-Static UltraClear™ coating
- Ergonomic on-screen display
- Completely Flicker Free Viewing
- Plug and Play compatibility
- EPA Energy Star, NUTEK and VESA DPMS compliant Power Management System
- TCO 95 compliant
- 3 Years warranty (Parts and Labour, CRT)



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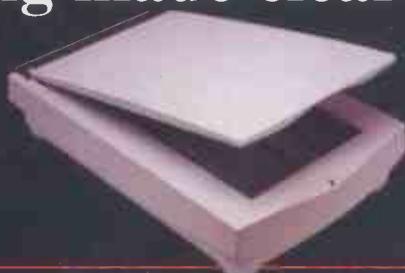
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FROM £84
(£98.70)

- 30 bit colour scanning
- 600 x 600 dpi
- Maximum resolution: 9600 x 9600 dpi
- Bundled software: *PhotoDeluxe and PageManager*
- EPP/SPP Parallel Port

Powerlook *ColourStudio II*

FROM £749
(£880.07)

- Bundled software: *Binuscan PhotoPerfect Advanced Adobe Photoshop LE Optional Photoshop full v4.0 Includes FREE Painter 5 and Wacom ArtPad II*

Call for details of CoverPlus Extended Warranty

Model	Standard	LE	Full	Pro
Astra 610 Parallel	£59 (£69.32)	£89 (£104.57)	£169 (£198.57)	-
Astra 610 SCSI	£89 (£104.57)	£119 (£139.82)	£199 (£233.82)	-
Astra 1210P	£84 (£98.70)	£114 (£133.95)	£204 (£239.707)	-
Astra 1220 SCSI	£219 (£257.32)	£249 (£292.57)	£339 (£398.32)	£538 (£632.15)
Powerlook ColourStudio II	-	£749 (£880.07)	£899 (£1056.32)	£1149 (£1350.07)

LE = Photoshop LE, Full = Full Photoshop
Pro = Full Photoshop & Transparency Adaptor
All prices shown in brackets are inclusive of VAT



Powerlook III with Tranny unit £1995 (£2344.12)
Mirage SE A3 with Tranny unit £1999 (£2348.82)

GENUINE UK UNITS

All **UMAX** scanners supplied by Dabs Direct are genuine UK units and come with 1 year RTB



COVER plus
EPSON CoverPlus three year extended warranty service available
£149.00 (£175.07 inc VAT)

EPSON GTx-9500 Colour (4800 dpi/36 bit per pixel) Flatbed Scanner

- Advanced scanning options - TET, batch, page frame and negative film scanning
- SCSI and Bi-directional parallel interfaces built-in as standard
- Optional transparency unit and document feeder
- 1 year RTB warranty

FROM £446 (£524.05 inc VAT)



EPSON GT-5500 Compact Colour (400 dpi/ 30 bit per pixel) Flatbed Scanner

- Small footprint
- Maximum resolution 3200dpi
- Single pass, full 30 bit colour scanning
- Advanced TET (Text Enhancement Technology)
- AAS (Auto Area Segmentation) for accurate copying and faxing
- SCSI interface

£187 (£219.72 inc VAT)



EPSON GT-5000 Flatbed colour image scanner

- Small footprint
- Single pass, full 24 bits colour scanning
- Advanced TET (Text Enhancement Technology)
- Maximum resolution of 2400dpi
- Dedicated software for both PC and Mac users
- Bi-directional parallel interface

£130 (£152.75 inc VAT)



EPSON FilmScan 200 35mm Film Scanner

- Affordable high quality scanning
- Suitable for 35mm - negative and positive
- Optional holder for Advanced Photo System cartridges
- Batch scanning capability - up to 6 images, simultaneously
- Fully TWAIN compliant, PC and Mac™ compatible
- BONUS PictureWorks PhotoEnhancer and Prestol PhotoAlbum software

from £303 (£356.02 inc VAT)

EPSON PhotoPC 600 XGA Colour digital camera

- High quality 24 bit colour images
- Prints directly to the Epson stylus Photo
- Displays presentations directly through video output
- High quality built-in 2" LCD colour viewfinder
- 4MB internal memory
- PAL TV/Video output for excellent large screen viewing
- Digital zoom, panoramic, B & W and Macro image capture modes
- Multi-frame mode
- Dedicated software for both PC and Mac users

only £379 (£445.32 inc VAT)



EPSON



- ✓ Serving you since 1987
- ✓ Over £50m annual turnover
- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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All 0870 calls charged at national rate

SCANNERS

ACER	ex VAT	inc VAT
VuegoScan S200	39	45.82
VuegoScan S310P Parallel	55	64.62
VuegoScan S310S SCSI	79	92.82
VuegoScan 610P Parallel	85	99.87
VuegoScan 610S SCSI	115	135.12

AGFA	ex VAT	inc VAT
SnapScan 310 SCSI	99	116.32
SnapScan 600 SCSI	179	210.32
StudioStar SCSI	359	421.82
Arcus II SCSI & Transparency Adaptor	745	875.37
DuoScan SCSI	1749	2055.07
Accessories		
SnapScan Automatic Document Feeder	159	186.82

CANON	ex VAT	inc VAT
Canoscan 300 SCSI	129	151.57
Canoscan 300S	140	164.50
Canoscan 600 SCSI	454	533.45
DR3020 Document Management SCSI	3499	4111.32

EPSON	ex VAT	inc VAT
GTx-5000 Parallel	130	152.75
GTx-5500 SCSI	187	219.72
GT-9500 Parallel & SCSI	383	450.02
GTx-9500 Parallel	446	524.05
GTx-9500 SCSI	469	551.07
GTi-9500 SCSI	538	632.15
FilmScan 200 SCSI	303	356.02
Accessories		
GT Automatic Document Feeder	309	363.07
GT Transparency Unit	359	421.82

HEWLETT PACKARD	ex VAT	inc VAT
ScanJet Ss Parallel	134	157.45
ScanJet 5100c Parallel	149	175.07
ScanJet 6100c SCSI	434	509.95
ScanJet 5 Ethernet	1605	1885.87
Accessories		
6100 Automatic Document Feeder	259	304.32
6100 Transparency Unit	369	433.57

LOGITECH	ex VAT	inc VAT
Scanman Colour 2000	77	90.47
PageScan Parallel	85	99.87
FreeScan Parallel	99	116.32

MICROTEK	ex VAT	inc VAT
Phantom 330 Parallel	85	99.87
Colour PageWiz Parallel	89	104.57

Acer SCANNERS

Our lowest price scanner
...from only £55

- Flatbed A4 colour scanner
- 300 x 600/600 x 1200 dpi optical resolution
- 4800dpi or 9600dpi max resolution
- High speed one pass scan
- 30bit colour
- 8bit greyscale
- Software included
- Parallel (310P/610P) or SCSI II (310S/610S) interface



VuegoScan 310/610

310P £55
(£84.62 inc VAT)

310S PC £79
(£92.82 inc VAT)

3200 1200dpi, mono £39
(£45.82 inc VAT)

610P 9600dpi, Parallel £85
(£99.87 inc VAT)

610S 9600dpi, SCSI £115
(£135.12 inc VAT)



Nikon COOLSCAN II

High performance 35mm film scanner at an affordable price

- 2,700 dpi true optical resolution
- Fast 80 second scan time (approximate)
- Autofocus - consistently sharp scans
- Scans both slides and negatives

Internal with Nikon Scan £340 (£399.50)

External with Nikon Scan £425 (£499.37)

Int. with SilverFast & Photoshop LE £385 (£452.37)

Ext. with SilverFast & Photoshop LE £544 (£639.20)

Prices in brackets are Inclusive of VAT

SCANNERS

MICROTEK continued	ex VAT	inc VAT
ScanMaker 330 SCSI	109	128.07
ScanMaker 630 SCSI	209	245.57
35T Plus SCSI	595	699.12
ScanMaker III SCSI	675	793.12
ScanMaker Designer Pro SCSI	1195	1404.12
ScanMaker 6400XL A3 SCSI	1099	1291.32
ScanMaker 9600XL A3 SCSI	Call	Call
Accessories		
330/630 Transparency Unit	159	186.82

MUSTEK	ex VAT	inc VAT
ScanExpress 6000P Parallel	65	76.37
ScanExpress 6000SP Pro SCSI	99	116.32
ScanExpress 12000P Parallel	119	139.82
ScanExpress 12000SP Pro SCSI	149	175.07

NIKON	ex VAT	inc VAT
CoolScan II Int SCSI	340	399.50
CoolScan II Int SCSI & Photoshop LE	459	539.32
CoolScan II Ext SCSI	425	499.37
CoolScan II Ext SCSI & Photoshop LE	544	639.20
Super Coolscan SCSI	995	1169.12
Super Coolscan SCSI & Photoshop LE	1114	1308.95

POLOROID	ex VAT	inc VAT
SprintScan 35LE SCSI	419	492.32
SprintScan Plus SCSI	1199	1408.82

UMAX	ex VAT	inc VAT
Astra 610P Parallel	59	69.32
Astra 610S SCSI	89	104.57
Astra 1210P Parallel	84	98.70
Astra 1220S SCSI	219	257.32
Photoshop LE add	30	35.25
Full Photoshop add	120	141.00
Powerlook ColourStudio II LE SCSI	749	880.07
Powerlook ColourStudio II Plus SCSI	899	1056.32
Powerlook ColourStudio II Pro SCSI	1149	1350.07
Powerlook III SCSI	1995	2344.12
Powerlook 2000 Pro SCSI	2499	2936.32
Mirage IISE SCSI	1999	2348.82
Mirage II SCSI	4999	5873.82
Accessories		
Astra Transparency Unit	199	233.82

VISIONEER	ex VAT	inc VAT
PaperPort 3000	97	113.97
PaperPort Strobe Colour	169	198.57
PaperPort 6000	139	163.32



HP ScanJet 5100c £149

(£175.07 inc VAT)

The HP ScanJet 5100c is ideal for business people in the general office who wish to effectively convey paper based and electronic information.



With other scanners it can take hours to re-create a document; the HP ScanJet 5100c does it in minutes with the push of a button & Intelligent Scanning Technology.

Reproduction of black and white logos and linart to original quality, perfect for scaling to any size without jagged edges.

Complete scanning solution: includes software for desktop copying, text recognition, image editing, and document management.

- 600 dpi hardware super sampling
- 300 x 600 hardware
- 1200 x 1200 enhanced
- 30-bit Converter (36-bit colour image processor)
- CD-ROM:
 - HP PictureScan with integrated OCR software
 - HP ScanJet Color Copy Utility
 - Adobe PhotoDeluxe 2.0 Image Editor
 - Caere pageKeeper Light document management



With HP SupportPack £289 (£339.57 inc VAT)



HP ScanJet 6100c £434

(£509.95 inc VAT)

Professional Series

The HP scanning solution that provides you with professional results and tools to communicate your ideas effectively.



- Professional results with Intelligent Scanning Technology - Automatically
- NEW Slide Adapter for scanning 35mm slides
- Single-pass, single-exposure colour/greyscale flatbed
- 600 dpi optical, 2400 dpi enhanced
- 30-bit internal/24-bit colour output
- 10-bit internal/8-bit output grayscale
- Includes the following hardware:
 - HP ScanJet 6100c
 - HP ScanJet Slide adaptor
 - Power cord, SCSI card, SCSI cable and manuals
- Includes the following software:
 - OCR: Caere, with HP AccuPage
 - Corel PhotoPaint Select (PC only)
 - Adobe Photoshop LE (Macintosh only)
 - HP ScanJet Color Copy Utility
 - Adobe Acrobat 3.0
 - Corel Web Graphics Suite (PC only)

Includes Microsoft Network, MSN CD-ROM (for a limited period only)



With HP SupportPack £574 (£674.45 inc VAT)

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MICROTEK
The Digital Vision

ScanMaker 6400XL/9600XL



Features and Benefits

Designed for professional applications the ScanMaker 6400XL and 9600XL are ideal for a production environment in corporations, advertising agencies, service bureaus for FPO positioning and for scanning large artwork, tabloid-sized publications, and x-rays for medical imaging.

Scanmaker 9600XL hardware features are:

- Large scan bed - Allows for batch scanning of up to ten 3.5" x 5" photo on the bed at one time.
- High Resolution CCD - The ScanMaker 9600XL allows for greater enlargement of scanned images.
- High Dynamic Range - Greater than 3.2 allows the scanner to produce vibrant images showing the slightest subtle differences in colour levels.
- 36-bit colour depth.
- Large 12" x 17" / 304.8 mm x 431.8 mm Scan Area - Scan oversize materials such as newspapers or tabloid magazines.

Specifications

- Resolution: 6400XL: 400 x 800 dpi, Interpolated 6400 dpi
9600XL: 600 x 1200 dpi, Interpolated 9600 dpi
- Colour Depth: 36 bit
- Scan Area: 304 mm x 430 mm
- Interface: SCSI
- Software: Scan Wizard (PC/Mac)
Caere OmniPage LE (OCR) (PC/Mac)
Ulead PhotolImpact Full (Image Editing) (PC)
ImagePals2Go! (Image Editing) (PC, Windows 3.X)
ColorIt! (Image Editing) (Mac)
Fractal Design Painter (Image Editing)
Colour Management Software (PC/Mac)

ScanMaker 6400XL

£1099 (€1291.32 inc VAT)

ScanMaker 9600XL

€Call (€Call inc VAT)

Macintosh compatible versions also available - phone for prices



ScanMaker 330

£109 (€128.07 inc VAT)

The ScanMaker 330 lets you place photos, drawings, company logos or pages of text into your computer software applications.

- 30-bit single-pass colour scanning
- 4800 dpi maximum resolution
- SCSI interface
- Software: Scan Wizard (PC/Mac)

- Caere OmniPage LE (OCR) (PC/Mac)
- Ulead PhotolImpact LE (Image Editing) (PC)
- Kai's PhotoSoap (Image Editing) (PC/Mac),
- DocuMagix PaperMaster (Document Management) (PC)
- ImagePals2Go! (Image Editing) (PC, Windows 3.X), ColorIt! (Image Editing) (Mac)

NOW includes Kai's PHOTOSOAP



PC Home & PC Advisor Awards November 1997

Phantom 330 £85 (€99.87 inc VAT)

The Phantom 330 has integrated Enhanced Parallel Port technology, a colour depth of 30-bit, is very fast and thus about to become one of our most demanded models.

- 300 x 600 dpi optical resolution
- 4800 x 4800 dpi maximum (interpolated)
- Software: Scanner driver
Caere OmniPage LE (OCR)
Ulead iPhotoExpress (Image Editing)



ScanMaker 630

£209 (€245.57 inc VAT)

In terms of quality, speed and brilliance it's unequalled.

- 30-bit single-pass colour scanning
- 9600 x 9600 dpi maximum resolution
- SCSI interface
- Software: Scan Wizard (PC/Mac), Caere OmniPage LE (OCR) (PC/Mac)
Ulead PhotolImpact Full (Image Editing) (PC), Kai's PhotoSoap (Image Editing) (PC/Mac)
DocuMagix PaperMaster (Document Management) (PC)
ImagePals2Go! (Image Editing) (PC, Windows 3.X)
ColorIt! (Image Editing) (Mac)
Colour Management Software (PC/Mac)

Macintosh compatible versions of these two model are also available - phone for prices

All Microtek scanners are covered by 12 months of **Microtek Total Care**

...if within the 12 month warranty period, hardware fails, then you receive a brand new scanner free of charge.



- ✓ Serving you since 1987
- ✓ Over £50m annual turnover
- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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FUJITSU

Network Scanning from Fujitsu

A plug and play Solution for Distributing Scanned Information across an enterprise environment.

Attach the Axis 700 Scan Server with the Fujitsu ScanPartner 300C to your network and send scanned documents, photographs, reports etc. any where from individual to corporate distribution lists across the building or around the world.



ScanPartner 300C



The Axis 700 Scan Server

The Axis 700 Scan Server

- The AXIS 700 Network Scan Server is a practical way to reduce the cost, inefficiencies and duplication of effort required by photocopying, mailing, faxing and other conventional paper-based communication.
- Designed as an HTTP server with file (FTP) and e-mail (SMTP) clients.
- Optimised for Internet and intranets. It works within any Windows, UNIX or IntranetWare environment.
- Embedded Web server for easy configuration.
- Install in minutes and no special training required
- As easy to use as the copier or the fax
- View mono or colour scanned documents from standard Web browsers and free of charge image viewers.

ScanPartner 300C

- Colour Desktop Scanner • Up to 300 x 600 dpi • 10 pages per minute

ScanPartner 300C with Axis 700 Scan Server form **£2445**
 (includes BT Internet software, Avail Personal Edition Document Management software, (£2872.87 inc VAT) and a SCSI cable)

SnapScan 310



£95 (€111.62)

- 30 bit colour depth
- 300 x 600 ppi optical resolution
- 4800 x 4800 ppi through Interpolation
- 10ms/line scan speed
- Bundle includes: FotoLook, and FotoFlavor software
- Outstanding image and text capture within seconds
- Free On-Site Maintenance

SnapScan 600



from only £179 (€210.32)

- Bundle includes: FotoSnap, FotoLook, FotoFlavor, OmniPage LE OCR software
- Mac or PC

ePhoto 307



£145 (€170.37)

- Digital Camera**
Includes: Agfa Photowise and Adobe PhotoDeluxe software
- High quality 24 bit colour images
 - Stores 36 high res photos at 640 x 480 pixels or 72 low res photos at 320 x 240 pixels
 - 43mm glass lens (equivalent to a 35mm camera)
 - Built-in auto flash from 3 - 10 feet (0.9m - 3m)
 - Focus free lens from 2 feet to infinity (0.6m - to infinity)
 - Ten second self timer

ePhoto 1280



£499 (€586.32)

- Digital Camera**
Includes: Agfa Photowise
- Outstanding print quality, up to 1.2 million colours (1280 x 960) with Agfa PhotoGenie
 - Removable memory stores 6 - 60 images per 4MB SSFDC Card (one included)
 - FlashTrack swivel zoom lens (280 degree swivel)
 - Built-in auto flash from 3 - 10 feet (0.9m - 3m)

Arcus II



£745 (€875.37)

- FAST A4 CCD scanner capable of registering 68 billion cols.
- Density range of 3.0D
- 600 x 1200 ppi resolution
- Bundle includes FotoLook, FotoTune Light, and Adobe PhotoShop 3.0
- Mac or PC



Prices shown in brackets include VAT



The complete picture.

visioneer
PAPERPORT 6000 £139 (€163.32)

The Visioneer™ PaperPort® 3000 and PaperPort 6000 are compact desktop colour scanners that deliver excellent performance, unbeaten quality, and unmatched ease of use!

- 600 x 1200 dpi optical resolution; 2400 dpi enhanced
- 30-bit photorealistic colour
- Flatbed design allows for more flexible scanning of bound and loose items



£30 CASH BACK on all Visioneer hardware
 example: Buy the PaperPort 3000 @ £113.97 inc VAT and get £30 CASH BACK, making the actual cost only £83.97 inc VAT. Cash Back claimed by voucher only.

PAPERPORT 3000 £97 (€113.97)

- 300 x 600 dpi optical resolution; 2400 dpi enhanced
- 30-bit photorealistic colour
- Flatbed design allows for more flexible scanning of bound and loose items



PAPERPORT Colour Strobe £159 (€186.82)

With PaperPort Strobe, you can organise, edit, fax, e-mail, and publish using the world's most popular paper management software.



- Manage all your paper and images on screen
- Organise. Simply drag and drop your scanned documents to and from folders on your desktop.
- Fax*. Just drag any scanned document to your fax icon. SharpPage™ technology makes faxes from your PC razor-sharp.
- E-mail. With PaperPort Strobe, you can distribute your documents quickly using popular e-mail or Internet software - company-wide or worldwide.
- PaperPort Links™. Work with more than 150 applications. Just drag and drop your documents and images.

Upgrade to **PAPERPORT DELUXE** for just **£65 (€76.37)**
 The Essential Companion For Your Scanner

* printer & modem required to print and fax. Prices shown in brackets are inclusive of VAT

AFTER CASH BACK
£133.32 inc VAT

- Free Software!**
- PaperPort Software
 - Web Publishing Kit
 - Xerox TextBridge® OCR
 - Corex CardScan™ SE
 - PictureWorks PhotoEnhancer™
 - Quicken ExpensAble SE
 - Connectix QuickCards™ LE

AFTER CASH BACK
£83.97 inc VAT

AFTER CASH BACK
£156.82 inc VAT

- Designed for Windows® 95**
- Fits between your keyboard and PC.
 - Scans anything from business cards and photos to full news columns.

- Free Software!**
- Xerox TextBridge® OCR
 - Corex CardScan™ SE
 - PictureWorks PhotoEnhancer™
 - Connectix QuickCards™ LE



Mustek All Mustek products are fully TWAIN compliant
 All Mustek scanners are single pass

The total scanning solution

Flatbed A4 Colour Scanners

ScanExpress 6000P £65 (€76.37)

- 300x600 dpi Optical Resolution
- 4800 Interpolated Resolution
- 30bit Colour Depth (1.1 billion colours)
- Connects simply, via the parallel port

ScanExpress 12000P £119 (€139.82)

- 600x1200 dpi Optical Resolution
- 9600 Interpolated Resolution
- 36bit Colour Depth (68.7 billion colours)
- Connects simply, via the parallel port

ScanExpress 6000SP Pro £99 (€116.32)

- 300x600 dpi Optical Resolution
- 4800 Interpolated Resolution
- 30bit Colour Depth (1.1 billion colours)
- Includes a SCSI interface

ScanExpress 12000SP Pro £149 (€175.07)

- 600x1200 dpi Optical Resolution
- 9600 Interpolated Resolution
- 36bit Colour Depth (68.7 billion colours)
- Includes a SCSI interface

The above models include image editing and OCR software

Digital Camera

VDC-100 £89 (€104.57)

- Up to 640x480 resolution interpolated (250k CCD)
- Stores up to 20 images in memory
- Includes editing software, PSU, batteries and carry pouch

VDC-200P £189 (€222.07)

- Up to 640x480 resolution (470k CCD)
- 2MB Memory (Up to 50 frames)
- 45mm TFT LCD image preview/menu
- Flash & self timer
- Composite connection to TV (PAL) to view images
- Includes editing software, batteries

Prices shown in brackets are inclusive of VAT

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London 0171 582 4777

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DIGITAL CAMERAS

AGFA	ex VAT	inc VAT
ePhoto 307	145	170.37
ePhoto 1280	499	586.32
CANON		
PowerShot 350	388	455.90
PowerShot 600	529	621.57
CASIO		
QV-70	229	269.07
QV-200	299	351.32
QV-700	299	351.32
QV-5000SX	375	440.62
EPSON		
PhotoPC 600	379	445.32
Accessories		
PhotoPC 600 AC Adaptor	49	57.57
PhotoPC 600 4Mb Card	99	116.32
PhotoPC 600 15Mb Card	259	304.32
FUJI		
DX-5	179	210.32
DX-7	205	240.87
DX-9	309	363.07
Accessories		
Mains Adaptor	25	29.37
HITACHI		
MPEG Video Camera	1449	1702.57
KODAK		
DC120	425	499.37
DC200	379	445.32
DC210	499	586.32
Accessories		
Carry Case	45	52.87
DC50/120 Mains Adaptor	40	47.00
DC200/210 AC Adaptor	59	69.32
DC120 Flash Sync Cable	15	17.62
DC120 Wide Angle Set	139	163.32
DC200/210 Mac Kit	29	34.07
4Mb CompactFlash Card	89	104.57
10Mb CompactFlash Card	159	186.82
20Mb CompactFlash Card	259	304.32
External CompactFlash Card	79	92.82
MUSTEK		
VDC-100	99	116.32
VDC-2000P	199	233.82
NIKON		
CoolPix 100	246	289.05
CoolPix 300	329	386.57
OLYMPUS		
C-420L	309	363.07
C-820L	545	640.37
C-1400L	989	1162.07
RICOH		
RDC-300	255	346.62
RDC-2E	425	499.37
RDC-2L	549	645.07
SANYO		
DigiCam 200	295	346.62
DigiCam 210	call	call
DigiCam 250	375	440.62
DigiCam 300 XGA	419	492.32
Accessories		
Digicam 200 AC Adaptor	75	88.12
Digicam 300 AC Adaptor	45	52.87
SONY		
Mavica FD5	355	417.12
DSC-F1	389	457.07
Mavica FD7	469	551.07
Accessories		
Mavica Stamina Battery	47	55.22
Mavica Soft Case	29	34.07
DSC-F1 Battery	35	41.12
DSC-F1 Fast Charger	49	57.57

MEMORY CARDS

SMARTMEDIA CARDS	ex VAT	inc VAT
2MB	25	29.37
4MB	40	47.00
8MB	75	88.12
COMPACT FLASH/PCMCIA CARDS		
4MB	49	57.57
8MB	59	69.32
12MB	85	99.87
16MB	99	116.32
32MB	199	233.82
Compact Flash - PCMCIA Adaptor	15	17.62

CARD READERS

CHASE	ex VAT	inc VAT
CARDport solo Internal Front	79	92.82
CARDport uno Internal Rear	75	88.12
CARDport isa Internal Front/Rear	125	146.87
CARDport ex2 External Parallel	119	139.82

The Award Winning DC210 Zoom Camera!



DC210 £499 (£586.32 inc VAT)

NEW MEGAPIXEL DC200
Based on the DC210, features fixed focus lens, 1152x864 pixel image sensor, LCD colour preview and review display, high quality compact design
£379 (£445.32 inc VAT)

Also available: DC120 £425 (£499.37 inc VAT)

Kodak digital science PRODUCTS

Great Value MEGAPIXEL Cameras NOW INCLUDES FREE AC POWER ADAPTER!

- True megapixel CCD with 1152 x 864 image resolution
- 4MB picture card included stores 16-60 pictures
- 1.8" TFT colour LCD for picture preview & review
- 2X Focus Free Zoom Lens with close-up mode
- Easy function select via Mode Dial
- Finished File Format (JPEG or FLASHPIX)
- Drag & Drop image straight into application
- Serial (RS232C), Infrared (IrDA) & Video Out (NTSC & PAL) interfaces - display pictures straight to TV!
- Includes: Kodak PictureEasy 2.0, Adobe PhotoDeluxe & PageMill software, Windows '95 mounter & TWAIN Acquire module

Accessories:	DC210 Mac kit	£29 (£34.07 inc VAT)
	DC200 AC adapter	£59 (£69.32 inc VAT)
	DC40/50/120 AC adapter	£59 (£69.32 inc VAT)
	Compact FLASH 4Mb card	£89 (£104.57 inc VAT)
	Compact FLASH 10Mb card	£159 (£186.82 inc VAT)
	Compact FLASH 20Mb card	£259 (£304.32 inc VAT)
	External Compact FLASH reader	£79 (£92.82 inc VAT)

QV-5000SX

Digital Camera

- 960 x 1280 dpi Mega Pixel
- 8MB built in flash
- 1.3million Pixel
- 1.8 TFT Display
- Auto focus
- Stores 102 VGA images
- 4x digital zoom

£375
(£440.62 inc VAT)

QV-700

Digital Camera

- Removable Flash Cards
- Large 2.5" LCD display
- Macro Function (to 7cm)
- 640 x 480 VGA resolution
- Interval or continuous shooting
- Panaramic function
- PC or MAC software and connection kit included

£299
(£351.32 inc VAT)



Also QV-70 £229 (£269.07 inc VAT) QV-200 £299 (£351.32 inc VAT)

CASIO



www.modularte.ch.com

PC Video Camera Quartzsight Video Camera System

- Video Clip & Still Image Capture & Editing
- Video e-mail
- Video phone
- 24-bit Full Colour Video
- 352 x 288 resolution
- Includes software & cables

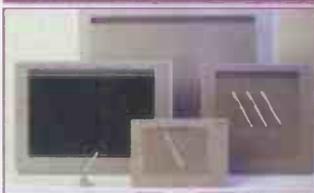
£59 (£69.32 inc VAT)



Wacom Graphics Tablets

It's as easy, as comfortable, and as natural as using a pen. Whether you're painting in Painter, retouching in Live Picture or Photoshop, or working with a host of other applications, a Wacom cordless pen and graphic tablet can significantly enhance your creativity and ease of working. Pressure sensitive pens allow you to vary line thickness, colour density or other characteristics, depending on the application. Already the most widely used graphics tablets for professional electronic artwork production, Wacom's innovative new features combine ergonomics with life like simulation of traditional graphics tools. UltraPad tablets are available from A5 to A2 size. All come with a programmable menustrip for commonly used functions, and provide tilt sensitivity for measuring pen angle - another Wacom first - for calligraphic effects in programs like Painter.

WACOM



Product	Price
Pen Partner	£59 (£69.32)
Pen Partner & PhotoSoap	£69 (£81.07)
ArtPad II	£96 (£112.80)
A5 UltraPad	£185 (£217.37)
A4 UltraPad	£279 (£327.82)
A3 UltraPad	£479 (£562.82)
A2 UltraPad	£1299 (£1526.32)

Prices shown in brackets are inclusive of VAT

VIDEO CONFERENCING

BARAKA	ex VAT	inc VAT
VidCall32 Parallel Video Conferencing Kit	169	198.57
Software		
Cinemail	59	69.32
CONNECTIX		
QuickCam VC	74	86.95
Software		
Digital Radar	19	22.32
PhotoBadge	39	45.82
Wig Out	19	22.32
CREATIVE LABS		
VideoBlaster WebCam II	99	116.32
INTEL		
Create & Share USB	129	151.57
Create & Share PCI	199	233.82
ProShare Video Conferencing 200	599	703.82
ProShare Video System 200	849	997.57
KODAK		
DVC323 Desktop USB	139	163.32
MODULAR TECHNOLOGY		
QuartzSight Desktop Colour Camera Kit	59	69.32
PACE		
Desktop Colour Camera USB	89	104.57
VIDEOLOGIC		
Captivator PCI/VC	149	175.07

PROJECTORS

CTX	ex VAT	inc VAT
Ez500 VGA 240Lm	1289	1514.57
Ez550 SVGA 300Lm	1989	2337.07
Ez600 SVGA 550Lm	2989	3512.07
EPSON		
EMP-5100 SVGA 750Lm	3995	4694.12
EMP-7100 XGA 650Lm	5375	6315.62
EMP-7300	8449	9927.57
NEC		
MT810 SVGA 600Lm	3389	3982.07
MT1000 XGA 550Lm	4489	5274.57
PROXIMA		
LB20	1989	2337.07
DS1 SVGA 600Lm	3699	4346.32
DP5800 SVGA 650Lm	3885	4564.87
DP5900 SVGA 700Lm	3989	4687.07
DP9200 XGA 500Lm	5449	6402.57
SANYO		
PLC-550B SVGA 550Lm	3299	3876.32
PLC-560S SVGA 700Lm	3995	4694.12
PLC-8815 XGA 550Lm	4495	5281.62
PLC-900S XGA 1500Lm	9500	11162.50
SHARP		
XG3785E VGA 250Lm	2229	2619.07
XG3795 SVGA 300Lm	2589	3042.07
XGNV1E SVGA 400Lm	3819	4487.32
XGSV1E SVGA 600Lm	5529	6496.57
SONY		
CPJ-D500	1119	1408.82
VPL-S600	3999	4698.82
VPL-X600	4650	5463.75

GRAPHICS TABLETS

WACOM	ex VAT	inc VAT
Pen Partner	59	69.32
Pen Partner & Soap	69	81.07
ArtPad II	96	112.80
UltraPad A5	185	217.37
UltraPad A5 & Painter	289	339.57
UltraPad A4	279	327.82
UltraPad A4 & Painter	359	421.82
UltraPad A3	479	562.82
UltraPad A3 electrostatic	599	703.82
UltraPad A2	1299	1523.32

PLOTTERS

HEWLETT PACKARD	ex VAT	inc VAT
DesignJet 430 A1	1120	1316.00
DesignJet 430 A0	1642	1929.35
DesignJet 450C A1	1492	1753.10
DesignJet 450C A0	1942	2281.85
DesignJet 455CA A1	1942	2281.85
DesignJet 455CA A0	2242	2634.35
DesignJet 750C+ A1	3142	3691.85
DesignJet 750C+ A0	3742	4396.85
DesignJet 755CM A0	5017	5894.98
DesignJet 2000CP	5392	6335.60
DesignJet 2500CP	6292	7393.10
Accessories		
DesignJet 430/450 Roll Feed	139	163.32
DesignJet 430/450/455 A1 Stand & Bin	139	163.32
DesignJet 430/450/455 A0 Stand & Bin	169	198.57



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- ✓ Over 200,000 satisfied customers
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- Vegas 97

NEW 1998 Sanyo digiCAM'S

Introducing the New Sanyo digiCAM range featuring the all new digiCAM 250 digital movie clip camera. Moving as well as still pictures comes to the digital camera world. The digiCAM 210 and 300 offer sound with every picture. All digiCAMs are PC and Macintosh compatible. The biggest selling feature is the ability to extend battery life by up to 10 times using its viewfinder and reviewing via the TV- quality polysilicon LCD TFT display.

...see the result the instant you take the picture.

Accessories

- 4MB Smart Media Card (XGA only) **£39** (£45.82)
- 8MB Smart Media Card (XGA only) **£65** (£76.37)
- Mains Adapter **£45** (£52.87)
- FlashPath Floppy Disk Adapter **£69** (£81.07)

Prices shown in brackets are inclusive of VAT

Models	digiCAM VGA200/210	digiCAM VGA250	digiCAM XGA 300
Resolution	640 x 480	640 x 480	1024 x 768
Sound with each picture	6 seconds	No	4 seconds
Auto timer, focus, flash	Yes	Yes	Yes
Digital movie clip mode	No	Yes (5 seconds)	No
Zoom x 3	No	No	Yes
Memory	4MB/8MB removable (210)	4MB or 8MB removable	4MB or 8MB removable
TFT display & viewfinder	Yes	Yes	Yes
	200 210	COMING SOON!	
Price	£289	£375	£419
(Inc VAT)	(£339.57)	(£440.62)	(£492.32)

Connectix QUICKCAM VC

FOR WINDOWS 95™

Bring the Excitement, Immediacy and Expressiveness of Colour Video Communications to Your Desktop

Use Your PC to Make Video Calls and send Video Emails to Friends & Family.

QuickCam VC is the easiest, most affordable colour video communications solution available. Using QuickCam VC's one-click video email integration, you can enliven text e-mail messages with graphics, sounds, still images and full motion video clips and turn your online chat into a truly interactive experience. QuickCam comes with all the software you need to make real time video conferencing calls to anyone virtually anywhere in the world over standard phone lines, the Internet or LAN connections.

- Installation is a snap. With no cards to install or configure you can start making video calls in under 10 minutes
- Standard based video conferencing software means you can reach a broader community of people! With Connectix Video Phone 3.0 (compliant to modem H.323 standards) and Microsoft Net Meeting 2.0 (compliant to internet H.323 standards).
- Available in parallel and USB versions.

Communicating has never been so satisfying!

SYSTEM PERFORMANCE

- Camera focus range: 1- inch to infinity
- Number of colours: thousands or millions
- Connectix VIDEOP compression for improved video quality, faster frame rates and larger frame sizes
- Performance (thousands of colours):
Parallel (ECP) 15+fps @ 352 x 288 pixels (CIF)
USB: 15+fps @ 352 x 288 pixels (CIF)
- Image formats: AVI, BMP, JPEG, TIFF
- Video for Windows AVI support (v3.0)
- Software Applications include QuickCam software (v3.0)
Connectix VideoPhone (v3.0), Microsoft NetMeeting (v3.0)
Microsoft Internet Explorer and Vivo Active Video Now



Includes everything you need to video conference

only **£74**
(£86.95 inc VAT)



THE BEST GETS LIGHTER AND BRIGHTER

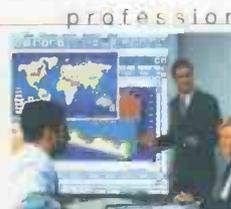
SANYO

PLC-8815B

Multimedia pro EX LCD Projector

- True XGA (1024 x 768 dots)
- 550 ANSI lumens brightness
- Lightweight 5.9kg
- Lens Protection
- Motor-Driven Zoom and Focus
- Auto Image Expansion
- Wireless remote with mouse functions
- Stereo Speakers
- Freeze frame
- Ceiling and rear picture reversal
- Blue-back function
- RS-232C Serial Control Port
- Auto voltage adjustment
- Two computer input terminals
- Auto fine sync.
- Digital Realize Interpolation Technology
- Easy to use GUI on screen menus

£5495 (£6456.62 inc VAT)



NEW PLC9005
Workstation Projector
1500 ANSI Lumens
(3000 Twin stacked)
£10995



PLC-5605B

Multimedia pro X LCD Projector

- True SVGA (800 x 600 dots)
- 700 ANSI lumens brightness
- Lightweight 5.9kg
- Lens Protection
- Motor-Driven Zoom and Focus
- Wireless remote with mouse functions
- Stereo Speakers
- Freeze frame
- Ceiling and rear picture reversal
- Blue-back function
- RS-232C Serial Control Port
- Auto voltage adjustment
- Two computer input terminals
- Auto fine sync.
- Easy to use GUI on screen menus

£4499 (£5286.32 inc VAT)

freephone

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Pace 56 Solo

56kbps self-memory messaging system

- 56kbps voice/fax/data modem with on-board memory
- Receives & stores voice & fax messages even with your PC off
- Stores a combination of approximately 30 minutes of speech or 30 pages of fax
- Retrieve your voice messages without your PC
- Retrieve your fax messages without having to view them first
- New audible UK Calling Line Identification
- Hands free speaker phone without your PC
- Flash upgradeable to future standards (V90 ready)
- Contacts you on the move to let you know you have messages waiting - remote access for message collection
- Automatically discriminates between voice, fax & data calls

NEW £155 (€182.12)



Pace 56 Voice

56kbps voice/fax/data external or internal modem

- Super fast 56,000bps internet access & 33.6kbps data transfer
- Voice mail, fax mail & email
- UK Calling Line Identification
- Flash upgradeable to future standards (V90 ready)
- Full duplex, hands free, speaker phone capability
- Private mailboxes for multiple users

INTERNAL £79 (€104.57)
EXTERNAL £99 (€116.32)



Pace NB 56 Voice

56kbps voice/fax/data PC Card modem

- Super fast 56,000bps internet downloads
- Voice mail, fax mail & email
- Enhanced throughput up to 230.4kbps
- UK Calling Line Identification
- Flash upgradeable to future standards (V90 ready)
- Ultra low power operation & standby mode

£89 (€104.57)



Pace ISDN Terminal Adaptor

Complete package for high speed digital communications

- Basic Rate ISDN interface (2 x 64k)
- Channel bonding for data transmission at 128kbps
- Enhanced serial interface for up to 230.4kbps
- 2 analogue ports for telephone/fax/modem connections
- Simultaneous voice & data over a single ISDN line
- Multiple Subscriber Numbering
- Euro ISDN approved for use throughout Europe

£175 (€205.62)



Pace products are complete solutions with cables, user guide, software suite & free internet trials. Supplied with lifetime technical support and 5 year guarantee

Prices shown in brackets are inclusive of VAT

DIAMOND MULTIMEDIA

SupraExpress 336i Internal High-Speed Fax Modem

- 33,600 bps V.34 data transmission speed, 14,400 bps fax data transfer
- V.80 standard for video conference communication based on H.324
- Automatic dataflow analysis and connection at maximum speed

336i £39 (€45.82 inc VAT)

SupraExpress 56i/e Series High-Speed Data/Fax Modem

- 56,000 bps - High-speed data transfer using K56 Flex technology, 14,400 bps fax data transfer

56i £70 (€82.25 inc VAT) 56e £84 (€98.70 inc VAT)

MODULAR www.modulartech.com

- K56Flex/V90, download speed faster than 33.6Kbps & upload speed up to 33.6Kbps*
- Fax upto 14,400bps
- Telephone Answering machine
- Full Duplex Speaker-Phone
- Camera Ready (internal only)
- Includes Supervoice software & cables

*Conditions & connection permitting

INTERNAL £65 (€76.37 inc VAT)
EXTERNAL £69 (€81.07 inc VAT)

56K Message Modem

Includes V.90 56K standard and x2™ technology

Complete feature-rich communications package for the home or office. The Sportster MessagePlus can be left to store incoming fax and voice message even when your computer is switched off.

- Flash ROM memory
- Integrates V.90 56K standard and x2™ technology
- Internet ready and compatible at 33,600bps
- Full Duplex speaker phone
- Remote voice message, fax and data retrieval
- Call discrimination: Fax/Data/Voice with Fax-on-Demand



£125 (€146.87 inc VAT)

All U.S. Robotics modems are supplied with a five year warranty and free lifetime technical support

56K Voice Faxmodem

Includes V.90 56K standard and x2™ technology

- Flash ROM memory
- Integrates V.90 56K standard and x2™ technology
- Internet ready and compatible at 33,600bps
- Full Duplex speaker phone
- 1000 Mailbox voice mail with security
- Fax-on-Demand - up to 9 faxes stored for distribution
- Call discrimination: Fax/Data/Voice



£85 (€99.87 inc VAT)

Sportster Winmodem 56K

The low-cost internal card - Windows compatible only £75 (€88.12 inc VAT)

- x2 technology at up to 56Kbps
- Full Duplex speaker phone
- Personal Voice Mail with 1000 mailboxes
- Call discrimination: Fax/Data/Voice with Fax on demand
- Remote voice message retrieval



Sportster Winmodem PC CARD

33.6kbps (PCMCIA) PC Card £75 (€88.12 inc VAT)

- Designed exclusively for Windows™ 95
- Upgradeable to x2 FREE
- Pan European internal DAA ensures the modem will operate correctly across Europe
- Full Duplex speaker phone
- Personal Voice Mail with 1000 mailboxes
- Call discrimination with Fax-on-Demand
- Remote voice message retrieval



Megahertz 56K Global PC CARD

Hassle free mobile connections

This Megahertz 56K Global PC CARD features 56K technology for high speed downloads and WorldPort country selection software so you can easily configure your modem for use around the world. The Intelligent Auto Install gives you easy, doubt-free installation in a matter of minutes.

- x2 technology at up to 56Kbps
- Flash DSP/Flash ROM upgradeable
- World Ready-approved for use in over 250 countries & regions
- Digital line guard



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DABS	ex VAT	inc VAT
33k6 Voice Internal	35	41.12
33k6 Voice External	45	52.87
56k Voice Internal	55	64.62
56k Voice External	65	76.37

DIAMOND	ex VAT	inc VAT
Supra Express 56i Internal	69	81.07
Supra Express 56i External	79	92.82

DYNALINK	ex VAT	inc VAT
56K Voice Internal	65	76.37
56K Voice External	79	92.82
33k6 PCMCIA	75	88.12
56K PCMCIA	99	116.32

GREYCELL	ex VAT	inc VAT
GlobalPulse	119	139.82
GCS-4000 33k6 PCMCIA	159	186.82
GCS-4020 GSM Upgrade	119	139.82
GCS-4040 33k6 & GSM PCMCIA	259	304.32
GCS-6040 GSM PCMCIA	149	175.07

HAYES	ex VAT	inc VAT
Accura 56K Voice Internal	79	92.82
Accura 56K Voice External	85	99.87
Accura 56K Voice MSN Internal	85	99.87
Accura 56K Voice MSN External	95	111.62
Optima 366 Business	149	175.07
Optima 336 Global PCMCIA	125	146.87
Optima 56K Global PCMCIA	155	182.12
GSM kit	95	111.62

MODULAR TECHNOLOGY	ex VAT	inc VAT
SuperHighway 56K Voice Internal	65	76.37
SuperHighway 56K Voice External	69	81.07

MULTITECH	ex VAT	inc VAT
MT28342PXI 33k6 Internal	75	92.82
MT28342DXK 33k6 External	75	92.82
MT28342DXV 33k6 Voice External	85	99.87
MT5600ZDX 56K External	75	88.12
MT5600ZDXV 56K Voice External	99	116.32
MT2834LT1 33k6 PCMCIA	119	139.82
MT2834BLK 28x8 External	145	170.37
MT5634ZLXI 56K PCMCIA	129	151.57

OLITEC	ex VAT	inc VAT
Self Memory 33600	89	104.57
Self Memory 56000	119	139.82
Self Memory 56000 Phone	139	163.32

AWARD WINNING MODEMS

WHAT PC?

ACCURA 56K speakerphone Modem

- Internet downloads up to 56k bit/s*
- V.90 ready
- Voice Answerphone
- Full Duplex Speakerphone
- Remote Fax & Voice message retrieval
- Plug and Play
- Comms software and cables included
- FLASH upgradable

*Varying line conditions may result in lower speeds

INTERNAL £79 (£92.82 inc VAT)
EXTERNAL £85 (£99.87 inc VAT)

MODEMS CONTINUED	ex VAT	inc VAT
PAGE		
Voice 56k Internal	79	92.82
Voice 56k External	99	116.32
NB 56K PCMCIA	89	104.57
Solo 56K External	155	182.12
PSION DACOM		
Gold Card V34+ Global PCMCIA	129	151.57
Gold Card 56K Global PCMCIA	159	186.82
GoldCard GSM Upgrade	89	104.57
TDK		
DF-2814 33k6 PCMCIA	109	128.07
DF-3310 33k6 GSM PCMCIA	119	139.82
DF-5660 56k PCMCIA	149	175.07
US ROBOTICS / 3COM		
Sportster WinModem 33k6 Internal	75	88.12
Sportster WinModem 56k PCMCIA	75	88.12
Megahertz 56k Global PCMCIA	129	151.57
56k Voice Faxmodem Internal	85	99.87
56k Voice Faxmodem External	85	99.87
56K Message Modem	125	146.87
56K Professional Message Modem	139	163.32
Courier V34 Internal	195	229.12
Courier V34 External	195	229.12
XIRCOM		
Credit card 33k6 PCMCIA	109	128.07
Credit card 56K PCMCIA	129	151.57
GSM Global Access PCMCIA	109	128.07

Model MT5600ZDK External

Supports enhanced V.34 (33.6K bps) data and V.17 (14.4Kbps) data and V.17(14.4K bps) Class 1 fax.

Key Features

- K56 flex 56K
- Flash upgradeable

£75 (£88.12 inc VAT)

Model MT5634ZLXI PCMCIA

Key Features

- K56 flex 56K
- Flash upgradeable
- Plug and Play

£129 (£151.57 inc VAT)

ISDN TERMINAL ADAPTORS	ex VAT	inc VAT
HAYES		
Accura 64k External	174	204.45
PAGE		
UltraLink External	175	205.82
EICON		
Diva 2.0 Internal	165	193.87
Diva 2.0 Internal PCI	209	245.57
Diva 2.0 PCMCIA	209	245.57
US ROBOTICS		
Sportster ISDN	99	116.32
Courier-I ISDN & 33k6 modem Internal	239	280.82
Courier-I ISDN & 33k6 modem External	239	280.82
XIRCOM		
CreditCard ISDN PCMCIA	189	222.07

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- Designed to fit neatly over any steering wheel.
- Fold down shelf supports a laptop in a comfortable working position.
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- Folds flat for storage in seat pocket or boot.
- The No.1 mobile desk!

£16 (£18.80 inc VAT)

12 to 220 Volts In Car Power - Power Converter

- Provides mains power from your car cigar lighter.
- It will safely provide power for any laptop computer, mobile phone, video camera or other small electrical appliances.
- Automatic cut out when your car battery falls below 10.5 volts.

£49 (£57.57 inc VAT)

Line Wizard™ - 2 Lines In 1

- Switches incoming calls to either fax/modem or telephone and answerphone on a single line.
- Immediate and Simple to install - No tools required.
- Unique line detection means that you will never lose a call and keep all the functions of your existing equipment.
- New improved detection technique.

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Technical Support 7 days per week on - 01642 575095

Specialists in Mobile Computing and Telecommunications

DACOM

- V34 (33.6Kbps) data, 14.4Kbps fax
- K56Flex technology for downloading from compatible ISP's
- Ready for GSM fax and data
- Total package of software including fax and communications software, Internet access packages, point enablers and drivers.
- Unlimited access to Pan-European support

£159 (£186.82)

Shown with Nokia 6110 (available separately)

Xerox Document HomeCentre

Color printer, colour copier and detachable colour scanner

- Up to 4ppm mono, up to 1ppm colour
- 600 x 600 colour, high-resolution paper
- 24-bit colour scanner depth
- Software includes Pagis Pro 97, TextBridge Pro OCR, Sierra Print Artist 4.0 and PhotoEnhancer
- Compatible with MS Windows 95
- 12 Months Warranty

only £339 (£398.32 inc VAT)

Xerox Document WorkCentre 450c

Work faster and easier with the all-in-one office partner from Xerox

- Up to 4ppm with optional high capacity monochrome cartridge; colour printhead (inc) up to 1ppm colour
- 600 x 600 monochrome, 300 x 300 colour
- Plain paper (dual access), 7 seconds per page speed, up to 23 pages memory
- PC Fax modem 14.4 Kbps
- Compatible with Windows 95
- 12 Months Warranty

only £339 (£398.32 inc VAT)

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FAX

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AVRO PACIFIC		
Fax Friend	49	57.57
International Modem adaptor kit	42	49.35
BROTHER		
Fax-510	153	179.77
Fax-520 TAM	195	229.12
Fax-1020	255	299.62
Fax-1030 TAM	340	399.50
Fax-8000P	510	599.25
CANON		
T-21	179	210.32
T-31	199	233.82
T-30 Inkjet	229	269.07
B-150 Inkjet	235	276.12
L-250 Laser	495	581.62
L-300 Laser	679	797.82
OKI		
Okifax 460 TAM	209	245.57
Okifax 740	339	398.32
Okifax 4100	489	574.57
Okifax 5200	715	840.12
Okifax 5500	899	1056.32
PANASONIC		
UF-S2	179	210.32
UF-S1 TAM	209	245.57
UF-S10	249	292.57
KX-F2680	185	217.37
KX-F2780	219	257.32
KX-F1810	255	299.62
KX-F1100E	379	445.32
UF-332 Plain Paper	389	457.07
UF-280M	759	891.82
UF-550 Laser	629	739.07
UF-560 Laser	679	797.82
SAMSUNG		
SF-150	115	135.12
SF-110T	135	158.62
SF-1600	155	182.12
SF-910 TAM	159	186.82
SF-2900M TAM	189	222.07
SF-4000 Inkjet	239	280.82
SF-5500 Laser	389	457.07
SF-5600 Laser	489	574.57
SF-6000 Laser	539	633.32
SF-6100 Laser	599	703.82

MFC-9000

The MFC-9000 is a true all-in-one quality laser printer/fax/PC fax with Copy/Scanner capability

only £595 (£699.12 inc VAT)

- 6 Second Transmission Speed
- Broadcasting
- 60 Page Memory
- 36 Speed Dial Buttons



- 64 Level Grey Scale
- 200 Sheet A4 Paper Cassette
- Reduce/Enlarge 50-200%
- Editable Cover Page
- Telephone Index
- Auto Document Feeder
- Fax/Telephone switch
- Call Back Message
- 6 ppm print speed
- Win 3.1, 95 printer driver

FAX-1020

The FAX-1020 is versatile enough for use both at home or in the office

only £255 (£299.62 inc VAT)

- Plain paper fax
- Fixed cost per copy
- Transmission report on request
- 20 sheet document feeder
- Caller line identification
- 20 page memory
- 60 speed dial stations
- 64 grey scales
- Optional PC interface
- Personal copy mode



FAX-1030

As FAX-1020 with Telephone Answer Machine

only £340 (£399.50 inc VAT)



FAX CONTINUED

	ex VAT	inc VAT
SANYO		
SFX-115	169	198.57
SFX-215	219	257.32
SHARP		
UX-108	115	135.12
UX-75	135	158.62
UX-81 TAM	145	170.37
UX-85 TAM	159	186.82
FO-1460	185	217.37

MULTI-FUNCTION DEVICES

	ex VAT	inc VAT
BROTHER		
MFC-1025	299	351.32
MC-3000	449	527.57
MFC-9000 Laser	595	699.12
MFC Pro 700C Colour Inkjet	680	799.00
CANON		
MPC-20 Colour Inkjet	289	339.57
MPL-90 Laser	769	903.57
HEWLETT PACKARD		
OfficeJet 590 Inkjet	296	347.80
OfficeJet 635 Colour Inkjet	339	398.32
OfficeJet 1150 Colour Inkjet	491	576.92
LaserJet 3100 Laser	489	574.57
OKI		
Okifax 740MF Colour Inkjet	349	410.07
PANASONIC		
UF-342 Inkjet	639	750.82
UF-344 Inkjet	879	1032.82
UF-770 Laser	1209	1209.07
SAMSUNG		
SF-4200 Colour Inkjet	259	304.32
SANYO		
SFX-P500 Colour Inkjet	299	351.32
SHARP		
FO-1860M	225	264.37
TOSHIBA		
TF-461 Colour	439	515.82
TF-601 Laser	639	750.82
TF-605 Laser	749	880.07
XEROX		
HomeCentre Colour Inkjet	339	398.32
Work Centre 450C Colour Inkjet	339	398.32

MFC Pro 700C

£680

(£799.00 inc VAT)

The multifunction printer, scanner, copier and fax.

- Printer 720 x 720 dpi colour inkjet printer Up to 5ppm (Mono), 3 ppm (Colour)
- Scanner 1200 x 1200 dpi 24-bit colour scanner includes Xerox Textbridge OCR software
- Copier Colour copy up to 720 x 720 dpi max Reduction/Enlarge (Ratio 50% - 200%)
- Fax Fully featured fax machine 14400 bps modem/speed Full duplex speaker phone
- 4Mb memory (1Mb or 2Mb upgrade)



Memory

Increase the performance of your printer with an additional memory option at a very cost effective price. Phone now for prices



A complete range of All-in-One

solutions to choose from

HP OfficeJet 590

- Colour Printer, Copier, Scanner
- Plain-paper Fax
- Compact All-in-One design
- Simple to install and use.
- HP's proven quality and reliability



FEATURES

- 600x600 dpi Black Text
- 600x300 dpi Colour Printing
- 4ppm black 2ppm colour
- Plain paper Faxing with 100 speed dials and 65 page memory
- 600 dpi enhanced, 64-bit greyscale scanning
- 50 seconds per page copy speed
- Windows®95 or 3.1x compatible
- HP one-year warranty with on-site exchange

only **£289** (£339.57 inc VAT)

With HP SupportPac

only **£355** (£417.12 inc VAT)

HP OfficeJet 635

- Print, Copy, Scan in Colour
- Plain-paper Fax
- Compact All-in-One design
- Simple to install and use.
- HP's proven quality and reliability



FEATURES

- 600x600 dpi Black Text
- 600x300 dpi Colour Printing
- 5ppm black 2ppm colour
- Plain paper Faxing with 100 speed dials and 65 page memory
- 1200 dpi enhanced, 24-bit colour scanning
- Excellent copy quality - with 50% to 200% zoom
- Windows®95 or 3.1x compatible
- HP one-year warranty with on-site exchange

only **£339** (£398.32 inc VAT)

With HP SupportPac

only **£411** (£482.92 inc VAT)

HP OfficeJet 1150C

- Advanced Colour Printer/Copier/Scanner
- All-in-One space saving design
- Superior colour images on plain paper and a range of special media
- HP's proven quality and reliability



FEATURES

- 600x600 dpi Black Text
- 600x300 dpi (with CREt) Colour Printing
- 7ppm black 4ppm colour
- 1200 dpi enhanced, 24-bit colour scanning
- Digital Zoom 50% to 400% reduction/enlargement - automatically enlarges to A4 or letter size
- Windows®95 or 3.1x compatible
- HP one-year warranty with on-site exchange

only **£489** (£574.57 inc VAT)

With HP SupportPac

only **£607** (£713.22 inc VAT)

HP LaserJet 3100

- Professional Quality Laser Printer, Fax, Copier and Scanner
- Time-Saving separation of printer and scanner paths for multi-tasking
- Standalone fax and copy facility
- HP's proven quality and reliability



FEATURES

- 600x600 dpi
- 6ppm
- Plain paper Faxing with 175 speed dials and up to 150 page memory
- 600 dpi enhanced scanning with 256 levels of grey
- 50% to 200% reduction/enlargement
- Windows®95 or 3.1x compatible
- HP one-year warranty with on-site exchange

only **£489** (£598.07 inc VAT)

With HP SupportPac

only **£607** (£713.22 inc VAT)

...making it easy to do your work.

<http://www.hp.com/go/all-in-one>



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- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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PERSONAL COMPUTER SYSTEMS

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Tally



Tally T9006 laser printer

T9006 laser printer

- Low cost of ownership
- Small and compact
- 6 pages per minute
- 600 dpi
- PCL6
- Silent operation
- Win 3.x, Win 95, Win NT 4 software drivers
- Straight paper path
- 1 year on site warranty

NEW

£255
(£299.62 inc VAT)

PROFESSIONAL

Printing

solutions

T9208 laser printer

- 8 pages per minute
- Small and compact
- True 600 dpi
- Microsoft Windows Printing System
- Real PCL5e

£295
(£346.62 inc VAT)



Tally T9014 office laser printer
(shown with optional dual input bins)

T9014 laser printer

- 14 pages per minute
- 600 dpi
- Optional Dual input bins
- Optional LAN interface
- Optional Postscript
- Optional Duplex

£525
(£616.87 inc VAT)

Excellent print quality, at an affordable price



HL-730 Plus **£205**
(£240.87 inc VAT)

The HL-730 Plus is the ideal low cost solution for your printing needs, combining flexibility with high print quality at an affordable price. Its compatibility with various computing environments makes it a good fit for home and corporate use.

FEATURES

- 6ppm engine speed
- 600 dpi resolution
- Straight paper path technology
- 1MB memory as standard
- Auto email printing software
- Intelligent sleep mode
- 200 sheet adjustable paper tray



HL-760 **£229**
(£269.07 inc VAT)

The solution to your demanding print needs - flexible, high print quality at an affordable price. The HL-760 offers high performance print speed of 6 pages per minute, with the added benefit of fast 600 dpi output.

FEATURES

- 6ppm engine speed
- 1200 x 600 dpi resolution
- Straight paper path technology
- Intelligent sleep mode
- Network connectivity option

Also available:

HL-760 5MB **£245**
(£287.87 inc VAT)

Memory

Increase the performance of your printer with an additional memory option at a very cost effective price.

Phone now for prices



HL-1060 **£299**
(£351.32 inc VAT)

The only 10 ppm printer with two bins as standard (usually an expensive option), the HL-1060 is a real performance machine, ideally suited to workgroups or to individuals with demanding print requirements.

FEATURES

- 1200 x 600 dpi printing
- 10 pages per minute print speed
- 2MB memory
- Dual bin as std (2 x 200 sheets)
- Straight paper path
- Multiple emulations
- Network connectivity option

Also available:

HL-1060 6MB **£315**
(£370.12 inc VAT)



HL-1660e **£639**
(£750.82 inc VAT)

Incorporating Brother's own high speed 16 ppm engine and 1200dpi, the Brother HL-1660e delivers superb quality output with stunning graphic and text reproduction, for professional documentation.

FEATURES

- True 1200 x 600 dpi
- 650 sheet paper input
- 8Mb memory
- PCL5e/BR-Script 2
- Additional paper tray and duplex tray options

Also available:

HL-1660en **£859**
(£1009.32 inc VAT)



HL-2400c **£2349**
(£2760.07 inc VAT)

With a resolution of up to 2400dpi the new colour laser from Brother, provides the high quality output demanded by professionals

FEATURES

- up to 2400dpi
- up to 8ppm colour/16ppm mono
- 24Mb memory (up to 112Mb)
- Semi automatic manual duplex
- Low running costs
- Automatic e-mail printing
- Intelligent sleep mode

Also available:

HL-2400cn **£2685**
(£3154.87 inc VAT)

The HL-2400cn is a network ready version, having all the features of the HL-2400c, with the addition of...

- 40Mb memory as standard
- Advanced Network Functionality
- 10BaseT & 10Base2 connectors with automatic detection

MC-3000 **£449**
(£527.57 inc VAT)

The 3-in-1 Brother printer that brings out the best in colour.

FEATURES

- Up to 5 ppm printing
- Up to 720x720 dpi printing
- 200 sheet input and output
- Bundled software includes OCR textbridge and photo-manipulation package

freephone

0800 558866



PRICE MATCHING
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It's time your printing costs came down

All ECOSYS printers save you money.



ECOSYS cartridge-free technology cuts printing cost by avoiding the need to replace the drum and developer, treated as consumables on conventional printers. Kyocera use long-life components instead meaning that printing is significantly cheaper than with cartridge-based printers.



FS-600

only **£239**
(£280.82 inc VAT)

- 600 dpi, 6ppm laser printer
- Cartridge-free technology
- 50MHz Power PC processor
- IEEE 1284 parallel plus option port
- Internal 150-sheet cassette
- Optional 250-sheet cassette
- Ethernet/serial interface options

One-year on-site warranty **£49** (£57.57 inc VAT)
 Three-year on-site warranty **£99** (£116.32 inc VAT)



NEW

FS-1700N

only **£725**
(£851.87 inc VAT)

- 600 dpi, 12ppm network laser printer
- 6MB memory plus memory enhancement
- Pre-installed multi-protocol Ethernet interface
- Fully SNMP compliant/Windows plug & play
- High speed parallel and serial interfaces
- Supported by Kyocera PrintMonitor management utility
- 250 sheet standard cassette plus 100 sheet multi-purpose feed
- Up to 2 x 500 sheet optional cassettes
- Optional duplex unit and output sorter/mailbox

One-year on-site warranty **£99** (£116.32 inc VAT)
 Three-year on-site warranty **£199** (£233.82 inc VAT)



FS-800

only **£415**
(£487.62 inc VAT)

- High performance personal/small workgroup printer
- 8ppm print speed
- 4MB RAM, upgradeable to 36MB
- Ultra fast 50MHz Power PC processor
- 600dpi plus resolution enhancement
- PCL5e and PostScript level 2 emulations as standard
- 150-sheet enclosed paper cassette
- Compact, robust design
- Low cost per page - 1p per page 5% and RRP
- Options include 250-sheet second cassette, network and serial interfaces

FS-3700N

only **£1015**
(£1192.62 inc VAT)

- As FS-1700N, but **18ppm**

One-year on-site warranty **£199** (£233.82 inc VAT)
 Three-year on-site warranty **£399** (£468.82 inc VAT)



THE SMART MONEY'S ON





- ✓ Serving you since 1987
- ✓ Over £50m annual turnover
- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

DABS DIRECT

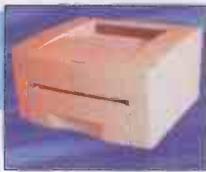
PERSONAL COMPUTER SYSTEMS

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LASER PRINTERS

	ex VAT	inc VAT
BROTHER		
HL-730 Plus	205	240.87
HL-760	229	269.07
HL-760 5Mb	245	287.87
HL-1060	299	351.32
HL-1060 6Mb	319	374.82
HL-1660e	639	750.82
HL-1660e Network	859	1009.32
HL-2400c Colour	2349	2760.07
HL-2400c Colour Ethernet	2685	3154.87
CANON		
LBP-660	177	207.97
LBP-1260+	614	721.45
EPSON		
EPL-5700	304	357.20
EPL-5700EN Network	call	call
EPL-5700PS PostScript	call	call
EPL-N1200	593	696.77
EPL-N1200EN Ethernet	791	929.42
EPL-N1200PS PostScript	986	1158.55
EPL-N2000	1278	1501.65
EPL-N2000PS PostScript	1582	1858.85
FUJITSU		
Print Partner 10V	439	515.82
Print Partner 12V	579	680.32
Print Partner 16DV	729	856.57
Print Partner 16ADV	929	1091.57
HEWLETT PACKARD		
LaserJet 6L	232	272.60
LaserJet 6P	461	541.67
LaserJet 6MP PostScript	562	660.35
LaserJet 4000 PostScript	711	835.42
LaserJet 4000T Twin Cassette PostScript	787	924.72
LaserJet 4000N Ethernet PostScript	914	1073.95
LJ 4000TN Twin Cassette Enet PScript	990	1091.57
LaserJet 5000 A3 PostScript	929	1091.57
LaserJet 5000N A3 Ethernet PostScript	1334	1567.45
LaserJet 5000GB A3 Ethernet PostScript	1649	1937.57
LaserJet 5Si	1604	1884.70
LaserJet 5SiNX Ethernet	1784	2096.20
LaserJet 5SiMX PostScript	2211	2597.92
LaserJet 5Si Mopier	4199	4933.82
LaserJet 8000 A3 PostScript	1604	1884.70
LaserJet 8000N A3 Ethernet PostScript	1791	2104.42
LJ 8000FN A3 Enet PostScript Duplex	2099	2466.32
LJ Mopier 240 A3 Enet PostScript Duplex	2362	2775.35
LaserJet 5 Colour	2460	2890.50
LaserJet 5N Colour Ethernet	2700	3172.50
LaserJet 5M Colour PostScript	3099	3641.32
Accessories		
LaserJet Companion	78	91.65
LaserJet 4000 500sht Tray	75	88.12
LaserJet 4000 500sht Universal Tray	85	99.87
LaserJet 4000 500sht Feeder	179	210.32
LaserJet 4000 75sht Envelope Feeder	195	229.12
LaserJet 4000 Duplex Unit	175	205.62
LaserJet 5000 250sht Tray	89	104.57
LaserJet 5000 500sht Tray	125	146.87
LaserJet 5000 250sht Feeder	149	175.07
LaserJet 5000 500sht Feeder	209	245.57
LaserJet 5000 Duplex Unit	295	346.62
LaserJet 5Si Duplex Unit	329	386.57
LaserJet 5Si 2000sht MultiBin Mailbox	749	880.07
LaserJet 5Si 2000sht Feeder	599	703.82
LaserJet 5Si Maintenance Kit	339	398.32
LaserJet 5Si Envelope Feeder	279	327.82
LaserJet 5Si Cabinet	229	269.07
J2550B JetDirect RJ45 MID	189	222.07
J2552B JetDirect Combo/LocalTalk MID	225	264.37
J2556B JetDirect 10/100 RJ45 MID	245	287.87
J3110A JetDirect 600N RJ45 EIO	165	193.87
J3113A JetDirect 600N 10/100 RJ45 EIO	265	311.37
KYOCERA		
FS-600	239	280.82
FS-800	415	487.62
FS-1550	565	663.87
FS-3400	785	922.37
FS-1700	568	667.40
FS-1700T Twin Cassette	719	844.82
FS-1700N Ethernet	725	851.87
FS-1700M PostScript	859	1009.32
FS-3700	849	997.57
FS-3700T Twin Cassette	935	1098.62
FS-3700N Ethernet	1015	1192.62
FS-3700M PostScript	1119	1314.82
FS-6500 A3	1175	1380.62
FS-7000 A3 Twin Cassette	1784	2096.20
FS-1700/FS-3700 Accessories		
ST-20 Face-Down Stacker	639	750.82
HS-20 Face-Up Stacker	99	116.32
PF-7E Bulk Paper Feeder	419	492.32
HS-3E Bulk Output Stacker	419	492.32
EF-1 Power Envelope Feeder	150	176.25
PB-20 Printer Base	115	135.12
PA-20 Paper Path Adaptor	26	30.55
PF-20 Universal Paper Cassette	189	222.07
DU-20 Duplex Unit	359	421.82

Xerox DocuPrint



Xerox DocuPrint 4508

Xerox DocuPrint 4508

The productive personal laser printer.

- 8 pages per minute
- 600 x 600 dpi
- 250 sheet paper tray
- 12 Months Warranty

only £319 (£374.82 inc VAT)



Xerox DocuPrint 4512/4512N

Xerox DocuPrint 4512/4512N

The black and white network laser printer for small workgroups.

- Up to 12 pages per minute
- 600 x 600 dpi
- 2 x built-in 250 sheet paper trays
- Duplex printing as standard
- Optional Ethernet (standard on 4512N)
- 12 Months Warranty

DocuPrint 4512

only £709 (£833.07 inc VAT)

DocuPrint 4512N

- Ethernet as standard

only £791 (£929.42 inc VAT)

DocuPrint C55



Xerox DocuPrint C55

Xerox DocuPrint C55

Colour laser printing for the office user.

- 600 x 600 dpi
- PCL5C emulation
- 3 ppm (colour), 12 ppm (mono)
- 30Mb memory
- 12 Months Warranty

only £1899 (£2231.32 inc VAT)

C55MP only £2499 (£2936.32 inc VAT)

Photorealistic output for the larger workgroup

- PostScript & Ethernet as standard
- 12 Months Warranty

C55MPV only £3099 (£3641.32 inc VAT)

- PostScript & Ethernet as standard
- 2nd 250 sheet feed & hard disc drive
- 12 Months Warranty

Xerox DocuPrint N32 Network Laser Printer



Xerox DocuPrint N32

- 600 x 600dpi laser technology
- 32ppm one-sided, 30 ipm two-sided technology
- Edge-to-edge printing, all sizes
- Offers production level paper handling, document collating and stapling
- 2 x built-in 500 sheet paper trays
- 12 MB memory, upgradeable to 128 MB
- PCL5e emulation and PostScript Level 2
- Built-in Ethernet as standard
- 12 Months Warranty

Colour inkjet printer

only £1729 (£2031.57 inc VAT)



Xerox Document XJ4C

Xerox Document XJ4C

Four colour inkjet printer

- Up to 4ppm mono, up to 1.5ppm colour
- Up to 6ppm (turbo black, optional)
- 600 x 600 dpi colour, high-resolution paper
- Takes plain paper, inkjet paper and transparencies, envelopes, card stock & labels
- Compatible with MS Windows 95
- 12 Months Warranty

only £121 (£142.17 inc VAT)



THE DOCUMENT COMPANY

XEROX



LASER PRINTERS

	ex VAT	inc VAT
KYOCERA continued		
FS-1550/FS-3400/FS-6500 Accessories		
PF-5 500 Sheet Feeder	195	229.12
PA-1 Paper Path Adaptor	29	34.07
EF-1 Power Envelope Feeder	149	175.07
HS-1 500 Sheet Output Stacker	99	116.32
DU-1 Duplex Unit	375	440.62
HS-3 2000 Sht Face-Up Output Stacker	419	492.32
UF-1 100 Sheet Universal Feeder	175	205.62
LEXMARK		
Optra S1250	655	769.62
Optra S1650	769	903.57
Optra S1650N Ethernet	949	1115.07
Optra S2450	1519	1784.82
Optra S2450N Ethernet	1759	2066.82
Optra SC1275 Colour	2769	3253.57
Optra SC1275N Colour	3079	3617.82
OKI		
OkPage 4w plus	135	158.62
OkPage 6e	189	222.07
OkPage 6ex	219	257.32
OkPage 10I	359	421.82
OkPage 10IS	395	464.12
OkPage 10IEN Ethernet	445	522.82
OkPage 16N	579	680.32
OkPage 16NPS PostScript	699	821.32
OkPage 16EN Ethernet	749	880.07
OkPage 16ENPS Ethernet PostScript	869	1021.07
OkPage 20N	729	856.57
OkPage 20EN Ethernet	889	1044.57
OkPage 20NPS PostScript	899	1056.32
OkPage 20NDX Duplex	909	1068.07
OkPage 20ENPS Ethernet PostScript	1039	1220.82
OkPage 20ENDX Ethernet Duplex	1069	1256.07
Accessories		
10i Serial Interface	39	45.82
10i Ethernet Interface	95	111.62
10i PostScript SIMM	109	128.07
20n 2nd/3rd Bin	219	257.32
20n Duplex Unit	235	276.12
20n Fast Ethernet Interface	249	292.57
20n PostScript SIMM	275	323.12
PANASONIC		
KX-P6300	172	202.10
KX-P6500	235	276.12
KX-P7200	1179	1385.32
GMS		
DeskLaser 600	159	186.82
DeskLaser 1400P	655	769.62
DeskLaser 2000Net A3 Ethernet	889	1044.57
DeskLaser 2000XNet A3 Duplex Ethernet	1339	1573.32
2060WX	1069	1256.07
2060BX	1329	1561.57
2060GX	1579	1855.32
2060IS	1999	2348.82
2060EX	2669	3136.07
2425PS	2869	3371.07
2425EX	4149	4875.07
MagiColor II DeskLaser	1549	1820.07
MagiColor II CX 24Mb	2449	2877.57
MagiColor II CX Exec 80Mb	3349	3935.07
SHARP		
JX-9680 Twin Cassette	549	645.07
JX-9685 Duplex	799	938.82
JX-9665N Duplex Ethernet	899	1056.32
TALLY		
T9109	199	233.82
T9006	255	299.62
T9208	295	346.62
T9014	525	616.87
XEROX		
4508	319	374.82
4512 Duplex	709	833.07
4512N Duplex Ethernet	791	929.42
4512MP PostScript	995	1169.12
4517	712	836.60
4517D Duplex	909	1068.07
4517 MP PostScript	791	929.42
4517 MPD Duplex PostScript	987	1156.72
4520	1875	2203.12
4520 MP PostScript	2815	3307.62
4925 PS Colour PostScript	5699	6696.32
DocuPrint C55	1899	2231.32
DocuPrint C55MP PostScript	2499	2936.32
DocuPrint C55MPV PostScript	3099	3641.32
TERMINALS		
WYSE		
WY-35 with keyboard	239	280.82
WY-55ES	199	233.82
WY-65ES	275	323.12
WY-120ES	255	299.62
WY-160ES	299	351.32
WY-185ES with keyboard	275	323.12
WY-325ES	379	445.32
WY-520ES	215	252.82

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Home/Office Printers



HP DeskJet 670C

- Up to 4 ppm mono, 1.5 ppm colour
- 300 x 300 dpi resolution
- Handles up to 100 sheets
- Compatible with MS-DOS, Windows 3.1x and Windows 95
- 1 year unit exchange warranty

only **£111** (£130.42)

With HP SupportPack

£151 (£177.42)

HP DeskJet 400L

- Quick printing at up to 3ppm
- 300 x 300 dpi resolution
- Prints up to 16.7 million colours
- Compatible with MS-DOS, Windows 3.1x and Windows 95
- 1 year unit exchange warranty

only **£66** (£77.55)

With HP SupportPack

£106 (£124.55)



HP DeskJet 720C

Brings photo-quality colour and crisp black text - on any paper - bringing all your print to life.

- Up to 8 ppm mono, 4 ppm colour/text
- 600 dpi resolution
- Photo REt II for Photo Quality output
- Smaller ink drop size for more realistic colour
- Crisp quality black text with HP's patented ink
- HP ColorSmart II automatically adjusts colour settings also sharpens and enhances low resolution images
- Supports Intel's MMX technology for faster color processing
- Prints on plain and premium papers, transparencies, cards, envelopes and labels-even banners and iron-on transfers
- Includes Kodak Image Enhancements for amazing photo-quality color on HP Deluxe Photo Paper
- Easy setup and installation
- 1 year unit exchange warranty

720C **£156** (£183.30)

With HP SupportPack

£196 (£230.30)



HP DeskJet 690C Plus

Vibrant life-like images and crisp black type

- Up to 5 ppm mono, 1.7 ppm colour
- 600 x 300 dpi resolution
- Full colour Photo-Realistic printer with Photo Colour cartridge
- Mixes six inks to produce desired colour tone
- Compatible with MS-DOS, Windows 3.1x and Windows 95
- 1 year unit exchange warranty

only **£126** (£148.05)

With HP SupportPack

£166 (£195.05)

DeskJet Consumables

Part No.	Item	Exc VAT	Inc VAT
51629A	670/690C Black	£17	£19.97
51645A	720/890/1100 Black	£17	£19.97
C1823A	720/890 Colour	£22	£25.85
51641A	820/870/1100 Colour	£18	£21.15
51649A	670/690C Colour	£17	£19.97
C1816A	690C Photo	£23	£27.02
51634Z	Premium A4 200sht	£12	£14.10
C4847A	690C Photo paper 20sht	£8	£9.40
C4821A	690C Banner paper	£8	£9.40
C3831A	Glossy A4 10sht	£9	£10.57
C3837A	Glossy A4 50sht	£36	£42.30
C3832A	Transparency A4 10sht	£18	£21.15
C3835A	Transparency A4 50sht	£33	£38.77



HP DeskJet 1120C

Vibrant, natural photo quality colour with HP PhotoREt II

- Up to 6.5 ppm black, 4.5 ppm color
- Photo REt II for Photo Quality output
- HP ColorSmart II automatically adjusts colour settings for best-looking results
- HP SmartFocus to sharpen images
- Supports Intel's MMX technology for faster colour processing
- Supports Windows® NT 4.0, Windows 95, Windows 3.1x and MS-DOS
- Network sharing via an optional HP JetDirect external print server.
- Easy setup and installation

1120C **only £285** (£290.22)

With HP SupportPack

£325 (£337.22)



HP DeskJet 890C

Introducing the premium colour inkjet that makes you look professional

- Up to 9 ppm mono, 5 ppm colour and text
- 600 dpi resolution
- Improved colour print quality with Photo REt and ColorSmart II
- Compatible with DOS, Windows 3.1x, Win 95 and Win NT 4
- 1 year unit exchange warranty

only **£202** (£237.35)

With HP SupportPack

£268 (£314.90)



HP LaserJet 6L

The personal laser for business users

- Up to 6 ppm print speed
- 600 x 600 dpi resolution plus REt and Microfine toner
- Up to 100 sheets
- Multi-platform compatible
- 1 year return to HP warranty, extendible to 3 year next day, on-site with HP SupportPack

only **£232** (£272.60)

With HP SupportPack

£299 (£351.32)

LaserJet 6L Consumables

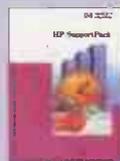
Part No.	Item	Exc VAT	Inc VAT
C3906A	6L Toner	£36	£42.30

LaserJet Companion

This HP LaserJet is a new concept which turns any personal HP LaserJet, Series 4,5 or 6 into a solution which gives 4 additional capabilities.

- Copy:** Convenience copies at the touch of button.
- File:** Storage of many types of document on PC
- Read:** Conversion of hardcopy documents to editable text
- Fax:** Send faxes in conjunction with a PC fax modem

only **£78** (£91.65)





- ✓ Serving you since 1987
- ✓ Over £50m annual turnover
- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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Professional Printers



HP LaserJet 6P/MP

- Up to 8 ppm print speed
- 600 x 600 dpi resolution plus RET and Microfine toner
- Two paper trays holding 350 pages total
- 1 year return to HP warranty, extendible to 3 year next day, on-site with HP SupportPack

6P only **£461** (£541.67)
 With HP SupportPack **£603** (£708.52)

6MP only **£562** (£660.35)
 With HP SupportPack **£704** (£827.20)

LaserJet 6P/6MP Accessories

Part No.	Item	Exc VAT	Inc VAT
C3903A	6P, 6MP Toner	£45	£52.87
C3987A	6P PostScript SIMM	£189	£222.07
J2591A	JetDirect EX Plus Combo	£175	£205.62
J2593A	JetDirect EX Plus 3 Combo	£229	£269.07
J2590A	JetDirect EX Plus 3 10/100	£349	£410.07



HP LaserJet 4000

4000 only **£711** (£835.42)
 • 4MB, 500 Sheet Tray
 With HP SupportPack **£891** (£1046.92)

4000T only **£787** (£924.72)
 • 4MB, 2 x 250 Sheet Trays
 With HP SupportPack **£967** (£1136.22)

4000N only **£914** (£1073.95)
 • 8MB, Network Card
 With HP SupportPack **£1094** (£1285.45)

4000TN only **£990** (£1173.82)
 • 8MB, 2 x 250 Sheet Trays, Network Card
 With HP SupportPack **£1170** (£1371.17)

LaserJet 4000 Accessories

Part No.	Item	Exc VAT	Inc VAT
C4122A	75sht Envelope Feeder	£195	£229.12
C4123A	Duplex Assembly	£175	£205.62
C4124A	500sht Feeder	£179	£210.32
C4125A	500sht Universal Tray	£85	£99.87
C4127A	Toner	£69	£81.07



HP LaserJet 5000

5000 only **£929** (£1091.57)
 • 4MB, 100 Sheet MP Tray, 250 Sheet Tray
 With HP SupportPack **£1164** (£1367.70)

5000N only **£1334** (£1567.45)
 • 8MB, 100 Sheet MP Tray, 250 Sheet Tray & 500 Sheet Tray, Network ready
 With HP SupportPack **£1569** (£1843.57)

5000GN only **£1649** (£1937.57)
 • 12MB, 100 Sheet MP Tray, 250 Sheet Tray & 500 Sheet Tray, Network ready, 1Gb Hard Disk
 With HP SupportPack **£1884** (£2213.70)

LaserJet 5000 Accessories

Part No.	Item	Exc VAT	Inc VAT
C4113A	Duplex Assembly	£295	£346.62
C4114A	250sht Feeder	£149	£175.07
C4115A	500sht Feeder	£209	£245.57
C4116A	250sht Input Tray	£89	£104.57
C4129X	Toner	£149	£175.07



HP LaserJet 8000

- 24ppm, 1200dpi, 16MB with MET, 1100 Sheet Capacity

8000 only **£1604** (£1884.70)
 With HP SupportPack **£2134** (£2507.45)

8000N only **£1791** (£2104.42)
 • 24ppm, 1200dpi, 16MB with MET, 1100 Sheet Capacity, Network ready
 With HP SupportPack **£2321** (£2727.17)

8000DN only **£2099** (£2466.32)
 • 24ppm, 1200dpi, 16MB with MET, Duplex, 1100 Sheet Capacity, Network ready
 With HP SupportPack **£2630** (£3090.25)

LaserJet 8000 Accessories

Part No.	Item	Exc VAT	Inc VAT
C4781A	2000 sheet HCI	£Call	£Call
C4780A	2 x 500 multi input tray	£Call	£Call
C3765A	Envelope feeder	£Call	£Call
C4783A	7 bin table top mailbox	£Call	£Call
C4787A	5 bin mailbox & stapler	£Call	£Call



HP LaserJet Mopier 240

- Up to 24 ppm print speed for A4 documents
- 600 dpi, FastRes 1200 plus PS Emulation
- 24MB standard with MET
- 1.4GB Disk Drive
- JetDirect MIO Internal PrintServer
- Duplex unit
- 130,000 pages/month

only **£2362** (£2775.35)
 With HP SupportPack **£3093** (£3634.27)

LaserJet Mopier 240 Accessories

Part No.	Item	Exc VAT	Inc VAT
C3765A	Envelope feeder	£Call	£Call
C4783A	7-bin table top Mailbox	£Call	£Call
C4787A	5-bin Mailbox & stapler	£Call	£Call
C4785A	7-bin Mailbox	£Call	£Call

Part No.	Item	Exc VAT	Inc VAT
C4785A	8 bin mailbox	£Call	£Call
C4782A	Duplex unit	£Call	£Call
C2975A	Printer stand	£Call	£Call
C4784A	7bin table top mailbox Toner	£Call	£Call



HP Colour LaserJet 5/5M

- Up to 10 ppm mono and up to 3 ppm colour
- 1200 dpl equivalent image print quality
- Standard 250 sheet tray
- Colour LaserJet 5 includes 20MB RAM
- Colour LaserJet 5M includes 36MB RAM, PostScript & Network Interface
- 1 year return to HP warranty

5 only **£2460** (£2890.50)
 With HP SupportPack **£3079** (£3617.82)

5M only **£3099** (£3641.32)
 With HP SupportPack **£3718** (£4368.65)

Colour LaserJet 5/5M Accessories

Part No.	Item	Exc VAT	Inc VAT
C3119A	250 sheet Rear Feed	£205	£240.87
C3117A	250 sheet A4 Tray	£75	£88.12
C2937A	Printer Cabinet	£245	£287.87
C3102/3/4A	C/M Toners each	£26	£30.55
C3105A	Black Toner	£6	£7.05
C3120A	Toner Collection Kit	£18	£21.15
C3964A	Coating Kit	£35	£41.12
C3965A	Black developer	£109	£128.07
C3966A	Colour developer	£299	£351.32
C3967A	Print Drum	£189	£222.07
C3968A	Transfer Belt	£119	£139.82
C3969A	Fuser Unit (110V, 220V)	£165	£193.87



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PRICE MATCHING
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HP LaserJet 5000 series

The A3 network printer for small to medium-sized workgroups.



More paper and printing flexibility

- Support from postcard size to full bleed A3
- Up to 1100 sheet input from 4 different size trays
- Duplexing capability

Greater network performance/expandability & manageability

- 2 new, fast EIO interface
- Optional Disk for Transmit Once/MOPY functionality, fonts and forms printing
- JetSend enabled

Enhanced print quality

- FastRes 1200 for best quality business documents and drafts prints
- ProRes 1200 for best quality graphics intensive documents
- New 10K page UltraPrecise cartridge and toner formulation for crisp, sharp output
- 220 levels of grey

All prices in brackets are inclusive of VAT

All 5000 range A3

All 16ppm, up to 1200dpi

5000N/GN Network Ready

HP LaserJet 5000 £929 (€1091.57)

Features:

- 4MB RAM (expandable to 100MB)
- 16 ppm print speed, first page out in less than 13 seconds
- 600 x 1200 dpi resolution
- 100 MHz RISC processor
- PCL6, PCL5e, PostScript Level 2 Emulation
- Network-ready
- Adobe PostScript Level 2 languages built-in
- 1 year warranty

With HP SupportPack £1164 (€1367.70)

HP LaserJet 5000N £1334 (€1567.45)

Features as the LaserJet 5000 with the except for:

- 8MB, 100 Sheet MP Tray, 250 Sheet Tray & 500 Sheet Tray
- Network ready

With HP SupportPack £1569 (€1843.57)

HP LaserJet 5000GN £1649 (€1937.57)

Features as the LaserJet 5000 with the except for:

- 12MB, 100 Sheet MP Tray, 250 Sheet Tray & 500 Sheet Tray
- Network ready, 1Gb Hard Drive

With HP SupportPack £1884 (€2213.70)

HP LaserJet 5000 ACCESSORIES

Part No.	Item	Exc VAT	Inc VAT
C4113A	Duplex Assembly	£295	£346.62
C4114A	250sht Feeder	£149	£175.07
C4115A	500sht Feeder	£209	£245.57
C4116A	250sht Input Tray	£89	£104.57
C4117A	500sht Input Tray	£125	£146.87
C4129X	Toner	£149	£175.07

HP SupportPack

PCs & Peripherals



HP SupportPack PCs & Peripherals is a hardware warranty upgrade service that gives you fast, reliable, high quality support direct from the company who manufactures the product.

HP SupportPack PCs & Peripherals is an off the shelf support contract designed to give computer users, large or small, complete peace of mind with 3 year's extended warranty, on-site hardware support.

All you need to do if you experience a hardware problem on any of your covered products is call the telephone number provided in your HP SupportPack. Once you've placed the call a highly trained engineer will get to work immediately to ensure your hardware is up and running in the shortest time possible.

All HP engineers are highly trained to provide a rapid, professional response, so you know your hardware is in safe hands.

PCs & Peripherals - Response Levels

Service	Response Level
Next Day	9am to 5pm, Monday to Friday except Public Holidays. Arrival on-site next working after call is received
Next Day Unit Exchange	9am to 5pm, Monday to Friday except Public Holidays. Permanent replacement unit supplied

Service Features

- 3 year's on-site hardware support
- Covers HP products only
- Repair and support delivered to you at your home and office (on-site)
- Includes parts, labour and travel at no cost
- European coverage
- Transferable with product
- Service and support direct from HP

Benefits to You

- Allows you to enhance your service over and above standard HP product warranty
- Provides fixed cost of ownership for 3 years
- Gives you peace of mind that you have the best support available
- Service delivered to you, at your site, throughout Europe
- Expert assistance
- Rapid professional response



- ✓ Serving you since 1987
- ✓ Over £50m annual turnover
- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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OKI

People to People Technology

OKIPAGE 4w Plus

Ideal for small business or specialist home users, the OKIPAGE 4w Plus is compatible with Windows 3.1/95 and Windows NT 4.0 and combines the highest standards of monochrome printing with fast throughput and excellent paper handling. The OKIPAGE 4w Plus has one of the smallest footprints of any 600 dpi class personal page printer.

- Oki LED technology - superior reliability and print quality
- 4ppm - near silent page printer
- 600 dpi resolution
- Improved Windows 3.1 and Windows 95 driver
- NEW Windows NT 4.0 driver
- Improved paper guide system and cover latch
- Small footprint
- Energy Star approved

£135
(£158.82)



LED PAGE PRINTERS

The Oki range of LED page printers have been designed to provide all the performance you need, day after day. Producing excellent quality text and graphics, these printers will grow in line with your needs and can be expanded in terms of paper handling and memory capacity.

OKIPAGE 10i

The OKIPAGE 10i has the quality, speed and excellent paper handling capabilities to make it ideal for either personal professional use or as a shared business printer.

- LED 10 ppm page printer (PCL6), 12 seconds to first print
- 600 x 1200 dpi resolution
- Oki microfine spherical toner - crisp characters
- Fast MIPS R3000 RISC processor
- 2Mb RAM - upgradeable to 35Mb
- DOS, Windows 3.1/95 and Windows NT

£359
(£421.82)

OKIPAGE 20n

The high speed page printer for workgroups

- LED 20 ppm page printer (PCL6), 7 seconds to first print
- 600 x 1200 dpi resolution
- Optional AdobePostScript Level II
- Fast MIPS R3000 RISC processor
- 8Mb RAM - upgradeable to 68Mb
- OKIVIEW network management software
- Bi-directional parallel and serial interface

£729
(£856.57)

OKIPAGE 20n/dx

- All the features of the OKIPAGE 20n
- Duplex unit as standard

£909
(£1068.07)

OKIPAGE 6e

- LED 6 ppm page printer (PCL5e)
- 600 dpi resolution
- 2Mb RAM - upgradeable to 18Mb
- DOS, Windows 3.1/95 and Windows NT

£189
(£222.07)

OKIPAGE 6ex

- LED 6 ppm page printer (PCL5e)
- 600 x 1200 dpi resolution
- 2Mb RAM - upgradeable to 35Mb
- DOS, Windows 3.1/95 and Windows NT

£219
(£257.32)

OKIPAGE 16n

- For heavier use, ideal for networks
- 16 Pages per minute
- 6Mb of memory
- 600 x 600 dpi
- Up to 1200 sheet paper capacity

£579
(£680.32)

OKIFAX 4100/740/740MF

The OKIFAX 4100 is a high quality, high performance desktop LED fax, perfect for small office, home offices and for personal use.

- 14.4k modem
- 100 sheet paper capacity
- Memory expandable from 15 pages to 75
- Separate toner and drum
- Advanced dialling features
- Power save mode

£489
(£574.57)

The OKIFAX 740 is an affordable plain paper fax

- Compact Footprint
- PC link via Serial interface
- 150 sheet paper capacity/20 sheet ADF
- 10 one touch and 50 two touch dialling
- 18 pages memory upgradeable to 68 pages
- ID coded Access
- 70 broadcast locations

£339
(£398.32)

The OKIFAX 740MF is a plain paper fax and colour printer.

- Supplied with mono and colour cartridges
- 150 sheet paper capacity/20 sheet ADF
- 18 sec/page transmission speed
- Autodial: 10 one-touch/50 speed dial/5 groupdial
- 1 Mb/50 page upgrade
- Q600 dpi mono printing

£349
(£410.07)



Prices shown in brackets are inclusive of VAT

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Colour Bubble Jet Printers



BJC-80

"Complete Independence when you're out and about"

- New Drop Modulation Technology™, ensures desktop printing quality for colour and photo images
- New Image Optimizer technology improves quality of low resolution images
- New Colour Image Scanning Cartridge (optional), transforms printer into a full colour A4 sheet fed image scanner
- 30 sheet Automatic Sheet Feeder
- Cable free printing using built-in IrDA sensor
- One Year return to Canon Warranty

£142 (€166.85 inc VAT)



BJC-250

"Everyday printing that's out of the ordinary"

- New Image Optimizer technology improves quality of low resolution images
- Fast mono output - up to 3.4 pages per minute
- Free black and colour cartridges - no extra cost for colour output
- Produces photo-realistic images using optional Photo cartridge
- Banner Printing Capability
- One Year return to Canon Warranty

£71 (€83.42 inc VAT)



BJC-4300

"Intense colour that shines out every time"

- New Drop Modulation Technology™, maximises printing quality for colour and photo images
- New Image Optimizer technology improves quality of low resolution images
- New Colour Image Scanning Cartridge (optional), transforms printer into a full colour A4 sheet-fed image scanner
- Banner Printing Capability
- Stunning Photographic Output using optional BC-22e Photo cartridge
- FREE Canon World Cup Software CD and FIFA Road To World Cup '98 PC CD-ROM.
- FREE Extra Black and Colour Ink Tanks
- One Year return to Canon Warranty

£92 (€108.10 inc VAT)



BJC-4650

"The Intelligent choice for A3 output"

- Full colour printing capability up to A3 in size
- New Drop Modulation Technology™, maximises printing quality for colour and photo images
- New Image Optimizer technology Improves quality of low resolution images
- New Colour Image Scanning Cartridge (optional), transforms printer into a full colour A3 sheet-fed image scanner
- PC and Mac compatibility
- One Year return to Canon Warranty

£197 (€231.47 inc VAT)

Colour Image Scanning



Three Bubble Jet printers are designed to accept an optional scanning cartridge, enabling them to scan images and text into your PC. By simply swapping the ink cartridge with the IS Scanner cartridge you can transform the printer into a full colour sheet fed scanner, capable of transferring photo's, images and documents into a PC at up to 360 dpi resolution. When you have finished scanning, simply replace the scanner cartridge with an ink cartridge, and the printer is ready to print. The BJC-80 and BJC-4300 can scan photo's images and documents up to A4 in size into a PC, whilst the new BJC-4650 can handle A3 documents. The cartridges are supplied with PhotoImpact SE - an image editing suite, and OmniPage LE - an OCR package which recognises scanned document characters as text.

Please note: to use the Colour Image Scanner Cartridge your PC must operate under Windows® 95.



BJC-7000

"The colour printer to outclass all others"

- Photograph? Bubble Jet Print? With the BJC-7000 Colour Bubble Jet printer, you really have difficulty telling them apart.
- Quality so high, using technology so advanced, means that all your documents will be superbly printed onto any media from everyday plain paper to Canon's Glossy Photo Paper.
- Unprecedented Bubble Jet printing quality
- New P-POP technology delivers high quality printed images onto plain paper
- Prints full colour photographs hard to distinguish from the originals
- High capacity ink cartridges
- Incredible flexibility - accepts media from 64 to 550 gsm
- Water-fast printing ensures inks will not run or streak when wet
- One Year return to Canon Warranty

£178 (€209.15 inc VAT)

YOU AND
CANON CAN.

Canon





- ✓ Serving you since 1987
- ✓ Over £50m annual turnover
- ✓ Over 200,000 satisfied customers
- ✓ Highly trained specialist staff
- ✓ Repair & upgrade services

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INKJET PRINTERS

CANON	ex VAT	inc VAT
BJC-80	142	166.85
BJC-80 & Colour Scanner	185	217.37
BJC-250	71	83.42
BJC-4300	92	108.10
BJC-4300 & Colour Scanner	122	143.35
BJC-620	166	195.05
BJC-4650	197	231.47
BJC-4650 & Colour Scanner	235	276.12
BJC-5500	409	480.57
BJC-7000	178	209.15

EPSON	ex VAT	inc VAT
Stylus Colour 300	83	97.52
Stylus Colour 400	103	121.02
Stylus Colour 600	147	172.72
Stylus Photo	177	207.97
Stylus Photo 700	207	243.22
Stylus Colour 800	207	243.22
Stylus Colour 850	243	285.52
Stylus Photo EX	308	361.90
Stylus Colour 1520	511	600.42
Stylus Colour 3000	1118	1313.85
PostScript RIP	89	104.57

HEWLETT PACKARD	ex VAT	inc VAT
Deskjet 340C	135	158.62
Deskjet 340CBI	166	195.05
Deskjet 400L Colour	86	77.55
Deskjet 670C	111	130.42
Deskjet 690C+	126	148.05
Deskjet 690C+ with Photo Reader	161	189.17
Deskjet 720C	156	183.30
Deskjet 820Cxi	153	179.77
Deskjet 890C	202	237.35
Deskjet 1120C	285	334.87
Deskjet 1600C	871	1023.42
Deskjet 1600CN	1110	1304.25
Deskjet 1600CM	1280	1504.00

LEXMARK	ex VAT	inc VAT
Colour JetPrinter 1000	89	104.57
Colour JetPrinter 5000	139	163.32
Colour JetPrinter 5700	179	210.32
Colour JetPrinter 7200	195	229.12

OLIVETTI	ex VAT	inc VAT
JP190	99	116.32
JP792	129	151.57
JP795	149	175.07

TALLY	ex VAT	inc VAT
T-7060	169	198.57
T-7070	399	468.82

XEROX	ex VAT	inc VAT
XJ4C	130	152.75
HomeCentre	339	398.32
WorkCentre 450c	339	398.32

DOT MATRIX PRINTERS

EPSON	ex VAT	inc VAT
LX-300	97	113.97
LX-1050	154	180.95
FX-880	247	290.22
FX-1170	230	270.25
FX-1180	call	call
FX-2170	395	464.12
DFX-5000	1226	1440.55
DFX-8000	1911	2245.42
LQ-300	115	135.12
LQ-570+	216	253.80
LQ-670	230	270.25
LQ-870	377	442.97
LQ-2070	330	387.75
LQ-2170	468	549.90
DLQ-3000	831	976.42

OKI	ex VAT	inc VAT
ML280	182	213.85
ML320	299	351.32
ML321	359	421.82
ML380	215	252.62
ML3320	315	370.12
ML3390	335	393.62
ML3321	369	433.57
ML3391	385	452.37
ML520	329	386.57
ML521	389	457.07
ML590	434	509.95
ML591	499	586.32
ML395 Mono	635	746.12
ML395 Colour	715	840.12
ML3410	799	938.82

PANASONIC	ex VAT	inc VAT
KX-P1150	87	102.22
KX-P2023	108	126.90
KX-P3200P	173	203.27
KX-P3626	254	298.45
KX-P3696	254	298.45

PostScript Compatible Printing For Your Desktop Colour Printer

Affordable PostScript Compatible Printing

- Easy to use
- Chooser level printing
- Fast RIP on the fly processing
- High quality photographic screening & colour profiles
- Reliable PostScript Level 2 compatibility

PhotoScript Lite™ offers affordable PostScript® level 2 compatible printing for non-PostScript ink jet printers such as the Epson Stylus range, Canon BubbleJets and HP DeskJet models.

Documents will print faster, more accurately, and with superior quality and colour fidelity. Scanned images come alive with near photographic quality. Text and line drawings will be rendered to the full potential resolution of your printer with optimised colour matching for a full range of media and ink combinations.



- PhotoScript Lite DTP £89 (£104.57)
- PhotoScript Plus DTP £195 (£229.12) with PhotoMatch Colour Management

PostScript is the registered trademark of Adobe Systems Inc. PhotoScript Group Ltd and Adobe Systems Inc are not associated companies.

EPSON PRINTER/PHOTOSCRIPT BUNDLES

Printer	PhotoScript Lite	PhotoScript Plus
Epson Stylus 300	£174 (£204.45)	£279 (£327.82)
Epson Stylus 400	£193 (£226.77)	£298 (£350.15)
Epson Stylus 600	£222 (£260.85)	£327 (£384.22)
Epson Stylus 800	£282 (£331.35)	£387 (£454.72)
Epson Stylus 1520	£586 (£688.55)	£691 (£811.92)

Prices shown in brackets are inclusive of VAT

olivetti lexikon

JP190 £89 (£104.57)



A compact colour inkjet recommended for anybody who needs quality colour printing.

- 600 x 300 resolution, mono and colour
- 128KB RAM
- 3ppm mono
- 30 Bitmap Fonts
- Low cost refillable printheads
- Free Microrgrafx software
- 12 Months On-Site/Exchange Warranty



JP792 £115 (£135.12)



Olivetti has come up with a truly brilliant solution. Five colours instead of four.

- Five colour printing technology
- Up to 6ppm mono, 3ppm colour
- 600 x 600 resolution, mono and colour
- 120 sheet handling
- Optional photo lab
- Refillable print heads provides low cost per copy
- 12 Months On-Site/Exchange Warranty

JP795 £125 (£146.87)



Top quality printing every time.

- Five colour printing technology
- Up to 6ppm mono, 3ppm colour
- 600 x 600 resolution, mono and colour
- 120 sheet handling
- Photo lab standard
- Free photographic paper for outstanding results
- 12 Months On-Site/Exchange Warranty

Prices in brackets are inclusive of VAT

ORIGINAL INKJET CARTRIDGES

CANON	ex VAT	inc VAT
BC-01	BJ-10 Black	13 15.27
BC-02	BJ-200/210/230/240 Black	14 16.45
BC-05	BJC-210/240/250 Colour	18 21.15
BC-06	BJC-240/250 Photo	22 25.85
BC-06KIT	BJC-240/250 Photo Kit	29 34.07
BC-22	BJC-4550 Photo	26 30.55
BC-22PKIT	BJC-4550 Photo Kit	29 34.07
BC-29	BJC-4550 Fluorescent	24 28.20
BJI-642	BJ-300/330 Black	8 9.40
BJI-643BK	BJC-800 Black	12 14.10
BJI-643C/M/Y	BJC-800 Colour	16 18.80
BJI-201BK	BJC-600/610/620 Black	5 5.87
BJI-201C/M/Y	BJC-600/610/620 Colour	5 5.87
BC-10	BJ-30/70 Black	22 25.85
BCI-10BK	BJ-30/70 Black Tank 3pk	10 11.75
BC-11	BJC-70 Colour	25 29.37
BCI-11BK	BJC-70 Black Tank 3pk	12 14.10
BCI-11C	BJC-70 Colour Tank 3pk	15 17.62
BC-20	BJC-4200/4300 Black	19 22.32
BC-21	BJC-4200/4300 Colour	28 32.90
BCI-21BK	BJC-4200/4300 Black Tank	6 7.05
BCI-21C	BJC-4200/4300 Colour Tank	13 15.27
BC-60	BJC-7000 Black	22 25.85
BC-61	BJC-7000 Colour	24 28.20
BC-62	BJC-7000 Photo Colour	33 38.77
BCI-60	BJC-7000 Black Ink Tank	13 15.27
BCI-61	BJC-7000 Colour Ink Tank	15 17.62
BCI-62	BJC-7000 Photo Ink Tank	22 25.85

CITIZEN	ex VAT	inc VAT
3000055	Printiva Black	4 4.70
3000056/7/8	Printiva Colours	5 5.87
3000059	Printiva Gold metallic	12 14.10
3000061	Printiva Red metallic	12 14.10
3000062	Printiva Blue metallic	12 14.10

EPSON	ex VAT	inc VAT
S020025	Stylus 800/1000 Black	7 8.22
S020031	Stylus 300 Black	15 17.62
S020034	Stylus Colour/Pro Black	9 10.57
S020036	Stylus Colour/Pro Colour	19 22.32
S020047	Stylus 820/1115/200 Black	12 14.10
S020049	Stylus 1115/200 Colour	18 21.15
S020062	Stylus 1500 Black	28 32.90
S020066	Stylus Pro XL+ Colour	22 25.85
S020089	Stylus 4/6/800/1520 Colour	14 16.45
S020093	Stylus 400/500/600 Black	14 16.45
S020097	Stylus 200/500 Colour	18 21.15
S020108	Stylus 800/1520 Black	15 17.62
S020110	Stylus Photo 5 Colour	14 16.45
S020118	Stylus 3000 Black	38 44.65
S020122/26/30	Stylus 3000 Colours	38 44.65
S020138	Stylus 300 Colour	15 17.62

HEWLETT PACKARD

51625A	DJ 500 Black	17 19.97
51625A	DJ 500 Colour	17 19.97
51629A	DJ 600/670/690 Black	17 19.97
51649A	DJ 600/670/690 Colour	17 19.97
51645A	DJ 720/Bx0/1100 Black	17 19.97
51641A	DJ 820/B70/890/1100 Col	18 21.15
C1816A	DJ 690 PhotoRealistic	23 27.02
C1823A	DJ 720/890 Colour	22 25.85
51633M	DJ Port/310/320/340	14 16.45
51640A	DJ 1600 Black	16 18.80
51640C/M/Y	DJ 1600 Colours	19 22.32
51639A	PJ XL300 Black	13 15.27
51639C/M/Y	PJ XL300 Colours	14 16.45

LEXMARK

1380490	PS 4079 Black	15 17.62
1380491/3	PS 4079 Colours	20 23.50
1380620	WinWriter 150 Black	19 22.32
1380619	WinWriter 150 Colour	26 30.55
1380620	ColourJet 1020 Black	20 23.50
1382050	ColourJet 2070 Black	24 28.20
1382060	ColourJet 2070 Colour	26 30.55
1380620	ColourJet 2050 Black	19 22.32
1380619	ColourJet 2050 Colour	26 30.55

XEROX

XJ4C/Work/HomeCentre	Black	12 14.10
XJ4C/Work/HomeCentre	Colours	each 12 14.10

ORIGINAL RIBBONS

EPSON	ex VAT	inc VAT
8750	80 column 9 pin	5 5.87
8755	136 column 9 pin	6 7.05
7753	80 column 24 pin	5 5.87
7754	136 column 24 pin	6 7.05
S015086	FX-2170 black	14 16.45
S015083	LQ-2170 black	14 16.45

PANASONIC

KX-P150	KX-P2180/2123/3124 black	8 9.40
KX-P150C	KX-P2180/2123/3124 colour	15 17.62
KX-P160P	KX-P2135 black	7 8.22
KX-P165P	KX-P2135 colour	13 15.27
KX-P170	KX-P3626/3696 black	10 11.75
KX-P181	KX-P3200 black	12 14.10

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EPSON

EPSON STYLUS COLOR 400



£103
(£121.02 inc VAT)



FREE! EPSON PerfectPicture Pak
Includes PrintArtist v.4, LivePix v.1, Photo Quality Media Pack, Customisable Mouse Mat only with Stylus Color 400 & Stylus Color 600

720 dpi PhotoReal Colour Inkjet Printer

- Prints on plain, coated papers, envelopes and OHP transparencies
- Permanent Piezo print-head
- Windows 95 ICM compliant
- Video and camera mode
- 1 year RTB warranty

COVER plus
EPSON CoverPlus three year extended warranty service available £65.00 (£76.37 inc VAT)

EPSON STYLUS COLOR 400



£147
(£172.72 inc VAT)



1440 dpi PhotoReal Colour & Laser Sharp Mono Printer

- 1440dpi colour or true black printing with Epson Super MicroDot™
- Up to 6ppm mono and 4ppm colour
- Photo-Real colour and laser sharp mono printing
- Windows and Mac compatible
- 1 year RTB warranty

COVER plus
EPSON CoverPlus three year extended warranty service available £65.00 (£76.37 inc VAT)

EPSON EPL-5700



EPL-5700 **£304**
(£357.20 inc VAT)

EPL-5700EN **£Call**
(£Call inc VAT)

EPL-5700PS **£Call**
(£Call inc VAT)

NEW

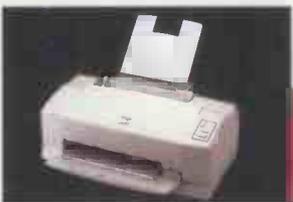
Featured with optional paper cassette

1200 dpi High Performance Laser Printer

- 8ppm with 100MHz RISC processor • True 600 x 600dpi
- 1200dpi with MicroGray 1200 and RITech
- 4MB RAM - upgradeable to 36MB
- Up to 650 sheets capacity with optional paper cassette
- Advanced features 'Watermark', 'Multiple Pages per Sheet', 1200dpi class'
- Parallel & Serial interfaces as standard
- Standard, Network & PostScript ready configurations
- 1 year RTB warranty with Optional Epson Cover Plus for 3 year warranty

COVER plus
EPSON CoverPlus three year extended warranty service available £Call (£Call inc VAT)

EPSON STYLUS COLOR 850



£243
(£285.52 inc VAT)

NEW

The Ideal Professional and Business Printer

- Up to 9ppm mono and 8.5ppm colour
- 1440 dpi colour printing on plain paper
- PhotoReal Colour & Laser-sharp Black output as standard
- Windows 3.1, Windows NT and Macintosh compatible
- Optional network and Postscript capability
- PC and Mac support as standard • High capacity dual ink cartridge system
- New full function status monitor
- 1 year RTB warranty

COVER plus
EPSON CoverPlus three year extended warranty service available £65.00 (£76.37 inc VAT)

EPSON STYLUS COLOR 300



£83
(£97.52 inc VAT)

720 dpi Colour Inkjet Printer

- Up to 720dpi colour & true black printing (single 4 colour ink cartridge)
- Up to 3ppm black and 1.2ppm colour
- PhotoReal colour as standard
- Windows 95 ICM compliant
- 1 year RTB warranty

EPSON STYLUS COLOR 700



£207
(£243.22 inc VAT)

NEW

New Generation Home Printer for Photos & Text

- Perfect for photo reproduction, editing and output up to A4
- Windows 3.1, Windows NT and Macintosh compatible
- 1440 dpi and Super MicroDot for the highest photo quality output
- Epson PhotoEnhance 2 - automatically optimises photo output
- Includes Adobe Photo Deluxe V2.0

COVER plus
EPSON CoverPlus three year extended warranty service available £65.00 (£76.37 inc VAT)

EPSON STYLUS COLOR 1520 **£510**

(£599.25 inc VAT)



- 1440dpi print quality, up to 6ppm black & 6ppm colour
- A3 printing • PC and Mac compatible as standard
- 'Look Your Best Color Pack'
- Optional PostScript RIP software
- Optional Network connectivity

EPSON STYLUS PHOTO **£177**

(£207.97 inc VAT)



- Prints documents, text and graphics
- Optimised for photo reproduction
- Prints 4" x 6" format and enlargements to A4
- Normal and light colour QuickDry Inks
- Windows and Mac capability



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BROTHER		ex VAT	inc VAT
TN-100	HL-630/631/660	19	22.32
TN-200	HL-730/760	15	17.62
TN-300	HL-1060	19	22.32
EP-ED	HL-1260/1660	60	70.50

EPSON		ex VAT	inc VAT
S051022	EPL-9000	139	163.32
S051016	EPL-N1200	65	76.37
S051035	EPL-N2000	129	151.57

HEWLETT PACKARD		ex VAT	inc VAT
92275A	LaserJet HP/HP	46	54.05
92295A	LaserJet II/III	42	49.35
92298A	LaserJet 4/4+5	54	63.45
92274A	LaserJet 4L/4P	39	45.82
C3900A	LaserJet 4V	84	98.70
C3903A	LaserJet 5P/6P	45	52.87
C3906A	LaserJet 5L	36	42.30
C3909A	LaserJet 5Si/8000	95	111.62
C4127A	LaserJet 4000	69	81.07
C4129X	LaserJet 5000	149	175.07

KYOCERA		ex VAT	inc VAT
TK-11	FS-400	13	15.27
TK-12	FS-1550/1600/3400/3600	40	47.00
TK-20	FS-1700/3700	39	45.82
TK-20M	FS-1700/3700 HiCap	49	57.57

LEXMARK		ex VAT	inc VAT
1382100	Optra 7k Diamond Fine	109	128.07
382150	Optra 14k Diamond Fine	149	175.07
	Optra S 7k Diamond Fine	119	139.82
	Optra S 17k Diamond Fine	149	175.07

OKI		ex VAT	inc VAT
4851	OL600/610/6e/6ex	15	17.62
5075	OL1200ex/Okipage 16n	35	41.12
5089	Okipage 4w	18	21.15
5122	Okipage 10i	15	17.62
5136	Okipage 20n	35	41.12

PANASONIC		ex VAT	inc VAT
KX-P453	KX-P4410/4430/4400	28	32.90
KX-P457	KX-P6100/6150	12	14.10
KX-P459	KX-P6300/6500	12	14.10

QMS		ex VAT	inc VAT
	MagiColour 2 Black	115	135.12
	MagiColour 2 Colour	99	116.32

TALLY		ex VAT	inc VAT
044726	T-9108/9208	80	94.00

XEROX		ex VAT	inc VAT
4512		109	128.07
4517		119	139.82
4520		235	276.12
N32		195	229.12

CABLES/CONNECTORS

CABLES		ex VAT	inc VAT
Parallel Printer 2m		4	4.70
Bi-Directional Parallel Printer 2m		5	5.87
Bi-Directional Parallel Printer 3m		7	8.22
Bi-Directional Parallel Printer 5m		9	10.57
Bi-Directional Parallel Printer 10m		15	17.62
C36M-C36M Centronics 2m		5	5.87
C36M-C36M Centronics 3m		7	8.22
C36M-C36M Centronics 5m		9	10.57
C36M-C36M Centronics 10m		15	17.62
Macintosh Printer 2m		5	5.87
Macintosh Printer 5m		10	11.75
D25-D25 Serial 2m		5	5.87
D25-D25 Serial 3m		7	8.22
D25-D25 Serial 5m		9	10.57
D25-D25 Serial 10m		15	17.62
D9F/D25F-D25M Modem 2m		5	5.87
D9F/D25F-D25M Modem 5m		9	10.57
RG58 (Thin) Ethernet 2m		4	4.70
RG58 (Thin) Ethernet 3m		5	5.87
RG58 (Thin) Ethernet 5m		7	8.22
RG58 (Thin) Ethernet 10m		10	11.75
IEC Mains 2m		5	5.87
IDE HD 140F-140F-140F Internal 1m		3	3.52
Floppy 134F-134F-34F Internal 1m		3	3.52
SCSI 150F-150F-150F Internal 1m		5	5.87
SCSI D25M-C50M 1m		6	7.05
SCSI D25M-C50M 1m		10	11.75
SCSI C50M-C50M 1m		8	9.40
SCSI C50M-C50M 2m		12	14.10
SCSI HC50M-C50M 1m		10	11.75
SCSI HC50M-C50M 2m		12	14.10
SCSI HC50M-HC50M 1m		10	11.75
SCSI HC50M-HC50M 2m		18	21.15
WideSCSI HC68M-C50M 1m		15	17.62
WideSCSI HC68M-HC50M 1m		18	21.15
WideSCSI HC68M-HC68M 1m		20	23.50
Keyboard Extension DIN5M-DIN5F 2m		5	5.87
VGA Extension HD15M-HD15F 2m		5	5.87

Price drop on award winning laser

DeskLaser 600 £159 (£186.82 inc VAT)

- 600 dpi for razor sharp text and graphics
- 6 pages per minute
- Windows 3.11 and Windows 95 compatibility
- Tiny footprint
- Prints on plain paper, envelopes, transparencies and label stock

TOP 50 BUYERS' CHOICE AWARDS
Computer BUYER'S HOME OFFICE AWARD WINNER
WHAT PC?

MagiColor 2 colour laser printer

- 4/8ppm colour, 16ppm mono
- Up to 2400 dpi
- From only 3 pence a page in colour
- Simple to use and small footprint

CX 24Mb £2449 (£2877.57 inc VAT)
CX Executive 80Mb £3349 (£3935.07 inc VAT)

MacWorld Jan'98 Editor's Choice Award

DATA SWITCHES

2/1 Parallel Manual	10	11.75
4/1 Parallel Manual	15	17.62
2/2 Crossover Parallel Manual	29	34.07
2/1 Parallel Auto	19	22.32
4/1 Parallel Auto	29	34.07
8/1 Parallel Auto	99	116.32
2/1 VGA & keyboard	15	17.62
4/1 VGA & keyboard	25	29.37

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DISCS	ex VAT	inc VAT
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1.44Mb DSHD x 100 each	0.40	0.47
1.44Mb DSHD x 250 each	0.35	0.41
650Mb CD Recordable x 1	2.00	2.35
650Mb CD Recordable x 10 each	1.80	2.11
650Mb CD Recordable x 100 each	1.50	1.76
650Mb CD ReWritable x 1	16	18.80
650Mb CD ReWritable x 10 each	14	16.45
650Mb CD ReWritable x 100 each	13	15.27

TAPES	ex VAT	inc VAT
2Gb/4Gb 90m DAT	6	7.05
4Gb/8Gb 120m DAT	14	16.45
12Gb/24Gb 125m DAT	29	34.07
Travan TR-1 400/800Mb	16	18.80
Travan TR-3 1.6/3.2Gb	22	25.85
Travan TR-4 4/8Gb	25	29.37
Verbatim TR-1 Extra 500/1000Mb	17	19.97
Verbatim TR-3 Extra 2.2/4.4Gb	20	23.50
Imega Ditto 2000 1/2Gb	14	16.45
Imega Ditto 2000 1/2Gb 3pack	38	44.65
DC2120 120/250Mb Formatted	10	11.75
DC2120XL 170/340Mb	12	14.10

REMOVABLE CARTRIDGES	ex VAT	inc VAT
Imega ZIP 100Mb	9	10.57
Imega ZIP 100Mb 6 pack	48	56.40
Imega ZIP 100Mb 10 pack Coloured	89	104.57
Imega JAZ 1Gb	55	64.62
Imega JAZ 1Gb 3 pack	160	188.00
LS-120 120Mb 3.5"	14	16.45
Panasonic 650Mb PD	25	29.37
SyQuest 44Mb 5.25"	25	29.37
SyQuest 88Mb 5.25"	28	32.90
SyQuest 200Mb 5.25"	42	49.35
SyQuest 270Mb 3.5"	37	43.47
SyQuest EZ 135 135Mb 3.5"	15	17.62
SyQuest EZ Flyer 230Mb 3.5"	21	24.67
SyQuest SyJet 1.5Gb	51	59.92
SyQuest SparQ 1.0Gb	28	32.90
SyQuest SparQ 1.0Gb 3 pack	68	79.90
128Mb 3.5" MO	5	5.87
230Mb 3.5" MO	7	8.22
640Mb 3.5" MO	18	21.15
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2.8Gb 5.25" MO	36	42.30

STATIONERY

CANON	ex VAT	inc VAT
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LC-101 A3 Coated 200sht	36	42.30
LC-301 A3 A3 Coated 200sht	25	29.37
CF-102 A4 Transparency 50sht	30	35.25
GP-101 A4 Glossy 50sht	20	23.50
BF-102 A4 Black Print Film 20sht	23	27.02
BF-103 A3 Black Print Film 20sht	46	64.05
HG-101 A4 Glossy Film 20sht	16	18.80
HG-101 A3 Glossy Film 20sht	36	42.30
HR-101 A4 HiRes Coated 200sht	16	18.80
HR-101 A3 HiRes Coated 100sht	19	22.32
FS-101 A4 Fabric 10sht	23	27.02

EPSON	ex VAT	inc VAT
SE41001 T-Shirt Transfer Pack	10	11.75
S041059 A4 360dpi 100sht	8	9.40
S041061 A4 1440dpi 100sht	9	10.57
S041063 A4 Transparencies 30sht	32	37.60
S041065 A3 Coated 360dpi 100sht	17	19.97
S041066 A3+ 360dpi 100sht	20	23.50
S041068 A3 Coated 720dpi 100sht	21	24.67
S041069 A3+ Photo 1440dpi 100sht	27	31.72
S041071 A4 Photo Glossy 1440dpi 15sht	20	23.50
S041073 A3 Photo Gloss 1440dpi 10sht	32	37.60
S041074 A3+ Photo Gloss 1440dpi 10sht	40	47.00
S041078 A2 360dpi 30sht	17	19.97
S041079 A2 Photo 1440dpi 30sht	22	25.85
S041123 A2 Photo Glossy Paper	28	32.90
S041125 A3 Photo Glossy Paper	16	18.80
S041126 A4 Photo Glossy Paper	8	9.40
S041133 A3+ Photo Glossy Paper	18	21.15

HEWLETT PACKARD	ex VAT	inc VAT
C1847A A4 Premium 200sht	12	14.10
C3831A A4 DJ690C Photographic	8	9.4
C3831A A4 Premium Glossy 10sht	9	10.57
C3832A A4 Prem Transparency 20sht	18	21.15
C3835A A4 Prem Transparency 50sht	30	35.25
C3837A A4 Premium Glossy 50sht	33	38.77

LEXMARK

1000 COLOR JETPRINTER

The Lexmark 1000 Color Jetprinter provides outstanding, vivid colours with maximum flexibility

- Up to 600 x 600 dpi
- Up to 3ppm mono, 1ppm colour
- 30 sheet feeder
- Banner printing
- Plug and Play
- Compatible with Windows 95, Windows 3.x

£89 (£104.57 inc VAT)

5000 COLOR JETPRINTER

Designed for home use where high quality output and performance are required from a variety of operating systems.

- New EX2 technology with laser crafted print cartridges which give 1200 x 600 dpi printing
- Up to 5 ppm mono, 2 ppm colour
- Upgradeable to 6-colour photographic printing
- Optimised for plain paper printing

£139 (£163.32 inc VAT)

5700 COLOR JETPRINTER

The Lexmark 5700 delivers the highest resolution ever available from a desktop inkjet printer - without compromising speed.

- New EX2 technology with laser crafted print cartridges which give 1200 x 1200 dpi printing
- Up to 8ppm mono, 4 ppm colour
- Upgradeable to 8-colour photographic printing
- Optimised for plain paper printing

£179 (£210.32 inc VAT)

Award Winning 7200 COLOR JETPRINTER

The Lexmark 7200 gives you 6-colour printing for enhanced photo-realistic colours, smoother flesh tones and less grain

- Up to 1200 x 1200 dpi
- Up to 1 ppm mono, 3 ppm colour
- Dual ink cartridges with super-sharp waterproof black ink
- Compatible with Windows 95, Windows 3.1x, Windows NT
- Comes with LivePix software

£195 (£227.12 inc VAT)

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Edinburgh 0131 556 4114

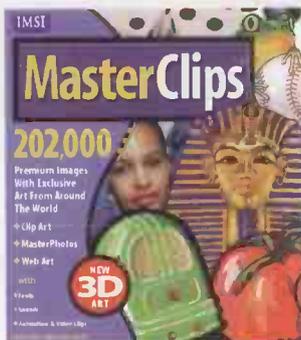
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- 500 Sounds
- 20 Video & Animation Clips
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- A suite of four powerful software products for home or office use, providing a complete solution for enhancing, editing and customising photos
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- Also includes: HotShots, Graphics File Converter, NetCard

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FloorPlan 3D Deluxe



- FloorPlan 3D Deluxe offers five complete products in one package to allow you to plan and design your dream home, office and garden
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- 3D Symbol Editor / Modeller™
- Quick and Easy Estimator®
- 1000+ Homestyles® Home Plans

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- Create brilliant multimedia presentations, page by page, with Mediator 4.0 and its amazing range of drag-and-drop editing features.
- Create presentations, multimedia slide shows, electronic photo albums & greetings cards, interactive web pages, electronic product catalogues, interactive training and more!

- No programming knowledge is required

£27 (£31.72)

WinDelete Deluxe



- Safe, accurate and effective install/uninstall facility
- Improves speed and security, preventing crashes, data loss and viruses, and managing memory and Internet downloads
- Clean-Up Wizard, Debris Finder, and Duplicate Finder identify and rid your system of outdated, unused and duplicated files

£25 (£29.37)

NetAccelerator Deluxe

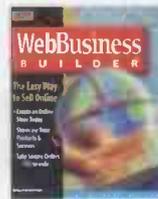


- Maximise efficiency of your modem, browser and Internet connection
- Improves web browsing performance regardless of modem type

- Includes 6 additional utilities: WebSleuth Lite, Internet Anti-Virus, WinPack Deluxe, JackHammer, Gravity Lite, & NetJumper

£23 (£27.02)

Web Business Builder



- Create an Interactive Web site to promote and sell your products or services online.
- Combines stunning graphics, logical links, a powerful database, secure transactions and a user-friendly interface to provide the complete Internet business solution that will save you thousands of pounds.

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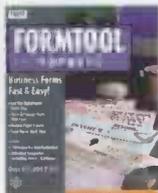
Easy Language 25



- Learn to communicate in twenty-five languages, covering an amazing 150 countries, all from one easy-to-use package.
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- The complete forms design solution for the small business or home office.
- Incredible value-for-money, providing 250 ready-to-use, pre-designed forms
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- An ingenious memory manager and system resource organiser for Windows
- Makes your PC more stable, helps prevent crashes and improves your system's performance when multi-tasking

£21 (£24.67)

Languages Included: Arabic, Czech, Chinese, Danish, Dutch, English, French, German, Greek, Hebrew, Hungarian, Indonesian, Italian, Japanese, Korean, Polish, Portuguese, Romanian, Russian, Spanish, Swedish, Tagalog, Thai, Turkish, Zulu.

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SOFTWARE

ACCOUNTING

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BestWare MYOB v7.0	125	146.87
Freeway PAYE Master	45	52.87
Intuit QuickBooks v5.0	167	198.57
Intuit QuickBooks & Payroll v5.0	255	299.62
Intuit Quicken 98	22	25.85
Intuit Quicken 98 Deluxe	38	44.65
MS Money 98	21	24.67
MS Money 98 Deluxe	33	38.77
Sage Accountant v4.0	339	398.32
Sage Accountant +	489	574.57
Sage Financial Controller	689	809.57
Sage Financial Controller Network	1439	1690.82
Sage Instant Accounting 98	69	81.07
Sage Instant Payroll v4.0	69	81.07
Sage Instant Accounting/Payroll	125	146.87
Sage Payroll	289	339.57
Sage Payroll Network	589	692.07

ANTIVIRUS

Cheyenne AntiVirus	40	47.00
Cheyenne Inoculan v4.0 WinNT	379	445.32
Cheyenne Inoculan v4.0 Netware	379	445.32
Dr Solomons AntiVirus Workstation	68	79.90
Dr Solomons AntiVirus Server	225	264.37
Dr Solomons AntiVirus MS Exchange 10u	239	280.82
Dr Solomons AntiVirus MS Exchange 20u	339	398.32
Dr Solomons AntiVirus MS Exchange 50u	559	656.82
McAfee VirusScan v3.0	23	27.02
McAfee VirusScan v3.0 QUG	29	34.07
McAfee VirusScan Deluxe v3.0 QUG	45	52.87
McAfee VirusScan Security Suite	45	52.87
McAfee WebScan v2.0	23	27.02
RMG PC-Cillin Deluxe	36	42.30
Symantec Norton Anti Virus Deluxe	42	49.35
Symantec Norton Anti Virus Server v4.0	335	393.62

BACKUP

Arcada Backup Exec v7.0 Server	259	304.32
Arcada Backup Exec v7.0 Enterprise	499	586.32
Chey. ArcServe Small Business Netware	269	316.07
Chey. ArcServe Single Server Netware	269	316.07
Chey. ArcServe Workgroup Netware	295	346.62
Chey. ArcServe Enterprise Netware	679	797.82
Chey. ArcServe Workstation WinNT	119	139.82
Chey. ArcServe Single Server WinNT	295	346.62
Chey. ArcServe Enterprise WinNT	519	609.82
RMG Cheyenne Backup	38	44.85
Seagate Backup Exec v2.0	35	41.12

CAD

Autodesk AutoCAD LT v2.0	279	327.82
Autodesk AutoCAD LT 97	425	499.37
Autodesk AutoCAD View v2.0	119	139.82
Autodesk Autosketch v3.0 DOS	60	70.50
Autodesk Autosketch v2.1 Win	45	52.87
Autodesk Autosketch v5.0 Win	75	88.12
IMSI TurboCAD 2D/3D v4.0	98	115.15
IMSI TurboCAD Pro 2D/3D v4.0	189	222.07
IMSI TurboCAD Designer	29	34.07
Shapeware IntelliCAD 98	215	252.62

COMMUNICATIONS

Artisoft CoSession Remote	41	48.17
Artisoft Insync ModemShare 1port	61	71.67
Artisoft I-Share	115	135.12
Artisoft Xtra Mail	129	151.57
Cheyenne Bitware + v4.0	80	94.00
Cheyenne FAXserve v5.0 5user Netware	229	269.07
Cheyenne FAXserve v5.0 10user Netware	429	504.07
Cheyenne FAXserve 5user WinNT	149	175.07
Cheyenne FAXserve 10user WinNT	265	311.37
DCA Crosstalk Intercom Suite	87	102.22
Delrina WinFax Pro v4.0	54	63.45
Delrina WinFax Pro v4.1 Net Starter 2u	195	229.12
Delrina WinFax Pro v4.1 Net Server	87	102.22
Delrina WinFax Pro Net 5u	279	327.82
Delrina WinFax Pro v8.0	67	78.72
Delrina WinFax Pro v8.0 5u FD	279	327.82
Delrina WinFax Pro v8.0 10u FD	569	668.57
Delrina WinFax Pro v8.0 25u FD	1299	1526.32
Delrina WinFax Pro v8.0 5u CD	299	351.32
Delrina WinFax Pro v8.0 10u CD	569	668.57
Delrina WinFax Pro v8.0 25u CD	1299	1526.32
Equisys ZetaFax Starter Kit v5.0 1u	79	92.82
Equisys ZetaFax Starter Kit v5.0 5u	309	363.07
Microcom Carbon Copy 32	119	139.82
Persoft Smarterm Essentials	89	104.57
Persoft Smarterm 95	125	146.87
Quarterdeck Procomm v3.0	75	88.12
STAC Reach Out Modem/Net H+V v7.0	78	91.65
Symantec PC Anywhere H+R v8.0	92	108.10
Travelling Software Laplink v7.5	89	104.57

DATABASES

Borland Paradox v7.0 Win	79	92.82
Borland Paradox v7.0 Win95	78	91.65
Borland Visual dbase Professional v7.0	249	292.57
Borland Visual dbase Client/Server v7.0	995	1169.12
Claris Filemaker Pro v4.0	165	193.87
Dataease v5.0 Win	269	316.07
Dataease v5.0 DOS	429	504.07

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- Text messaging (most phones)

	Nokia 5.1*	nk702*	mr501	mr601	mr701	Communicator
Weight	235g	137g	125g	211g	110g	397g
Talktime**	80 minutes	180 minutes	110 minutes	180 minutes	202 minutes	180 minutes
Standby**	22 hours	10 days	45 hours	80 hours	85 hours	35 hours
Display	3 lines	Dynamic	Dynamic	Dynamic	Dynamic	Dynamic
Size	149 x 56 x 27	130 x 47 x 28	96 x 52 x 27	130 x 59 x 23	96 x 52 x 27	173 x 64 x 38
Vibrating Battery	option	no	no	standard	option	no
Dual Band	no	no	no	yes	no	no
Price ex VAT††	£FREE	£CALL	£CALL	£CALL	£CALL	£CALL

** optimum conditions

†† subject to signing a 12 month contract

FREE Carriage on Orange phones from Dabs Direct

* FREE In car charger and leather case when connecting to Talk 60

† FREE Nokia 5.1 on request, subject to signing a 12 month contract

talkshare

- Free connection for additional phones - saving £30 each phone
- Each additional handset is charged at £12.50 per month
- All phones share the inclusive minutes

Tariffs

talk plan name	monthly charge	standard call charges		Handsets allowed	standard call charges (per minute after standard talk time)		
		time included (per month)	time included		7am-7pm Mon-Fri	off peak	orange to orange
talk 15	£15.00	15 minutes	1 (no sharing)	25p	12.5p	12.5p	
talk 60	£25.00	60 minutes	1 - 2	20p	10p	10p	
talk 200	£50.00	200 minutes	1 - 3	18p	9p	9p	
talk 360	£75.00	360 minutes	1 - 4	16p	8p	8p	
talk 540	£100.00	540 minutes	1 - 5	14p	7p	7p	
talk 1000	£180.00	1000 minutes	1 - 10	14p	7p	7p	
talk 2500	£425.00	2500 minutes	1 - 25	12p	6p	6p	
talk 5000	£800.00	5000 minutes	1 - 50	12p	6p	6p	

One-off connection charge: £30.00

Line Two chat 60	Extra £5.00	60 off-peak minutes		25p	10p	10p
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One-off connection charge for line two: £10.00



hutchinson telecom

All prices exclude VAT

SOFTWARE

DATABASES continued

	ex VAT	inc VAT
Lotus Approach v3.0	69	81.07
Lotus Approach 97	39	45.82
MS Access 97	225	264.37
MS Visual FoxPro Pro v5.0	319	374.82

DTP

Adobe FrameMaker v5.5	419	492.32
Adobe Pagemaker v6.5	369	433.57
Adobe Pagemaker OnLine (WSL)	350	411.25
Adobe Publishing Collection	Call	Call
Corel Ventura v7.0	365	428.87
Serif PagePlus v5.0	39	45.82
MS Publisher 98	67	78.72
Quark Xpress v4.0	695	816.62

GRAPHICS

Adobe Acrobat v3.0	129	151.57
Adobe After Effects v3.1	409	480.57
Adobe After Effects Pro v3.0	815	957.62
Adobe Dimensions v3.0	85	99.87
Adobe Graphics Collection	475	558.12
Adobe Illustrator v7.0	235	276.12
Adobe Persuasion v3.0	285	311.37
Adobe PhotoDeluxe v2.0	39	45.82
Adobe Photoshop v5.0	385	452.37
Adobe Photoshop v5.0 5 Pack	1349	1585.07
Adobe Premiere v4.2	289	339.57
Adobe Streamline v4.0	85	99.87
Adobe Type On Call v4.1	38	44.65
Adobe Type Manager Deluxe v4.0	39	45.82
Astound v4.0	145	170.37
Asymetrix MediaBlitz v3.0	55	64.62
Asymetrix Toolbook II Publisher v5.0	535	628.62
Asymetrix Toolbook II Instructor v5.0	1120	1316.00
Corel Draw v8.0	259	304.32
Corel Mega Gallery	42	49.35
Corel PhotoPaint v6.0	120	141.00
Corel PrintHouse v1.1	16	18.80
Corel Print & Photohouse	29	34.07
Corel Xara!	113	132.72
Deneba Canvas v5.0	295	346.62
Fractal Add Depth	44	51.70
Fractal Dabbler v2.0	29	34.07
Fractal Detailer	229	269.07
Fractal Expression	119	139.82
Fractal Jag	44	51.70
Fractal Painter Classic	75	88.12
Fractal Painter v5.0	215	252.62
Fractal Poser v2.0	137	160.97
Fractal RayDream Designer v4.0	115	135.12
Fractal RayDream Dream Studio v5.0	215	252.62
IMSI Floorplan Essentials	19	22.32
IMSI Floorplan 3D Deluxe	42	49.35
IMSI Form Tool 97	68	79.90
IMSI Graphic Converter Gold	29	34.07
IMSI Graphic Converter 97	39	45.82
IMSI HiJack Pro v4.0	39	45.82
IMSI MasterClips 33000	15	17.62
IMSI MasterClips 45000	17	19.97
IMSI MasterClips 75000	25	29.37
IMSI MasterClips 101000	39	45.82
IMSI MasterClips 150000	35	41.12
IMSI MasterClips 202000	42	49.35
IMSI MasterPhotos 25000	29	34.07
Lotus Freelance 97	39	45.82
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Macromedia Director MM Studio v6.0	799	938.82
Macromedia Extreme 3D	369	433.57
Macromedia Freehand v8.0	279	327.82
MM Freehand Graphics Studio v7.0	399	468.82
Macromedia SmartSketch	55	64.62
Macromedia xRes v3.0	399	468.82
MetaTools Bryce 3D	135	158.62
MetaTools Goo	35	41.12
MetaTools Kai's Power Tools v3.0	95	111.62
MetaTools Soap	35	41.12
Micrographx Draw v6.0	39	45.82
Micrographx Flowcharter v7.0	179	210.32
Micrographx Graphics Suite v2.0	199	233.82
MS Powerpoint v4.0	224	263.20
MS Powerpoint 97	225	264.37
Newssoft Multimedia Suite	39	45.82
Newssoft PageManager Suite	39	45.82
Newssoft Print Suite	19	22.32
Scala MM100	39	45.82
Scala MM200	125	146.87
Scala Publisher PB100	169	198.57
Visio v5.0	95	111.62
Visio Professional v5.0	215	252.62
Visio Technical v5.0	215	252.62

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Corel Office Professional v3.0	169	198.57
Corel WordPerfect Suite v8.0	172	202.10
Claris Works Office	72	84.60
Lotus SmartSuite 97	294	345.45
MS Home Essential 98	75	88.12
MS Office 97	318	373.65
MS Office Pro 97	418	491.15

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Online updates for currency rates	✓	✓
Prompts you when key financial decisions are due	✓	✓
Manages small business finance including VAT	✓	✓
Keeps Self Assessment records for you automatically	✓	✓
Handles multiple currencies	✓	✓
Tracks bank accounts and credit cards	✓	✓
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MS Outlook 97	89 104.57
MS Works v4.5	59 69.32
SPC Active Office	28 32.90

INTERNET PUBLISHING	
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Claris HomePage v3.0	65 76.37
Corel WebDesigner	63 74.02
Corel WebMaster Suite	119 139.82
Corel WebGraphics Suite	125 146.87
MM Backstage Desktop Studio v2.0	249 292.57
MM Backstage Enterprise Studio v2.0	649 762.57
Macromedia DreamWeaver	229 269.07
Macromedia Flash v3.0	199 233.82
MS FrontPage 98	89 104.57
NetObjects Fusion v2.0	189 222.07
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Specular 3D Web Workshop	285 334.87
Symantec Internet Fast Find	33 38.77
Travelling Software WebEx	26 30.55

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Caere OmniForm v2.0	89 104.57
Caere Omnipage v6.0	301 353.67
Caere Omnipage v8.0	305 358.37
Caere PageKeeper v2.0	55 64.62
Caere Wordscan Plus v4.0	285 334.87
Visioneer PaperPort Deluxe	59 69.32
Xerox Paxis Pro 97	69 81.07
XXerox TextBridge Pro 98	69 81.07

OPERATING SYSTEMS	
IBM OS/2 Warp v3.0	49 57.57
IBM OS/2 Warp v3.0 & Win	85 99.87
IBM OS/2 v4.0	125 146.87
MS BackOffice Server v4.0	1515 1780.12
MS BackOffice Small Business Server 5u	879 1032.82
MS BackOffice Small Business Server 25u/459	1714.32
MS Plus! Pack	26 30.55
MS Windows 95 3-in-1 Value Pack	65 76.37
MS Windows 95 Full	111 130.42
MS Windows 95 Upgrade	59 69.32
MS Windows NT v4.0 Workstation	212 249.10
MS Windows NT v4.0 Server & 5 Client	542 636.85
MS Windows NT v4.0 Server & 10 Client	759 891.82
Novell Netware 3.2 5 user	459 539.32
Novell Netware 3.2 10 user	1039 1220.82
Novell Netware 3.2 25 user	1529 1796.57
Novell Netware 3.2 50 user	2069 2431.07
Novell IntranetWare 5 user	459 539.32
Novell IntranetWare 10 user	869 1021.07
Novell IntranetWare 25 user	1529 1796.57
Novell IntranetWare 50 user	2075 2438.12

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Borland C++ Builder Professional v3.0	325 381.87
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Borland C++, Learn to program with...	35 41.12
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Borland IntraBuilder Pro	266 312.55
Borland JBuilder v2.0	Call Call
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Borland Turbo C++ v3.0 DDS	53 62.27
Borland Turbo C++ v4.5 Win	54 63.45
Borland Turbo Pascal v1.5	78 91.65
MS Visual Basic v5.0	61 71.67
MS Visual Basic Pro v5.0	319 374.82
MS Visual Basic Enterprise v5.0	795 934.12
MS Visual C++ v5.0	61 71.67
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MS Visual C++ Enterprise v5.0	795 934.12
MS Visual Interdev 97	325 381.87
MS Visual J++ v1.1	61 71.67
MS Visual Studio Pro	658 773.15
MS Visual Studio Enterprise	959 1126.82
Symantec Visual Java Cafe Web v2.0	55 64.62
Symantec Visual Java Cafe Pro v2.0	165 193.87
Symantec Visual Java Cafe Database v2.0	285 334.87

PROJECT MANAGEMENT	
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ROUTING	
AA A to B Britain 1998	10 11.75
AA Bed and Breakfast Guide	17 19.97
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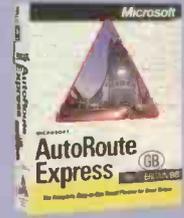
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Microsoft will refund 50% of the additional item you chose (NOT the Office product) on receipt of both registration cards and your sales receipt.



FrontPage 98

This Web site creation and management software provides a quick, effective way to create and manage professional-quality Internet or Intranet sites - without programming! With innovative imaging tools and intelligent design assistance, Microsoft FrontPage 98 is ideal for new users and professional Web developers alike.

£87 (£102.22 inc VAT)



Encarta 98 Reference Suite

The World's most comprehensive PC reference library including the following titles...

MS Encarta 98 Encyclopedia Deluxe

The British Edition now raises the standards of multimedia encyclopedias for the family. It is the ultimate learning resource for anyone who wants to keep on learning through life.

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 Microsoft Bookshelf 98 is the essential resource for people who use the PC to communicate, write and present. With ten completely updated reference works.

MS Encarta 98 World Atlas

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Word 97	225 (264.37)	89 (104.57)	209 (245.57)	119 (139.82)
Excel 97	225 (264.37)	89 (104.57)	209 (245.57)	119 (139.82)
Access 97	225 (264.37)	89 (104.57)	209 (245.57)	119 (139.82)
PowerPoint 97	225 (264.37)	89 (104.57)	209 (245.57)	119 (139.82)
Project 98	298 (350.15)	115 (135.12)	275 (323.12)	159 (186.82)
Office 97	318 (373.65)	148 (173.90)	309 (363.07)	175 (205.62)
Office Pro 97	418 (491.15)	205 (240.87)	399 (468.82)	199 (233.82)
Office Developer 97	515 (605.12)	195 (229.12)	-	-
Office 97 Small Business	325 (381.87)	148 (173.90)	315 (370.12)	-
Home Essentials 98	75 (88.12)	-	-	-
Visual Basic 5	61 (71.67)	35 (41.12)	35 (41.12)	35 (41.12)
Visual Basic Pro 5	319 (374.82)	165 (193.87)	295 (346.62)	169 (198.57)
Visual Basic Ent 5	795 (934.12)	455 (534.62)	725 (851.87)	415 (487.62)
Visual C++ 5	61 (71.67)	35 (41.12)	35 (41.12)	35 (41.12)
Visual C++ Pro 5	319 (374.82)	165 (193.87)	295 (346.62)	169 (198.57)
Visual C++ Ent 5	795 (934.12)	455 (534.62)	725 (851.87)	415 (487.62)
Visual InterDev 97	325 (381.87)	179 (210.32)	295 (346.62)	169 (198.57)
Visual J++ 1.1	61 (71.67)	35 (41.12)	-	35 (41.12)
Visual Studio Pro 97	658 (773.15)	335 (393.62)	609 (715.57)	345 (405.37)
Visual Studio Ent 97	959 (1126.82)	675 (793.12)	889 (1044.57)	515 (605.12)
Visual Foxpro Pro v5.0	319 (374.82)	195 (229.12)	295 (346.62)	175 (205.62)

STUDENT TITLES

Windows	Windows 95 Upgrade	£44	(£51.70)
	Windows NT Workstation v4.0		
Office	Office Professional 97	£88	(£103.40)
Developer Tools	Visual Basic Pro v5.0	£88	(£103.40)
	Visual C++ Pro v3.0		
Works	Works v4.0	£30	(£35.25)
Publisher	Publisher 97	£30	(£35.25)

HOME TITLES

Encarta 98	£31	(£36.42)
Encarta 98 Deluxe	£49	(£57.57)
Encarta 98 World Atlas	£31	(£36.42)
Money 98	£21	(£24.67)
Money 98 Deluxe	£33	(£38.77)
AutoRoute Express GB 98	£39	(£45.82)
AutoRoute Express Europe 98	£39	(£45.82)
Greetings Workshop v2	£26	(£30.55)
Picture It! v2	£33	(£38.77)
Flight Simulator 98	£32	(£37.60)

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Microsoft **Windows 98** **Microsoft®**



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Windows 98

Windows 98 builds on the breakthrough features of Windows 95 by improving performance, reliability and ease of use, as well as unlocking an exciting new range of PC hardware and entertainment capabilities.

Increased Power

With Windows 98 applications load up to 36% quicker so there's less time waiting for your PC to do something. Windows 98 gives users an extra 26% hard disk space.

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With Windows 98 the system will automatically carry out system checks and will heal potential problems without the you having to intervene. One common browser allows you to seamlessly view files with one common set of instructions, whether it's on the web or your hard drive. Improved internet navigation means that you can get to your favourite web sites quicker than ever before.

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Windows 98 supports a whole host of new exciting hardware devices, including DVD - Digital Versatile Disk. And with USB hardware support customers can simply plug in new USB hardware and the system will recognise it - it's as easy as plugging in a lamp. Multi-monitor support allows users to do two things at once.

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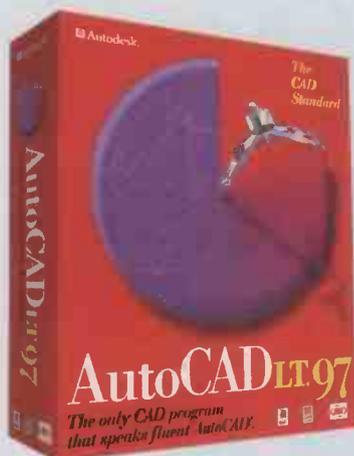


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Introducing AutoCAD LT® 97. The only CAD program that speaks 100 percent fluent AutoCAD®. AutoCAD LT® 97 is loaded with powerful 2D drawing and editing tools plus several new features that increase your productivity. There's a Office-like Object Property toolbar that lets you determine the layer, color, or linetype of an object and change it with a single mouse click. A drag & drop Content Explorer™ that makes it easy to manage and re-use symbols. Plus precision drawing tools like AutoSnap™ and PolarSnap™ that speed up your drawing process. With AutoCAD LT® 97, you can even share drawings on the Internet..

- AutoCAD LT for Windows 3.1** **only £279** (£327.82 inc VAT)
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AutoCAD LT Features:

- Powerful 2D CAD functionality
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- Easy to learn, so you'll be up to speed in no time
- View and compare AutoCAD and AutoCAD LT .DWG and .DXF files
- View popular images and vector file formats, including .GIF, HPGL and many more
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- Access popular database, spreadsheet, word-processor and presentation graphics files
- Build an information system by adding text notes to files and creating links between related documents
- Safeguard original documents from unauthorised modifications



AutoSketch 5

...precision drawing made easy

AutoSketch have produced a brand new version of its award winning drawing software AutoSketch. It has been produced to provide the easiest to use product, that works in a familiar way and yet can quickly produce accurate drawings, layouts and charts. Template within the software immediately start the drawing process through a series of 'wizards' which avoids the 'blank page syndrome' often faced by the casual or occasional user. The product has been completely configured to European standards and includes thousands of standard recognisable symbols for furniture, components and fixings. It is affordably priced and a 'must' for every desktop.

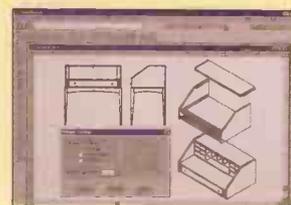
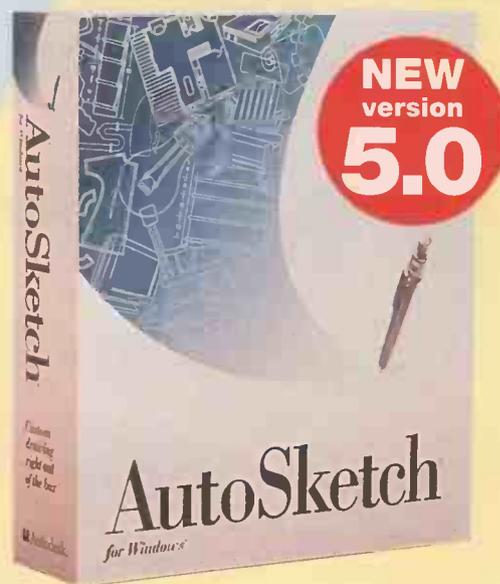
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AutoSketch 5 Features:

- Brand new design for 98
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- 'Wizard' technology produces a step by step guide to the drawing you need
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	ex VAT	inc VAT
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PageMaker v6.5 VU	93	109.27
Photoshop v5.0 VU	149	175.07
Premiere LE-Full	93	109.27
AUTODESK		
AutoCAD LT 97 VU	179	210.32
BORLAND		
C++ Builder Professional v3.0 VU	229	269.07
C++ Builder Client/Server v3.0 VU	979	1150.32
Delphi Professional v3.0 VU	229	269.07
Delphi Client/Server v3.0 VU	979	1150.32
Visual dBase 7 Pro VU	149	175.07
Visual dBase 7 Client/Server VU	795	934.12
COREL		
Draw v8.0	139	163.32
WordPerfect Suite v8.0	88	103.40
INTUIT		
QuickBooks v5.0	115	135.12
QuickBooks & Payroll v5.0	175	205.62
LOTUS		
SmartSuite 97 VU/CU	109	128.07
MICROSOFT		
Word/Excel/Access/PowerPoint 97 CU/VU	88	103.40
FrontPage 97 VU	69	81.07
Office 97 CU/VU	148	173.80
Office Pro 97 CU/VU	205	240.87
Office Pro 97 with Intellimouse	224	263.20
Office Small Business CU/VU	148	173.90
Visual Basic v5.0 VU	36	42.30
Visual Basic Pro v5.0 VU	166	195.05
Visual Basic Enterprise v5.0 VU	469	551.07
Visual C++ Pro v5.0 VU	213	250.27
Visual C++ Enterprise v5.0 VU	469	551.07
Visual FoxPro Pro v3.0 VU	189	222.07
Visual FoxPro Pro v5.0 VU	189	222.07
Visual Studio Pro 97 CU/VU	335	393.62
Visual Studio Enterprise 97 CU/VU	677	795.47
Works v4.5 VU	35	41.12
NOVELL		
Netware Any 5u - IntranetWare 5 user	215	252.62
Netware Any 10u - IntranetWare 10 user	375	440.62
Netware Any 25u - IntranetWare 25 user	655	769.62
Netware Any 50u - IntranetWare 50 user	875	1028.12

VU = Version upgrade, CU = Competitive upgrade

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Delphi 3 incorporates Borland's latest technology, easiest to use, most productive tool for Windows 95/NT. Delphi has always been the RAD tool and to improve productivity still further, Delphi's complete object-oriented component architecture allows you to create your own DLLs, stand alone EXEs and ActiveXs.

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Delphi 3 Professional Upgrade £229 (£269.07)

Delphi 3 Client/Server Suite £1299 (£1526.32)

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Rapidly deliver high-performance 32-bit database applications using Borland's proven visual development tools, the Visual dBASE7 Compiler, a reusable component model, an enhanced object-oriented language and powerful new data processing and analysis tools.

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The fastest way to deliver business applications.

Visual dBASE 7

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For Windows 95 and Windows NT 4.0

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Comprehensive 32-bit graphics suite offers sophisticated features and tools required by professional graphic designers

- Includes tools for illustration, page layout, painting, photo editing, and 3D modeling and rendering.
- Utility support for scanning, tracing, OCR, font management, screen capture, OLE scripting and more.
- 40,000 clipart images and symbols, 1,000 Type 1 and TrueType fonts, 1,000 high-resolution photos, plus Web backgrounds, animated GIFs, templates and more.

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Prices from £519 plus VAT

see pages 4 - 7 for full details

CUSTOM BUILT PC DIVISION

see page 6 for details

DR. SOLOMON'S

Anti-Virus Toolkit...

...keeps you working without the worry of viruses

Dr Solomon's provides advanced techniques for the detection and removal of viruses and is the first choice for any PC user. Dr Solomon's Anti-Virus Toolkit finds new and unknown viruses, especially macro viruses, without costly false alarms.

The Toolkit will stop viruses however they try to infect, including: Internet, e-mail, CD and floppy disk. There is no hiding place for viruses once the Toolkit has been installed.

- Dr Solomon's scanning consistently wins industry accolades for being the best year after year after year - don't just take our word for it - <http://www.drsolomon.com/products/avtk/reviews>
- Scans inside more compressed file formats than any other product (ZIP, LZH, ARJ, PKLite, and many, many more)
- Includes monthly/quarterly updates. for term of licence, to keep you ahead of new viruses
- Offers FREE UK based technical support - 24 hours a day, 365 days a year, for any virus emergency. FREE product support is also provided during business hours.

Dr Solomon's Anti-Virus Software is available in a number of packages and formats.

CD-ROM Workstation Pack £68

Windows & DOS, Windows 95, Windows NT and OS/2 (79.90 inc VAT)

CD-ROM Server Pack £229

NetWare and Windows NT (including Management Edition) (269.07 inc VAT)

CD-ROM Licence Packs from £165

Windows & DOS, Windows 95, Windows NT and OS/2 (193.87 inc VAT)
available for 5, 10, 20, 25 or 50 users

NEW

Adobe Photoshop 5.0

The world-standard photo design and production tool gets even better.

Adobe Photoshop 5.0 delivers the four most requested features in one elegant upgrade: multiple levels of undo and redo, editable text with character-level formatting, flexible and precise, accurate color management, controls, and built-in support for spot-color channels.

Adobe Photoshop 5.0 boasts a compelling combination of image editing benefits for old and new users alike. Designers gain the freedom to experiment more easily, powerful color management features, broad workflow and automation improvements, and precision in selecting and measuring elements. The program's key features enhance the image design and production process across the board with powerful new tools and enhancements to existing ones.

Exciting new features include:

- "Multiple undos" for tracking image editing
- Editable text for creating high-quality typography
- Enhanced color management, including ICC support
- Spot-color channels for incorporating specialty colors into print jobs
- Broad range of new workflow and automation tools for greater productivity
- New tools for increased precision and control over measurement and selection

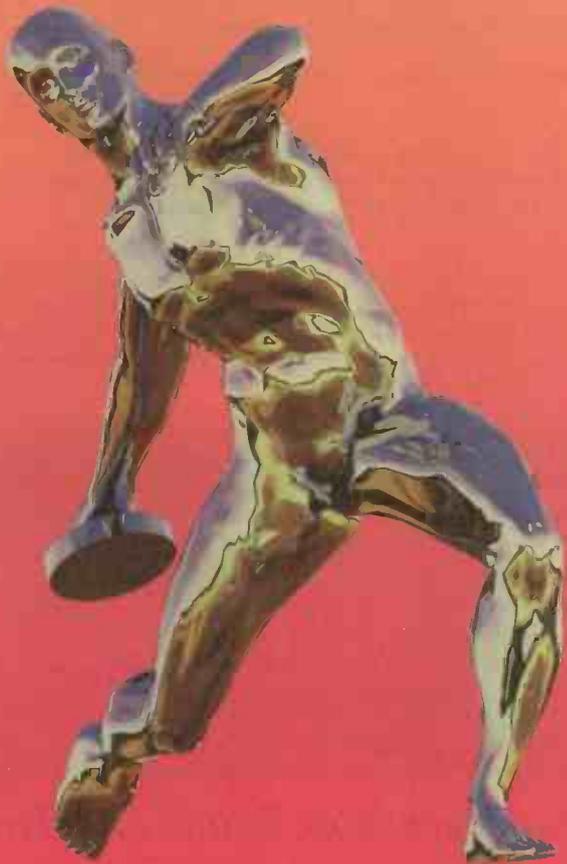
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NEW THIS MONTH :

New section for Notebooks !

Expanded Software section, including an exclusive introductory offer for Windows 98 !

PRODUCT FINDER

INFINITE PC Systems	30-31
Boxes : Drive	16
Cables : Data	16
Cables : Network	20
Cables : Printer	24
Cases : PC systems	8
CD ROM Drives	14
CD ROM Towers	15
CD Writers & Recorders	15
Controller Cards : IDE	12
Controller Cards : SCSI	13
DAT Drives	10
Digital Cameras & Printers	23
DLT Drives	10
DVD Drives	14
Film Scanners	23
Graphics Cards	19
Hard Drives : EIDE, Ultra-IDE	12
Hard Drives : SCSI, Ultra-SCSI	13
Hubs (Network)	20-21
Keyboards	8
Media : CD, Tape, Removable, Floppy	17
Memory : Kingston	7
Memory : Matched	4 - 6
Memory : SIMMS & DIMMS	3
Mice	8
Modems (inc. ISDN)	22
Monitors	26-27
Motherboards	9
Multimedia Kits	18
Networking Cards & Cables	20-21
Notebook PCs	32
Optical Writers & PD Drives	14
Parallel Port CD ROM Drives	17
Printers (and Support Packs)	24-25
Printer Toner & Cartridges	25
Print Servers	21
Processors	8
Removable Drives	11
Scanners (and Support Packs)	25
Software	28-29
Sound Cards	18
Speakers	18
Switches (Network)	20-21
Tape Drives	10
TV Cards	20
UPS's	21
Video Cards	19

Prices effective from 8th day of month of publication. Whilst every effort is made to ensure accuracy, prices & specifications can be subject to change without notice. Please confirm details when ordering. E&OE : Errors & Omissions excepted.

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SMC : THE UK's TOTAL QUALITY SUPPLIER



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Take a look at the product listings on these pages and we're sure you'll agree that with our established quality of operation coming free of charge, you won't find better value for your money.

HOW TO ORDER



BY TELEPHONE :

Call our Sales Hotlines on 01753 - 550333. We can give you details of product availability, process your order and start the shipment process while you wait.

BY FAX :

Fax us on 01753 - 524443 with your requirements and payment details and we'll process the order immediately. Please include a phone number !

BY POST :

Send us your requirements and payment for immediate attention. Uncovered personal cheques may take 10 working days to clear. Please include a phone number !

IN PERSON :

Personal callers are welcome, but you are advised to telephone and reserve stock beforehand, when you will be given a sales reference and given priority treatment when you arrive.

PLEASE NOTE :

SMC Computers has very strict payment security procedures which exist for everyone's benefit. We may call you to confirm details as part of this process.



Welcome to the June edition of the SMC Catalogue

At SMC, we started life seven years ago as a specialist hardware company, with most of our business coming from the sales of Hard Drives and Tape Backup systems. In those days, there were interfaces called MFM, RLL and ESDI as well as IDE and SCSI, and installation was a baffling process involving BIOS tables, CMOS setups and a host of incompatibility problems. Quite often you couldn't obtain the full capacity of the drive ! In this environment, the highest level of technical expertise was needed to survive, and although since that time products have become much more user-friendly, as we have expanded our range we have retained our ability to provide a total service for everything we sell.

We do this by controlling the introduction of new products. New manufacturers are added only after serious evaluation of sales potential, product quality and availability, and support in terms of information and backup. We reject many more approaches than we accept, and we will "can" a manufacturer (or any supplier) if they do not live up to our standards.

Nevertheless, growth happens, and this month sees two further additions to our product range.

Software

We have carried a small range of top-selling software products for some time now, but after repeated requests from our customers, we have increased that range to include virtually every major title on the market. We'll be expanding the range further as the months go on.

Notebooks

We often operate a pilot campaign to test new products before we launch them fully, and this has been the case with notebooks which we have been selling very successfully for some time into our Corporate customer base. This month you will see both Toshiba and Compaq listed, along with the brand new range from ASUS. We have not yet completed our evaluation process with other manufacturers, but we will include them when the time is right.

DON'T FORGET :

At SMC, we are a privately-owned company, 100% British (English, actually) and completely independent.

We have one agenda, which is the one we started with in 1991, and that is to be a reliable supplier to the domestic market, a company that is a pleasure to deal with and to work for.

We keep it simple : that's why we're the best at what we do.

SMC Guarantees You Peace Of Mind

We appreciate that the products we sell are of a technical and sometimes confusing nature, and occasionally problems may arise, so for your peace of mind SMC offers you a unique **Four-Stage** guarantee :

- Stage 1 : Our 7 day option -** When you receive your purchase, if you are not completely satisfied, we will gladly exchange it or refund the purchase price less carriage charges.
- Stage 2 : Our 30 day option -** If any product that you order fails within 30 days, we will gladly exchange it or refund the purchase price less carriage charges.
- Stage 3 : Warranties -** Just arrange to return the product to us and we will handle it from there.
- Stage 4 : Quick response -** If you have need to use any of the above options, or if you have any problems that need resolving, please contact our Customer Service team on **01753 550999** for an immediate, no-fuss response.

So with this in mind, you can order from SMC with total confidence in the knowledge that every product will perform to your expectations -

OR WE WILL TAKE IT BACK

(Does not include: Notebooks, Printers and Software, or made-to-order items such as Systems and cables, and goods must be returned intact and complete in their original packaging)
(Full SMC Terms & Conditions are available on request)



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SDRAM DIMMs - 168 Pin

ex VAT inc VAT



168pin DIMMS sold by SMC use synchronous SDRAM, operating at 3.3volts and running at 66MHz.

They are non-parity, un-buffered and also feature an SPD chip allowing them to be compatible with all machines requiring standard SDRAM.

Compatible motherboards & chipsets include:- Intel VX/TX/LX/BX.

66MHz		ex VAT	inc VAT
19-95-0821	8MB (1 x 64)	£29	£34.08
19-95-1622	16MB (2 x 64)	£19	£22.33
19-95-3224	32MB (4 x 64)	£29	£34.08
19-95-6468	64MB (8 x 64)	£72	£84.60
19-95-1280	128MB (16 x 64)	£145	£170.38
19-95-2560	256MB (32 x 64)	£675	£793.13
100MHz		ex VAT	inc VAT
100MHz SDRAM modules require an Intel BX chipset.			
19-95-3201	32MB (4 x 64)	£57	£66.98
19-95-6401	64MB (8 x 64)	£108	£126.90
19-95-1281	128MB (16 x 64)	£209	£245.58

SIMMs - 72 Pin

ex VAT inc VAT



EDO

Non-Parity EDO Memory offers faster performance, but requires motherboard support: please check your motherboard manual to confirm that it supports EDO memory and any size limitations. 486-based computers that support EDO can take single modules, but Pentium computers require EDO to be installed in pairs.

EDO SIMMS are non-parity (32-bit) and run at 60ns.

EDO SIMMS are non-parity (32-bit) and run at 60ns.		ex VAT	inc VAT
13-97-0400	4Mb (1 x 32)	£7	£8.23
13-97-0801	8Mb (2 x 32)	£9	£10.58
13-97-1601	16Mb (4 x 32)	£16	£18.80
13-97-3201	32Mb (8 x 32)	£29	£34.08
13-97-6401	64Mb (16 x 32)	£98	£115.15
13-97-1281	128Mb (32 x 32)	£285	£334.88

Fast Page Mode (FPM)

FPM SIMMS can be installed singly in 486-based PCs that support them, but Pentium-based PCs require SIMMS to be installed in pairs. With 70ns modules in increasingly short supply, we strongly advise the purchase of 60ns.

Always check your manual for compatibility and motherboard support.

Non-Parity (32-bit)

13-97-0406	4Mb (1 x 32) 60ns	£7	£8.23
13-97-0407	4Mb (1 x 32) 70ns	£9	£10.58
13-97-0806	8Mb (2 x 32) 60ns	£10	£11.75
13-97-0807	8Mb (2 x 32) 70ns	£14	£16.45
13-97-1606	16Mb (4 x 32) 60ns	£17	£19.98
13-97-1607	16Mb (4 x 32) 70ns	£20	£23.50
13-97-3206	32Mb (8 x 32) 60ns	£33	£38.78
13-97-3207	32Mb (8 x 32) 70ns	£39	£45.83

Full Parity (36-bit)

13-97-0117	1Mb (256k x 36) 70ns	£20	£23.50
13-97-0217	2Mb (512k x 36) 70ns	£38	£44.65
13-97-0416	4Mb (1 x 36) 60ns	£12	£14.10
13-97-0417	4Mb (1 x 36) 70ns	£14	£16.45
13-97-0816	8Mb (2 x 36) 60ns	£19	£22.33
13-97-0817	8Mb (2 x 36) 70ns	£20	£23.50
13-97-1616	16Mb (4 x 36) 60ns	£25	£29.38
13-97-1617	16Mb (4 x 36) 70ns	£24	£28.20
13-97-3216	32Mb (8 x 36) 60ns	£39	£45.83
13-97-3217	32Mb (8 x 36) 70ns	£45	£52.88

SIMMS - 30 Pin

ex VAT inc VAT



All 30pin SIMMS from SMC have full parity checking.

3-chip

10-97-1963	1Mb (1 x 9) 60ns	£6	£7.05
10-97-1973	1Mb (1 x 9) 70ns	£7	£8.23
10-97-1983	1Mb (1 x 9) 80ns	£11	£12.93
10-97-4963	4Mb (4 x 9) 60ns	£9	£10.58
10-97-4973	4Mb (4 x 9) 70ns	£9	£10.58

9-chip

10-97-1969	1Mb (1 x 9) 60ns	£9	£10.58
10-97-1979	1Mb (1 x 9) 70ns	£10	£11.75
10-97-1989	1Mb (1 x 9) 80ns	£13	£15.28
10-97-4969	4Mb (4 x 9) 60ns	£15	£17.63
10-97-4979	4Mb (4 x 9) 70ns	£15	£17.63
10-97-7976	16Mb (16 x 9) 60ns	£35	£41.13

30pin SIMMS must be installed as follows :-
286 & 386sx-based PCs - in matching pairs.
386DX & 486-based PCs - in matching sets of four.
Please check your motherboard manual to confirm that your PC supports the required module size, speed and configuration.

SO DIMMs - 72 Pin

ex VAT inc VAT



3.3 volt

19-93-0413	4Mb (1 x 4) 70ns	£25	£29.38
19-93-0433	4Mb (1 x 16) 70ns	£35	£41.13
19-93-0833	8Mb (1 x 16) 70ns	£45	£52.88
19-93-0823	8Mb (2 x 8) 70ns	£45	£52.88
19-93-1613	16Mb (4 x 4) 70ns	£45	£52.88

5 volt

19-93-0415	4Mb (1 x 4) 70ns	£29	£34.08
19-93-0435	4Mb (1 x 16) 70ns	£35	£41.13
19-93-0835	8Mb (1 x 16) 70ns	£29	£34.08
19-93-0825	8Mb (2 x 8) 70ns	£45	£52.88
19-93-1615	16Mb (4 x 4) 70ns	£38	£44.65

Chip size, voltage, buffering, clock speeds and fitting all differ. Unless you know exactly which SO DIMM you require, we recommend the use of matched modules, especially for branded machines. Please call for details. Always check machine compatibility before ordering.

Why SMC? While memory specifications can look the same on the page, it's a hard fact of life that the quality of manufacture and supply is more variable than most people think possible. So, it's reassuring to know that at SMC we haven't forgotten the importance of quality control. We insist on buying from reliable and reputable sources, and we carry out frequent batch checks in order to maintain the quality of our goods, and safeguard our hard-won reputation for reliability. Our range of SIMMS, DIMMS and Matched Memory is exhaustive, and because we stock in depth we can guarantee swift delivery times and very competitive prices. Add to this SMC's highest levels of after-sales service, and you'll know that when you buy from us, you're getting quality, value ... and peace of mind.

Product Focus: SMC's guide to memory types

What is a DIMM?

A DIMM (Dual In-line Memory Module) is the latest technology which takes advantage of the new Pentium and Pentium II based computers. A circuit board with DRAM (Dynamic Random Access Memory) chips now provides 64-bit memory access to match the processor.

You should consider the following factors before you attempt a memory upgrade:

- > DIMMs are available as 72pin, 144pin and 168pin. The desktop standard is 168pin.
- > DIMMs are installed in a single bank so you won't have to worry about matching.
- > Early Pentium PCs that could work with DIMMs used 5 volt modules.
- > The most recent support is for 3.3 volt.
- > However, always check your system's manual for sizes and voltages.

What is a SIMM?

Industry standard SIMMS (Single In-line Memory Modules) are based on DRAM (Dynamic Random Access Memory) chips and provide a cost effective way of adding memory to the PC. However, the following factors must be considered before you attempt a memory upgrade:

- > Machines use either 30pin or 72pin SIMMS or a combination of the two.
- > You must check which your machine takes before making your purchase.
- > SIMMS are installed into a bank, which will be either two or four slots.
- > You must fill a complete bank, with modules of the same size.
- > 30pin SIMMS are supplied in the older form of 9-chip or the newer 3-chip versions.
- > Older 286/386sx machines require 9-chip, whilst later 386DX/486 use 3-chip.
- > 72-pin SIMMS are fitted to later 486 PC's and PENTIUM based machines.
- > They are fitted singly on the 486 or in pairs in Pentium machines.

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MEMORY: SIMMS & DIMMS

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Why Matched Memory ?

Many of the major brand PC manufacturers use proprietary memory modules in their machines. While they may look the same as standard SIMM or DIMM modules (although some most definitely don't!) they will often be re-engineered to perform differently. This means that if you fit the wrong module, even if the PC works, you may be plagued with (often apparently random) system "hangs" which can be utterly maddening if you haven't saved a document!

At SMC, we are the UK's premier supplier of Memory upgrades because we take the time to find the right solution, we batch test to maintain quality and we carry comprehensive stocks across the board. You'll find our service is as reliable as the memory we sell!

Dell Memory

	ex VAT	inc VAT
4000/XE Series, 486/66, 486/50, 486/33		
17-20-1208 8Mb	£45	£52.88
13-97-1617 x2 32Mb	£48	£56.40
13-97-3217 x2 64Mb	£90	£105.75

Dimension

	ex VAT	inc VAT
Dimension 425Si, 433i/si, 450i, 466i, XPS 450V, 466V		
Dimension XPS 486 Midsize 4100, 466		
13-97-0407 4Mb	£9	£10.58
13-97-1607 16Mb	£20	£23.50

	ex VAT	inc VAT
Dimension XPS P60 FS (Kits)		
13-97-0407 x2 8Mb	£18	£21.15
13-97-0807 x2 16Mb	£28	£32.90
13-97-1607 x2 32Mb	£40	£47.00

	ex VAT	inc VAT
Dimension XPS P90, P100C/t, P120C, P133C, P166C		
13-97-0400 x2 8Mb	£14	£16.45
13-97-0801 x2 16Mb	£18	£21.15
13-97-1601 x2 32Mb	£32	£37.60
13-97-3201 x2 64Mb	£58	£68.15

	ex VAT	inc VAT
Dimension XPS P133s/v, P166s/v, Dimension XPS M166s, M200s, P200v		
19-95-0821 8Mb	£29	£34.08
19-95-1622 16Mb	£19	£22.33
19-95-3224 32Mb	£29	£34.08

	ex VAT	inc VAT
Dimension XPS H266, H233 (Kits)		
00-00-0000 32Mb	£POA	£POA
00-00-0000 64Mb	£POA	£POA

	ex VAT	inc VAT
Dimension XPS Pro 200n, 180n, 150n Dimension P75T, P90T etc		
13-97-0400 x2 8Mb	£14	£16.45
13-97-0801 x2 16Mb	£18	£21.15
13-97-1601 x2 32Mb	£32	£37.60
13-97-3201 x2 64Mb	£58	£68.15

Low Profile Power Desktop

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486 P Series		
13-97-0418 4Mb	£22	£25.85
13-97-1617 16Mb	£24	£28.20

NetPlex

	ex VAT	inc VAT
NetPlex 486/25s, 33s, 33d, 50d, 66d		
13-97-0407 4Mb	£9	£10.58
13-97-1607 16Mb	£20	£23.50

OmniPlex

	ex VAT	inc VAT
OmniPlex 4100/ME, 466/ME, 450/ME, 433/ME		
13-97-0407 x2 8Mb	£18	£21.15
13-97-0807 x2 16Mb	£28	£32.90
13-97-1607 x2 32Mb	£40	£47.00

	ex VAT	inc VAT
OmniPlex 590/ME, 566/ME, 560/ME (Kits)		
13-97-0417 x2 8Mb	£28	£32.90
13-97-0817 x2 16Mb	£40	£47.00
13-97-1617 x2 32Mb	£48	£56.40
13-97-3217 x2 64Mb	£90	£105.75

OptiPlex

	ex VAT	inc VAT
OptiPlex 433/e, 450/e, 466/e, 466L(E), 4100/e		
13-97-0407 4Mb	£9	£10.58
13-97-1607 16Mb	£20	£23.50

	ex VAT	inc VAT
OptiPlex (V) Series 486 s/L, L, s/MX, MX Series		
13-97-0407 4Mb	£9	£10.58
17-20-1416 16Mb	£39	£45.83

	ex VAT	inc VAT
OptiPlex DGX Series 590, 5100, 5120, 5133, 5166		
17-20-1208 8Mb	£45	£52.88
13-97-0817 x2 16Mb	£40	£47.00
13-97-1617 x2 32Mb	£48	£56.40
13-97-3217 x2 64Mb	£90	£105.75

	ex VAT	inc VAT
OptiPlex XL/XM/XMT Series 575, 590, 5100, 5120, 5133		
13-97-0407 x2 8Mb	£18	£21.15
13-97-0807 x2 16Mb	£28	£32.90
13-97-1607 x2 32Mb	£40	£47.00

	ex VAT	inc VAT
OptiPlex GXpro 6200, 6180 OptiPlex GXiL/M/MT 5133, 5166, 5200		
17-20-6216 16Mb	£62	£72.85
17-20-6232 32Mb	£135	£158.63
17-20-6264 64Mb	£130	£152.75
17-20-6212 128Mb	£279	£327.83

Performance

	ex VAT	inc VAT
Performance 486 T, M, L, s/M, s/L		
13-97-0407 4Mb	£9	£10.58
13-97-1607 16Mb	£20	£23.50

	ex VAT	inc VAT
Performance 425s/ME, 433/ME, 433s/ME, 450/ME, 466/ME		
13-97-0417 x2 8Mb	£28	£32.90
13-97-0817 x2 16Mb	£40	£47.00
13-97-1617 x2 32Mb	£48	£56.40

Power range

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Power Desktop 486 D Series		
13-97-0418 4Mb	£22	£25.85
13-97-1617 16Mb	£24	£28.20

	ex VAT	inc VAT
PowerEdge SP, SP-2 Series SP 560, 566, 590, 5100 SP-2 575, 590, 5100, 5133		
13-97-0417 x2 8Mb	£28	£32.90
13-97-0817 x2 16Mb	£40	£47.00
13-97-1617 x2 32Mb	£48	£56.40
13-97-1617 x2 64Mb	£48	£56.40

	ex VAT	inc VAT
PowerEdge XE, XE-2 Series XE 560, 566, 590, 5100 XE-2 5100, 5133		
13-97-0417 x2 8Mb	£28	£32.90
13-97-0817 x2 16Mb	£40	£47.00
13-97-1617 x2 32Mb	£48	£56.40
13-97-1617 x2 64Mb	£48	£56.40

	ex VAT	inc VAT
PowerEdge SP 433, 450, 466		
13-97-0417 x2 8Mb	£28	£32.90
13-97-0817 x2 16Mb	£40	£47.00
13-97-1617 x2 32Mb	£48	£56.40

	ex VAT	inc VAT
PowerEdge XE 433, 433s, 450, 466		
13-97-0407 x2 8Mb	£18	£21.15
13-97-0807 x2 16Mb	£28	£32.90
13-97-1607 x2 32Mb	£40	£47.00

	ex VAT	inc VAT
PowerEdge XL, EL575, EL590, EL5100, EL5120, EL5133		
17-20-1208 8Mb	£45	£52.88
17-20-1216 16Mb	£68	£79.90
17-20-1232 32Mb	£80	£94.00
17-20-1264 64Mb	£145	£170.38

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PowerEdge 4100, 2200, 2100/200, 180		
17-20-2132 32Mb	£119	£139.83
17-20-2164 64Mb	£297	£348.98
17-20-2112 128Mb	£297	£348.98

Latitude

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Latitude 433m/mc, 450mc/mcx, 475mc		
17-90-5304 4Mb	£35	£41.13
17-90-5308 8Mb	£45	£52.88
17-90-5316 16Mb	£55	£64.63

	ex VAT	inc VAT
Latitude 433/c/cx		
17-90-2504 4Mb	£33	£38.78
17-90-2516 16Mb	£68	£79.90

	ex VAT	inc VAT
Latitude LX 475D, 4100D/T		
17-90-5304 4Mb	£35	£41.13
17-90-5308 8Mb	£45	£52.88
17-90-5316 16Mb	£55	£64.63

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Latitude XP 450C, 475C, 4100C/CX		
17-20-5304 4Mb	£25	£29.38
17-20-5308 8Mb	£45	£52.88
17-20-5316 16Mb	£66	£77.55

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Latitude XPI P75D/T, P90D/ST/T, P100SD, P120D/ST, P133ST		
17-20-5304 4Mb	£25	£29.38
17-20-5308 8Mb	£45	£52.88
17-20-5316 16Mb	£66	£77.55

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Latitude LM P100SD, P133ST, P166		
17-20-1308 8Mb	£29	£34.08
17-20-1316 16Mb	£35	£41.13
17-20-1332 32Mb	£65	£76.38

Printer Memory

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Hewlett Packard		

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HP IIP, IIP+, III, IIIP, IIID		
17-28-1201 1Mb	£45	£52.88
17-28-1202 2Mb	£55	£64.63
17-28-1204 4Mb	£65	£76.38

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HP II, IID		
17-28-1001 1Mb	£39	£45.83
17-28-1002 2Mb	£45	£52.88
17-28-1004 4Mb	£65	£76.38

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HP 4, 4M, 4Si, 4SiMX		
13-97-0117 1Mb	£20	£23.50
13-97-0217 2Mb	£38	£44.65
13-97-0417 4Mb	£14	£16.45
13-97-0817 8Mb	£20	£23.50

	ex VAT	inc VAT
5Si, 5SiMX		
13-97-0417 4Mb	£14	£16.45
13-97-0817 8Mb	£20	£23.50

	ex VAT	inc VAT
HP IIIiSi		
17-28-0801 1Mb	£19	£22.33
17-28-0804 4Mb	£25	£29.38
17-28-0808 8Mb	£44	£51.70

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HP 4+, 4M+, 4MP, 4MV, 4P		
13-97-0417 4Mb	£14	£16.45

	ex VAT	inc VAT
HP 5, 5M, 5N, 5MP, 5P, 6P		
13-97-0807 8Mb	£14	£16.45

	ex VAT	inc VAT
HP 4L, 4V		
13-97-0417 1Mb	£19	£22.33

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17-28-0481 1Mb	£23	£27.03
17-28-1502 2Mb	£28	£32.90
17-28-1504 4Mb	£39	£45.83

Panasonic

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KX-P4400, KX-P4401		
17-57-4402 2Mb	£37	£43.48
17-57-4404 4Mb	£59	£69.33

	ex VAT	inc VAT
KX-P4410, KX-P4430		
17-57-1002 2Mb	£55	£64.63
17-57-3008 4Mb	£55	£64.63

	ex VAT	inc VAT
KX-P4420, KX-P4450i, KX-P4451		



Toshiba Memory

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T1000LE, T1800, T1850, T1850c		T3200SX		T5200, T8500 Series (Kits)		Satellite	
T2000/SX/SXe, T2200SX		17-75-3102 2Mb £25 £29.38		17-75-5202 2Mb £29 £34.08		Satellite 100CS, 105CS, 110, 115, 200, 205, 210 Series	
17-75-2004 4Mb £39 £45.83		17-75-3304 4Mb £33 £38.78		17-75-5208 8Mb £45 £52.88		Satellite PRO 400, 405, 410, 415, 420, 425, 430 Series	
17-75-2008 8Mb £59 £69.33		T3200SXC		T6400DX/DXC/SX/SXC, T6600C/CD/CDV		17-75-6108 8Mb £35 £41.13	
T200, T200CS (Dynapad)		17-75-3202 2Mb £28 £32.90		17-75-4402 2Mb £45 £52.88		17-75-6116 16Mb £65 £76.38	
T1900/C, T1910, T1920/CS		17-75-3204 4Mb £42 £49.35		17-75-4404 4Mb £49 £57.58		17-75-6132 32Mb £85 £99.88	
T1960C/CS/CT, T1950/CS/CT		T3600CT		17-75-4408 8Mb £59 £69.33		Satellite PRO 440CDT/CDX, 445CDT/CDX, 460CDT	
17-75-1904 4Mb £33 £38.78		17-75-3604 4Mb £33 £38.78		17-75-4416 16Mb £92 £108.10		Satellite 220CS, 225CS	
17-75-1908 8Mb £44 £51.70		17-75-3608 8Mb £45 £52.88		17-75-4432 32Mb £175 £205.63		17-75-6508 8Mb £39 £45.83	
17-75-1916 16Mb £59 £69.33		17-75-3516 16Mb £45 £52.88		Portege		17-75-6516 16Mb £48 £56.40	
T2100/CS/CT, T2105/CT, T2110CS, T2115CS, T2130CS/CT, T2135CT		T3400/CT		Portege 660CDT, 650CT		17-75-6532 32Mb £88 £103.40	
17-75-2104 4Mb £25 £29.38		17-75-3604 4Mb £33 £38.78		17-75-6516 16Mb £48 £56.40		17-75-6564 64Mb £222 £260.85	
17-75-2108 8Mb £33 £38.78		17-75-3608 8Mb £45 £52.88		17-75-6632 32Mb £158 £185.65		17-75-6528 128Mb £722 £848.35	
17-75-2116 16Mb £45 £52.88		17-75-3616 16Mb £78 £91.65		17-75-6664 64Mb £495 £581.63		Tecra	
17-75-2124 24Mb £65 £76.38		T4400CDX/CSX/SX/SXC		Portege 620CT, 610CT		Tecra 740, 730, 720, 710 Series	
T2400CS/CT, T2450CT		17-75-4402 2Mb £45 £52.88		17-75-6108 8Mb £35 £41.13		17-75-6108 8Mb £35 £41.13	
17-75-3604 4Mb £33 £38.78		17-75-4404 4Mb £49 £57.58		17-75-6116 16Mb £65 £76.38		17-75-6116 16Mb £65 £76.38	
17-75-3608 8Mb £45 £52.88		17-75-4408 8Mb £59 £69.33		17-75-6132 32Mb £85 £99.88		17-75-6132 32Mb £85 £99.88	
17-75-3516 16Mb £45 £52.88		17-75-4416 16Mb £92 £108.10		Equium		Tecra 700CS, 700CT Series	
T3100e		17-75-4432 32Mb £175 £205.63		Equium 6200 Desktop Series		17-75-6308 8Mb £55 £64.63	
17-75-3202 2Mb £28 £32.90		T4500/C, T4600/C, T4700/CS/CT, T4800CT		17-75-6208 8Mb £17 £19.98		17-75-6316 16Mb £85 £99.88	
T3100SX		17-75-1904 4Mb £33 £38.78		17-75-6216 16Mb £26 £30.55		17-75-6332 32Mb £169 £198.58	
17-75-3002 2Mb £25 £29.38		17-75-1908 8Mb £44 £51.70		17-75-6232 32Mb £44 £51.70		Tecra 500CS/CDT, 510CDS/CDT, 520CDT, 530CDT	
17-75-3004 4Mb £33 £38.78		17-75-1916 16Mb £59 £69.33		Equium 5200, 5160 Desktop Series		17-75-6508 8Mb £39 £45.83	
T3200		T4850CT, T4900CT		13-97-0801 x2 16Mb £18 £21.15		17-75-6516 16Mb £48 £56.40	
17-75-3103 3Mb £95 £111.63		17-75-1904 4Mb £33 £38.78		13-97-1601 x2 32Mb £32 £37.60		17-75-6532 32Mb £88 £103.40	
		17-75-1908 8Mb £44 £51.70		13-97-3201 x2 64Mb £58 £68.15		17-75-6548 48Mb £146 £171.55	
		17-75-1916 16Mb £59 £69.33				17-75-6528 128Mb £722 £848.35	
		17-75-4732 32Mb £159 £186.83					

IBM Memory

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Aptiva		PC SERVER 486 & Pentium Series (pairs needed)		PS/VP 6384 Series with IBM 30pin slots		ThinkPad 510Cs	
Aptiva 300, 500 & 700 486s		17-30-7201 x2 4Mb £52 £61.10		17-30-1404 4Mb £22 £25.85		17-30-0704 4Mb £63 £74.03	
13-97-0407 4Mb £9 £10.58		17-30-9108 8Mb £24 £28.20		10-97-4973 x4 8Mb £36 £42.30		17-30-0708 8Mb £79 £92.83	
13-97-0807 8Mb £14 £16.45		13-97-1617 x2 16Mb £48 £56.40		PS/VP 6384 C00, C20, C40 Series		17-30-0716 16Mb £125 £146.88	
13-97-1607 16Mb £20 £23.50		17-30-7205 x2 32Mb £158 £185.65		17-30-9102 2Mb £28 £32.90		ThinkPad 701C, CS Butterfly Series	
13-97-3207 32Mb £39 £45.83		PS/I Series		17-30-9304 4Mb £29 £34.08		17-30-0498 4Mb £25 £29.38	
Aptiva Pentium Series		PS/I 486 Series with IBM 72pin slots		17-30-9208 8Mb £33 £38.78		17-30-0898 8Mb £45 £52.88	
13-97-0807 x2 8Mb £14 £16.45		17-30-9302 2Mb £19 £22.33		PS/VP 6381 SI Series		17-30-1698 16Mb £44 £51.70	
13-97-1607 x2 16Mb £20 £23.50		17-30-9204 4Mb £20 £23.50		13-97-0417 4Mb £14 £16.45		ThinkPad 710T	
13-97-3207 x2 32Mb £39 £45.83		17-30-9208 8Mb £33 £38.78		13-97-1617 16Mb £24 £28.20		17-30-7504 4Mb £29 £34.08	
PC300, 330, 350 486s		17-30-1516 16Mb £69 £81.08		ThinkPad		17-30-7508 8Mb £45 £52.88	
13-97-0407 4Mb £9 £10.58		PS/I 486 Series with IBM 30pin slots		ThinkPad 350, 350C		ThinkPad 700, 700C, 720, 720C	
13-97-0807 8Mb £14 £16.45		17-30-1404 4Mb £22 £25.85		17-30-7504 4Mb £29 £34.08		15-30-4204 4Mb £59 £69.33	
13-97-1607 16Mb £20 £23.50		10-97-4973 x4 16Mb £36 £42.30		17-30-0408 8Mb £85 £99.88		15-30-4208 8Mb £69 £81.08	
13-97-3207 32Mb £39 £45.83		PS/I 2011 & 2121 286/386sx Series		17-30-0416 16Mb £98 £115.15		ThinkPad 750, 750C, Ce, Cs, P	
PC300, 330, 350 Pentiums (Kit-2)		17-30-1202 2Mb £55 £64.63		ThinkPad 360, C, CE, CSE, CS, P, PE		ThinkPad 755C, Cs, CD, CDV, CE, CSE, CV	
17-97-0807 8Mb £24 £28.20		17-30-1304 4Mb £35 £41.13		ThinkPad 345C, CS		15-30-4208 8Mb £69 £81.08	
13-97-1607 16Mb £20 £23.50		PS/I 2123 PRO 386SX		15-09-0604 4Mb £49 £57.58		15-30-4416 16Mb £88 £103.40	
13-97-3207 32Mb £39 £45.83		17-30-9302 2Mb £19 £22.33		15-09-0608 8Mb £69 £81.08		15-30-4232 32Mb £159 £186.83	
PC700, 730, 750 Pentiums (Kit-2)		17-30-9204 4Mb £20 £23.50		15-09-0616 16Mb £99 £116.33		ThinkPad 755CX, CV, CD, CDV	
17-30-9108 8Mb £24 £28.20		17-30-9108 8Mb £24 £28.20		ThinkPad 355, 355C, 355Cs, 370C		17-30-0504 4Mb £33 £38.78	
13-97-1617 16Mb £24 £28.20		PS/I 386SX Series		ThinkPad 730T, 730TE		17-30-0508 8Mb £45 £52.88	
13-97-3217 32Mb £45 £52.88		17-30-9102 2Mb £28 £32.90		15-30-4204 4Mb £59 £69.33		17-30-0516 16Mb £65 £76.38	
PC SERVER 77i (ECC)		17-30-9204 4Mb £20 £23.50		15-30-4208 8Mb £69 £81.08		ThinkPad 760C, 760CD, 760L, 760LD	
17-30-2904 4Mb £49 £57.58		17-30-9108 8Mb £24 £28.20		15-30-4416 16Mb £88 £103.40		17-30-0908 8Mb £38 £44.65	
17-30-2908 8Mb £55 £64.63		PS/2 Series		ThinkPad 365C, CD, CS, CSD, E, ED		17-30-0916 16Mb £58 £68.15	
17-30-7816 16Mb £77 £90.48		PLEASE CALL - MODEL SPECIFIC		17-30-0498 4Mb £25 £29.38		ThinkPad 820 Series	
PC SERVER 300, 320, Server 85(pairs needed)		PS/VP Series		17-30-1698 16Mb £44 £51.70		17-30-8208 8Mb £75 £88.13	
17-30-9108 8Mb £24 £28.20		PS/VP 6382, 6384, 6387 with IBM 72pin slots		ThinkPad 365X, 365XD, 380 Series		17-30-8216 16Mb £119 £139.83	
13-97-1617 16Mb £24 £28.20		17-30-9302 2Mb £19 £22.33		17-30-6208 8Mb £38 £44.65		ThinkPad 850 Series	
13-97-3217 32Mb £45 £52.88		17-30-9204 4Mb £20 £23.50		17-30-6216 16Mb £77 £90.48		15-30-4208 8Mb £69 £81.08	
PC SERVER 95 & 500 Series (ECC) (Kit-2)		17-30-9108 8Mb £24 £28.20		17-30-6232 32Mb £92 £108.10		15-30-4416 16Mb £88 £103.40	
17-30-2908 8Mb £55 £64.63		17-30-9108 8Mb £24 £28.20		ThinkPad 500 Series		15-30-4232 32Mb £159 £186.83	
17-30-7816 16Mb £77 £90.48		13-97-1617 16Mb £24 £28.20		17-30-0704 4Mb £63 £74.03			
17-30-7832 32Mb £144 £169.20				17-30-0708 8Mb £79 £92.83			

SALES HOTLINES: **01753 550333**

FAX: 01753 524443



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Kingston manufactures memory for nearly every system in use today.

Call for details of the right memory for your machine.



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TECHNOLOGY

Computing Without Limits



IF ALL MEMORY IS THE SAME, WHY DO SOME BRANDS FAIL MORE OFTEN THAN OTHERS?

KINGSTON MEMORY

Kingston Matched Memory

Acer		Part No	ex VAT	inc VAT
Altos 700, 800, 7000, 17000				
8MB	KAC8000/8		£31	£36.43
16MB	KAC8000/16		£45	£52.88
32MB	KAC9000/32		£84	£98.70

Intel		Part No	ex VAT	inc VAT
440LX Motherboards Non-ECC				
32MB	KTM66X64/32		£68	£79.90
64MB	KTM66X64/64		£162	£190.35
128MB	KTM66X64/128		£317	£372.48
440LX Motherboards ECC				
32MB	KTM66X72/32		£78	£91.65
64MB	KTM66X72/64		£181	£212.68
128MB	KTM66X72/128		£353	£414.78

Compaq		Part No	ex VAT	inc VAT
DeskPro 2000, 4000, 6000 series				
16MB	KTC2430/16		£40	£47.00
32MB	KTC2430/32		£70	£82.25
64MB	KTC2430/64		£136	£159.80
Armada 7000 series D/MT, 1500 series D/MT, 1130/T				
16MB	KTC2721/16		£37	£43.48
32MB	KTC2721/32		£74	£86.95
64MB	KTC2721/64		£149	£175.08
Deskpro 2000, 4000, 6000 MMX Series				
16MB	KTC2428/16		£42	£49.35
32MB	KTC2428/32		£68	£79.90
64MB	KTC2428/64		£162	£190.35
128MB	KTC2428/128		£339	£398.33
Presario 4800s, 4200s, 4500s				
16MB	KTC-P4800/16		£43	£50.53
32MB	KTC-P4800/32		£78	£91.65
64MB	KTC-P4800/64		£174	£204.45

Dell		Part No	ex VAT	inc VAT
Performance 425L/M, 433L/M, 4333s L/M, 450, L/M, 466L/M				
Latitude 433 M/MC, 450 M/MCX, 475 M/C/D, LX4100 D/T				
Omniplex 433, 450, 466, 4100 ME				
4MB	KTD-LMT/4		£15	£17.63
8MB	KTD-LMT/8		£24	£28.20
16MB	KTD-LMT/16		£40	£47.00
Dimension XPS P60, P75, P90				
Optiplex XLX/M/XMT 575, 590, 5100, 5120, 5133				
16MB	KTD-NPOP/16		£46	£54.05
32MB	KTD-NPOP/32		£78	£91.65
64MB	KTD-NPOP/64		£149	£175.08
Dimension XPS P100c, P100c, P120C, P133C, XPS PRO 150n, 180n				
Optiplex GL/GM/GMT 575, 590, 5100, 5120, 5133, 5166				
Optiplex GXL/GXM/GXMT 590, 5100, 5120, 5133, 5150, 5166				
Optiplex Gs/L/GsM/GsMT 5133, 5166, 5200				
16MB	KTD-NPOP/16		£46	£54.05
32MB	KTD-NPOP/32		£78	£91.65
64MB	KTD-NPOP/64		£149	£175.08
Dimension P133x, P166v, P200v				
Dimension XPS P133s, P166s, M166s, M200s				
8MB	KTD-5DRAM/8		£50	£58.75
16MB	KTD-5DRAM/16		£49	£57.58
32MB	KTD-5DRAM/32		£84	£98.70
Optiplex GXPRO series				
16MB	KTD-GXPRO/16		£52	£61.10
32MB	KTD-GXPRO/32		£93	£109.28
64MB	KTD-GX/164		£198	£232.65
128MB	KTD-GXPRO/128		£380	£446.50
Optiplex GXA series (non-parity)				
Optiplex GXA series (EDO memory)				
32MB	KTD-GXAN/32		£81	£95.18
32MB	KTD-GXA/32		£90	£105.75
64MB	KTD-GXA/64		£215	£252.63
128MB	KTD-GXA/128		£423	£497.03

Digital		Part No	ex VAT	inc VAT
Digital Hinote VP 520, 525, 535				
16MB	KTV-VP500/16		£50	£58.75
32MB	KTV-VP500/32		£92	£108.10

Hewlett Packard		Part No	ex VAT	inc VAT
Pavilion 7270, 7275, 7280, 7285, 7295				
8MB	KTH-VL4/8		£27	£31.73
16MB	KTH-VL4/16		£40	£47.00
32MB	KTH-VL4/32		£70	£82.25
64MB	KTH-VL4/64		£136	£159.80
Laserjet 4000s				
16MB	KTH-LJ4000/16		£45	£52.88
16MB	KTH-LJ4000E/16		£46	£54.05
32MB	KTH-LJ4000/32		£108	£126.90
Vectra VE 4/5 series, VL2 4 series, VL3 5 series, XM3, XU 5 series				
8MB	KTH-NPVEC/8		£24	£28.20
16MB	KTH-NPVEC/16		£36	£42.30
32MB	KTH-NPVEC/32		£68	£79.90
Vectra VL7				
16MB	KTH5361/16		£42	£49.35
32MB	KTH5361/32		£71	£83.43
64MB	KTH5361/64		£168	£197.40

IBM		Part No	ex VAT	inc VAT
Thinkpad 760 series, ELDs, 560, 360, 380s				
16MB	KTM760ELD/16		£37	£43.48
32MB	KTM760ELD/32		£81	£95.18
Thinkpad 760C, CD, L, LD				
8MB	KTM-TP760/8		£34	£39.95
16MB	KTM-TP760/16		£46	£54.05
32MB	KTM-TP760/32		£108	£126.90
Thinkpad 770				
16MB	KTM-TP770/16		£46	£54.05
32MB	KTM-TP770/32		£100	£117.50
64MB	KTM-TP770/64		£205	£240.88
Aptiva 2137 E series				
16MB	KTM2137/16		£49	£57.58
32MB	KTM2137/32		£86	£101.05
64MB	KTM2137/64		£206	£242.05
Aptiva L, C & 5 series 2136 E series				
16MB	KTM731/8/16		£40	£47.00
32MB	KTM731/8/32		£70	£82.25
64MB	KTM731/8/64		£136	£159.80
PC300GL (6561, 6591)				
32MB	KTM0069/32		£75	£88.13
Aptiva 2142, 2140				
64MB	KTM0069/64		£178	£209.15
128MB	KTM0069/128		£346	£406.55
PC300PL (6562, 6592)				
32MB	KTM0076/32		£75	£88.13
64MB	KTM0076/64		£168	£197.40
128MB	KTM0076/128		£331	£388.93

Toshiba		Part No	ex VAT	inc VAT
Toshiba 750s, Portege 650, 660s				
16MB	KTT650/16i		£43	£50.53
32MB	KTT650/32i		£83	£97.53
64MB	KTT650/64i		£155	£182.13
Portege 610 CT, Satellite 110C5/CT, 200CD5, 205CD5				
Satellite Pro 420/425/430 CDS/CDT				
8MB	KTT610/8i		£42	£49.35
16MB	KTT610/16i		£55	£64.63
32MB	KTT610/32i		£84	£98.70
Toshiba 500 & 510 CDS/CDT				
Satellite Pro 440, 445, 460, 470, 480 CDX/CDT				
32MB	KTT500/32i		£81	£95.18
48MB	KTT500/48i		£114	£133.95
128MB	KTT500/128i		£303	£356.03

Kingston Generic Memory

72 Pin SIMMs

60ns : available in Tin (T) or Gold (G)

Non-Parity (32-bit)		Part No	ex VAT	inc VAT
4MB	KTM1x32L-60T		£15	£17.63
8MB	KTM2x32L-60T		£24	£28.20
16MB	KTM4x32L-60T		£40	£47.00
32MB	KTM8x32L-60T		£93	£109.28
64MB	KTM16x32L-60T		£159	£186.83
Parity (36-bit)		Part No	ex VAT	inc VAT
4MB	KTM1x36L-60T		£18	£21.15
8MB	KTM2x36L-60T		£31	£36.43
16MB	KTM4x36L-60T		£45	£52.88
32MB	KTM8x36L-60T		£84	£98.70
64MB	KTM16x36L-60T		£178	£209.15

EDO Non-Parity (32-bit)

4MB	KTM1x32L-60ET		£15	£17.63
8MB	KTM2x32L-60ET		£24	£28.20
16MB	KTM4x32L-60ET		£40	£47.00
32MB	KTM8x32L-60ET		£75	£88.13

EDO Parity (36-bit)

4MB	KTM1x36L-60ET		£18	£21.15
8MB	KTM2x36L-60ET		£31	£36.43
16MB	KTM4x36L-60ET		£45	£52.88
32MB	KTM8x36L-60ET		£84	£98.70

168 Pin DIMMs

SDRAM Non-Parity (Gold Connectors)		Part No	ex VAT	inc VAT
64MB	KTM66x64/64		£162	£190.35
128MB	KTM66x64/128		£317	£372.48
SDRAM Parity		Part No	ex VAT	inc VAT
16MB	KTM66x72/16		£43	£50.53
64MB	KTM66x72/64		£181	£212.68
128MB	KTM66x72/128		£353	£414.78



Upgrading memory is the single most cost effective way of increasing system performance.

But Not All Memory Is Created Equal.

Knowing what questions to ask about memory will save you time and money.

- >>> **Warranties - what do they mean?**
Insist on a lifetime warranty from an established manufacturer.
- >>> **What about support?**
Make sure your memory comes from a manufacturer that offers free, expert technical support.
- >>> **What are the testing procedures?**
Choose memory from a manufacturer who tests every single module 100% of the time.
- >>> **Is compatibility absolute?**
Modules must be specifically designed for the exact systems they will be used in.
- >>> **Where do the components come from?**
Only accept chips purchased directly from manufacturers such as IBM, Samsung and Toshiba.

Kingston Technology is the world's leading supplier of computer memory. All Kingston memory is guaranteed for 100% compatibility and reliability and carries lifetime warranty.

http://www.smc-computers.co.uk



Your Motherboard is the heart of your system. If you don't make the right choice here, the performance of your system may be held back or even subject to incompatibility problems. That may sound daunting, but we give you as much technical data as possible on these pages, so that when you call you'll have the information you need to make an informed choice. If you have a special requirement, we can discuss your needs and ensure that the products you buy will give the right mix of price and performance, and maximise the value you get for your money.



INTEL Overdrive

ex VAT inc VAT



All INTEL Overdrive Processors come complete with built-on fan.

Pentium MMX Overdrive

MMX Overdrives will upgrade all Pentium PC's to MMX technology!

09-31-5205	200Mhz Pentium MMX OverDrive : 3.3v, for P100/133/166 (Socket 7 ZIF)	£139	£163.33
09-31-5185	180Mhz Pentium MMX OverDrive : 3.3v, for P90/120/150 (Socket 5/7 ZIF) (upgrades P75 to P150Mhz)	£135	£158.63
09-31-5165	166Mhz Pentium MMX OverDrive : 3.3v, for P100 (Socket 5/7 ZIF)	£109	£128.08

486 to Pentium Overdrive

09-31-5083	Pentium 83Mhz OverDrive, P24T : 5v, for 486 PC's (Socket 3 ZIF)	£114	£133.95
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Please note: 486 to Pentium Overdrives will soon be discontinued. There are expected to be no alternatives, so we advise you to make your decision!



Heat Sink/ Fan Units

ex VAT inc VAT

NOTE : these units are only available when purchasing a CPU. We recommend their use for all CPUs. Ball Bearing units are designed to run at very high temperatures.

09-95-6000	Pentium Pro 200	£17	£19.98
09-95-6086	Cyrix 6x86MX Ball Bearing unit	£14	£16.45
09-95-5266	Intel Pentium/AMD K6 Ball Bearing unit	£15	£17.63

Processors

ex VAT inc VAT

Intel

Pentium II - Slot 1 with 512k cache

Boxed, with HS & Fan (3Yr Warranty)			
09-31-8233	PII 233MMX - 66/233Mhz	£139	£163.33
09-31-8266	PII 266MMX - 66/266Mhz	£175	£205.63
09-31-8300	PII 300MMX - 66/300Mhz	£259	£304.33
09-31-8333	PII 333MMX - 66/333Mhz (ECC)	£333	£391.28
09-31-8350	PII 350MMX - 100/350Mhz	£429	£504.08
09-31-8400	PII 400MMX - 100/400Mhz (ECC)	£569	£668.58

Pentium MMX - Socket 7

Bare processors (1Yr Warranty)			
09-31-4166	P166MMX - 166Mhz, 2.8v	£72	£84.60
09-31-4200	P200MMX - 200Mhz, 2.8v	£75	£88.13
09-31-4233	P233MMX - 233Mhz, 2.8v	£93	£109.28

Boxed, with HS & Fan (3Yr Warranty)			
09-31-6200	P200MMX - 200Mhz, 2.8v	£79	£92.83
09-31-6233	P233MMX - 233Mhz, 2.8v	£109	£128.08

Pentium Pro - Socket 8 (with 256k cache)

09-31-3200	Intel Pentium Pro 200Mhz	£319	£374.83
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AMD

K6 MMX Enhanced Processor - Socket 7

09-05-6200	200Mhz, 3.2v	£55	£64.63
09-05-6233	233Mhz, 3.2v	£65	£76.38
09-05-6266	266Mhz, 3.2v (Requires 100MHz bus)	£119	£139.83

Cyrix

6x86 & 6x86MX - Socket 7

09-17-5136	6x86-133 - 166Mhz+, 3.3v	£39	£45.83
09-17-6200	6x86MX-200, 200Mhz (requires motherboard support)	£45	£52.88

We recommend the use of a Heat Sink and Fan Unit for all CPUs.

Keyboards & Mice

ex VAT inc VAT

Keyboards

82-50-3505	For Windows 95 (105 key) 5-pin (AT)	£10	£11.75
82-50-3509	For Windows 95 (105 key) 6-pin Din (PS/2)	£12	£14.10
82-50-0001	MS Natural Keyboard v1 (105 key) 5-pin AT/6-pin Din	£45	£52.88
82-91-3595	Cherry G81-3000 Lamb (105 key) 5-pin AT, soft touch	£25	£29.38
82-91-3597	Cherry G80-3000HFM AT (102 key) 5-pin AT, click	£39	£45.83
82-91-3599	Cherry G80-3000HPM (105 key) 6-pin Din (PS/2), click	£43	£50.53

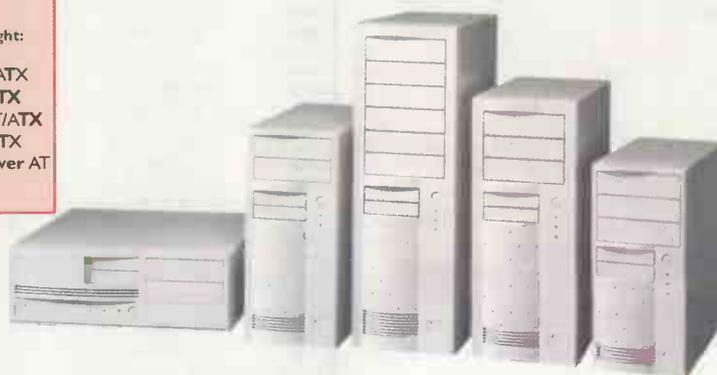
Mice

82-53-3153	MS compatible mouse 9 pin serial, 2 buttons	£10	£11.75
82-50-3192	Microsoft Home 9 pin serial, 2 buttons	£17	£19.98
82-50-0002	Microsoft V.2 - 9 pin serial & PS/2	£27	£31.73
82-50-0605	Microsoft Intellimouse 9 pin serial & PS/2	£35	£41.13
82-97-1511	Pilot Mouse New shape 9 pin serial, 3 buttons	£15	£17.63
82-97-1513	Pilot Mouse New shape 6-pin DIN, 3 buttons	£15	£17.63
82-97-0035	Pilot Mouse Plus 3 buttons/wheel 9 pin serial & PS/2	£19	£22.33
82-97-1315	Trackman Portable 3 buttons, 200dpi 9-pin serial	£30	£35.25
82-97-1395	Trackman Marble - 3 buttons, marble infra-red tech	£42	£49.35
82-97-0021	Mouseman 4 buttons 9-pin serial & PS/2	£24	£28.20
82-97-0022	Mouseman Plus 4 buttons/wheel 9-pin serial & PS/2	£27	£31.73

PC Cases (CE Approved)

From left to right:

- Desktop AT/ATX
- Mini Tower ATX
- Full Tower AT/ATX
- Midi Tower ATX
- Mini/Midi Tower AT



ex VAT inc VAT

ex VAT inc VAT

All cases are supplied with power supply units, power cables, screws and motherboard mounts.

Above picture and details refer to the cases below.

Standard PC cases

PC-AT : 100w PSU

70-97-0300	Super-Slimline Desktop, 2x 3.5" bays*	£55	£64.63
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Note : suitable for ISA Motherboards only.

PC-AT : 200w PSU

70-97-0500	Slimline Desktop 2x 3.5", 2x 5.25" bays Standard Desktop	£49	£57.58
70-97-1000	1x 3.5", 3x 5.25" bays	£39	£45.83
70-97-1510	Mini Tower, 3x 3.5", 2x 5.25" bays	£39	£45.83
70-97-1730	Mini Tower, 5x 3.5", 3x 5.25" bays	£45	£52.88
70-97-1910	Full Tower, 3x 3.5", 6x 5.25" bays	£59	£69.33

High-specification PC cases

PC-AT : 230w PSU

70-97-3012	Standard Desktop 3x 3.5", 2x 5.25" bays	£59	£69.33
70-97-3712	Mini/Midi Tower 4x 3.5", 3x 5.25" bays	£65	£76.38
70-97-3912	Full Tower, 4x 3.5", 6x 5.25" bays	£89	£104.58

PC-ATX : 200w PSU

70-97-3330	Desktop, 3x 3.5", 2x 5.25" bays	£89	£104.58
70-97-3790	Mini Tower, 4x 3.5", 2x 5.25" bays	£79	£92.83
70-97-3730	Midi Tower, 4x 3.5", 3x 5.25" bays	£99	£116.33
70-97-3930	Full Tower, 4x 3.5", 6x 5.25" bays	£115	£135.13

SALES HOTLINES: **01753 550333**

FAX: **01753 524443**



SALES LINES OPEN: MONDAY TO FRIDAY: 8.30am - 6.30pm SATURDAY: 9am - 1pm - THE BEST YOU'LL GET -

Motherboards



ex VAT inc VAT

All Intel motherboards come with a 3-year warranty. They have 3 x PCI, 1 x ISA and 1 x AGP slots, USB support, built-in floppy/EIDE/UIDE support with enhanced I/O ports. They have 3x 168pin SDRAM DIMM sockets (max 384Mb RAM) and are Windows 95 Plug & Play.

Pentium II - Slot I 66MHz

Intel 'Atlanta' (MMX)

07-31-2081 Intel 440LX Chipset, 3Yr Warranty P233-P300MHz option, 16-Bit Yamaha sound, USB connectors, Ultra IDE £105 £123.38

Pentium II - Slot I 100MHz

Intel 'Seattle'

07-31-2098 Intel 440BX chipset, P233-P400 MHz supports 100MHz PC100 DIMMS £115 £135.13



All ASUS motherboards are fitted with built-on USB / floppy / EIDE / Ultra-IDE support with Ultra-IDE drivers for Windows 95/NT4, and enhanced I/O ports as standard. They have LDCM Hardware monitoring support (includes Intel LanDesk CD for live PC monitoring). Full documentation is supplied.

Pentium - Socket 7

These motherboards are fitted with an Intel 'TX' (430TX) chipset, 4 x 72pin SIMM, 2 x 168pin DIMM sockets (max 256MB RAM), and 512k Pipeline Burst Cache.

ATX

ATX Motherboards have PS/2 style keyboard/mouse connectors. They have 4 x PCI and 4 x ISA bus slots.
07-99-0400 TXP4-X - no LDCM £69 £81.08
07-99-0500 TX97-XE - supports LDCM £79 £92.83
07-99-0510 TX97-XES, as TX97-XE with Creative Labs VIBRA sound £99 £116.33

Baby-AT

Baby-AT Motherboards have AT style keyboard (Spin DIN)/mouse connectors. They have 4 x PCI and 3 x ISA bus slots.
07-99-0405 TXP4 - no LDCM £69 £81.08
07-99-0505 TX97-E - supports LDCM £77 £90.48

Pentium II - Slot I 66MHz

ATX

These motherboards are fitted with an Intel 'LX' (440LX) chipset and have AGP support.

Single-processor - 5 x PCI, 2 x ISA bus

3x 168pin SDRAM sockets (Max 384Mb RAM)
07-99-0700 P2L97 £95 £111.63
07-99-0710 P2L97-S On board Adaptec AIC7880 SCSI controller £152 £178.60

Dual-processor - 4 x PCI, 2 x ISA bus

4 x 168-pin SDRAM DIMM sockets (max. 512Mb RAM)
07-99-0715 P2L97-DS - Dual Pentium II support, On board Adaptec AIC7880 SCSI controller £245 £287.88

Pentium II - Slot I 100MHz

ATX

These motherboards have an Intel 'BX' (440BX) chipset, AGP support, 100MHz system bus and support for PC100 SDRAM. Memory sockets are 168pin SDRAM DIMM.

07-99-0730 P2B 3 DIMM sockets (Max 768MB) £135 £158.63
07-99-0732 P2B-S 4 DIMM sockets (Max 1GB) On-board Adaptec U2 Wide SCSI £225 £264.38
07-99-0735 P2B/LS - 10/100 LAN 4 DIMM sockets (max 1GB) On-board Adaptec U2 Wide SCSI £255 £299.63
07-99-0739 P2B/DS - Dual Pentium II support 4 DIMM sockets (max 1GB) On-board Adaptec U2 Wide SCSI £325 £381.88



ex VAT inc VAT

All TMC motherboards are fitted with AMI/Award BIOS, built-in Floppy / EIDE support and Enhanced Parallel & Fast Serial Ports.

Pentium - Socket 7

These motherboards support Ultra-DMA and are Windows 95 Plug & Play.

Baby AT

07-97-5925 Intel 'TX' Chipset 256Mb max RAM 4 x 72 pin SIMMS, 2 x 168pin DIMMS 4 x PCI, 3 x ISA Bus, 2 x USB headers, 512Kb Burst Pipeline cache £59 £69.33

ATX

07-97-5901 Intel 'TX' Chipset 256Mb max RAM 4 x 72 pin SIMMS, 2 x 168pin DIMMS 4 x PCI, 4 x ISA Bus, 2 x USB headers, 512Kb Burst Pipeline cache £62 £72.85

07-97-5315

VIA VP3 Chipset 768Mb max RAM 4 x 72 pin SIMMS, 3 x 168 pin DIMMS 4 x PCI, 3 x ISA, 1 x AGP, 2 x USB ports £65 £76.38

USB Port Adaptors

These adaptors convert USB headers into usable ports to allow external connection of USB-supported devices. USB is not expected to be widely supported until the availability of Windows 98.
75-95-5002 USB Port Adaptor £10 £11.75

Pentium II - Slot I

ATX

This motherboard is Windows 95 Plug & Play and has Hardware Monitoring.
07-97-1060 Intel 'LX' Chipset, (82440LX - supports Ultra-DMA) 5 x PCI, 2 x ISA, 1 x AGP, 2 x USB ports, 4 x 168 pin DIMMS (512Mb max. memory), modem ring on £85 £99.88

Pentium II - Slot I 100MHz

ATX

This motherboard has the new 100MHz system bus and Intel 'BX' chipset. Memory sockets are 168pin SDRAM DIMM.

07-97-2450

P233 - P450, Max 1GB RAM, 5 x PCI, 2 x ISA, 1 x AGP £115 £135.13



All Gigabyte motherboards are fitted with an Award BIOS

Pentium - Socket 7

These motherboards are fitted with a 512kb Pipeline Burst Cache, 4x PCI, 3x ISA, built-on floppy & EIDE/Ultra-IDE support, 1 Enhanced Parallel & Fast Serial Ports. They are Windows 95 Plug & Play and have PS/2 Mouse connection.

They have an Intel 'TX' Chipset (82430TX), and 4x SIMM, 2x DIMM Sockets (Max 256MB RAM). They support Ultra DMA/33 and have 2x USB connectors.

ATX

07-93-5057 GA-586ATX3 £69 £81.08
BABY AT (5-pin AT keyboard connection)
07-93-5035 GA-586TX £62 £72.85

Pentium II - Slot I 66MHz

ATX

These motherboards are fitted with Intel 'LX' Chipset (440LX) and support Ultra DMA/33. They have 4 x DIMM Sockets for SDRAM (1Gb max memory), 2x USB ports, 1x AGP, with Super I/O and built-on floppy and EIDE/Ultra-IDE support.
07-93-6001 GA-686LX £85 £99.88
07-93-6021 GA-686DLX - Dual Processor slots and on-board Adaptec Ultra-wide SCSI support £195 £229.13

When you buy a motherboard from SMC, you get full technical support.

You also get SMC's FREE 16-page, easy-to-follow Installation Guide.

Subjects covered include:
Mounting the board,
Installing Processors and Memory, making Power and Case connections.
Basic and Advanced connections, configuring your BIOS and a section on Troubleshooting.



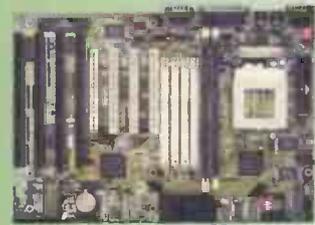
FULL OF TIPS



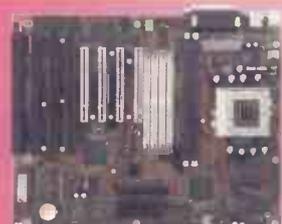
INTEL 'ATLANTA' 07-31-2081 £105 £123.38 inc.VAT



ASUS P2B-S 07-99-0732 £235 £276.13 inc.VAT



TMC ATX-TX 07-97-5901 £62 £72.85 inc.VAT



Gigabyte GA-ATX3 07-93-5057 £69 £81.08 inc.VAT

MOTHERBOARDS

http://www.smc-computers.co.uk

SMC Computers Plc

253-257 Farnham Rd Slough Berkshire SL2 1HA



~ ~ ALL MAJOR CREDIT CARDS ACCEPTED ~ ~

9



Why do I need to back up ?

For many people, making sure that their data is safe only ever becomes important when the data isn't there any more !
Imagine how many hours it would take to re-install software, set up all your applications as you had them before and then re-type all your work!
At SMC, we offer every kind of option, from parallel port devices which plug into your printer port to advanced SCSI DAT and Autoloader equipment, supporting from a basic 400Mb right through to a massive 144Gb.
Call us now for the solution to fit your requirements.

BACKUP : TAPE & DAT DRIVES

DAT Drives

ex VAT inc VAT

Internal drives

2Gb : 11Mb/min			
Tape type (see Page 18) - B1			
42-28-0120	HP DAT C1534	£335	£393.63
42-28-2020	HP SureStore 2000	£449	£527.58
42-13-0200	Seagate 4320	£339	£398.33
42-71-0020	Sony SDT-2000E	£345	£405.38
4Gb : 22Mb/min			
Tape type (see page 18) - B1			
42-28-0130	HP DAT C1536	£365	£428.88
42-28-2050	HP SureStore 5000	£475	£558.13
42-84-2000	Wangdat 3200	£399	£468.83
42-13-0400	Seagate 4324	£355	£417.13
5Gb : 22Mb/min			
Tape type (see page 18) - B1 or B2			
42-71-0040	Sony SDT-5200	£399	£468.83
4 - 8Gb : 44Mb/min			
Tape type (see page 18) - B1 or B2			
42-28-0140	HP DAT C1599A	£479	£562.83
42-28-2067	HP SureStore DAT8i	£585	£687.38
42-84-4000	Wangdat 3400DX	£479	£562.83
42-13-0800	Seagate 4326	£455	£534.63
42-71-0090	Sony SDT-5000 (22Mb/min)	£455	£534.63
42-71-0080	Sony SDT-7000 QUAD	£489	£574.58
12 - 24 GB : 44Mb/min			
Tape type (see page 18) - B1, B2 or B3			
42-28-0240	HP DAT C1554A	£679	£797.83
42-28-2070	HP SureStore DAT24i DDS-3	£795	£934.13
42-84-9000	Wangdat TS3900i	£695	£816.63
42-71-0120	Sony SDT-9000 (22Mb/min)	£625	£734.38
64 GB Autoloaders			
Tape type (see page 18) - B1 or B2			
42-71-0320	Sony TSL-7000 (22Mb/min)	£1299	£1526.33
72 - 144 GB Autoloaders			
Tape type (see page 18) - B1, B2 or B3			
42-28-7144	HP DAT C5648A	£1749	£2055.08
DDS-3 (6 tapes)			

External Drives

2GB : 11Mb/min			
Tape type (see Page 18) - B1			
42-28-0125	HP DAT C1534-X	£425	£499.38
42-28-2025	HP SureStore 2000-X	£519	£609.83
42-84-1005	Wangdat 3100-X	£435	£511.13
42-13-0205	Seagate 4350	£415	£487.63
4GB : 22Mb/min			
Tape type (see page 18) - B1			
42-28-0135	HP DAT C1536-X	£429	£504.08
42-28-2055	HP SureStore 5000-X	£545	£640.38
42-84-2005	Wangdat 3200-X	£489	£574.58
42-13-0405	Seagate 4354	£429	£504.08
4 - 8GB : 44Mb/min			
Tape type (see page 18) - B1 or B2			
42-28-0145	HP DAT C1599A-X	£549	£645.08
42-28-2069	HP SureStore DAT8e	£669	£786.08
42-84-4005	Wangdat 3400DX-X	£579	£680.33
42-13-0805	Seagate 4356	£545	£640.38
42-71-0095	Sony SDT-5000/X (22Mb/min)	£525	£616.88
12 - 24GB : 44Mb/min			
Tape type (see page 18) - B1, B2 or B3			
42-28-2073	HP SureStore DAT24e DDS-3	£879	£1032.83
42-84-9005	Wangdat TS3900e 12-24Gb, DDS-3	£745	£875.38
64GB Autoloaders			
Tape type (see page 18) - B1 or B2			
42-71-0325	Sony TSL-7000 (22Mb/min)	£1369	£1608.58
72 - 144GB Autoloaders			
Tape type (see page 18) - B1, B2 or B3			
42-28-2144	HP SureStore DAT24X6e	£2129	£2501.58
DDS-3 (6 tapes)			

Product Link



Tape media : see page 17

DLT Drives

ex VAT inc VAT

DLT technology offers high performance with exceptional reliability for backup operations involving the new generation of high end servers & workstations.
Fast backup speeds are combined with advanced error detection to give complete peace of mind.
All products are supplied with user documentation, TapeAssure software on CD, SCSI cable and terminator, power cable, DLT cleaning cartridge and one piece of DLT media for instant use.
A SCSI controller is required.

Hewlett Packard SureStore



If the protection of mission-critical data is a priority then the DLT range is the best solution, offering exceptional reliability as a result of robust drive construction, extremely durable media and advanced error detection.
The DLT range offers capacities from 40Gb to 70Gb with sustained transfer rates of 2.5Mb/sec up to 10Mb/sec.

Tape type (see Page 18) -F2			
42-28-1579	DLT40e 40Gb External	£2399	£2818.83
42-28-5658	DLT70e 70Gb External	£4399	£5168.83

Product Link

Backup Software : Page 29



HEWLETT PACKARD

SMC provides a flexible choice of tape drives for any system configuration, whether a combination of drives and backup software, or a complete plug-and-play solution.

The Hewlett Packard range covers most options you will consider. At the top of the range is the industry-leading C5648A DAT Autoloader, based on the fastest DDS-3 DAT drive in the industry today. This uses standard DDS-3 125M cartridge tapes with a native capacity of 12Gb : this can be increased using compression to typically 24Gb, thereby giving up to a massive 144Gb using a six-cartridge magazine.

Drives in the HP SureStore range are supplied with one media tape, one cleaning tape, basic backup software and a full operating manual. Internal drives have a bracket set whilst external drives are supplied with a premium-quality data cable.



Tape Drives

ex VAT inc VAT

HP Colorado Travan

1.6 - 3.2 GB - 9.5MB/min			
Tape type (see Page 18) - A3			
48-10-2000	T3000 Internal	£108	£126.90
2.5-5.0GB			
Tape type (see Page 18) - A5			
48-10-2505	HPC5GB/ATAPI EIDE Internal	£127	£149.23
48-10-2509	HPC5GB/PP P/Port	£159	£186.83

Wangtek

1GB - 17MB/min			
Tape type (see Page 18) - D2, D3 OR D4			
48-84-1000	51000ES SCSI Internal	£299	£351.33

lomega Ditto

See feature on opposite page

Seagate

3.2GB Floppy Drive interface - 19MB/min			
Tape type (see Page 18) - A3			
48-13-3200	TSM3200R Internal	£95	£111.63
4GB Hard Drive interface - 54MB/min			
Tape type (see Page 18) - C7			
48-13-8000	TST8000R-A EIDE Internal	£145	£170.38
48-13-8005	TST8000R-S SCSI Internal	£179	£210.33
48-13-8015	TST8000ES-S SCSI External	£229	£269.08

Tape Support Packs

ex VAT inc VAT

Hewlett Packard

99-28-9461	H5461A - SureStore Tape T4i	£35	£41.13
99-28-9462	H5462A - SureStore 2000/S000, DAT 8	£47	£55.23
99-28-9464	H5465A - SureStore 6000	£66	£77.55
99-28-9471	H5471A - SureStore 12000	£118	£138.65
99-28-9475	H5475A - SureStore Tape 30e DLT	£140	£164.50
99-28-9485	H5485A - SureStore Tape 70e DLT	£299	£351.33
99-28-9511	H5511A - SureStore Tape 40e DLT	£192	£225.60

SALES HOTLINES: **01753 550333**

FAX: 01753 524443



SALES LINES OPEN: MONDAY TO FRIDAY: 8.30am - 6.30pm SATURDAY: 9am - 1pm

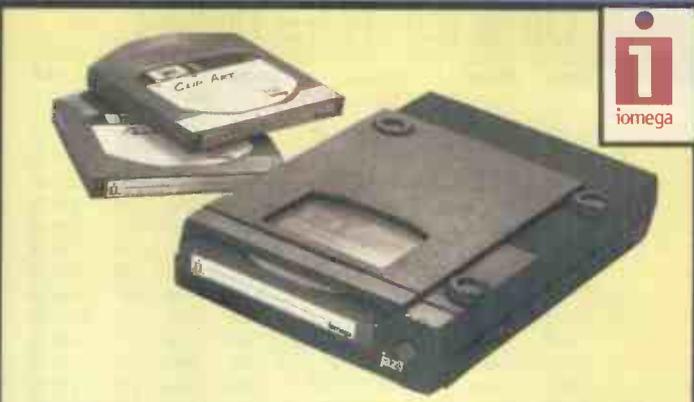
- THE BEST YOU'LL GET -

IOMEGA REMOVABLE & TAPE DRIVES



Iomega ZIP

	ex VAT	inc VAT
35-35-0105 SCSI - External	£86	£101.05
35-35-0100 SCSI - Internal		
Including controller	£86	£101.05
30-35-0100 ATAPI - Internal	£69	£81.08
37-35-0100 Parallel port	£86	£101.05
37-35-0106 Parallel port + 6 media/mouse	£139	£163.33
35-35-3537 ZIP Plus		
Parallel port/SCSI	£119	£139.83
Notebook (CNF) Drives - Internal		
Please check compatibility: for latest models only		
35-35-9110 Toshiba	£219	£257.33
35-35-9120 IBM	£219	£257.33
35-35-9130 Compaq	£219	£257.33
Media (Cartridges)		
95-35-0101 Single	£9	£10.58
95-35-0110 10 Pack multicoloured	£85	£99.88
Accessories		
70-35-0003 Carry Case	£19	£22.33
26-35-0284 PCMCIA to SCSI card	£59	£69.33



Iomega JAZ

The JAZ drive is the ultimate in storing, transporting and running your applications. With operating speeds in excess of many conventional hard drives, the JAZ can handle even the most demanding use, including video, DTP and CAD/CAM applications. Not only is there no limit to the number of disks you can use, but with a capacity of 1 GB or 2GB you can store enormous amounts of data on a single cartridge.

Iomega JAZ

	ex VAT	inc VAT
SCSI Drives		
35-35-1000 1.0Gb - Internal	£169	£198.58
35-35-1005 1.0Gb - External	£197	£231.48
35-35-2000 2.0Gb - Internal	£309	£363.08
35-35-2005 2.0Gb - External	£379	£445.33
Media (Cartridges)		
95-35-1001 1.0Gb - Single	£55	£64.63
95-35-2001 2.0Gb - Single	£95	£111.63
Accessories		
70-35-0003 Carry Case	£19	£22.33
26-35-0450 PCMCIA to SCSI card	£77	£90.48
26-35-0347 ISA 16-bit SCSI card	£59	£69.33
26-35-0346 PCI Bus-mastering SCSI card	£65	£76.38
75-35-0231 Parallel/SCSI convertor	£29	£34.08



Iomega DITTO

	ex VAT	inc VAT
Ditto 2000		
2GB, 19MB/min		
Tape type (see Page 18) - E1		
46-35-2000 Internal Drive	£56	£65.80
46-35-2009 Parallel Port Drive	£88	£103.40
46-35-2003 Bundle: P/P Drive with carry case & 3 tapes	£125	£146.88
Ditto Max		
3-7GB, 36MB/min		
Tape type (see Page 18) - E2, E3 OR E4		
46-35-3070 Internal Drive	£99	£116.33
46-35-3075 Parallel Port Drive	£129	£151.58
Ditto Max Pro		
3-10GB, 36MB/min		
Tape type (see Page 18) - E2, E3, E4 OR E5		
46-35-3010 Internal Drive	£139	£163.33
46-35-3015 Parallel Port Drive	£169	£198.58
ISA Controller		
26-35-0030 DITTO-DASH	£19	£22.33



From 2GB up to 10GB, the DITTO offers the most versatile small tape backup range on the market. The DITTO MAX even allows you to customise your capacity by using 3, 5, 7 or 10GB* cartridges in the same drive. With installation taking just 5 minutes and backup involving simple point and click activation, you won't find an option that's easier to use.

*10GB: Ditto Max Pro only.

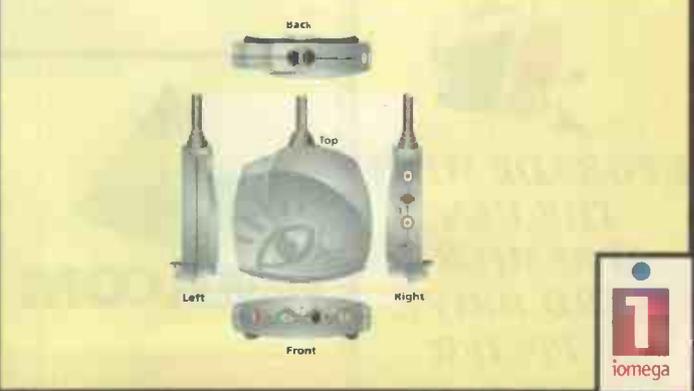


Iomega BUZ

The BUZ is a cross-platform video capture board and SCSI card that allows you to put multimedia from camcorders, VCRs, DVD and CD-ROM drives into your PC ... and then customise it using the easiest software around. From there, you can share it with others using a ZIP or JAZ disk, or even the Internet! Iomega have again brought stunning new technology to the market at a very affordable price.

Iomega BUZ

	ex VAT	inc VAT
62-35-0700 Multimedia Card SCSI	£149	£175.08



http://www.smc-computers.co.uk

SMC Computers Plc
253-257 Farnham Rd Slough Berkshire SL2 1HA



~ ALL MAJOR CREDIT CARDS ACCEPTED ~

11

What size Hard Drive do I need ?

With very small differences between the cost of different size Hard Drives, it is obviously tempting to go for the biggest drive within your immediate budget. However, there are several factors you should consider when making your decision. Your needs will increase if you use space-hungry software packages and/or operating system. (Don't forget Windows 98 is about to launch, with a maximum disk requirement of 300MB!) On the other hand, if you run most of your applications direct from CD, this will obviously lower your anticipated requirements, as will whether you use removable media (eg lomega ZIP or JAZ) where you can have an external "plug-in" library of data and/or applications. If you need advice, just give us a call and we'll help you choose the option that's best suited to your requirements.

HARD DRIVES : ULTRA-IDE & PCMCIA

Ultra-IDE Hard Drives

Part No	Size	Make	Model	Cache		ex.VAT	inc.VAT
2.1Gb - 3.2Gb							
30-24-3021	2.1GB	Fujitsu	MPB3021AT	256k 10ms		£82	£96.35
30-39-2160	2.1GB	Maxtor	82160D2	256k 9.7ms		£85	£99.88
30-64-2100	2.1GB	Quantum	SE2100AT	128k 9.5ms		£85	£99.88
30-64-2111	2.1GB*	Quantum	CY2111AT 5.25"	128k 12ms		£85	£99.88
30-70-2122	2.1GB	Seagate	ST32122A	128k 12ms		£85	£99.88
30-86-2100	2.1GB	Western Dig	AC12100AU	128k 12ms		£89	£104.58
30-95-2152	2.1GB*	Samsung	WNR321520A	128k 11ms		£89	£104.58
30-95-2543	2.5GB*	Samsung	WNR325430A	128k 11ms		£89	£104.58
30-70-2503	2.5GB*	Seagate	ST32531A	128k 12ms		£89	£104.58
30-86-2505	2.5GB	Western Dig	AC22500AU	128k 12ms		£92	£108.10
30-39-0288	2.8GB	Maxtor	90288D2	256k 9ms		£95	£111.63
30-24-3032	3.2GB	Fujitsu	MPB3032AT	256k 10ms		£97	£113.98
30-64-3201	3.2GB	Quantum	SE3200AT	128k 9.5ms		£97	£113.98
30-70-3232	3.2GB	Seagate	ST33232A	128k 12ms		£99	£116.33
30-86-3205	3.2GB	Western Dig	AC23200AU	128k 12ms		£99	£116.33

4.0Gb - 5.7Gb

30-24-3043	4.3GB	Fujitsu	MPB3043AT	256k 10ms		£112	£131.60
30-39-4320	4.3GB	Maxtor	84320D4	256k 9.7ms		£112	£131.60
30-39-0432	4.3GB	Maxtor	90432D3	256k 9ms		£112	£131.60
30-64-4300	4.3GB	Quantum	SE4300AT	128k 9.5ms		£112	£131.60
30-64-4320	4.3GB	Quantum	ST4320AT	128k <10ms		£112	£131.60
30-64-4335	4.3GB*	Quantum	CY4335AT 5.25"	128k 12ms		£99	£116.33
30-70-4342	4.3GB	Seagate	ST34342A	128k 12ms		£112	£131.60
30-86-4300	4.3GB	Western Dig	AC34300AU	256k <11ms		£112	£131.60
30-86-5100	5.1GB	Western Dig	AC35100AU	256k <11ms		£135	£158.63
30-24-3152	5.2GB	Fujitsu	MPB3052AT	256k 10ms		£137	£160.98
30-39-0576	5.7GB	Maxtor	90576D4	256k 9ms		£139	£163.33

6.4Gb - 11.5Gb

30-24-3064	6.4GB	Fujitsu	MPB3064AT	256k 10ms		£145	£170.38
30-30-8064	6.4GB	IBM	00K0355	512k 8.5ms		£149	£175.08
30-39-6480	6.4GB	Maxtor	86480D6	256k 9.7ms		£139	£163.33
30-64-6400	6.4GB	Quantum	SE6400AT	128k 9.5ms		£159	£186.83
30-64-6480	6.4GB	Quantum	ST6480AT	128k <10ms		£145	£170.38
30-64-6510	6.4GB*	Quantum	CY6510AT 5.25"	128k 12ms		£119	£139.83
30-70-6451	6.4GB	Seagate	ST36451A	512k 9.9ms		£145	£170.38
30-86-6400	6.4GB	Western Dig	AC36400AU	256k <9.5ms		£145	£170.38
30-30-8084	8.4GB	IBM	00K0394	256k 8.5ms		£195	£229.13
30-39-8400	8.4GB	Maxtor	88400D8	256k 9.7ms		£195	£229.13
30-64-8400	8.4GB	Quantum	SE8400AT	128k 9.5ms		£205	£240.88
30-39-1152	11.5GB	Maxtor	91152D8	256k 9ms		£265	£311.38

All the above hard drives come with a 3 year warranty and are 3.5" wide unless stated otherwise.
Drives marked * are standard EIDE drives, with a lower data transfer rate.
Ultra-IDE drives can also work as standard IDE/EIDE drives.
We recommend the Promise PCI Ultra33 controller for optimized transfer rates.

IDE/EIDE/UIDE Controllers

		ex VAT	inc VAT
IDE			
24-95-1300	IDESPC, ISA, 2HD/2FD, with I/O Ports	£13	£15.28
ADP60 with on-board BIOS			
The ADP60 card fits into a standard ISA slot and enables older PC's with BIOS limitations to run modern Hard Drives without restrictions on capacity.			
24-97-0300	ADP60 ISA, 2HD, LBA Support	£35	£41.13
24-97-0355	ADP60F ISA, 2HD/2FD, LBA Support	£39	£45.83

EIDE

With ATAPI/CD-ROM & LBA support			
24-97-1360	EIDEMAX, ISA, 2HD	£24	£28.20
24-97-1365	EIDEPRO, ISA, 4HD/2FD	£39	£45.83
24-91-2300	DC2300+ VESA, 4HD/2FD	£35	£41.13
24-91-4035	DC4030+ VESA Cache, 4HD	£85	£99.88

FloppyMax

24-97-0120	FloppyMax, ISA Add-on for LS-120 (120Mb A:Drive)	£25	£29.38
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ULTRA DMA33 (UIDE)

24-97-0033	Promise Pro ATA Ultra33, PCI add-on controller supporting Quantum ST and UIDE drives. Co-exists with existing IDE/EIDE - ATAPI devices	£44	£51.70
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EIDE 2.5" Hard Drives

Part No	Size	Make	Model	Cache		ex VAT	inc VAT
1.4Gb - 3.2Gb							
30-75-2104	2.1Gb	Toshiba	MK2104MAV	128k 13ms		£119	£139.83
30-75-3205	3.2Gb	Toshiba	MK3205MAV	128k 13ms		£175	£205.63
30-75-4006	4.0Gb	Toshiba	MK4006MAV	128k 13ms		£249	£292.58

These Hard Drives come with a 2 year warranty. All are 12.7mm high with a 44-pin connector, but please check your system for compatibility.

Product Link

Utility Software : see Page 29



UPGRADE WITH THE UK'S PREMIER HARD DRIVE SUPPLIER

Amacom Flip Disk

	ex VAT	inc VAT
All drives include Novadisk backup software		
37-92-9028 2.8Gb	£329	£386.58
37-92-9042 4.2Gb	£349	£410.08
37-92-9064 6.4Gb	£409	£480.58
37-92-9080 8.0Gb	£499	£586.33



6.4Gb Flip disk
37-92-9064
£409
£480.58 inc.VAT

Amacom Flip Disks offer high capacity - up to 8.0Gb* - and a PCMCIA/Parallel Port interface for maximum convenience. Power is drawn from the mains or PC, giving yet more flexibility of application. With a 128Mb cache and 13ms access time, the Flip Disk gives high performance for both access and data transfer, and with Toshiba Disk Drives fitted, quality and reliability are assured.

*Using compression ratio of 2:1



Ultra SCSI Hard Drives

Part No	Size	Make	Model	Cache	ex VAT	inc VAT
2.1Gb - 4.5Gb						
35-30-2104	2.1GB	IBM	09J1034	512k 8.5ms	£109	£128.08
35-64-2100	2.1GB	Quantum	SE2100S Fireball SE	128k 9.5ms	£115	£135.13
35-86-2173	2.1GB	Western Dig	E2170-0003Enterprise512k	8ms	£189	£222.08
35-24-2200	2.2GB	Fujitsu	M2952S AL3	512k 8ms	£255	£299.63
35-70-2260	2.2GB	Seagate	ST32272N Barracuda	512k 8.8ms	£209	£245.58
35-64-3201	3.2GB	Quantum	SE3200S Fireball SE	128k 9.5ms	£142	£166.85
35-30-4304	4.3GB	IBM	09J1035 Ultrastar	512k 8.5ms	£159	£186.83
35-64-4301	4.3GB	Quantum	SE4300S Fireball SE	128k 9.5ms	£175	£205.63
35-64-4305	4.3GB	Quantum	ST4320S Fireball ST	128k <10ms	£159	£186.83
35-86-4363	4.3GB	Western Dig	E4360-0003Enterprise512k	8ms	£292	£343.10
35-30-4527	4.5GB	IBM	27H1713 Ultrastar	512k 7.5ms	£279	£327.83
35-64-4500	4.5GB	Quantum	XP34550S Atlas II	512k 8ms	£269	£316.08
35-70-4505	4.5GB	Seagate A/V	ST34501N Cheetah	512k 7.5ms	£379	£445.33
35-70-4515	4.5GB	Seagate	ST34572N Barracuda	512k 8.8ms	£315	£370.13

6.4Gb - 9.1Gb						
35-64-6400	6.4GB	Quantum	SE6400S Fireball SE	128k 9.5ms	£219	£257.33
35-64-6405	6.4GB	Quantum	ST6480S Fireball ST	128k <10ms	£225	£264.38
35-64-8400	8.4GB	Quantum	SE8400S Fireball SE	128k 9.5ms	£289	£339.58
35-24-9100	9.1GB*	Fujitsu A/V	M2949S AL3	512k 9.5ms	£497	£583.98
35-30-9188	9.1GB	IBM A/V	59H6588 Ultrastar	512k 7.5ms	£545	£640.38
35-30-9191	9.1GB	IBM	00K3990 UltrastarES	512k 7.5ms	£429	£504.08
35-64-9100	9.1GB	Quantum	XP39100S Atlas II	1024k 8ms	£479	£562.83
35-70-9105	9.1GB	Seagate A/V	ST19101N Cheetah	512k 8ms	£595	£699.13
35-70-9173	9.1GB	Seagate	ST39173N Barracuda	512k 7.5ms	£549	£645.08

18Gb - 23Gb						
35-30-1800	18GB	IBM	59H6589 Ultrastar	512k 7.5ms	£1079	£1267.83
35-70-0230	23GB	Seagate	ST423451N Elite	2048k 13ms	£1039	£1220.83

Data transfer rate on Ultra-SCSI drives is 20Mb/sec.
Drives marked * are Fast-SCSI-2 (10Mb/sec) only.

When you buy a Hard Drive from SMC, you get something no other company offers - a free 24 page, easy-to-follow Installation Guide containing everything you need to ensure a trouble-free set up.

It covers:

- > Getting Started & basic troubleshooting
- > IDE/EIDE Hard Drive Installation
- > CMOS configuration
- > Installing with & without a translating BIOS
- > SCSI Hard Drive installation & configuration
- > Creating a bootable floppy disk
- > Windows NT & Windows'95

FREE

WHEN YOU BUY FROM SMC



CHECK OUT CABLES & BOXES ON PAGE 14



Product Link

Drive cables & boxes page 16

UltraWide SCSI Hard Drives

Part No	Size	Make	Model	Cache	Access	ex VAT	inc VAT
2.1Gb - 4.5Gb							
35-30-2108	2.1GB	IBM	09J1036 Ultrastar	512k 8.5ms	£129	£151.58	
35-86-2177	2.1GB	Western D	E2170-0007Enterprise512k	8ms	£215	£252.63	
35-24-2203	2.2GB	Fujitsu	M2952QA AL3	512k 8ms	£289	£339.58	
35-70-2265	2.2GB	Seagate	ST32272W Barracuda512k	8.8ms	£289	£339.58	
35-24-4403	4.3GB	Fujitsu A/V	M2954QA AL3	512k 10ms	£299	£351.33	
35-30-4308	4.3GB	IBM	09J1037 Ultrastar	512k 8.5ms	£166	£195.05	
35-86-4367	4.3GB	Western D	E4360-0007Enterprise512k	8ms	£299	£351.33	
35-30-4537	4.5GB	IBM A/V	27H1772 Ultrastar	512k 7.5ms	£285	£334.88	
35-30-4547	4.5GB	IBM	00K0000 Ultrastar	512k 7.5ms	£229	£269.08	
35-64-4507	4.5GB	Quantum	XP34550W Atlas II	512k 8ms	£299	£351.33	
35-70-4507	4.5GB	Seagate A/V	ST34501W Cheetah	512k 7.5ms	£389	£457.08	
35-70-4517	4.5GB	Seagate	ST34572W Barracuda512k	8.8ms	£389	£457.08	

9.1Gb							
35-24-9103	9.1GB	Fujitsu A/V	M2949QA AL3	512k 9.5ms	£519	£609.83	
35-24-9105	9.1GB	Fujitsu	MAB3091SP	496k 7.5ms	£495	£581.63	
35-30-9190	9.1GB	IBM A/V	59H6590 Ultrastar	512k 7.5ms	£549	£645.08	
35-30-9118	9.1GB	IBM A/V	05J7618 Ultrastar	512k 7.5ms	£699	£821.33	
35-64-9107	9.1GB	Quantum	XP39100W Atlas II	1024k 8ms	£489	£574.58	
35-70-9107	9.1GB	Seagate A/V	ST19101W Cheetah	512k 8ms	£599	£703.83	
35-70-9174	9.1GB	Seagate	ST39173W Barracuda512k	7.5ms	£559	£656.83	

18Gb - 23Gb							
35-30-1891	18GB	IBM	59H6591 Ultrastar	512k 7.5ms	£1099	£1291.33	
35-70-0231	23GB	Seagate	ST423451W Elite	2048k 13ms	£1049	£1232.58	

Data transfer rate on Ultra-Wide SCSI drives is 40Mb/sec.

Adaptec SCSI Controller Cards

Kits (include software and internal cable)

Part No	Model	Interface	Ext.Con	Devices	Boot	ex VAT	inc VAT
ISA Bus							
26-03-1542	AHA1542CP	FastSCSI2	Micro-D	7&FD	Y	£152	£178.60
EISA Bus							
26-03-2742	AHA2742AT	FastSCSI2	Micro-D	14&FD	Y	£189	£222.08
26-03-2747	AHA2742W	WideSCSI2	Micro-D wide	15&FD	Y	£239	£280.83
PCI Bus							
26-03-2910	AHA2910B	FastSCSI2	Micro-D	7		£65	£76.38
26-03-2920	AHA2920	FastSCSI2	Micro-D	7		£88	£103.40
26-03-2941	AHA2940UA	UltraSCSI	Micro-D	7	Y	£142	£166.85
26-03-2947	AHA2940UW	UltraWide	Micro-D wide	15	Y	£172	£202.10
26-03-3940	AHA3940U	UltraSCSI	Micro-D	14	Y	£245	£287.88
26-03-3947	AHA3940UW	UltraWide	Micro-D wide	30	Y	£285	£334.88
PCMCIA (PC Card)							
26-03-1460	APA1460A-2	FastSCSI2	PCMCIA, SCSI I&2 cables	7		£99	£116.33
MCA							
26-03-1640	AHA1640	FastSCSI2	Micro-D/MCA	7	Y	£199	£233.83
RAID 0, 1, 0/1, or 5 (PCI Bus-Network & WinNT)							
26-03-0131	AAA-131	UltraWide	Micro-D wide	45		£269	£316.08
26-03-0133	AAA-133	UltraWide	Micro-D wide	45		£469	£551.08

Bare Cards (do not include software or cable)

Part No	Model	Interface	Ext.Con	Devices	Boot	ex VAT	inc VAT
ISA Bus							
26-03-1520	AHA1520B	FastSCSI2	Micro-D	7		£44	£51.70
26-03-1549	AHA1542	FastSCSI2	Micro-D	7&FD	Y	£115	£135.13
PCI Bus							
26-03-2943	AHA2940UA	UltraSCSI	Micro-D	7	Y	£118	£138.65
26-03-2949	AHA2940UW	UltraWide	Micro-D wide	15	Y	£149	£175.08

HARD DRIVES: SCSI & ULTRA-SCSI

http://www.smc-computers.co.uk

CD-ROM technology was heralded as a breakthrough in data storage and transmission, but the first (single speed) drives were only of use in loading software or referencing data. As time went on, speeds increased so that as four-speed and eight-speed drives arrived, it was possible to run applications (including some games) from the CD. With today's 24- and 32-speed drives, even fast-moving animation can be run from the CD, enabling whole libraries of software and data to be stored and accessed without taking up valuable Hard Drive space. Technology has moved on again, so that with CD-ReWriters and Recorders it is now possible to store your own data in convenient CD format, and with the introduction of DVD CD-ROM drives providing enormous capacity of up to 17Gb, the range of uses is extending to the most complex and demanding Multimedia applications.



CD ROM, DVD, OPTICAL & PD DRIVES

CD-ROM Drives

ex VAT inc VAT

EIDE / ATAPI - internal

8 - speed

With data transfer 1200 KB/sec			
51-93-0068	Teac CD-C68 190ms		
	6-disc Autochanger	£95	£111.63

24 - speed

MPC-3 Compatible, with data transfer 3600 KB/sec			
51-48-0240	Mitsumi FX240	£45	£52.88
51-15-2402	Creative Blaster CD 90ms	£59	£69.33
51-26-8240	LG G'star CRD-8240B 90ms	£42	£49.35
51-57-0587	Panasonic CR-587 85ms	£42	£49.35
51-62-2400	Pioneer DR-A24X 75ms	£49	£57.58
51-95-2430	Samsung 5CR2430	£39	£45.83
51-93-0524	Teac CD524E 90ms	£42	£49.35
51-75-6102	Toshiba XM6102B 90ms	£42	£49.35

32 - speed

MPC-3 Compatible, with data transfer 4800 KB/sec			
51-75-6202	Toshiba XM6202B	£49	£57.58
51-48-0320	Mitsumi FX320	£45	£52.88
51-26-8320	LG G'star CRD-8320B 80ms	£45	£52.88
51-93-0532	Teac CD532E 85ms	£59	£69.33
51-62-3200	Pioneer DR-A045 70ms (Slot loading)	£52	£61.10

All above CD-ROMs are tray loading, supplied with software drivers and audio cable

SCSI - Internal

12 - speed

With data transfer 1800 KB/sec			
51-75-5701	Toshiba XM5701B 115ms (T)	£69	£81.08

20 - speed

With data transfer 3000 KB/sec			
51-93-2000	Plextor 20Plex 95ms (T)	£99	£116.33

24 - speed

With data transfer 3600 KB/sec			
51-62-2415	Pioneer DR-U24X 75ms (T)	£79	£92.83

32 - speed

With data transfer 4800 KB/sec			
51-93-3200	Plextor PX32Tsl 85ms (T)	£82	£96.35
51-93-3210	Plextor PX32Csl 85ms (C)	£129	£151.58
51-75-6201	Toshiba XM6201B (T)	£65	£76.38
51-62-3215	Pioneer DR-U065 70ms (S)	£79	£92.83
51-93-1532	Teac CD532S (T)	£69	£81.08

SCSI - External

12 / 24 - speed

With data transfer 1800 KB/sec			
51-62-1412	Pioneer DRM-6324X 6-disc Autochanger	£349	£410.08

32 - speed

Ultra 5 SCSI, with data transfer 4800 KB/sec			
51-93-3205	Plextor PX32Tse 85ms (T)	£129	£151.58
51-93-3215	Plextor PX32Cse 85ms (C)	£159	£186.83

Plextor drives have a 2-year warranty

(T) = Tray Loading. (C) = Caddy Loading

CD Caddies

IMPORTANT:

These are only available when purchasing a CD-ROM Drive.
51-95-9700 CD-ROM Caddy £9 £10.58

ex VAT inc VAT

PCMCIA

Amacom EZCD Card

The EZCD Card has a 256K cache			
51-92-3008	8-speed 145ms	£115	£135.13
51-92-3016	16-speed 125ms	£135	£158.63
51-92-3024	24-speed 125ms	£139	£163.33

Amacom EZCD Plus

The EZCD Plus has a 256K cache and 125ms access time. It can also be used as a standalone CD player. Power is drawn direct from your PC or via a mains adaptor/battery pack (supplied with the 20-speed version).			
51-92-5010	10-speed	£165	£193.88
51-92-5020	20-speed	£179	£210.33

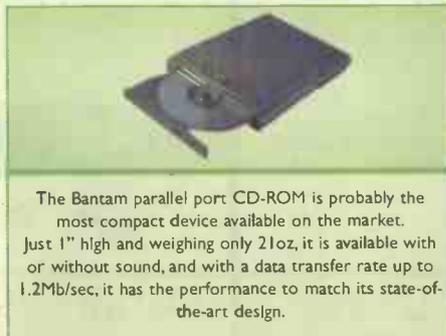
Parallel Port

These plug into the Parallel (Printer) Port of your PC, and are fitted with an additional Parallel Port Interface so you can still use your printer with the drive connected.

Micro-Solutions Backpack

Drives with sound have Microsoft Sound compatibility			
51-42-0800	8-speed	£125	£146.88
51-42-0804	8-speed with sound	£155	£182.13
51-42-3200	32-speed	£169	£198.58
51-42-3204	32-speed with sound	£189	£222.08

Micro-Solutions Bantam



The Bantam parallel port CD-ROM is probably the most compact device available on the market. Just 1" high and weighing only 21oz, it is available with or without sound, and with a data transfer rate up to 1.2Mb/sec, it has the performance to match its state-of-the-art design.

The Bantam drive supports DOS, Windows 3x, 95 and NT.

Drives with sound support 16-bit & 8-bit sound			
51-42-1000	Bantam 10-speed	£145	£170.38
51-42-1004	Bantam 10-speed with sound	£169	£198.58
51-42-2400	Bantam 24-speed	£165	£193.88
51-42-2404	Bantam 24-speed with sound	£189	£222.08

Amacom EZCD

The EZCD drive has a 256K cache and 125ms access time			
51-92-0016	16-speed	£125	£146.88
51-92-1016	16-speed with 16-bit sound	£169	£198.58
51-92-0024	24-speed	£135	£158.63
51-92-1024	24-speed with 16-bit sound	£179	£210.33

DVD CD-ROM Drives

DVD (Digital Versatile Disk) looks exactly like a normal CD, but stores over 26 times the amount of data. A standard DVD disk can hold over two hours of high quality MPEG-2 video with better-than-CD quality audio. DVD-ROM disks can be used to distribute all types of computer data with storage capacities from 4.7Gb and 17Gb, making them ideal for distribution of large multimedia or interactive applications such as music videos and full-length films.

Creative Labs Encore DVD CD-ROM Kit

51-15-1700
£170
(£199.75 inc.VAT)



Add the very latest technology to your Windows 95 PC and have the confidence of choosing the market leader in Multimedia technology. The Creative DVD has a unique view zone function., it is compatible with standard CD Discs and will play DVD movies to your monitor or TV. It includes:

- > Internal EIDE/ATAPI, DVD-ROM Drive for Windows 95 (with full 17Gb capacity)
- > MPEG-2 PCI decoder card with full screen & TV out for broadcast quality output
- > All required cables
- > Software titles : Claw and Wing Commander 4

Product Link

CD Sound Cables : See Page 16

Optical & PD

ex VAT inc VAT

Optical Drives

50-24-0640	Fujitsu M2513A 640Mb Internal	£219	£257.33
50-91-0230	Olympus Power MO 230 II Universal 230Mb External P/Port & SCSI	£179	£210.33
50-91-2600	Olympus Power MO 2600 2.6Gb External	£1349	£1585.08

All above units are 5 SCSI devices requiring a 5 SCSI Controller.

Panasonic PD

51-57-0410	LF1004BK Internal SCSI kit 4-Speed CD + 650Mb Optical	£249	£292.58
51-57-0811	LF1196AB Internal EIDE Drive, 8-Speed CD + 650Mb Optical	£199	£233.83
51-57-0815	LF1500EPB Parallel Port drive, 8-speed CD + 650Mb Optical	£249	£292.58

OLYMPUS

Power MO 230 Optical Writer

50-91-0230
£179

£210.33inc.VAT



THERE'S MORE TO CHOOSE FROM AT SMC





SALES LINES OPEN : MONDAY TO FRIDAY : 8.30am - 6.30pm SATURDAY : 9am - 1pm - THE BEST YOU'LL GET -

CD RECORDERS, RE-WRITERS & TOWERS

CD-ROM Towers

ex VAT inc VAT

All options listed are Full Tower SCSI CD ROM solutions

Standalone PC use

Toshiba
With 8 bays and 7 CD ROM drives
51-75-0908 32-speed option £859 £1009.33
With 16 bays and 14 CD ROM drives
51-75-1715 32-speed option £1579 £1855.33

Plextor
With 8 bays and 7 CD ROM drives
51-93-0809 32-speed option £889 £1044.58
With 16 bays and 14 CD ROM drives
51-93-1517 32-speed option £2189 £2572.08

Network CD Servers

supplied with AXIS StorPoint™ CD Server modules included

Toshiba
With 8 bays and 7 CD ROM drives
51-75-6207 XM6207/AX - 32-speed option £1359 £1596.83
With 16 bays and 14 CD ROM drives
51-75-6214 XM6214/AX - 32-speed option £2339 £2748.33

Plextor
With 8 bays and 7 CD ROM drives
51-93-0732 PX7732/AX - 32-speed option £1399 £1643.83
With 16 bays and 14 CD ROM drives
51-93-1472 PX1472/AX - 32-speed option £2899 £3406.33

CD-ReWriters

ex VAT inc VAT

CD-RW disks can be read in CD-RW, Multiread and DVD drives.
CD-RW drives produce standard CD (CD-R) for all CD players!

Hewlett Packard Surestore

1 Mb cache : 2-speed write/rewrite, 6-speed play
HP drives include software, 1 CD-RW and 1 CD-R media
52-28-4380 7200i EIDE/ATAPI internal £235 £276.13
52-28-4381 7200e Parallel Port £289 £339.58
Requires Pentium 133Mhz, 32Mb RAM, Win'95, 1 free IDE channel or EPP port.

TraxData

99-95-0020 PRESSIT - CD Labeller £20 £23.50
2-speed write/rewrite, 6-speed play
52-95-2260 2260ELPro - SCSI Internal £249 £292.58
4-speed write, 2-speed rewrite, 6-speed play
52-95-4260 4260ELPro - SCSI Internal £285 £334.88
52-95-4268 4260ELPro - SCSI External £329 £386.58
52-95-4262 4260ELPlus - EIDE Internal £335 £393.63
PCI SCSI controller & audio recording software are also available.

Yamaha

4-speed write, 2-speed rewrite, 6-speed play
Kits include drive, 1 x media, Easy CD software & Direct CD.
All SCSI drives require a controller card.
52-93-4001 CRW4001T-VK - Internal EIDE kit £279 £327.83
52-93-4260 CRW4260T - Internal SCSI drive £279 £327.83
52-93-4261 CRW4260TX - External SCSI drive £329 £386.58
52-93-4262 CRW4260TVK - Internal SCSI kit £299 £351.33
52-93-4264 CRW4260TX-VK - Extnl SCSI kit £325 £381.88

CD-Recorders

ex VAT inc VAT

Plasmon

4-speed write, 8-speed play
Plasmon SCSI drives have a 1Mb Cache and 175ms access time and are tray loading.
Supplied with CD software for Windows 95, Windows 3.1x and NT3.51 & 4.
52-95-2120 CDR4801 - Internal drive £239 £280.83
52-95-2125 CDR480E - External drive £279 £327.83
52-95-2122 CDR4801-S - Internal drive and SCSI controller £299 £351.33
52-95-2127 CDR480E-SI - External drive and SCSI controller £369 £433.58

Plextor

4-speed write, 12-speed play
Plextor SCSI drives have a 2Mb Cache and 190ms Access time.
Supplied with software, cables and a free caddy. Warranty is 1 year.
52-93-4120 PX-R412CI - Internal drive £325 £381.88
52-93-4125 PX-R412Ce - External drive £369 £433.58

TraxData

4-speed write, 12-speed play
Traxdata SCSI drives include WinOnCD to GO for Windows 95, 3.1x and NT4.
52-95-4120 4120EL Pro - Internal SCSI drive £249 £292.58
52-95-4128 4120EL Pro - External SCSI drive £285 £334.88

See listings above for complete solutions available from SMC



AXIS StorPoint™

Access everything with THINSERVER™ technology

A breakthrough technology that makes peripherals of all kind 'network ready'. Access your CD-ROMs with no intermediate PC client or server, allowing them to work faster & smarter.

Everything is plug and play!



HEWLETT PACKARD

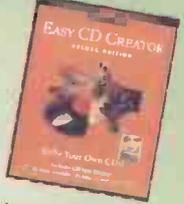
SureStore 7200i CD Re-Writer

52-28-4380
£235
£276.13 inc. VAT



Easy CD Creator™ Deluxe Edition

01-91-2445
£64
(£75.20 Inc. VAT)



NOW YOU CAN :

- > Store your photographs & video
- > Save your presentations & graphics
- > Back up your important files to CD
- > Duplicate CD's with CD Copier

CD-ROM JukeBoxes

ex VAT inc VAT

Pioneer

These are Quad-Speed External units
51-62-1418 DRM-1804X - 18 CD's, 3 drives 300ms, 600Kb/s £1339 £1573.33
51-62-1450 DRM-5004X - 500 CD's, 1 Drive (max 4) 280ms, 600Kb/s £11985 £14082.38

Product Link

Media : see Page 18




WIN A FERRARI F355

From now until 31st December 1998, vouchers will be included with every Traxdata product purchased (including media) with the chance to win a Ferrari F355 in a draw at the end of the period.

(NOTE : no purchase necessary)

In a period of less than four years, the Traxdata Group of Companies has grown into the European market leader in the field of CD-Recordable media and its product range covers Digital Optical Media, CD recording, CD duplication and CD Labellers.

Not only is Traxdata's range at the forefront of technology, but every product is fully tested, certified and guaranteed. This provides both technical excellence and the highest standards of quality, so that you, the customer, can be sure of complete satisfaction with your purchase.

Whether it's a cable, a fitting kit or a drive box to house an external device, you can be sure that the product you buy from SMC will be of the highest quality.

Not only are all our products covered by a full guarantee, but our dedicated Customer Support team handle any problems so that you can be assured of the best service available.



Data Cables

Internal Cables

ex VAT inc VAT



Note: Cable lengths may vary - lengths given are nominal sizes.

SCSI - 50 pin

75-95-1501	Single drive, 19 inches	£8	£9.40
75-95-1502	Dual drive, 38 inches	£10	£11.75
75-95-1503	Triple drive, 38 inches	£15	£17.63
75-95-0500	Custom made to order, as required. Prices from:	£10	£11.75

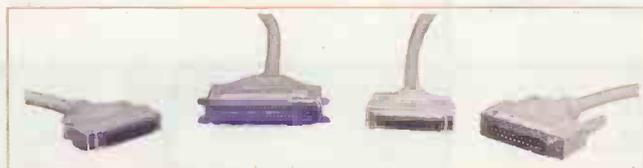
Wide SCSI - 68 pin

75-95-1703	Triple drive, for Wide SCSI	£20	£23.50
75-95-1705	5 drives, for Wide SCSI	£25	£29.38

IDE - 40 pin

75-95-1401	Single Drive - 12.5"	£8	£9.40
75-95-1402	Dual Drive - 18" (4" gap)	£10	£11.75
75-95-1403	Dual Drive - 20" (9" gap)	£15	£17.63
75-95-0400	Custom made, up to 18" (Max of 2 drives/cable) From:	£10	£11.75

External Cables



SCSI

All cables are a nominal 1 metre in length unless specified otherwise.

75-95-3521	25-pin D to 50-pin Centronics	£14	£16.45
75-95-3719	25-pin D to 68-pin Wide SCSI	£28	£32.90
75-95-3551	50-pin Centronics to 50-pin Centronics	£15	£17.63
75-95-3552	50-pin Centronics to 50-pin Centronics - 2 metres	£18	£21.15
75-95-3571	50-pin Micro D to 50-pin Centronics	£20	£23.50
75-95-3572	50-pin Micro D to 50-pin Centronics - 2 metres	£28	£32.90
75-95-3721	50-pin Micro D to 25-pin D	£18	£21.15
75-95-3771	50-pin Micro D to 50-pin Micro D	£25	£29.38
75-95-3661	Wide SCSI to Wide SCSI	£26	£30.55

Sound Cables

75-75-0404	ATAPI to ATAPI, 4-4pin for EIDE CD-ROMs	£8	£9.40
75-57-0570	Panasonic Cable for SCSI CD-ROM only (not IDE)	£8	£9.40
75-75-0751	Toshiba Cable, 3-4 for 3xxx series	£8	£9.40
75-75-0757	Toshiba Cable, 4-4 for 4xxx series	£8	£9.40
75-75-0753	Toshiba Cable, 4-4 for 5xxx series	£8	£9.40

Power Cables

75-95-9357	Power Splitter 'Y' Cable - converts single drive power lead to double	£3	£3.53
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Printer (Parallel Port) Cables

75-95-6002	1.8 metres	£5	£5.88
75-95-6003	3.0 metres	£7	£8.23
75-95-6005	5.0 metres	£9	£10.58

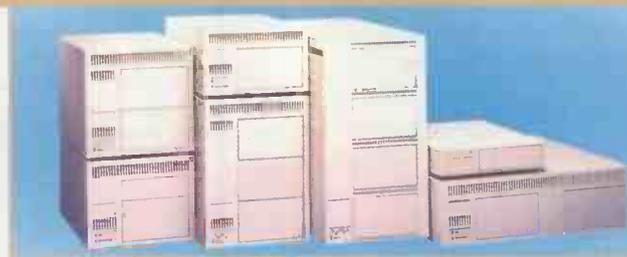
NOTE: All cables are usually ex-stock, but orders for custom-made Internal Cables (see above) may sometimes require an extra day to process.

Parallel Port Drive Boxes

73-97-1183	For IDE / EIDE / Ultra-IDE drives	ex VAT £65	inc VAT £76.38
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This is the ideal solution for turning a standard Hard Drive into a portable device. It is easy to install and Includes software to work with any size drive, which will then work at the speed of your parallel port.

External Drive Boxes



ex VAT inc VAT

Centronics

73-97-3113	1 x 3.5"HH, 40 watt	£65	£76.38
73-97-3213	2 x 3.5"HH, 65 watt	£99	£116.33
73-97-3413	4 x 3.5"HH, 2 x 65 watt	£189	£222.08
73-97-3114	1 x 3.5"HH, 30 watt	£69	£81.08
73-97-6114	1 x 5.25"FH, 65 watt	£94	£110.45
73-95-9412	2 x 5.25"HH, Conversion Kit for 73-97-6114	£14	£16.45
73-97-5116	1 x 5.25"HH, 40 watt	£62	£72.85
73-97-5114	1 x 5.25"FH, 30 watt	£65	£76.38
73-97-6215	2 x 5.25"FH, 2 x 65 watt	£175	£205.63
73-95-9524	4 x 5.25"HH, Conversion Kit for 73-97-6215	£24	£28.20
73-97-6315	3 x 5.25"FH, 3 x 65 watt	£239	£280.83
73-95-9536	6 x 5.25"HH, Conversion Kit for 73-97-6315	£34	£39.95
73-97-6415	4 x 5.25"FH, 4 x 65 watt	£345	£405.38

Micro-D

73-97-3133	1 x 3.5"HH, 40 watt	£79	£92.83
73-97-3233	2 x 3.5"HH, 65 watt	£119	£139.83
73-97-3433	4 x 3.5"HH, 2 x 65 watt	£199	£233.83
73-97-5134	1 x 5.25"FH, 30 watt	£85	£99.88
73-97-6144	2 x 5.25"FH, 65 watt	£115	£135.13

Fast-Wide

73-97-3152	1 x 3.5"HH, 40 watt	£95	£111.63
73-97-3252	2 x 3.5"HH, 65 watt	£145	£170.38
73-97-3452	4 x 3.5"HH, 65 watt	£215	£252.63

KEY: HH=Half-Height (1 bay high) FH=Full-Height (2 bays high)
Wide SCSI options are available on selected models: please call for details.

All boxes are TUV approved and come with a 3 year warranty.

Hard Drive Mounting Kits

ex VAT inc VAT

Fitting Bracket kit

This universal kit can be used to mount any 3.5" Hard Drive we sell into a 5.25" bay in virtually any standard PC case.
(Note: not suitable for cases using special bays or slide rails.)

79-95-1135	DBHD - for 3.5" IDE or SCSI drive	£9	£10.58
79-95-1125	DBHD2.5 - for 2.5" drive	£18	£21.15

Removable Caddies



Removable Drive Caddies enable easy movement of data between sites. They are ideal for use where large volumes of data may need to be physically transferred, and also where the removal of data for security purposes is required.

The Removable Caddy consists of a 5.25" docking bay which receives a sliding frame containing a 3.5" Hard Drive.
All kits are complete and come with full installation instructions.

79-97-3502	SCSI - High-duty plastic frame	£35	£41.13
79-97-3504	SCSI - Metal frame	£59	£69.33
79-97-3506	Fast/Wide SCSI - Metal frame	£79	£92.83
79-97-3102	IDE / EIDE / Ultra-IDE - High-duty plastic frame	£25	£29.38



SALES LINES OPEN: MONDAY TO FRIDAY: 8.30am - 6.30pm SATURDAY: 9am - 1pm

- THE BEST YOU'LL GET -

Removable Media

		ex VAT		inc VAT		ex VAT		inc VAT		
		Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+
95-35-0101	Iomega Zip 100Mb, Single	£9	£10.58	£8	£9.40	£7	£8.23			
95-35-0110	Iomega Zip 100Mb, 10 Pack (Multi-Coloured 10-pack, Inc Software)	£85	£99.88	£80	£94.00	£75	£88.13			
95-35-1001	Iomega Jaz 1.0Gb, Single	£55	£64.63	£55	£64.63	£52	£61.10			
95-35-2001	Iomega Jaz 2.0Gb, Single	£95	£111.63	£89	£104.58	£86	£101.05			
95-73-3135	Syquest 3.5" 135Mb, Single	£15	£17.63	£13	£15.28	£12	£14.10			
95-73-3270	Syquest 3.5" 270Mb, Single	£35	£41.13	£32	£37.60	£30	£35.25			
95-73-5044	Syquest 5.25" 44Mb, Single	£29	£34.08	£26	£30.55	£24	£28.20			
95-73-5088	Syquest 5.25" 88Mb, Single	£28	£32.90	£29	£34.08	£27	£31.73			
95-73-5200	Syquest 5.25" 200Mb, Single	£40	£47.00	£37	£43.48	£35	£41.13			



CD-ROM & Optical Media

CD-ROM		ex VAT		inc VAT		ex VAT		inc VAT		
		Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+
95-97-7174	CD Gold - CD media (74 Mins)	£4	£4.70	£3	£3.53	£2	£2.35			
95-97-0700	TRAX CD Gold - CD media (74 Mins)	£5	£5.88	£4	£4.70	£3	£3.53			
95-97-0774	TRAX CD Re-writable, CD-RW players	£17	£19.98	£16	£18.80	£14	£16.45			

Optical

		ex VAT		inc VAT		ex VAT		inc VAT		
		Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+
95-97-0128	128Mb, (LMD300)	£10	£11.75	£13	£15.28	£11	£12.93			
95-97-0230	230Mb, Fujitsu M2512A (OM230)	£8	£9.40	£9	£10.58	£8	£9.40			
95-97-0640	640Mb, Fujitsu M2513A (OM640)	£18	£21.15	£14	£16.45	£12	£14.10			
95-97-0653	650Mb, Panasonic LF1004-PD Drive	£19	£22.33	£16	£18.80	£15	£17.63			
95-97-1300	1.3Gb, HP C1716T, HP C2550A	£32	£37.60	£22	£24.68	£20	£21.15			
95-97-1500	1.5Gb, Panasonic LF7304, LF7300B	£82	£96.35	£83	£97.53	£80	£94.00			



Floppy/Super Floppy Disks

Part No	Description	ex VAT		inc VAT		ex VAT		inc VAT		
		Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+
95-93-0140	1.44Mb 3.5" DS,HD (Box-10)	£1	£1.18	£4	£4.70	£3	£3.53			
95-71-0144	Sony - 1.44Mb 3.5" DS,HD (Box-10)	£8	£9.40	£7	£8.23	£6	£7.05			
95-95-0144	3M - 1.44Mb 3.5" DS,HD (Box-10)	£8	£9.40	£8	£9.40	£7	£8.23			
95-95-1200	3M - 120Mb 3.5" LS-120	£13	£15.28	£12	£14.10	£11	£12.93			



Tape Media Selector Chart

Tape Type		ex VAT		inc VAT		ex VAT		inc VAT		
		Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+	Qty 1-4	Qty 5-19	Qty 20+
95-95-0805	A1 TRI (QIC Formatted)	£15	£17.63	£13	£15.28	£12	£14.10			
95-95-3405	A3 TR3 (QIC Formatted)	£18	£21.15	£16	£18.80	£15	£17.63			
95-95-8005	A4 TR4 (QIC Formatted)	£24	£28.20	£21	£24.68	£19	£22.33			
95-95-2505	A5 TR4/5Gb (QIC Wide Formatted)	£21	£24.68	£18	£21.15	£16	£18.80			
95-95-9409	B1 DAT 4mm 90metre DDS-1	£5	£5.88	£5	£5.88	£4	£4.70			
95-95-9412	B2 DAT 4mm 120metre DDS-2	£12	£14.10	£11	£12.93	£10	£11.75			
95-95-9417	B3 DAT 4mm 125metre DDS-3	£20	£23.50	£20	£23.50	£18	£21.15			
95-95-0120	C1 DC2120 unformatted	£8	£9.40	£7	£8.23	£6	£7.05			
95-95-0125	C2 DC2120 pre-formatted	£12	£14.10	£10	£11.75	£9	£10.58			
95-95-0255	C3 DC2120XL pre-formatted	£10	£11.75	£8	£9.40	£7	£8.23			
95-95-0345	C4 DC3000XL pre-formatted	£13	£15.28	£11	£12.93	£10	£11.75			
95-95-0680	C5 DC3000XL unformatted	£15	£17.63	£13	£15.28	£12	£14.10			
95-95-1365	C6 DC1400	£19	£22.33	£17	£19.98	£16	£18.80			
95-95-4005	C7 DC3080XLF (QIC Formatted)	£20	£23.50	£17	£19.98	£15	£17.63			
95-95-0250	D2 DC6250	£12	£14.10	£10	£11.75	£9	£10.58			
95-95-0520	D3 DC6525	£15	£17.63	£13	£15.28	£12	£14.10			
95-95-1000	D4 DC9100	£19	£22.33	£17	£19.98	£16	£18.80			
95-35-2002	E1 Ditto 2000 2Gb Media	£13	£15.28	£12	£14.10	£10	£11.75			
95-35-2003	E2 DittoMax 3Gb Media	£15	£17.63	EPOA	EPOA	EPOA	EPOA			
95-35-2005	E3 DittoMax 5Gb Media	£19	£22.33	EPOA	EPOA	EPOA	EPOA			
95-35-2007	E4 DittoMax 7Gb Media	£22	£25.85	EPOA	EPOA	EPOA	EPOA			
95-35-2010	E5 DittoMax Pro 10Gb Media	£25	£29.38	EPOA	EPOA	EPOA	EPOA			
95-28-0514	F1 HP DLT Tape III, 30Gb	£35	£41.13	£33	£38.78	£32	£37.60			
95-28-5141	F2 HP DLT Tape IV, 40Gb	£69	£81.08	£64	£75.20	£61	£71.68			
95-95-9130	DAT 4mm Tape Cleaner	£10	£11.75	£8	£9.40	£7	£8.23			



NOTE: Tape type codes (eg A1) in column 2 refer to codes given for Tape/DAT drives on pages 10 - 11.

MEDIA SELECTOR

http://www.smc-computers.co.uk



AT YOUR SERVICE .THE UK's TOTAL QUALITY SUPPLIER

The first Sound Cards, although giving a welcome improvement on the old internal PC speaker, used chips which generated an artificial electronic sound that used to approximate to the effect desired. The introduction of 64-Voice Wavetable/Wavesynth Sound means that actual recordings of instruments are stored inside the chips on the card, so that every time a note is played, a real musical sound is heard. Stereo speakers have been standard for some time now, but the introduction of separate amplifiers/Sub-Woofer enables hi-fi quality sound to be reproduced with a full range of scales (including booming bass) from even the smallest-sized speakers.

SOUND CARDS, SPEAKERS & KITS



Sound Cards

ex VAT inc VAT



"Upgrade to higher sound - NOW!"

From now until the 31st of August 1998 you can claim a rebate of **£23** against an AWE64 Gold or **£12** against an AWE64 Value

- all details are provided with your new card.

This offer applies to ALL makes of old sound cards, whether Creative Labs or not!

(Note : the return of your old sound card is required)

Creative Labs SoundBlaster cards are designed to take advantage of Intel Pentium technology & EIDE/ATAPI CD-ROM motherboard support, and use 16-bit ISA.

All Creative Labs products sold by SMC are full retail versions containing all required documentation, drivers and software.

SB16

53-15-1639 SB16 Value Plug 'n' Play
16bit FM Stereo, CD quality audio
MIDI/Joystick interface **£33** £38.78

AWE-64

53-15-6425 AWE64 Value Plug 'n' Play
64 Voice Wavetable, Creative WaveSynth
Wave Guide, 16bit FM Stereo,
512Kb RAM (max 24Mb) **£59** £69.33

53-15-6445 AWE64 Gold Plug 'n' Play
64 Voice Wavetable, Gold RCA
connectors for clearer audio
4Mb RAM (max 28Mb) **£92** £108.10

AWE-64 Upgrades

A memory upgrade allows you to download more sound fonts onto your card.

Each memory module is supplied with SoundFont Gold on CD.

19-15-6404 4Mb memory module **£29** £34.08
19-15-6408 8Mb memory module **£49** £57.58



53-19-2030 Diamond Monster 3D Sound
Supports Microsoft Direct Sound
for Window '95. Audio playback
support for 4 speakers **£85** £99.88



82-91-2400 PC Pro Joystick - 5 Fire buttons,
analogue, adjustable handle settings **£19** £22.33
82-91-2501 PC Gamepad Pro
Digital 10-button gamepad **£29** £34.08

Multimedia Kits

ex VAT inc VAT

59-15-2464 Sound Blaster AWE-64 Discovery Kit **£83** £97.53

This is the Market Leader in Multimedia Kits! In addition to the SoundBlaster AWE64 Value sound card, it contains the Blaster CD24x (the latest 24-speed CD-ROM drive from Creative Labs) and powered STEREO Speakers. It also comes complete with Windows 3.x/95 drivers and Actua Soccer.

Sound Blaster AWE-64 Discovery Kit

59-15-2464

£83

(£97.53 inc.VAT)



The hottest upgrades for the coolest PC's....

SMC Computers have the coolest range of Creative Labs multimedia upgrades : a full range of SoundBlaster cards, VideoBlaster cards and accessories that are hot enough to wake up any PC. Whether you are exploring the internet, enhancing your knowledge, talking to your colleagues with video conferencing or gaming in another dimension, you'll find yourself completely at home with the Creative range. Easy to install and easy to use, our top quality products will help keep you informed, in-touch and entertained for years to come.

Speakers

ex VAT inc VAT



57-15-0020	CSW20 - 5 Watt RMS	£12	£14.10
57-15-0050	CSW50 - 11Watt RMS	£24	£28.20
57-15-0100	CSW100 (with Amplifier) - 17Watt RMS	£42	£49.35
57-15-0200	CSW200 (with Amplifier) - 23Watt RMS	£75	£88.13
57-15-0350	CSW350 (with Amplifier) - 68Watt RMS	£115	£135.13



57-93-3105 LCS-1024 - 10 watt **£35** £41.13



57-93-7133	M15 - 10 watt	£38	£44.65
57-93-7135	SS510 Sub Woofer	£63	£74.03
57-93-0515	YST-MSV55 Sub Woofer	£45	£52.88
57-93-5525	YST-MSV55 Sub Woofer + Speakers	£59	£69.33

Internet Video

ex VAT inc VAT

64-15-0162 WebCam 2 (Requires Windows 95) **£69** £81.08

LIVE VIDEO OVER THE INTERNET

Video Blaster WebCam gives you everything you need to capture, create and communicate with live full colour video on the Internet. It's capable of live video capture with 16.7million colours, and supports AVI and e-mail.



Affordable and easy-to-use, it plugs into your printer port and works with your existing modem so you'll be up and running with live video from your own PC in minutes.



The Sound Blaster AWE64 Value breaks the 32 voice barrier to give you incredible audio realism. It's the most compatible sound card you can buy, running with more applications than any other sound card, yet at an incredibly low price.

Enjoy the smoothest, most realistic audio experience with 64 voices of Advanced WavEffects. Listen to expressive, true-to-life instrument reproductions as well as stunning sound effects. Thrill to ultra-realistic sound for your games and multimedia. Immerse yourself in 3D Positional Audio. Treat your ears to the astounding sound quality of SoundFont technology, playing back customised samples from your applications. Surf the sounds of the Internet with Inspire, Creative's own multimedia wizard.

The Sound Blaster AWE64 Value lives up to its name for great value and great performance.





SALES LINES OPEN : MONDAY TO FRIDAY : 8.30am - 6.30pm SATURDAY : 9am - 1pm - THE BEST YOU'LL GET -

Graphics Cards

ex VAT inc VAT

Diamond Stealth 3D series

2000 Pro - Outrageously fast 2-D and 3-D
64bit graphics processor with an 53 VIRGE DX chipset. Supports software MPEG.
170MHz RAMDAC with maximum refresh 120Hz.
64-19-1442 2Mb EDO-DRAM (4Mb max) £35 £41.13
85Hz : 1280x1024 (256 colours) 120Hz : 800x600 (16.7m colours)
64-19-1444 4Mb EDO-DRAM £42 £49.35
75Hz : 1280x1024 (64k colours) 100Hz : 1024x768 (16.7m colours)

2000 Pro with TV Output option
View PC software on your TV!
64-19-1452 2Mb EDO-DRAM £29 £34.08
64-19-1454 4Mb EDO-DRAM £59 £69.33

4000 - First generation AGP graphics
The 4000 is based on the 53 VIRGE GX2 AGP chipset.
With 220MHz RAMDAC & 100MHz 5GRAM, it supports AGP 1x.
64-19-4002 2Mb SGRAM £43 £50.53
64-19-4004 4Mb SGRAM £49 £57.58

Diamond FireGL Series

Premium performance 2D/3D professional graphics.
1000Pro Series
Based on 3DLabs Permedia 2 graphics chip and rendering engine.
64-19-1008 8Mb SGRAM - PCI £99 £116.33
64-19-1108 8Mb SGRAM - AGP £115 £135.13

Diamond Viper Series

The NVIDIA RIVA chipset gives true 128-bit power for incredible 2D, 3D & video under Windows 95 or NT.
Hardware-accelerated OpenGL, with multiple monitor support for multiple cards.
1600x1200 (64k colours), 1152x864 (16.7m colours) at 85Hz.
230MHz RAMDAC, 100MHz 5GRAM.
64-19-2004 V330 PCI - 4Mb SGRAM £75 £88.13
64-19-2704 V330 AGP - 4Mb SGRAM for AGP slot £79 £92.83

Diamond Monster

64-19-8001 4MB EDO-RAM £92 £108.10

Diamond Monster
64-19-8001
£89
(£104.58 inc VAT)
(DOS/Windows 3.x programs require accelerated drivers)



3D Graphics Cards - PCI

OEM packs
64-97-0302 Charger - 2Mb £29 £34.08
64-97-0304 Charger - 4Mb £41 £48.18
64-97-0604 XPERT @ Play - TV Out, 4Mb £62 £72.85
64-97-0608 XPERT @ Play - TV Out, 8Mb £85 £99.88
64-97-0504 XPERT @ Work - 4Mb £59 £69.33
64-97-0508 XPERT @ Work - 8Mb £75 £88.13
64-97-0704 All-in-Wonder Pro - 4Mb £145 £170.38
64-97-0708 All-in-Wonder Pro - 8Mb £165 £193.88

Retail packs with 3D software titles
64-97-1604 XPERT @ Play TV Out, 4Mb £109 £128.08
64-97-1608 XPERT @ Play TV Out, 8Mb £129 £151.58
64-97-1504 XPERT @ Work - 4Mb £99 £116.33
64-97-1508 XPERT @ Work - 8Mb £119 £139.83
64-97-1714 All-in-Wonder Pro - 4Mb £165 £193.88
64-97-1718 All-in-Wonder Pro - 8Mb £195 £229.13

3D Graphics Cards - AGP

OEM packs
64-97-0614 XPERT @ Play - TV Out, 4Mb £75 £88.13
64-97-0618 XPERT @ Play - TV Out, 8Mb £92 £108.10
64-97-0514 XPERT @ Work - 4Mb £69 £81.08
64-97-0518 XPERT @ Work - 8Mb £79 £92.83
64-97-0714 All-in-Wonder Pro - 4Mb £145 £170.38
64-97-0718 All-in-Wonder Pro - 8Mb £169 £198.58

ex VAT inc VAT

Matrox Millennium II

Optimized 64-bit MGA-2164W dual-ported processor, 250MHz flicher-free RAMDAC.
Max. refresh 230Hz : now faster 2D & supports Direct3D (D3D).
True 24-bit colour for photo realism at 1600x1200 with 8Mb!
Software and drivers supplied.
64-95-2004 4Mb WRAM (Max 16Mb) for PCI £107 £125.73
64-95-2008 8Mb WRAM (Max 16Mb) for PCI £149 £175.08
64-95-6004 4Mb WRAM (Max 16Mb) for AGP £109 £128.08
64-95-6008 8Mb WRAM (Max 16Mb) for AGP £155 £182.13

Matrox Millennium II WRAM PCI/AGP upgrades
64-95-0042 4Mb upgrade £59 £69.33
64-95-0082 8Mb upgrade £109 £128.08
64-95-0122 12Mb upgrade 4Mb board only £159 £186.83

Matrox Millennium MPEG
NOTE : This MPEG upgrade is for the bare 2Mb or 4Mb board only, not Millennium II
64-95-1036 Meda XL-MPEG board £189 £222.08

Matrox Mystique

Mystique 220 Rainbow Runner
This is a plug-in 'daughter board' video upgrade with sound being captured through your normal sound card. Video output is via PC to PAL and there is an easy-to-use on-screen PC-VCR remote. Hardware MPEG I on board enables video capture/playback, with both live and still frame capture. High-quality video editing, conferencing and recording are also included.
64-95-1199 For 2Mb or 4Mb (original) Mystique £109 £128.08

Matrox Mystique 220 - Home & Business Series
The 64 bit MGA graphics processor is based on the award-winning Matrox Mystique, now with faster 3D facilities and improved support for larger 21" monitors.
All cards include drivers, utilities and Software MPEG.

Home Series

With Disney's Toy Story, MotorRacer and 3D Game Demo's.
64-95-2204 4Mb SGRAM £59 £69.33

Business Series
With Netscape Navigator, Micrografx Simply 3D and Serif PagePlus.
64-95-2404 4Mb SGRAM £65 £76.38
Matrox Mystique 220 SGRAM upgrades (2, 4, 6Mb) are available - please ask for details.

Matrox Mystique Memory

NOTE : This memory upgrade is for the original 2Mb version only, not the 220 series
64-95-0102 2Mb SGRAM (expansion to 4Mb) £30 £35.25

Matrox m3D

Based on the PowerVR PCX2 processor, this card balances price with incredible 3D gaming.
64-95-0403 4Mb SDRAM, includes games £45 £52.88



Grafixstar

64-97-1411 410 - 53 Trio64V2, 1Mb EDO DRAM £25 £29.38
64-97-0242 560 PCI - 4Mb £59 £69.33
64-97-0249 560 AGP - 4Mb £59 £69.33
64-97-0261 600 Pro PCI - 2Mb £52 £61.10

Apocalypse

3Dx - 4MB SDRAM PCI
64-97-0287 Value Pack £42 £49.35
64-97-0213 Retail Pack £54 £63.45
5D - 6MB SDRAM PCI
64-97-0265 5D - ET6100, 128-bit processor £125 £146.88

Apocalypse 5D
6Mb version
64-97-0265
£125
(£146.88 inc VAT)

With SDRAM texture memory and the NEC PCX1/PowerVR 3D processor, the Apocalypse 5D has 400% more bandwidth than 64-bit DRAM cards and supports all the features needed to deliver stunning 3D realism and lightning fast 2D graphics. It runs MS DirectX, Windows 95 Direct3D and also comes with five of the best 3D games.

ex VAT inc VAT

Orchid Righteous 3D

64-53-2030 4MB EDO-RAM £99 £116.33

Righteous 3D
Orchid Righteous
64-53-2030
£75
(£88.13 inc VAT)
(DOS/Windows 3.1x programs require accelerated drivers)

Hauppauge Win TV Cards

62-95-0105 Win TV PCI - Plug'n'Play card £75 £88.13
125 channel
62-95-0215 Win TV Radio - as above with £89 £104.58
additional radio tuner

IMPORTANT : for Windows 95 only.
The Win TV card enables frame grabbing & video clip capture, and allows you to capture and display live video in a fully movable and sizable window. It captures live video at 320 x 240 up to 15-25 frames per second (limited by system specification). It supports resolutions up to 1600 x 1200 full colour display (Direct Draw drivers required).



TV/Video Cards

62-15-0313 **VideoBlaster RT300** £199 £233.83
Display/capture real time video, max. 30fps @ 320x240
62-15-1311 **TV Coder (external)** £103 £121.03
Display SVGA screens to TV via serial port. Gives 800x600 with 64,000 colours

Graphics Blaster Exxtreme

64-15-0423 4Mb SGRAM : 230MHz RAMDAC £67 £78.73

Graphics Blaster Exxtreme
64-15-0423
£67
(£78.73 Inc.VAT)

The Blaster Exxtreme is tomorrow's technology today, allowing you to indulge yourself by playing games written to Direct3D and OpenGL standards, with mind-boggling 2D, 3D and video acceleration. With resolution to 1600x1200, bilinear filtering, true transparency and polygon set-up, the degree of realism achieved has to be seen to be believed.

3D Blaster Voodoo2

64-15-0208 8Mb - PCI, with 4 games (see below) £129 £151.58
64-15-0212 12Mb - PCI with 4 games (see below) £152 £178.60

3D Blaster Voodoo2
64-15-0208
£129
(£151.58 Inc.VAT)

The 3D Blaster Voodoo2 brings a new dawn to 3D graphics and intense gaming. The card is based on the newest chipset from 3Dfx Interactive, and comes with 4 exciting "full version" games : G.Police, Incoming, Actua Soccer 2 and Ultimate Race. Designed for PC gamers who have a passion for exceptional performance, the 3D Blaster Voodoo2 delivers more than three times the speed found in equivalent Voodoo Graphics cards.

GRAPHICS, TV & VIDEO CARDS

http://www.smc-computers.co.uk



AT YOUR SERVICE : THE UK'S TOTAL QUALITY SUPPLIER

It's a fact of life in the IT world that as time goes on, technology gets more complex, and while it is directed at achieving ever-greater levels of performance, great attention is given by manufacturers to making products user-friendly. While the business of setting up and/or reconfiguring networking software is most definitely left to specialist engineers (it's much better to shout at them for getting it wrong than wonder how on earth you're going to sort out a problem that defies obvious logic) the specification of hardware is becoming easier all the time. At SMC, we provide a range from single interface cards, cables, hubs and switches right through to networking kits and network-ready CD Towers. We are approved reseller partners with both 3Com and Intel, so give us a call for a response you can rely on.



NETWORKING PRODUCTS



3Com is the world's leading supplier of network interface cards, and 3Com's exclusive Parallel Tasking technology ramps up your network's performance while driving down its costs.

3Com's leadership also ensures both leading-edge technology and extensive compatibility and seamless integration with computer and network operating systems.



Network Cables & Connectors

BNC / Thin Ethernet

ex VAT inc VAT



86-95-1371	Thin Ethernet cable, made to order - per metre :	£1	£1.18
86-95-1311	BNC solderless crimp connectors	£3	£3.53
86-95-1353	BNC Ethernet terminator	£5	£5.88
86-95-1331	BNC 'T' piece	£6	£7.05
86-95-1302	2m BNC Thin Ethernet cable with crimps - ready made	£4	£4.70
86-95-1305	5m BNC Thin Ethernet cable with crimps - ready made	£7	£8.23
86-95-1310	10m BNC Thin Ethernet cable with crimps - ready made	£11	£12.93
86-95-1320	20m BNC Thin Ethernet cable with crimps - ready made	£17	£19.98
86-95-1330	30m BNC Thin Ethernet cable with crimps - ready made	£24	£28.20

RJ45 / Twisted Pair



86-95-4502	2m RJ45 Ethernet/Fast Ethernet cable - ready made	£5	£5.88
86-95-4503	3m RJ45 Ethernet/Fast Ethernet cable - ready made	£6	£7.05
86-95-4505	5m RJ45 Ethernet/Fast Ethernet cable - ready made	£8	£9.40
86-95-4510	10m RJ45 Ethernet/Fast Ethernet cable - ready made	£12	£14.10
86-95-4520	20m RJ45 Ethernet/Fast Ethernet cable - ready made	£18	£21.15
86-95-4530	30m RJ45 Ethernet/Fast Ethernet cable - ready made	£25	£29.38

Product Link

CD ROM Servers : See Page 15

Networking Products

ex VAT inc VAT



Network Interface Cards (NIC's)

ISA (Etherlink III)			
84-90-0931	3C509B-TP AUI/RJ45	£60	£70.50
84-90-0933	3C509B-TP AUI/RJ45 - 5pack	£269	£316.08
84-90-0935	3C509B-TP AUI/RJ45 - 20pack	£975	£1145.63
84-90-0951	3C509B-Combo BNC/AUI/RJ45	£72	£84.60
84-90-0953	3C509B-Combo BNC/AUI/RJ45 - 5pack	£305	£358.38
84-90-0955	3C509B-Combo BNC/AUI/RJ45 - 20pack	£1109	£1303.08
PCI - 10Mb/s (Fast Etherlink XL)			
84-90-1900	3C900-TPO RJ45	£61	£71.68
84-90-5900	3C900-TPO RJ45 - 5pack	£259	£304.33
84-90-2900	3C900-TPO RJ45 - 20pack	£988	£1160.90
84-90-9951	3C900-Combo BNC/AUI/RJ45	£74	£86.95
84-90-9953	3C900-Combo BNC/AUI/RJ45 - 5pack	£348	£408.90
PCI - 100Mb/s (Fast Etherlink XL)			
84-90-1905	3C905-TX UTP	£54	£63.45
84-90-5905	3C905-TX UTP - 5pack	£255	£299.63
84-90-2905	3C905-TX UTP - 20pack	£935	£1098.63
EISA (Etherlink III)			
84-90-9251	3C592-Combo BNC/AUI/RJ45	£125	£146.88
MCA (Fast Etherlink III)			
84-90-2911	3C529 BNC/AUI	£129	£151.58
84-90-2931	3C529-TP BNC/AUI/RJ45	£139	£163.33
PCMCIA - 10Mb/s (Fast Etherlink III)			
84-90-1589	3C589D-TP RJ45	£78	£91.65
84-90-5589	3C589D-TP RJ45 - 5pack	£369	£433.58
84-90-2589	3C589D-TP RJ45 - 20pack	£1415	£1662.63
PCMCIA - 10/100Mb/s (Fast Etherlink III)			
84-90-1574	3C574-TX 16-bit UTP	£88	£103.40
84-90-5574	3C574-TX 16-bit UTP - 5pack	£415	£487.63
84-90-2574	3C574-TX 16-bit UTP - 20pack	£1649	£1937.58
84-90-1575	3C575-TX UTP	£88	£103.40
84-90-5575	3C575-TX UTP - 5pack	£415	£487.63
84-90-2575	3C575-TX UTP - 20pack	£1649	£1937.58
PCMCIA (Fast Etherlink XL)			
Combined 33.6Kbps Modem+10Mb/s Lan Adapter			
84-90-1563	3C563D-TP RJ45	£159	£186.83
84-90-5563	3C563D-TP RJ45 - 5pack	£769	£903.58
84-90-5631	3C563D-Combo BNC/RJ45	£199	£233.83
84-90-5635	3C563D-Combo BNC/RJ45 - 5pack	£879	£1032.83

OfficeConnect Hubs/Switches/Kits

All OfficeConnect Hubs & Switches are supplied with a user-guide, power adapter, stacking clips and rubber feet as standard.

10Mb/s Stackable Hubs			
84-90-1674	3C16704 4 Port TP4, 4x RJ45	£39	£45.83
84-90-1673	3C16703 4 Port TP4 Combo, 4xRJ45/1xAUI/BNC	£52	£61.10
84-90-1670	3C16700 8 Port 8TPC, 8x RJ45	£49	£57.58
84-90-1671	3C16701 8 Port 8TPC, 8x RJ45/1x BNC	£68	£79.90
84-90-1672	3C16702 16 Port TPC16C, 16x RJ45/1x BNC	£127	£149.23
100Mb/s Stackable Hubs			
84-90-6723	3C16723 4 Port TP400, 4x UTP	£129	£151.58
84-90-6722	3C16722 8 Port TP800, 8x UTP	£229	£269.08
84-90-6721	3C16721 12 Port TP1200, 12x UTP	£329	£386.58
100Mb/s Office Connect Switch - 4 Port			
84-90-6730	3C16730 1x UTP 100Mb -in, 4x RJ45 10Mb -out	£275	£323.13
Networking Kits			
84-90-0308	3C50902B 3 x ISA 10Mb/s cards, 1 x 8 Port Hub, 3 x 50ft RJ45 Cables	£169	£198.58

Superstack Hubs/Switches

12 Port			
84-90-6406	SuperStack II PS Hub 40 TP	£219	£257.33
84-90-6450	SuperStack II Switch 3000 10/100Mb/s	£1465	£1721.38
24 Port			
84-90-6524	SuperStack II PS Hub 40 TP	£379	£445.33
84-90-6824	SuperStack PS 50	£699	£821.33

SALES HOTLINES : **01753 550333**

FAX : 01753 524443



SALES LINES OPEN : MONDAY TO FRIDAY : 8.30am - 6.30pm SATURDAY : 9am - 1pm

~ THE BEST YOU'LL GET ~

Networking Products



ex VAT inc VAT

Network Interface Cards (NIC's)

EtherExpress PRO range

ISA - 10Mb/s Ethernet

84-31-8220	8220B 10+ TP	£39	£45.83
84-31-5822	8220B 10+ TP - 5 Pack	£175	£205.63
84-31-8210	8210B 10+ TP/BNC	£45	£52.88
84-31-5821	8210B 10+ TP/BNC - 5 Pack	£209	£245.58
84-31-8200	8200B 10+ Combo	£64	£75.20
84-31-5820	8200B 10+ Combo - 5 Pack	£315	£370.13

PCI - 10/100Mb/s Fast Ethernet

84-31-8460	8460 100+ UTP	£45	£52.88
84-31-5846	8460 100+ UTP - 5 Pack	£205	£240.88
84-31-2084	8460 100+ UTP - 20 Pack	£829	£974.08
84-31-8470	8470 100+ Server Adaptor	£59	£69.33
84-31-8480	8480 10+ Server Adaptor	£339	£398.33

PCMCIA Mobile Adapters - 10/100Mb/s Fast Ethernet

84-31-1600	1600 10/100+ 16Bit, UTP	£89	£104.58
84-31-1656	1656 10/100+ 16Bit, UTP, 56k flex	£185	£217.38
84-31-3200	3200 10/100+ 32Bit, UTP - 5 Pack	£105	£123.38

Network Switches

8 Port

84-31-5500	ES550t Express routing switch 10/100Mb/s	£1285	£1509.88
84-31-5505	ES550f Express routing switch 100Mb/s 100fx ports	£3199	£3758.83

24 Port

84-31-1024	10T24 Ethernet switch, 10Mb/s, 100Mb/s Up-link	£1195	£1404.13
84-31-5100	ES510t Express switch 10/100Mb/s	£1499	£1761.33

Express Network Hubs

8 Port

84-31-0130	130t Stand-alone Hub, 100Mb/s	£299	£351.33
84-31-1008	100TX8 Stand-alone Hub, 100Mb/s	£275	£323.13

12 Port

84-31-1112	110TX12W Stackable Hub, 10/100Mb/s	£649	£762.58
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24 Port

84-31-1124	110TX24W Stackable Hub, 10/100Mb/s	£999	£1173.83
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InBusiness Networking Products

84-31-6015	5 port 10Mb/s Hub	£39	£45.83
84-31-6017	8 port 10Mb/s Hub UTP only	£52	£61.10
84-31-6018	8 port 10Mb/s Hub	£55	£64.63
84-31-6104	4 port 100Mb/s Fast Hub	£119	£139.83
84-31-6108	8 port 100Mb/s Fast Hub	£219	£257.33
84-31-6118	8 port 100Mb/s Fast Hub Plus	£429	£504.08
84-31-6008	8 port 10Mb/s Switch	£329	£386.58
84-31-6080	8 port 100Mb/s Switch Plus	£475	£558.13
84-31-6101	Internet Station (requires Hub) shared access	£265	£311.38

ISA Network Cards

84-93-2411	SMC EZ P'n P, 16-bit ISA, BNC	£55	£64.63
84-93-1651	SMC E16, 16-bit ISA, Combo	£62	£72.85
84-93-2451	SMC EZ P'n P, 16-bit ISA, Combo	£39	£45.83

HP JetDirect Print Servers

84-28-5002	J2550B - for 10Base-T (MIO)	£189	£222.08
84-28-5202	J2552B - for 10BT, BNC, LocalTalk (MIO)	£225	£264.38
84-28-5502	J2555B - for Token Ring (MIO)	£325	£381.88
84-28-5602	J2556B - for 10/100Base-T (MIO)	£245	£287.88
84-28-2593	J2593A - EX Plus3 - Ethernet - 10BT, BNC	£229	£269.08
84-28-2594	J2594A - EX Plus3 Token Ring	£319	£374.83
84-28-2591	J2591A - EX Plus - Print Server	£175	£205.63
84-28-9201	J2592A - 150X for 10Base-T (IPX Protocol only)	£99	£116.33

With expertise in PC architecture, leadership in microprocessor technology and an extensive range of networking hardware and software products, Intel is uniquely placed to drive product innovation in the marketplace.

With a combination of high performance, ease of use and complete reliability, the Intel range gives you both value for money and complete peace of mind.



Visit Intel's WebSite on : www.intel.com/network

UPS's

According to computer insurer SAFEWARE, electrical power surges, brown-outs and black-outs, account for hundreds-of-thousands of computer losses per year, ranking second only to theft.

An APC UPS can protect against all mains surges and cuts.

So why leave it to chance ?
Protect yourself with an APC from SMC.



ex VAT inc VAT

BackUPS

Lowest cost protection for desktop PC's, the BackUPS MI range have 3 mains/battery connectors and 1 surge/spike connector - which makes them ideal for printers.

89-90-0302	300MI 180 watts, for 486 with 15" monitor	£65	£76.38
89-90-0502	500MI 300 watts, for Pentium with 15" monitor	£85	£99.88
89-90-0654	650MI 400 watts, for Pentium with 17"+ monitor	£135	£158.63

BackUPS PRO

High Performance PC protection with voltage regulation and shutdown software for Windows, Win95. Supplied with serial cable.

89-90-0280	280 200 watts, for 486 with 15" monitor	£99	£116.33
89-90-0422	420 300 watts, for Pentium with 15" monitor	£145	£170.38
89-90-0652	650 460 watts, for Pentium with 17" monitor	£155	£182.13

SmartUPS

High Performance protection for servers, with Smart Boost, Smart Trim and shutdown software for Windows, Win95, WinNT, SCO UNIX, Novell Netware. Supplied with serial cable. Also available in Rack Mount version.

89-90-0710	700 500 watts, for Pentium with 17"+ monitor	£229	£269.08
89-90-1010	1000 700 watts, for single server	£259	£304.33
89-90-1410	1400 1000 watts, for single server	£369	£433.58
89-90-2210	2200 1550 watts, for multiple servers	£539	£633.33
89-90-3010	3000 2135 watts, for multiple servers	£889	£1044.58

NETWORKING PRODUCTS

<http://www.smc-computers.co.uk>

SMC Computers Plc

253-257 Farnham Rd Slough Berkshire SL2 1HA



~ ALL MAJOR CREDIT CARDS ACCEPTED ~

21



What is ISDN ?

Integrated Services Digital Network (ISDN) is the latest telecommunications technology, utilising fibre optics and digital systems. Data transfer is pushed up to 64Kbit/s or 128Kbit/s using bonded (2x) channels, with rates up to 460Kbit/sec using V.42 bis compression. All this makes an ISDN modem up to 5 times faster than a standard modem. **IMPORTANT :** All ISDN modems require the use of an ISDN line : if connected to a non-ISDN line, they will not function.

U.S. Robotics. From the leader in networking. **3Com**

91-79-9179
£125
(£146.88 inc.VAT)



Sportster MessagePlus

MessagePlus Faxmodem with Independent Messaging Facilities
Integrates x2 Technology allowing users to download from the Internet and other x2 hosts at speeds up to 56Kbps*. Its Independent Voice Messaging facility stores incoming fax and voice messages - even when your computer is switched off. The 2Mb chip can store approx. 25 faxes or approx. 35 voice messages of about 20 seconds in length, and voice messages can be retrieved through a dial-up connection. Integrated Flash memory offers capability for future features and enhancements.
*Due to varying line conditions, the download speeds you experience may be lower.

91-79-3392
£75
(£88.13 inc.VAT)



Sportster Winmodem

33.6 Internal Faxmodem for Windows™ with Personal Voice Mail
This modem was designed exclusively for the Windows environment, providing you with Internet access at up to 33,600bps, fax, e-mail, personal voice mail and speakerphone facilities all in one compact unit.*
The Sportster Winmodem is easy to install and use. With the Windows operating system already on your PC, all the installation chores are done for you : simply insert the Sportster Winmodem and away you go !
* To utilise all voice features an external speaker, headset or soundcard is required.

US Robotics Courier-I Modem
91-79-4906
£239
£280.83 inc.VAT



BENEFITS :

- > Super-fast connection speeds
- > Flash Upgradable
- > Analogue compatible (through ISDN line)
- > Plug & Play support

The Courier-I modem has the flexibility of both high-speed analogue and ISDN connectivity in one single desktop product. Speeds of up to 128K/sec are obtainable using ISDN. Even using analogue via an ISDN line, speeds of up to 56Kb/sec can be achieved by using X2 Technology. This versatility enables the Courier-I modem to fulfil a variety of functions with high-speed connections.

Modems : Pace

	ex VAT	inc VAT
All Pace Modems include cables, manuals, software, 2-year warranty, lifetime technical support and FREE Internet trial bundles.		
91-91-5662 56k Voice Modem : Internal (56k Flex technology)	£79	£92.83
91-91-5666 56k Voice Modem : External (56k Flex technology)	£99	£116.33
91-91-5664 NB56 Voice : PCMCIA K56 Flex data, 14,400 Fax	£89	£104.58
91-91-3364 Microlin NB33.6 Voice PCMCIA External 33,600bps Data, 14,400bps Fax, Voice Software	£135	£158.63

Modems : US Robotics

ex VAT inc VAT

All US Robotics modems come with 5-year warranty and lifetime tech. support. These are compact, easy to use products designed to offer the fastest connection to the outside world. Based on an award-winning series, their performance, features, reliability and low price make a combination that's very hard to beat.

SPORTSTER Range

External			
91-79-3396	Sportster Flash, 56Kbps max. Data Speed, 14,400bps Fax Speed, (with voice mail/Data/Fax/Internet software & cables), X2 Compatible.V.34 std	£85	£99.88
91-79-9179	Sportster Message Plus, x2 Technology enables speeds up to 56Kbps.	£125	£146.88
Internal			
91-79-2892	Sportster 33.6 Voice*, 33,600bps Data, 14,400bps Fax Speed, with Data and Fax software, X2 Compatible	£96	£112.80
91-79-3392	Sportster 33.6 Winmodem, 33,600bps Data, 14,400bps Fax, with Data/Fax software, X2 Compatible.Win'95	£75	£88.13

*The Sportster 33,600 voice modems are hardware upgradeable through US Robotics direct (may be chargeable)

PCMCIA			
91-79-3356	Sportster Winmodem PC card, 33,600bps Data Speed, 14,400bps Fax Speed uses standard PCMCIA Type II /III slot, Inc. software. Requires Windows '95	£75	£88.13
91-79-5690	3Com Sportster Flash Internal, 56Kbps max. Data Speed, 14,400bps Fax Speed, (with voice mail/Data/Fax/Internet software & cables), X2 Compatible.V.34 std	£85	£99.88

COURIER Range

The Courier Dual Standard V34+Fax uses upgradable flash memory and can run at 33,600bps (Data) and 14,400bps (Fax). Dial security is enabled via password facility and Adaptive Speed Levelling is used to cater for poor line conditions. Automatic Fax/Data selection is made via software supplied, and Universal Connect automatically detects & connects at the fastest speed. For the communications professional looking for advanced performance at an affordable price - the COURIER delivers.

91-79-3402	V34+ Internal	£195	£229.13
91-79-3406	V34+ External	£195	£229.13

ISDN

The Courier-I (ISDN ONLY) supports X2 Technology, V34, 64Kbps, 14,400 Fax, Active Terminator, with Data/Fax software.

91-79-4902	Courier-I Internal	£239	£280.83
91-79-4906	Courier-I External	£239	£280.83

PCMCIA
With approval in more than 250 countries, the 3Com Megahertz Global modem gives you reliable, hassle-free connections around the world.

91-90-5690	56k Global modem x2 compatible	£129	£151.58
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Modems : BT

ex VAT inc VAT

BT modems are supplied with software and cables.

Prologue K56EV+

91-92-3356	Data/Fax/Voice modem using 56K Flex technology and flash upgradeable firmware	£99	£116.33
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Prologue x3

91-92-0333	PCMCIA modem, 33600kbps data, 14,400kbps fax Flash EPROM, upgradeable to ISDN or GSM	£139	£163.33
91-92-4110	GSM (Motorola) upgrade	£119	£139.83
91-92-1210	GSM (Nokia 1210) upgrade	£159	£186.83
91-92-8110	GSM (Nokia 8110) upgrade	£159	£186.83
91-92-3128	ISDN upgrade	£94	£110.45

ISDN

91-92-5128	Prologue 128 PTA Passive adapter card. Internal	£69	£81.08
91-92-7128	Express Lane Intelligent interface card. Internal	£259	£304.33
91-92-9128	Ignition terminal adapter. External	£259	£304.33

SALES HOTLINES: **01753 550333**

FAX: **01753 524443**



SALES LINES OPEN: MONDAY TO FRIDAY: 8.30am - 6.30pm SATURDAY: 9am - 1pm

~ THE BEST YOU'LL GET ~

Digital Cameras

ex VAT inc VAT

OLYMPUS

Olympus has used its renowned optical expertise to develop high resolution lenses that push the CCD's performance to the max!
All cameras feature auto focus, built-in flash, 12s self timer and a TTL viewfinder.
Supplied with interface cables and PhotoSoap software.

98-91-0420	C-420L 640x480 pixels (HQ/SHQ mode), 2Mb memory 350,000 pixel CCD	£255	£299.63
98-91-0820	C-820L 1024x768 pixels (HQ/SHQ mode), 2Mb memory 810,000 pixel CCD, LCD monitor, on-screen display Soft case	£425	£499.38
98-91-0840	C-840L 1280x960 pixels (HQ/SHQ mode), 4Mb memory 1.3million pixel CCD, LCD monitor, digital zoom 36-72mm) Photoalbum software	£510	£599.25
98-91-1400	C-1400L 1280x1024 pixels (Super HQ/HQ mode), 2x 4Mb memory, 1,410,000 pixel CCD, LCD monitor, on-screen display, 3x Zoom (36-110), Auto focus, Soft case, Battery charger kit	£850	£998.75
70-91-0006	C-6AG mains adaptor for complete range	£59	£69.33
19-91-0102	M-2PE 2Mb Smartmedia Memory Card	£29	£34.08
19-91-0104	M-4PE 4Mb Smartmedia Memory Card	£42	£49.35
19-91-0108	M-8PE 8Mb Smartmedia Memory Card	£72	£84.60

EPSON

These cameras feature auto focus, built-in flash and a 10-sec timer.
They run from AA batteries (supplied) with a mains adapter optional.
Interface cables and software are supplied.

PC500			
98-93-0500	Camera 640x480 pixels (High Quality mode), 330,000 pixel CCD, 2Mb memory	£271	£318.43
70-93-7022	240V mains adaptor	£49	£57.58
19-93-8251	4Mb Memory module	£159	£186.83
PC600			
98-93-0600	Camera 1024x768 pixels (XGA mode), 810,000 pixel CCD, 4Mb memory, Zoom focus.	£455	£534.63
70-93-7032	240 mains adaptor	£49	£57.58
19-93-8311	4Mb Memory module	£125	£146.88



The Photosmart Digital Camera features auto focus, built-in flash and 10-sec timer. It runs with 4x AA batteries, with a mains adapter optional.
Interface cables and software are supplied.

98-28-5340	PhotoSmart Digital Camera 640x480 pixels (HQ mode), 2Mb memory	£205	£240.88
70-28-5345	Mains adaptor	£POA	£POA
19-28-5347	4Mb memory module	£POA	£POA

Film Scanners

ex VAT inc VAT

OLYMPUS

This product is supplied with cables and software. It is an external Parallel device that supports 35mm negatives and slides at 1770dpi, 24 bit colour.

97-91-0010	ES-10 Film Scanner 35mm negatives or slides	£340	£399.50
97-91-1010	Advanced Photo System adapter	£135	£158.63

EPSON

The Epson FilmScan 200 is supplied with an interface card, cables and software. It is an external device that supports negative and positive scanning at 1200x2400 dpi, max 4800 dpi - 30 bit colour. There is an optional film (APS) holder.

97-93-0201	Epson FilmScan 200 35mm film scanner, SCSI interface	£303	£356.03
97-93-0235	Advanced Photo System (APS) Holder Film cartridge holder for batch scanning	£75	£88.13



99-93-5191	Epson Stylus Photo 720Dpi, 4"x6" - A4, 1ppm	£179	£210.33
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Photo Printers

ex VAT inc VAT

OLYMPUS

Olympus digital printers support either parallel or direct printing. A cable and software are supplied for PC and MAC. Dye sublimation produces a higher quality image through lower resolution over standard printing.

P-300E			
99-91-0300	1376x1024, 16.7m colours using dye sublimation (306Dpi). Ideal for C-420L/820L/1400L Camera	£399	£468.83
96-91-6060	P-60N A6 paper for P-300E Printer (x60)	£42	£49.35
26-91-3305	MA-1CE PCMCIA adaptor (3.3 & 5v) for faster downloads	£72	£84.60
26-91-0144	Flash Path 3.5" floppy disk adaptor (3.3v & 5v)	£59	£69.33
96-91-3004	B30Se Ni-MH Batter Charger + 4 batteries	£68	£79.90
05-91-1700	Photoalbum Image Archive software on CD	£12	£14.10

EPSON

This product is supplied with cables and software. It is an external SCSI device that supports 35mm negatives and slides at 2400dpi and Photos at 300 dpi, 30 bit colour.

97-28-5107	PhotoSmart Photo Scanner 35mm-5"x7" photo, 35mm negative or slide scanner	£325	£381.88
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99-28-3804	PhotoSmart Photo Printer 4"x6" - 8"x10", Enhanced print quality with photographic resolution	£296	£347.80
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Olympus C-420L

98-91-0420

£255

£299.63 inc.VAT



Olympus C-1400L

98-91-1400

£850

£998.75 inc.VAT

Olympus' leadership in optical technology started 20 years ago with their invention of the TAOHS optical reader - used now in every CD player in the world. This led to developments in the digital arena where both quality and innovation are of paramount importance.
Olympus don't make ordinary cameras, they make cameras with style, and cameras that are market leaders in quality and cutting edge technology.
If you want something special, Olympus is the choice to make.

OLYMPUS

DIGITAL CAMERAS & IMAGING

http://www.smc-computers.co.uk



Just a few years ago the standard resolution for high-quality printing was 300dpi (dots per inch). Now there are printer with resolutions up to 1440dpi for quality that's so good it's virtually impossible to tell apart from a photo. With the recent emergence of Digital Cameras and Film Scanners (see page 23) the process of film development can be removed, not only saving time and money, but enabling greater flexibility in use and, ultimately, quality of work.



Inkjet Printers

ex VAT inc VAT

Epson

99-93-5130	Stylus Color 300 - 720dpi, 3ppm	£99	£116.33
99-93-5131	Stylus 1000 - 360dpi, 180cps, A3	£299	£351.33
99-93-5140	Stylus Color 400 - 720dpi, 4ppm	£118	£138.65
99-93-5160	Stylus Color 600 - 1440dpi, 6ppm	£149	£175.08
99-93-5180	Stylus Color 800 - 1440dpi, 8ppm	£207	£243.23
99-93-5185	Stylus Color 850 - 1440dpi, 9ppm	£243	£285.53
99-93-5252	Stylus Color 1520 - 1440dpi, 800cps LQ, A3	£510	£599.25
99-93-5191	Stylus Photo - 720dpi, 1ppm	£179	£210.33
99-93-0700	Stylus Photo 700 - 1440dpi, 2ppm	£207	£243.23
99-93-5195	Stylus Photo EX - 1440dpi, 9ppm, A3	£308	£361.90
99-95-5300	Stylus Color 3000 - 1440dpi, A2	£1099	£1291.32

Hewlett Packard

99-28-5042	DeskJet 400L - 600x300dpi, 3ppm	£72	£84.60
99-28-5067	DeskJet 670C - 600dpi, 4ppm	£115	£135.13
99-28-5068	DeskJet 690C+ - 600dpi, 5ppm	£142	£166.85
99-28-5870	DeskJet 720C - 600dpi, 8ppm	£172	£202.10
99-28-5082	DeskJet 820Cxi - 600dpi, 5ppm	£153	£179.78
99-28-5089	DeskJet 890C - 600dpi, 9ppm	£202	£237.35
99-28-0110	DeskJet 1100C - 600dpi, 6.5ppm, A3	£247	£290.23
99-28-2678	DeskJet 1120C - 600dpi, 6.5ppm, A3	£285	£334.88
99-28-5160	DeskJet 1600C - 600dpi, 8ppm	£871	£1023.43
99-28-5168	DeskJet 1600CM - 600dpi, 8ppm	£1280	£1504.00

The CM model is Network and Postscript Ready.

Canon

99-91-5030	BJ30 (cream) - 720x360dpi, 1.7ppm	£124	£145.70
99-91-5080	BJC80 - 720x360dpi, 3ppm	£142	£166.85
99-91-5250	BJC250 - 720x360dpi, 3ppm	£79	£92.83
99-91-5620	BJC620 - 720dpi, 1.87-2.14ppm	£169	£198.58
99-91-6430	BJC4300 - 720x360dpi, 4.5ppm	£92	£108.10
99-91-6455	BJC4550 - 720x360, 4.8ppm, A3	£195	£229.13
99-91-6550	BJC5500 - 360dpi, 0.8ppm, max A2	£419	£492.33
99-91-6700	BJC7000 - 1200dpi x 600dpi, 4.5ppm, max 550gsm	£189	£222.08

Laser Printers

ex VAT inc VAT

Hewlett Packard

99-28-7570	LaserJet 5 Colour	£2460	£2890.50
99-28-7555	LaserJet 5Si 600dpi, 24ppm	£1604	£1884.70
99-28-7560	LaserJet 5SiMX 600dpi, 24ppm, Network	£2211	£2597.93
99-28-7565	LaserJet 5SiNX 600dpi, 24ppm	£1784	£2096.20
99-28-7610	LaserJet 6L 600dpi, 6ppm (replaces HP5L)	£232	£272.60
99-28-7631	LaserJet 6MP 600dpi, 8ppm	£562	£660.35
99-28-7650	LaserJet 6P 600dpi, 8ppm	£461	£541.68
99-28-4118	LaserJet 4000 1200dpi, 17ppm	£711	£835.43
99-28-4119	LaserJet 4000T 1200dpi, 17ppm	£816	£958.80
99-28-4120	LaserJet 4000N 1200dpi, 17ppm	£914	£1073.95
99-28-4121	LaserJet 4000TN 1200dpi, 17ppm	£1023	£1202.03
99-28-4110	LaserJet 5000 1200dpi, 16ppm, A3	£929	£1091.58
99-28-4111	LaserJet 5000N - 1200dpi, 16ppm, A3 Network	£1334	£1567.45
99-28-4112	LaserJet 5000GN - 1200dpi, 16ppm, A3 Network + HD	£1649	£1937.58

Canon

99-91-7173	LBPI260+ - 600dpi, 12ppm	££625	£734.38
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Epson

99-93-7151	EPL5500 - 600dpi, 6ppm	£274	£321.95
99-93-7120	EPL-N1200 - 600dpi, 12ppm	£593	£696.78
99-93-7200	EPL-N2000 - 600dpi, 20ppm A4, 11ppm A3	£1278	£1501.65
99-93-7201	EPL-2000PS - 600dpi, 20ppm	£1582	£1858.85

Brother

99-90-7301	HL730 Plus - 600dpi, 6ppm	£205	£240.88
99-90-0076	HL760 - 600dpi, 6ppm	£229	£269.08
99-90-7605	HL760 - 600dpi, 6ppm, 5Mb Memory	£245	£287.88
99-90-0126	HL1260 - 600dpi, 12ppm	£599	£703.83

OKI

99-93-9601	OL6E - 600dpi, 6ppm	£195	£229.13
99-93-9603	OL6EX - 600dpi x 1200dpi, 6ppm	£225	£264.38
99-93-9101	OL101 - 600dpi x 1200dpi, 10ppm	£359	£421.83
99-93-9201	OL20N - 600dpi x 1200dpi, 20ppm	£729	£856.58
99-93-9205	OL20N/PS - 600dpi x 1200dpi, 20ppm, Postscript	£899	£1056.33

Printer (Parallel Port) Cables

With the increasingly demanding two-way data communication requirements of modern PC's, it is ever-more apparent that a low-quality cable can often compromise the level of performance achieved.

SMC stock premium quality bi-directional printer cables ensuring the highest performance from your printer or parallel port device.

Cables use the standard 25-pin D-connector to 36-pin Centronics and are available in three lengths to suit a wide variety of installations.

ex VAT inc VAT

75-95-6002	1.8 metres	£5	£5.88
75-95-6003	3.0 metres	£7	£8.23
75-95-6005	5.0 metres	£9	£10.58

Epson Stylus Colour 300

99-93-5130

£99

£116.33 inc.VAT



With print resolution of 720dpi and a speed of 3 pages per minute, the Epson Stylus Colour 300 gives you high-quality output at an exceptionally low price.

Dot Matrix Printers

ex VAT inc VAT

Epson

99-93-0131	LX300 - 80 columns, 9 pin, 264cps, 4Kb Buffer	£97	£113.98
99-93-0137	LX1050+ - 136 columns, 9 pin, 240cps, 4Kb Buffer	£153	£179.78
99-93-0880	FX880 - 80 columns, 9 pin, 455cps, 32Kb Buffer	£247	£290.23
99-93-0135	FX1170 - 136 columns, 9 pin, 342cps, 24Kb Buffer	£239	£280.83
99-93-0139	FX2170 - 136 columns, 18 pin, 440cps, 64Kb Buffer	£395	£464.13
99-93-0311	LQ300 - 80 columns, 24 pin, 240cps, 8Kb Buffer	£115	£135.13
99-93-0313	LQ570+ - 80 columns, 24 pin, 269cps, 8Kb Buffer	£216	£253.80
99-93-0315	LQ870 - 80 columns, 24 pin, 330cps, 8Kb Buffer	£377	£442.98
99-93-0322	LQ2070 - 136 columns, 24 pin, 330cps, 64Kb Buffer	£330	£387.75
99-93-0320	LQ2170 - 136 columns, 24 pin, 440cps, 64Kb Buffer	£468	£549.90

Panasonic

99-57-1150	KXPI150 - 80 columns, 9 pin, 240cps, 4Kb Buffer	£87	£102.23
99-57-2023	KXP2023 - 80 columns, 24 pin, 192cps, 14Kb Buffer	£112	£131.60
99-57-3626	KXP3626 - 136 columns, 24 pin, 300cps, 40Kb Buffer	£254	£298.45

SALES HOTLINES : **01753 550333**

FAX : 01753 524443



SALES LINES OPEN : MONDAY TO FRIDAY : 8.30am - 6.30pm SATURDAY : 9am - 1pm

- THE BEST YOU'LL GET -

On-site Support Packs

Hewlett Packard

	ex VAT	inc VAT
All HP On-Site warranties cover a 3-year period.		
99-28-9461	H5461A - Deskjet 340,4/600,67/690C,SST4I,1100C	£35 £41.13
99-28-9462	H5462A - Deskjet 820Cxi,SS2/5000,PS Camera	£47 £55.23
99-28-9464	H5465A - Deskjet 870,890C,Officejet 500/590	
	Scanjet 4S/P,5S/P,SS6000,PS PhotoPrinter/Scanner	£66 £77.55
99-28-9470	H5470A - Officejet 350,Scanjet 6100C	£102 £119.85
99-28-9471	H5471A - Officejet Pro 1150C,SS12000	£118 £138.65
99-28-9473	H5473A - Deskjet 1600C/CM	£105 £123.38
99-28-9475	H5475A - Scanjet 4Si,SS30e DLT	£140 £164.50
99-28-9476	H5476A - Laserjet 5/6P,5/6MP	£142 £166.85
99-28-9479	H5479A - Laserjet 5,5M,5N	£180 £211.50
99-28-9485	H5485A - Scanjet 5,SS70e DLT drive	£299 £351.33
99-28-9482	H5482A - Laserjet 4V,4MV	£235 £276.13
99-28-9492	H5492A - Laserjet 5SI MX/NX	£530 £622.75
99-28-9500	H5500A - Laserjet 5L,6L	£67 £78.73
99-28-9501	H5501A - Laserjet 5/5M Colour	£619 £727.33
99-28-9511	H5511A - SS40e DLT	£192 £225.60

Epson

	ex VAT	inc VAT
All Epson Cover Plus (std) warranties are 3 Year on-site, with an 8-hour response time.		
99-93-0018	Group 1 - Stylus 200,Stylus Color 200,LQ100+	£40 £47.00
99-93-0028	Group 2 - Stylus Color 400/600/800,LX300/I050+ LQ300,GT-5000/5500	£65 £76.38
99-93-0038	Group 3 - Stylus 1000,FX870/880/1170 LQ570+,LQ870/2070,EPL-5500/5500W	£99 £116.33
99-93-0048	Group 4 - FX2170,LQ2170,GT-8500/9500 EPL-N12000/N12000EN/N12000PS	£149 £175.08
99-93-0058	Group 5 - Stylus 1520,DFX5000+,DLQ3000+	£199 £233.83
99-93-0068	Group 6 - Stylus Pro XL+,EPL9000/N2000/N2000PS DFX8000,GT-12000	£259 £304.33

Printer Consumables

Hewlett Packard

	ex VAT	inc VAT
Laser Toner		
96-28-7413	HP92274A - Laserjet 4L/4P/4ML/4MP	£42 £49.35
96-28-7313	HP92275A - Laserjet IIP/IIIP/IIIPplus	£49 £57.58
96-28-7354	HP92291A - Laserjet IIISi/4Si/4Si MX	£69 £81.08
96-28-7230	HP92295A - Laserjet IID/IIID	£45 £52.88
96-28-7434	HP92298A - Laserjet 4/4M/4+4M+/5/5N/5M	£54 £63.45
96-28-7451	HPC3900A - Laserjet 4V/4MV	£85 £99.88
96-28-7551	HPC3903A - Laserjet 5P/5MP/6P/6MP	£45 £52.88
96-28-7515	HPC3906A - Laserjet 5L/6L	£36 £42.30
96-28-4127	HPC4127A - Laserjet 4000	£52 £61.10
96-28-0412	HPC4127X - Laserjet 4000 Long life	£77 £90.48

	ex VAT	inc VAT
Ink Cartridges for Deskjet		
96-28-5030	HP51633M - 310/320/340/DW310,320,340	£16 £18.80
96-28-5060	HP51629A - 600/660C/690C/DW600,660C	£18 £21.15
96-28-5069	HP51649A - 600/660C/690C/DW600,660C	£19 £22.33
96-28-5080	HP51645A - 820Cxi/850C/870Cxi/890C/1600C/CM	£18 £21.15
96-28-5089	HP51641A - 820Cxi/850C/870Cxi	£19 £22.33
96-28-5120	HP51640A - 1200C/1200C PS	£18 £21.15
96-28-5123	HP51640C - 1200C/1200C PS/1600C/1600CM	£21 £24.68
96-28-5125	HP51640M - 1200C/1200C PS/1600C/1600CM	£21 £24.68
96-28-5127	HP51640Y - 1200C/1200C PS/1600C/1600CM	£21 £24.68
96-28-1823	HPC1823A - 890C	£22 £25.85

Epson

	ex VAT	inc VAT
96-93-4000	S020093 - Stylus Color 500/400/600/Photo	£14 £16.45
96-93-8009	S020089 - Stylus Color 400/600/800/1520	£17 £19.98
96-93-8200	S020047 - Stylus 820/200/Color IIs/II,Color200	£13 £15.28
96-93-8209	S020049 - Stylus 1500/820/Color IIs/II	£19 £22.33
96-93-8005	S020110 - Stylus Photo	£14 £16.45

Product Link



Digital Cameras :
Page 23

Scanners

Hewlett Packard

	ex VAT	inc VAT
HP's industry-standard A4 scanners are all supplied with software & OCR		
97-28-0050	Scanjet 55 - 600/300dpi 24-bit colour, pass-thru sheet feed, Parallel Port interface with cable	£134 £157.45
97-28-5100	Scanjet 5100C - 1200/300Dpi, 24-bit colour, Parallel Port interface with cable	£149 £175.08
97-28-6100	Scanjet 6100C - 2400/600dpi, 30-bit colour, includes ISA SCSI controller card & cable Also includes 35mm adaptor.	£449 £527.58

Epson

	ex VAT	inc VAT
GTX Range A4 scanners supplied with Adobe Photoshop LE & Caere OmniPage LE OCR package Parallel Port interface - supplied with Parallel cable		
97-93-0507	GTX5000/P - 24-bit colour,A4,1200/300dpi	£130 £152.75
97-93-0957	GTX9500/P - 36-bit colour,A4,2400/600dpi	£446 £524.05
SCSI interface - supplied with ISA SCSI controller card & cable		
97-93-0553	GTX5500/S - 30-bit colour,1600/400dpi,	£187 £219.73
97-93-0953	GTX9500/S - 36-bit colour,2400/600dpi,	£469 £551.08

GTI Range

	ex VAT	inc VAT
A4 scanners with ISA SCSI interface, supplied with ISA SCSI controller card & cable. Software : Adobe Photoshop (full version),scanner utility CD & Image Stitch.		
97-93-0955	GTI9500 - 36-bit colour, 2400/600dpi,	£538 £632.15

GT Range

	ex VAT	inc VAT
A3 scanners with ISA SCSI interface, supplied with PC/MAC drivers.		
97-93-0120	GTI2000 (bare) - 36-bit colour,6400/800dpi,	£1315 £1545.13
97-93-0124	GTI2000/Graphics - as GTI2000 with SCSI controller card & cables, transparency adaptor, Adobe Photoshop LE	£1699 £1996.33
97-93-0126	GTI2000/OCR - as GTI2000 with SCSI controller card & cables, document feeder, Caere Omnipage LE V5	£2035 £2391.13

Logitech

	ex VAT	inc VAT
Each model operates through the parallel port and comes complete with scanning software and OCR.		
NOTE : Windows 95 is required		
97-97-0606	Scanman Color 2000 400dpi, 24-Bit colour handheld,	£49 £57.58
97-97-1002	FreeScan 600dpi, 4800Dpi enhanced, 30-bit colour. With 25-page feeder.	£105 £123.38

Hewlett Packard All-In-One

	ex VAT	inc VAT
99-28-3590	OfficeJet 590 Colour Inkjet Printer/Copier/Scanner, mono fax 300dpi optical mono scanner	£296 £347.80
99-28-5317	OfficeJet 635 Colour Inkjet Printer/Copier/Scanner, mono fax 300dpi optical 24bit colour scanning	£339 £398.33
99-28-3050	OfficeJet Pro 1150C Colour Inkjet Printer/Copier/Scanner 300dpi optical 24bit colour scanning	£491 £576.93
99-28-3948	LaserJet 3100 Mono Laser Printer/Fax/Copier/Scanner 600dpi, scan with 256 grey-scales	£489 £574.58



The Officejet range offers a versatile combination of printer, copier and scanner in a single compact yet high-performance unit.

They are A4 copiers with digital zoom and include scanning software and OCR.

SCANNERS, PRINTER SUPPORT & TONER

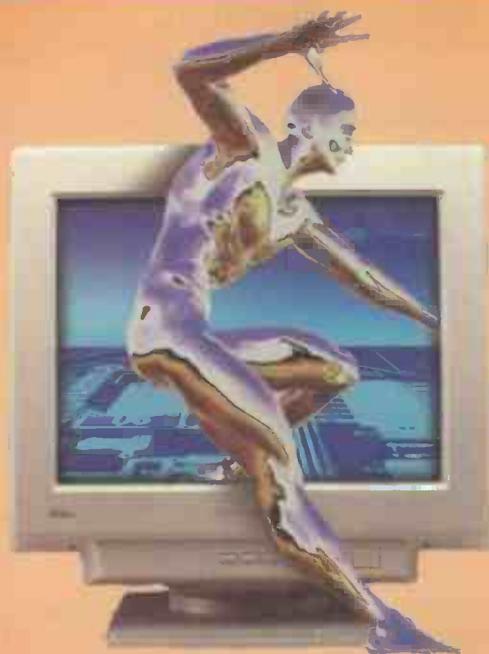
http://www.smc-computers.co.uk



A quick guide to Monitor sizes

14" - Ideal for business workstation use (eg word processing, database, spreadsheet) and basic games.
 15" - Better for applications involving more graphics such as Internet use and higher resolution games.
 17" - Primarily graphics use such as 3D modelling.
 21" - Intensive graphics use, including CAD and Desktop Publishing (including the production of this catalogue !)
 Monitor screen sizes are traditionally specified in terms of the size of the glass Cathode Ray Tube (CRT), but viewable screen sizes will vary depending on how much of the CRT extends beyond the monitor casing.
 LCD screen sizes are usually quoted as the actual visible size.

MONITORS



iiyama Monitors

Part No	Model	Size	Dot Pitch	Max.Res	ex VAT	inc VAT
68-93-9153	MF-8515G	15"	.28mm	1280x1024	£169	£198.58
68-93-9171	MF-8617T	17"	.26mm	1280x1024	£299	£351.33
68-93-9175	MF-8617ES	17"	.26mm	1280x1024	£365	£428.88

(The MF-8617ES has built-in stereo speakers)

68-93-9173	MT-9017T	17"	.25mm grille	1600x1200	£349	£410.08
68-93-1901	S-901GT	19"	.27mm	1600x1200	£499	£586.33

Limited Offer -All 21" Monitors supplied by SMC come with 3 Year on-site included.
 68-93-5010 **S-101GT** 21" .27mm 1600x1200 £729 £856.58
 68-93-5016 **A-101GT** 21" .28mm grille 1600x1200 £759 £891.83
 68-93-5020 **S-102GT** 21" .27mm 1800x1440 £765 £898.88
 68-93-5026 **A-102GT** 21" .28mm grille 1800x1440 £789 £927.08
 All iiyama monitors now have a 3-year warranty, with the first year on-site.

Resistive Touch Screen Monitors (for Windows 95) Experience the Power of Touch
 68-93-1500 **TS15** 15" based on MF-8515G £699 £821.33
 68-93-1700 **TS17** 17" based on MF-8617T £999 £1173.83
 68-93-2100 **TS21** 21" based on MT-9221T £1499 £1761.33

PROLITE - Flat panel screen
 68-93-3601 **ProLite 36** 14.1" Analogue LCD 1024x768 £899 £1056.33

Iiyama Vision Care (Extended Warranty Options)
 68-93-9916 15" MF-8515G £15 £17.63
 68-93-9917 17" MF-8617T/ES & MT-9017T £25 £29.38
 68-93-9919 19" S-901GT £30 £35.25
 68-93-9921 21" S-101GT,A-101GT,S-102GT,A-102GT £35 £41.13
 Warranties are upgradable 3 Year On-Site next day swap-out.
 Only available at time of purchase of monitor.



iiyama have over 20 years experience in manufacturing monitors in Japan and across the world. Since the UK office has been established they have won 44 leading computer magazine awards for technical excellence, display quality and value for money - a unique achievement.

In turn, SMC have won iiyama's award to establish themselves as Premier Authorised Reseller for Service Excellence.

The current range extends from a high quality 15" FST Monitor all the way through to a professional series 21" FST Monitor. We can provide the iiyama Vision Master Prolite 36, a 14.1" TFT flat panel LCD, offering full colour at resolution of 1024x768 !
 Through a partnership between iiyama UK and MicroTouch UK, SMC are also able to provide a range of touchscreen monitors which are based on the popular Vision Master series, each utilising MicroTouch ClearTek capacitive technology.

ViewSonic Monitors

Part No	Model	Size	Dot Pitch	Max.Res	ex VAT	inc VAT
The Economy Series						
68-99-1114	E641	14"	.28mm	1024x768	£99	£116.33
68-99-1115	E655	15"	.28mm	1280x1024	£159	£186.83
68-99-1117	E771	17"	.27mm	1280x1024	£239	£280.83
The Graphics Series						
68-99-3715	G653	15"	.28mm	1280x1024	£159	£186.83
68-99-3515	I5GA	15"	.27mm	1280x1024	£199	£233.83
68-99-3917	GA771	17"	.27mm	1280x1024	£339	£398.33
68-99-3617	GS771	17"	.27mm	1280x1024	£329	£386.58
68-99-3517	G773	17"	.26mm	1280x1024	£349	£410.08
68-99-3717	GT775	17"	.25mm grille	1600x1280	£379	£445.33
The Professional Series						
68-99-5115	P655	15"	.27mm	1280x1024	£169	£198.58
68-99-5117	P775	17"	.25mm	1600x1280	£359	£421.83
68-99-5217	PT775	17"	.25mm grille	1600x1280	£419	£492.33
68-99-5121	P810	21"	.25mm	1600x1280	£789	£927.08
68-99-5321	PT813	21"	.28mm	1600x1280	£849	£997.58
The LCD Series						
68-99-7140	VPI40	14"	n/a	1024x768	£899	£1056.33
68-99-7150	VPA150	15"	n/a	1024x768	£1099	£1291.33

All ViewSonic Monitors are supplied with a **FREE 3 Year Express Exchange Warranty.**





SALES LINES OPEN: MONDAY TO FRIDAY: 8.30am - 6.30pm SATURDAY: 9am - 1pm

- THE BEST YOU'LL GET -

MONITORS

Colour Monitors

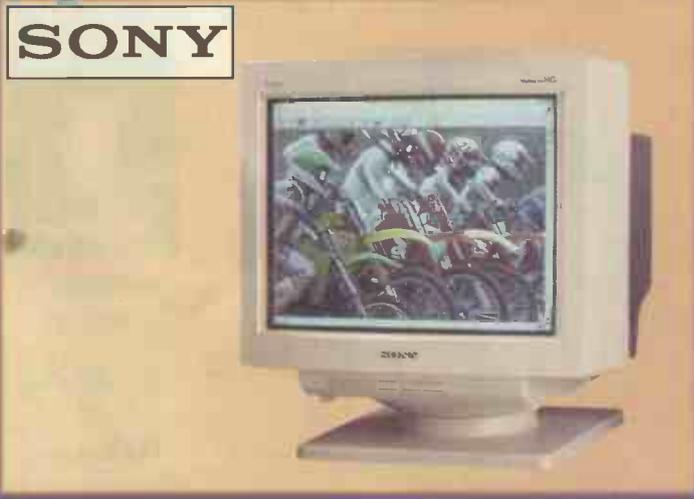
* All monitors are Energy Star compliant.

Model	Dot Pitch	Max. Res.	ex VAT	inc VAT
14"				
68-90-1405 AOC 4VLR	.28mm	1024x768	£85	£99.88
68-26-1440 LG Goldstar GS44i	.28mm	1024x768	£102	£119.85
68-59-1405 Philips 104S	.28mm	1024x768	£88	£103.40
68-59-1404 Philips 104B	.28mm	1024x768	£95	£111.63
68-95-1407 Samsung SM400b	.28mm	1024x768	£109	£128.08
With 2 year on-site warranty				
15"				
68-90-1505 AOC 5VLR	.28mm	1280x1024	£109	£128.08
68-26-1557 LG Goldstar GS56i	.28mm	1280x1024	£115	£135.13
68-26-1558 LG Goldstar GS57i	.28mm	1280x1024	£135	£158.63
68-59-1505 Philips 105S	.28mm	1024x768	£129	£151.58
68-95-1501 Samsung 500s FST	.28mm	30-54KHz	£139	£163.33
With 3 year on-site warranty.				
Available with multimedia speakers. Please ask for details.				
68-95-1507 Samsung 500b FST	.28mm	30-69KHz	£149	£175.08
68-71-1517 Sony CPD 100ES	.25 Grille	1024x768	£189	£222.08
68-71-1519 Sony CPD 100GST	.25 Grille	1280x1024	£219	£257.33
17"				
68-26-1777 LG Goldstar GS77i	.28mm	1280x1024	£245	£287.88
68-26-1778 LG Goldstar GS78i	.26mm	1600x1280	£329	£386.58
68-57-1734 Panasonic TX1734	.27mm	1280x1024	£315	£370.13
68-95-1703 Samsung 700s FST	.28mm	30-69KHz	£299	£351.33
With 3 year on-site warranty.				
Available with multimedia speakers. Please ask for details.				
68-95-1701 Samsung 17GLsi	.26mm	1600x1200	£399	£468.83
68-71-1721 Sony CPD200EST	.25mm	1024x768	£349	£410.08
68-71-1719 Sony CPD200GST	.25 Grille	1280x1024	£375	£440.63
Integrated mono speaker jack (for video conferencing & voice mail)				
68-71-1705 Sony GDM17SE2T5	.25mm	1280x1024	£489	£574.58
68-71-1723 Sony GDM-200PST	.25 Grille	1280x1024	£475	£558.13
19"				
68-71-1940 Sony GDM400PST	.25 grille	1600x1200	£635	£746.13
20"				
68-26-2020 LG Goldstar GS20i	.28mm	1600x1280	£555	£652.13
68-71-2017 Sony CPD300SFT5	.30mm	1280x1024	£729	£856.58
21"				
68-59-2104 Philips 201B 21"	.27mm	1600x1200	£745	£875.38
68-95-2101 Samsung 21GLs21"	.28mm	1600x1200	£799	£938.83
With 3 year on-site warranty				

MultiMedia Monitors (with speakers)

* All monitors are Energy Star compliant.

Part No	Model	Dot Pitch	Max. Res.	ex VAT	inc VAT
14"					
68-26-1444	LG Goldstar 44M	.28mm	1024x768	£115	£135.13
15"					
68-26-1556	LG Goldstar 56M	.28mm	1280x1024	£145	£170.38
68-26-1559	LG Goldstar 5D	.28mm	1280x1024	£165	£193.88
68-59-1513	Philips 105BR	.28mm	1280x1024	£195	£229.13
P'nP also with Microphone					
17"					
68-26-1783	LG Goldstar 78M	.26mm	1600x1280	£389	£457.08
68-59-1713	Philips 107B	.28mm	1280x1024	£349	£410.08
Including CustoMax software and Built-in Stereo sound					
68-59-1703	Philips 107BR	.26mm	1280x1024	£395	£464.13
With Microphone					
19"					
68-59-1901	Philips 109BR	.26mm	1600x1200	£575	£675.63
21"					
68-59-2113	Philips 201BR	.26mm	1600 x 1200	£895	£1051.63
With microphone					
68-59-2103	Philips 201BR	.26mm	1600 x 1200	£1575	£1850.63
Advanced Colour, also with microphone					



http://www.smc-computers.co.uk



AT YOUR SERVICE : THE UK'S TOTAL QUALITY SUPPLIER

Since the PC environment was revolutionised by Windows 95, hardware has made further enormous steps forward and it was this consideration that has made Windows 98 such a necessary upgrade.

With Windows 98, support is provided for AGP graphics, Ultra-DMA Hard Drives, USB and ACPI Power management. If you don't understand these terms or why they're so important : that's fine - enjoy your PC in the knowledge that you're being taken care of by those who know !

At SMC, we're proud to be selected as one of Microsoft's premier partners in the distribution of Windows 98, which is solid recognition of the success we have had in building a strong market presence through our unique commitment to Total Quality.

SOFTWARE : WINDOWS 98



FAST FORWARD YOUR PC WITH WINDOWS 98 !

- Make sure to reserve your copy for June 25th



Benefits :

- > Easier to use
- > Increased power
- > Better functionality
- > Supports new hardware
- > Improved Internet Interface
- > Unlocks the power of your PC

Options (only available from June 25th) :

05-50-9598	Upgrade from Windows 3.1x/95	£59	£69.33
05-50-9800	Upgrade from DOS	£119	£139.83
05-50-9809	Windows 98 Plus pack Companion utilities	£27	£31.73

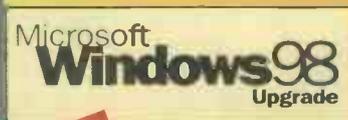
SMC SPECIAL OFFER*SMC SPECIAL OFFER*SMC SPECIAL OFFER

**RESERVE your copy of Windows 98 with a minimum order for
EITHER 32MB of memory
OR a 3.2GB Hard Disk
and receive FREE EXPRESS DELIVERY !**

SMC SPECIAL OFFER*SMC SPECIAL OFFER*SMC SPECIAL OFFER

Microsoft Windows 98 makes your computer work better by integrating tightly with the Internet and providing better system performance and easier system diagnostics and maintenance. With Windows 98, your system plays better as well, with support for the latest graphics, sound and Multimedia technologies, easy addition and removal of peripheral devices, and the convergence of PC and TV in your home.

This exciting new operating system builds on the groundbreaking features introduced with Windows 95, while at the same time maintaining the best support for older Windows-based applications and technologies.



SYSTEM REQUIREMENTS :

486DX 66MHz or higher with minimum 16MB RAM (32MB recommended) and 200MB free Hard Disk space (300MB max). CD-ROM drive, Microsoft (or compatible) mouse and VGA graphics & monitor. As the UK's Total Quality Supplier of PCs and Upgrades, we can advise on and supply any hardware required to maximise your enjoyment of Windows 98.



PLUS

BUY ANY MICROSOFT OFFICE 97 TITLE ...

Office 97 Small Business Edition
05-50-9702
£325 £381.88 inc.VAT
Includes :-
Microsoft Word 97
Microsoft Excel 97
Microsoft Outlook 97
Microsoft Publisher 97
Microsoft Small Business Financial Manager 97
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Office 97 Standard Edition
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£319 £374.83 inc.VAT
Includes :-
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Microsoft PowerPoint 97



Office 97 Professional Edition
05-50-3177
£418 £491.15 inc.VAT
Includes :-
Microsoft Word 97
Microsoft Excel 97
Microsoft Outlook 97
Microsoft Access 97
Microsoft PowerPoint 97

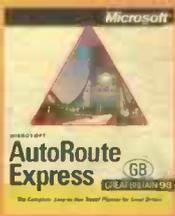


IT'S EASY WITH SMC ...

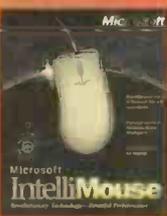
- FIRST -**
Choose the version of Microsoft Office 97, and the second software title, you wish to purchase.
- SECOND -**
Call the SMC Sales Hotlines on 01753-550333, or fax us on 01753-524443, to place your order.
- THIRD -**
When you receive your software, return the following to Microsoft :-
1) Registration card for Office 97
2) Registration card for 2nd software title
3) Sales invoice (sent separately by SMC)
4) Stamped, self-addressed envelope
- FOURTH -**
Microsoft will send you a cheque for 50% of the price of your second software title.

AND SAVE 50% ON ANY OF THESE ...

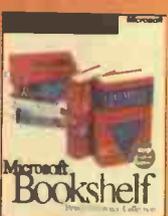
AutoRoute Express
05-50-0121
£39 £45.83 inc.VAT
Plan your travel routes precisely : fastest, shortest or preferred routes are all plotted, with step-by-step directions, and sights, views, hotels and even Internet links are given.



IntelliMouse
82-50-0605
£35 £41.13 inc.VAT
A "zoom and scroll" wheel allows you to work with speed, precision, control and comfort for faster, easier navigation of Microsoft Windows 95, Office 97 and Internet Explorer.



Bookshelf British Reference Collection
05-50-0149
£32 £37.60 inc.VAT
Includes : Chambers Dictionary, Hutchinson Concise Encyclopedia, Roger's Thesaurus, Bloomsbury Quotations, Microsoft Concise Encarta World Atlas and Microsoft Bookshelf Internet Directory



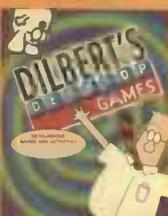
PowerPoint 97
01-50-3357
£222 £260.85 inc.VAT
The leader in presentation software, PowerPoint uses intelligent tools to help you organise your ideas into impressive visual presentations.



Publisher 98
01-50-9109
£66 £77.55 inc.VAT
Create professional documents - newsletters, flyers, mailers and more - simply and skilfully. Over 5,000 clip-art images, videos and sound clips are provided to allow you to customise layouts and personalise your creations.



Dilbert's Desktop Games
05-50-0119
£20 £23.50 inc.VAT
Take light relief from the pressures (or boredom !) of everyday life. Hours of entertainment will help you vary the heat, including comic strips, Techno Raiders, wacky memos & tough challenges.



THAT'S ALL THERE IS TO IT !





Software

SOFTWARE

Software Support

ICL/MICROSOFT
Call support packs for selected Microsoft products Applications covered include Windows 95, 3.x, NT, DOS 5+, Office 4, Office Pro 95/97, Office 5BE, Money, Autoroute Exp+, Project, Team Manager, Home Essentials, Product. They are available for both new and old Software purchases.

	ex VAT	inc VAT
99-50-0201 2 call pack *	£45	£52.88
99-50-0501 5 call pack *	£105	£123.38
99-50-1001 10 call pack *	£190	£223.25
99-50-1012 10 call pack **	£399	£468.83
99-50-2512 25 call pack **	£699	£821.33

* - With 1m free MSN access
** - With 1yr MS Technet CD

Business Applications

MICROSOFT

05-50-1209 Money 98	£19	£22.33
05-50-7157 FrontPage 98	£89	£104.58
01-50-3155 Word 97	£224	£263.20
05-50-3117 Office 97	£318	£373.65
05-50-3113 Office V4.2	£325	£381.88
05-50-3177 Office Professional 97	£418	£491.15
05-50-9702 Office Small Business Edition (SBE) 97 - V2	£325	£381.88
05-50-2405 BackOffice Small Business Server 4 + 5 users	£899	£1056.33
05-50-2425 BackOffice Small Business Server 4 + 25 users	£1529	£1796.58
05-50-3235 Excel 97	£222	£260.85
01-50-3197 Access 97	£222	£260.85
01-50-3357 Powerpoint 97	£222	£260.85
01-50-9109 Publisher 98	£66	£77.55
05-50-1091 Microsoft Proxy Server 1.x	£645	£757.88
05-50-1095 Exchange Server +10 clients licences	£910	£1069.25
05-50-3182 Office 97 Developers edition	£529	£621.58
05-50-3202 Site Server 32 Standard Edition	£995	£1169.13
05-50-6505 SQL Server 6.5 +5 client licences	£945	£1110.38
05-50-9299 Home Essentials 98	£75	£88.13

Upgrade Packages

05-50-3137 Office Std - Office 97 (CCP)	£148	£173.90
05-50-3157 Office Pro - Office Pro 97 (CCP)	£205	£240.88
01-50-9798 Publisher 97 to 98	£33	£38.78

LOTUS

05-91-0103 Smartsuite V4	£290	£340.75
05-91-0107 Smartsuite 97 for Windows 95	£295	£346.63
05-91-0305 Notes 4.x Full Client	£259	£304.33
05-91-7379 Intranet Starter Pack	£779	£915.33
05-91-0097 CCMail R8 Advanced	£339	£398.33

COREL

05-95-9808 Corel Draw 8	£259	£304.33
05-95-0517 Quattro Pro V7 for Windows 95	£46	£54.05
05-95-6061 Wordperfect Suite 6.1 for Windows 3.1x	£149	£175.08
05-95-0505 Wordperfect Suite 7 for Windows 95	£159	£186.83

ADOBE

05-93-0003 Acrobat 3	£129	£151.58
05-93-1004 Photoshop 4	£365	£428.88
05-93-2007 Illustrator 7	£255	£299.63

CLARIS

05-91-2258 Works Office	£75	£88.13
05-91-2004 FileMaker Pro 4	£165	£193.88
05-91-2176 Home Page 3	£69	£81.08

OTHERS

05-93-1700 Olympus Photoalbum	£12	£14.10
05-90-0097 AutoCAD LT 97	£449	£527.58
05-90-0197 AutoCAD LT 97 Upgrade	£179	£210.33

Edutainment

MICROSOFT

MULTIMEDIA EDUCATIONAL

05-50-5381 500 Nations	£19	£22.33
05-95-5209 Art Gallery	£33	£38.78
05-50-5213 Composer Collection	£32	£37.60
05-95-5217 Dangerous Creatures	£22	£25.85
05-50-5219 Dinosaurs	£22	£25.85
05-50-0114 Encarta 98 UK Windows 95	£31	£36.43
05-50-0115 Encarta 98 Deluxe UK Windows 95	£49	£57.58
05-50-0117 World Atlas 98 Windows 95	£31	£36.43
05-50-7103 Musical Instruments	£19	£22.33
05-95-7151 Oceans	£19	£22.33

MULTIMEDIA GENERAL

05-50-0122 Autoroute Express GB 98- Windows 95	£39	£45.83
05-50-0121 Autoroute Express Europe 98-Win 95	£39	£45.83
05-95-5213 Bookshelf 98	£55	£64.63
05-95-7047 Cinemanla 97	£19	£22.33
05-50-7151 Wine Guide	£19	£22.33

MULTIMEDIA GAMES
For Windows 95

05-50-0175 Chaos Island	£19	£22.33
05-50-0131 Age of Empires	£25	£29.38
05-50-0129 Close Combat 2	£25	£29.38
05-50-0135 Flight Simulator 98	£32	£37.60
05-50-0133 CART Precision Racing	£24	£28.20

Programming Languages

MICROSOFT

05-50-3313 Visual FoxPro Std V3	£121	£142.18
05-50-9131 Visual Basic V5	£63	£74.03
05-50-9505 Visual Basic Pro V5	£319	£374.83
05-50-3317 Visual Basic V5 Enterprise Edition	£759	£891.83
05-50-9011 Visual ++ V1.1	£63	£74.03
05-50-9017 Visual C++ V5	£63	£74.03
05-50-9119 Visual C++ V5 Enterprise	£775	£910.63
05-50-9049 Visual Interdev V1	£325	£381.88
05-50-9061 Visual Studio 97 Professional	£649	£762.58
05-50-9179 Visual Studio 97 Enterprise CCP	£677	£795.48
05-50-9063 Visual Studio 97 Enterprise	£949	£1115.08
05-50-9073 Visual Foxpro 5 Professional	£325	£381.88

BORLAND

05-94-0328 C++ Builder 3	£75	£88.13
05-94-0329 C++ Builder 3 Professional	£369	£433.58
05-94-0330 C++ Builder V3 Professional Upgrade	£229	£269.08
05-94-0332 C++ Builder V3 Client Server	£1499	£1761.33
05-94-0333 C++ Builder V3 Client Server U/G	£1049	£1232.58
05-94-0474 JBuilder Standard	£75	£88.13
05-94-0491 JBuilder Professional	£369	£433.58
05-94-0411 JBuilder Client Server	£1499	£1761.33
05-94-0433 JBuilder Client Server Upgrade	£1299	£1526.33
05-94-0537 Delphi V3 Professional	£345	£405.38
05-94-0593 Delphi V3 Professional Upgrade	£219	£257.33
05-94-0594 Delphi V3 Client Server Upgrade	£959	£1126.83
05-94-0698 Visual dBase V7 Professional	£239	£280.83
05-94-0698 Visual dBase V7 Professional Upgrade	£239	£280.83

Operating Systems

MICROSOFT

Full Versions

01-50-9503 Windows '95 (Floppy disc version)	£129	£151.58
05-50-9507 Windows '95 Service Release 2.5 *	£99	£116.33
05-50-1013 Windows NT 4.0 Workstation	£225	£264.38
05-50-1017 Windows NT 4.0 Server + 5 clients	£569	£668.58
05-50-1018 Windows NT 4.0 Client license	£37	£43.48

Upgrades

05-50-9509 Windows 3.1x to 95 (CD version)	£59	£69.33
01-50-1957 Windows 3.1x to 95 (Floppy disc version)	£59	£69.33
05-50-9531 Windows '95 3 in 1 Upgrade	£65	£76.38
05-50-1015 Windows NT V3.51 to V4 Upgrade	£99	£116.33
05-50-9309 Windows NT Server + 5 clients V3.51 TO V4.x	£295	£346.63

* 05-50-9507 must be purchased with a new Hard Drive. They do not include Microsoft Support.

Utilities

ONTRACK
Software supplied on floppy disk. OEM versions supplied with Hard Drive only

01-93-8642 Disk Manager OEM	£15	£17.63
01-93-8644 Disk Manager Retail	£35	£41.13
01-93-8402 Drive Rocket OEM	£12	£14.10
01-93-8404 Drive Rocket Retail	£17	£19.98

POWERQUEST

01-94-0002 Partition Magic	£44	£51.70
01-94-0030 Drive Image for backup/recovery	£43	£50.53
01-94-0035 Drive Image Pro Drive Data cloning	£499	£586.33

NORTON

01-95-0103 Utilities V8	£83	£97.53
05-95-9503 Utilities - WIN 95 V3	£55	£64.63
05-95-9055 Uninstall Deluxe	£26	£30.55
05-95-9057 CrashGuard Deluxe	£29	£34.08
05-95-9065 PC Anywhere 8	£95	£111.63

QUARTERDECK

05-95-0202 Partition-It Ex.Strength	£38	£44.65
05-95-0213 Real Help Ex.Strength	£29	£34.08
05-95-0221 VirusSweep	£24	£28.20
05-95-0219 Cleansweep Deluxe	£36	£42.30

Backup Software

Cheyenne
Backup for Win95

01-90-7001 Single user. easy to use, includes scheduling	£35	£41.13
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Arcserve 6 for Netware
Server based, supports DOS, OS/2, Windows 3.x and Windows 95 workstations (optional support packs for UNIX, Macintosh and Windows NT Servers and Workstations), improved support for NetWare 4.1, with an improved Windows 95 style user interface.

01-90-6011 Single Workgroup Edition	£320	£376.00
01-90-6015 Enterprise Edition for multiple servers	£789	£927.08

Arcserve 6.5 for Windows NT
Supports Windows NT, '95 and 3.x clients (optional agents available for NetWare, UNIX, OS/2 and Macintosh). Windows NT 4.0 compatible, with a built in Virus Scanner.

01-90-6533 Workstation edition not Win 95 client	£125	£146.88
01-90-6531 Single Server edition	£330	£387.75
01-90-6535 Enterprise edition for multiple servers	£559	£656.83

Anti-Virus

Dr. SOLOMON'S
Anti-Virus Toolkit

01-93-0014 1 Year cover, 4 updates	£69	£81.08
01-93-0112 1 Year cover, 12 updates	£122	£143.35
01-93-0034 3 Year cover 4 updates p.a.	£129	£151.58
01-93-0312 3 Year cover, 12 updates p.a.	£249	£292.58

Anti-Virus Toolkit is designed for single user computers running any of the following:- DOS/Windows 3.1x, 95, NT and OS/2. License packs and server versions for Novell Netware/Windows NT Server are available: please call for details.

NORTON
Anti-Virus

01-95-9103 For Windows 3.1x	£65	£76.38
05-95-9050 For Windows 95	£49	£57.58

McAfee VIRUS SCAN

05-97-0305 Electronic updates	£23	£27.03
05-97-0307 Quarterly updates	£28	£32.90

Seagate Software

01-13-0351 Windows 95 single user, includes Job Scheduling. Netware aware, will back up any workstation or network	£74	£86.95
01-13-0331 Windows NT 4.0 Single Server edition	£370	£434.75
01-13-0500 Windows NT 4.0 Workstation edition, includes Job Scheduling, true 32-bit backup to a host of devices	£135	£158.63



http://www.smc-computers.co.uk



For a truly Personal Computer ...

While the systems listed below can usually be provided off-the-shelf, we also specialise in the production of made-to-measure PCs, designed and built to individual requirements.

If you have a specific design in mind - or would simply like a quotation on a variation of a model you see below - just give our sales Hotline a call on 01753 - 550333 and one of our Technical Sales specialists will be happy to discuss what you need in terms of performance and price.

Individually-built systems take around five working days to process fully, so if you call us today, within a week you could have a new PC that is exactly what you want, and because we don't charge for the extra service, it will be at a price you can afford.



Home Entertainer **£879** (£1032.83 inc.VAT)

Our latest design for entertainment use features Intel's new 266MHz Celeron processor which allows simple upgrade in the future to Pentium II with speeds in excess of 400MHz. It includes 32MB of SDRAM with a capacity of 24 times that amount, and a 4GB Hard Drive. Creative Labs Soundblaster 64 and 24-speed CD-ROM make this system an all-round entertainer capable of handling virtually any applications on the market, while providing total compatibility with upgrade options should your requirements increase in years to come.

Driver Plus **£755** (£887.13 inc.VAT)

Many situations require the use of several advanced applications at once and for this reason we have configured a system with memory and processing power to match the task.

We have increased the specification to include a massive 32Mb of SDRAM, coupled with a powerful P233 Pentium MMX processor, while graphics are handled by a 4Mb 3D video card. A 24-speed CD-ROM drive, coupled with Soundblaster 64 Sound Card and speakers make this an extremely versatile and high-power system that offers performance way beyond its price.

3D Gamer **£878** (£1031.65 inc.VAT)

The Gamer has been designed from the ground up to be the ultimate gaming solution.

At its core is the 266MHz Pentium II processor, with 32MB of SDRAM memory and a 6.4GB Hard Drive.

Graphics performance is truly the best, with a whopping 12MB of memory shared between a 4MB AGP 3D video card and an 8MB Creative Labs Voodoo2 accelerator featuring the 3Dfx Interactive chipset, which is acknowledged as the fastest on the planet!

With a 24-speed CD-ROM drive, Soundblaster 64 Sound Card and speakers completing the specification, you'll have a set-up that will give a level of speed and realism you'll hardly believe.

HARDWARE : Our product quality is the best because we control every stage of the process, and will only install major branded products into our systems.

SOFTWARE : In addition to the latest version of Windows 95, every INFINITE system has Lotus Smartsuite pre-installed, and will support Windows 98 (available from June 25th).

SUPPORT : There's a full FIVE-YEAR warranty with every system (the first year on-site, years 2-5 return to base, labour only) and 3 year warranty with every monitor. In addition, there's lifetime technical support on our dedicated hotline to give you complete peace of mind.

Infinite
Personal Computer

Monitor options : all system specifications include an SVGA 14" monitor, but we can provide any monitor in our range. Obtaining a price for an alternative is easy : simply refer to the monitor listings on Page 26-27 and adjust for the difference in price.

Business Workstation **£675** (£793.13 inc.VAT)

Now featuring even more power with the Pentium P200 MMX processor, 32MB of SDRAM, a 2MB 2D/3D graphics card and a 24-speed CD-ROM drive, this system will handle all your business requirements at a price that won't stretch your budget.

Lotus Smartsuite is supplied with all INFINITE systems and this means you'll be ready to go with no extra fuss, or for an incredibly low £123 you can choose Microsoft Office (see opposite for details).

Should you wish to upgrade for network use, we can include this at build time for a nominal price : give us a call for details.

Blazer **£999** (£1173.83 inc.VAT)

Designed to handle all your Multimedia PC and Internet needs, this system really flies. At its heart is a Pentium II running at 233MHz coupled with 32MB of scorchingly fast SDRAM and a 4GB Hard Drive. It includes a 56K fax/modem by US Robotics to maximise your performance on the Net, and graphics are handled by a 4MB AGP 3D video card. A 24-speed CD-ROM drive, Soundblaster 64 Sound Card and speakers complete the specification of a system that'll blaze through any application you have.

Win'Jammer 98 **£1285** (£1509.88 inc.VAT)

Now at an even lower price, the Win'Jammer blows up a real storm with the latest ATX motherboard, Intel's new BX chipset, a blisteringly fast P333MHz Pentium II Processor and an enormous 64Mb of SDRAM memory. A 56Kbps Fax/Modem communicates with the outside world, and a 64-voice Soundblaster card & speakers give you exceptional sound quality. Other features include a massive 6.4Gb Ultra-IDE hard drive, 24-speed CD ROM and superb graphics performance in the form of a 4Mb 3D AGP video card.

This machine is really tomorrow's technology today !

Centurion **£1665** (£1956.38 inc.VAT)

Our latest top-of-the-range PC is a state of the art computer using the new 400MHz Pentium II and supporting a full 64MB of the new 100MHz PC100 SDRAM memory which is 50% faster than that used by technology to date. Further specification enhancements are necessary to make the most of this extra power, and we have included an enormous 8MB AGP x2 3D graphics card featuring Intel's i740 chipset, which is twice as fast as existing AGP cards.

Finally, an 8.4GB Hard Drive is used to hold all the data you will produce now that your machine takes half the time !

SALES HOTLINES: **01753 550333**

FAX: **01753 524443**



SALES LINES OPEN : MONDAY TO FRIDAY : 8.30am - 6.30pm SATURDAY : 9am - 1pm

- THE BEST YOU'LL GET -

5 YEAR WARRANTY * ... LIFETIME PEACE OF MIND

* Three-year warranty applies to monitors



All INFINITE systems have Lotus SmartSuite pre-installed FREE OF CHARGE with the following applications :

- Lotus 1-2-3
- Organiser
- Freelance
- Approach
- Word Pro
- ScreenCam



SMC INFINITE systems

At SMC, we have been building PC's for years, and we don't believe anyone can offer our unique combination of high performance, flexibility and competitiveness. We take a genuine pride in our work : every PC is built on-site by our own staff : we do not sub-contract or "buy in" systems from third parties. Initial assembly is carried out by an individual engineer, fully "burned in" and then quality-checked by another engineer before being passed for shipment. Components used are all major-brand items, fully compatible and upgradable as technology moves on.

The INFINITE brand has been built strongly over the years on the basis of care and attention to detail, and a deliberate and unbroken rejection of so-called "box-shifter" principles. In this way we have developed a no-compromise approach to quality that will give you a PC to be proud of. What's more, as with everything we do, getting a premium service from SMC doesn't mean you'll find anything added to the price.

Upgrade to Microsoft Office

The Small Business Edition includes : MS Word, Excel, Autoroute Express GB, Publisher, Outlook, Internet Tools and Financial Manager.

Available for just **£123**

£144.53 Inc.VAT



INFINITE PC SYSTEMS

http://www.smc-computers.co.uk

SMC Computers Plc
253-257 Farnham Rd Slough Berkshire SL2 1HA



~ ~ ALL MAJOR CREDIT CARDS ACCEPTED ~ ~

31

AT YOUR SERVICE : THE UK'S TOTAL QUALITY SUPPLIER

Did you know - SMC maintains a constant emphasis on training in all aspects of its operation to ensure that staff are able to provide the highest levels of service.

In addition to full-time staff employed to teach and reinforce job skills and procedures, we periodically engage outside agencies to provide another perspective, and in 1997 we received a Thames Valley Business of the Year award in recognition of the Investment we have made in training.

When we say that we are continually seeking improvement in what we do - we mean it.



ASUS Notebooks

ex VAT inc VAT

ASUS notebook PCs are fitted with 32MB memory, 3.2GB Hard Drive, 20-speed CD-ROM drive and 13.3" TFT display.

Windows 95 is installed, and a Carry Case is provided.

Notebook PCs

Pentium processor : with 32MB RAM.

94-99-7200	P200MMX	£1699	£1996.33
94-99-7233	P233MMX	£1789	£2102.08
94-99-7266	P266MMX	£1869	£2196.08

Pentium II processor : with 64MB RAM.

94-99-1233	PII 233MHz	£2049	2407.58
94-99-1266	PII 266MHz	£2199	£2583.83

Upgrade Options

IMPORTANT : these options are available at time of purchase only.

30-99-4001	4.1GB Hard Drive	£200	£235.00
51-99-2001	DVD CD-ROM and MPEG upgrade	£200	£235.00
19-99-0016	16MB Memory upgrade (to a maximum of 144MB)	£40	£47.00

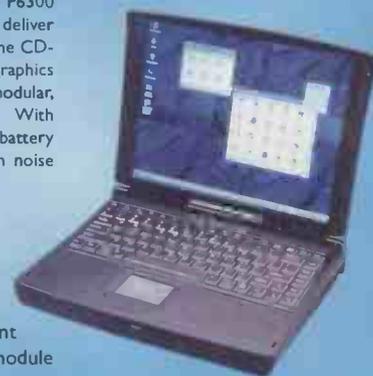


* PENTIUM II READY *

ASUS have unveiled their new P6300 range of notebook PCs which deliver breakthroughs in upgradability. The CD-ROM, floppy drive, hard drive, graphics and even the processor are all modular, allowing simple future upgrades. With their unique system management, battery life is enhanced and reductions in noise and heat generation are achieved.

Features include :

- > 5-hour battery life
- > 13.3" TFT display
- > Auto tilt keyboard
- > Unique thermal management
- > Intel MM0 CPU upgrade module
- > DVD upgradable
- > Leather Carry Case



NOTEBOOKS

Notebook PCs

ex VAT inc VAT

Toshiba

Libretto

With memory socket and 1.5 hours battery life. 1x Type II 16bit CardBus PCMCIA.

94-75-0070	70CT - P120MMX, 16MB RAM, 1.6GB HD, 6.1" TFT display	£1089	£1279.58
94-75-0100	100CT	£1449	£1702.58

Portege

With memory socket and 2.5 hours battery life. 1x Type II or 1x Type III 16/32bit CardBus PCMCIA.

94-75-0300	300CT/4.1 - P133MMX, 32MB RAM, 4.1GB HD, 10.4" TFT display	£1599	£1878.83
94-75-0320	320CDT	£2179	£2560.33

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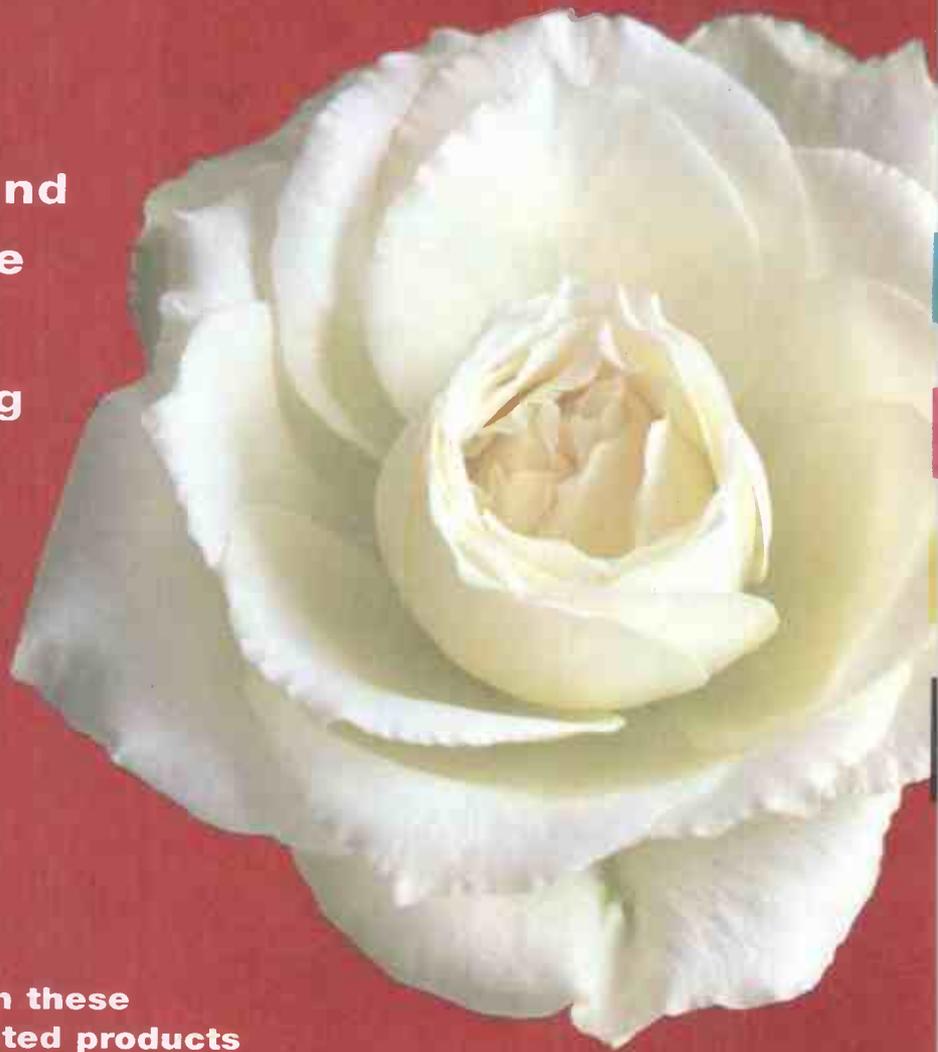
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- | | |
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W = Always |
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W = Always |
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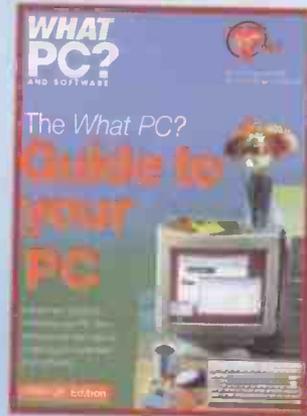
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SEE ALSO MICROMART CLASSIFIED
- Go to Main Index

A	MDL	636
A1 Shareware	634	Micro Direct 632
B	MX2	633
Bakewell Computers	637	P
Bucomm	636	Paradigm Technology 637
C		Product Line Services 639
Chilton Williams	638	Push Buttons 636
Computer Bargains	638	S
D		Selectafont 639
Data Acquisition	638	Squire International 637
G		Squire 637
Gemworks	636	T
GTS	637	Toner Cartridge Recharge 639
M		V
Mannink	639	Vector Graphics 638
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Company	Page No	Company	Page No	Company	Page No
PC Systems		PC Notebooks		Industrial solutions	
PC Desktops				Components	
A1 Computer Warehouse	630	ACi	226-7	SMC Computers	596-627
Aria Technology	350	ATT	643	Tech Direct	500-531
Atlantic	172-175	CD Revolution	299,307	Technomatic	460-499
ATT	643	Choice Systems	168/9	Time Computer Systems	384-396
Buccom	636	Compaq	132-133	Watford Electronics	413-459
CD Revolution	299,307	Cybernex	153	Monitors	
Chilton Williams	638	Dabs Direct	596-627	ADI	54
Choice Systems	168/9	Evesham Micros	397-412	Aria Technology	350
Chora Systems	249	Gateway 2000	100-101	Atlantic	172-175
Compaq	132-133	Gultronics	62,63	Choice Systems	168/9
Cybermax	153	HCS Global	397-412	CTX	104
Dabs Direct	596-627	IBM	32,33	Dabs Direct	596-627
Dan Technology	20-23, 333-337	Locland	162,163	Evesham Micros	397-412
Dell	5,8,9,11, 138-9, 146,147	MJN Technology	267-271	Extreme Computer	262,263
Elonex	70,71	Pico Direct	369-376	Hitachi	109
Evesham Micros	397-412	Powercom	149	NEC	196-197
Extreme Computer	262,363	Rock Computers	123,186,187	Novatech	348,349
Fujitsu/ICL	52,53	Roldec	202-205	Philips	98
Hi-Grade	62,63	Tech Direct	500-531	Roldec	202-205
KT Computers	194	Technomatic	460-499	SMC Computers	596-627
Linear Computers	240,241	Time Computer Systems	384-396	Sony	131
Locland	162,163	Universal Control Systems	460-499	Taxan	84,85
Mertec Computers	283-285	Viglen	651	Tech Direct	500-531
MESH Computers	42-45,48	Watford Electronics	413-459	Technomatic	460-499
Micro Business Computers	154-5	PC Handhelds		Viglen	651
Micro Direct	631	Clove Technology	257	Watford Electronics	413-459
Morgan	37	Exportech	265	Input Devices	
Mustard Computers	192-193	Paradigm Technology	160	Electrone	649
Protek	352	Pico Direct	369-376	Extreme Computer	262,263
Quantex	164-5	Tech Direct	500-531	Novatech	348,349
Roldec	202-205	Technomatic	460-499	Pico Direct	369-376
Squire International	637	Watford Electronics	413-459	Roldec	202-205
Swan Tech	263	PC Multimedia		SMC Computers	596-627
Tech Direct	500-531	Atlantic	172-175	Tech Direct	500-531
Technomatic	460-499	CD Revolution	299,307	Technomatic	460-499
Time Computer Systems	384-396	Choice Systems	168/9	Universal Control Systems	460-499
Tiny Computers	364,365-367	Clove Technology	257	Watford Electronics	413-459
Token Computers	253	Dabs Direct	596-627	PCMCIA	
Universal Control Systems	460-499	Dan Technology	20-23 333-337	Extreme Computer	262,263
Viglen	651	Evesham Micros	397-412	Novatech	348,349
Watford Electronics	413-459	Extreme Computer	262,263	Pico Direct	369-376
		Locland	162,163		
		Mertec Computers	283-285		
		Roldec	202-205		

Key: IBC inside back cover, OBC outside back cover, IFC inside front cover



Company	Page No	Company	Page No	Company	Page No
Psion	127	CD-ROM		Evesham Micros	397-412
Roldec	202-205	Atlantic	172-175	Extreme Computer	262,263
SMC Computers	596-627	CD Revolution	299,307	Roldec	202-205
Tech Direct	500-531	Dabs Direct	596-627	SMC Computers	596-627
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Floppy Drives		Evesham Micros	397-412	Universal Control Systems	460-499
Atlantic	172-175	Extreme Computer	262,263	Watford Electronics	413-459
Dabs Direct	596-627	Novatech	348,349	Multimedia Upgrades	
Choice Systems	168/9	Pico Direct	369-376	Choice Systems	168/9
Extreme Computer	262,263	Roldec	202-205	Dabs Direct	596-627
Evesham Micros	397-412	SMC Computers	596-627	Extreme Computer	262,263
Novatech	348,349	Tech Direct	500-531	Locland	162,163
Roldec	202-205	Technomatic	460-499	Novatech	348,349
SMC Computers	596-627	Universal Control Systems	460-499	Roldec	202-205
Tech Direct	500-531	Viglen	651	SMC Computers	596-627
Technomatic	460-499	Westlakes	384	Tech Direct	500-531
Viglen	651	Data Backup		Technomatic	460-499
Westlakes	384	APC	66	Time Computer Systems	384-396
Hard drives		Dabs Direct	596-627	Viglen	651
Aria Technology	350	C&T	316,317	Watford Electronics	413-459
Dabs Direct	596-627	Evesham Micros	397-412	Graphics Cards	
C&T	316,317	Extreme Computer	262,263	Aria Technology	350
Choice Systems	168/9	Novatech	348,349	ATI	183
Evesham Micros	397-412	Roldec	202-205	Choice Systems	168/9
Extreme Computer	262,263	SMC Computers	596-627	Dabs Direct	596-627
Keyzone	315	Tech Direct	500-531	Diamond Multimedia	151
Novatech	348,349	Technomatic	460-499	Evesham Micros	397-412
Pico Direct	369-376	Viglen	651	Extreme Computer	262,263
Roldec	202-205	Westlakes	384	Matrox	81
SMC Computers	596-627	Memory		Novatech	348,349
Tech Direct	500-531	Aria Technology	350	Roldec	202-205
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Watford Electronics	413-459	Choice Systems	168/9	Tech Direct	500-531
Westlakes	384	Dabs Direct	596-627	Technomatic	460-499
Optical Storage		Evesham Micros	397-412	Watford Electronics	413-459
C&T	316,317	Extreme Computer	262,263	Sound Cards	
CD Revolution	299,307	Novatech	348,349	Aria Technology	350
Evesham Micros	397-412	Richnight	353-355	Atlantic	172-175
Extreme Computer	262,263	Roldec	202-205	Choice Systems	168/9
Novatech	348,349	SMC Computers	596-627	Evesham Micros	397-412
Roldec	202-205	Tech Direct	500-531	Extreme Computer	262,263
SMC Computers	596-627	Technomatic	460-499	Linefeed	297
Tech Direct	500-531	Motherboards		Novatech	348,349
Technomatic	460-499	Aria Technology	350	Roldec	202-205
Westlakes	384	Choice Systems	168/9	SMC Computers	596-627

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Company	Page No	Company	Page No	Company	Page No
Techmate UK	295	Bakewell Computers	637	Lotus	67
Tech Direct	500-531	Corel	289	Novatech	348,349
Technomatic	460-499	Data Acquisition	638	Technomatic	460-499
Universal Control Systems	460-499	Evesham Micros	397-412	Utilities	
Watford Electronics	413-459	J+M Software	311	Baraka	180
Upgrades		Megatech	178	Evesham Micros	397-412
Choice Systems	168/9	Novatech	348,349	HarperCollins	263
Extreme Computer	262,263	River Pro Audio	295	Novatech	348,349
Linefeed	297	SMC Computers	596-627	SMC Computers	596-627
MJN Technology	267-271	Sure Range	265	Tech Direct	500-531
Novatech	348,349"	Tech Direct	500-531	Technomatic	460-499
Roldec	202-205	Technomatic	460-499	Watford Electronics	413-459
SMC Computers	596-627	Vector Graphics	638	Anti Virus	
Tech Direct	500-531	Watford Electronics	413-459	Evesham Micros	397-412
Technomatic	460-499	Games		Forefront	156
Time Computer Systems	384-396	Evesham Micros	397-412	Novatech	348,349
Viglen	651	Novatech	348,349	Secure PC	295
Watford Electronics	413-459	Technomatic	460-499	SMC Computers	596-627
Software		SMC Computers	596-627	Technomatic	460-499
Accounting		Watford Electronics	413-459	Tech Direct	500-531
Evesham Micros	397-412	Multimedia		Watford Electronics	413-459
Novatech	348,349	Atlantic	172-175	Networking	
Technomatic	460-499	Corel	289	Advanced Network Solutions	308-9
Tech Direct	500-531	Evesham Micros	397-412	Cambridge ISDN	200
Watford Electronics	413-459	Extreme Computer	262,263	Dakota Computer Solutions	258
CAD		Novatech	348,349	Evesham Micros	397-412
Evesham Micros	397-412	SMC Computers	596-627	Executive Software	261
Leonardo Computer Systems	332	Tech Direct	500-531	Novatech	348,349
Novatech	348,349	Technomatic	460-499	Roldec	202-205
Tech Direct	500-531	Watford Electronics	413-459	SMC Computers	596-627
Technomatic	460-499	Music		Tech Direct	500-531
Database		Gem Works Direct	636	Technomatic	460-499
Dabs Direct	596-627	Novatech	348,349	Operating Systems	
Extreme Computer	262,263	SMC Computers	596-627	Evesham Micros	397-412
Evesham Micros	397-412	Techmate	295	Executive Software	261
Novatech	348,349	Technomatic	460-499	Extreme Computer	262,263
QAS	64	Project Management		Grey Matter	645
SMC Computers	596-627	Novatech	348,349	Novatech	348,349"
Watford Electronics	413-459	Technomatic	460-499	Programmers' Paradise	304
Edutainment		Security		Roldec	202-205
Evesham Micros	397-412	Novatech	348,349	SMC Computers	596-627
HarperCollins	263	Secure PC	276	Technomatic	460-499
Novatech	348,349	SMC Computers	596-627	Shareware	
SMC Computers	596-627	Technomatic	460-499	A1 Shareware	630
Technomatic	460-499	Spreadsheets		Evesham Micros	397-412
Watford Electronics	413-459	Evesham Micros	397-412	Technomatic	460-499
Business Software		Extreme Computer	262,263	Watford Electronics	413-459

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Company	Page No	Company	Page No	Company	Page No
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JJA	273	Scanner Technologies	224	Ink Again	257
OS/2		SMC Computers	596-627	Manx Print Care	639
One Stop Software	276	Technomatic	460-499	Mannink	639
Peripherals		Worthington-Data Solutions	287	System Insight	313
Printers		Modems		Watford Electronics	413-459
Atlantic	172-175	Atlantic	172-175	Westlakes	384
Canon	30	Choice Systems	168/9	Books/Journals	
Choice Systems	168/9	Dabs Direct	596-627	Gemworks Direct	636
Dabs Direct	596-627	Evesham Micros	397-412	International Books	
Epson	28	Extreme Computer	262,263	(Prentice Hall)	142
Evesham Micros	397-412	Linefeed	297	Mc Graw Hill	121
Extreme Computer	262,263	Netdirect Internet	245	Consultancy/Programming	
Kyocera	OBC	Novatech	348,349	Paradigm Technology	160
Lexmark	69	Paradigm Technology	160	Pico Direct	369-376
Linefeed	297	Pico Direct	369-376	Internet Service Providers	
MJN Technology	267-271	Roldec	202-205	BT	39/11
Novatech	348,349	SMC Computers	596-627	Global Internet	250-1
Roldec	202-205	Tech Direct	500-531	Uninet	247
SMC Computers	596-627	Technomatic	460-499	BBS	
Tech Direct	500-531	3Com/US Robotics	191	A1 Shareware	630
Technomatic	460-499	Watford Electronics	413-459	Megadownload	249,636
Time Computer Systems	384-396	Network Hardware		Strangeways	249
Viglen	651	Advanced Network Solutions	308-9	Disk/CD Duplication	
Watford Electronics	413-459	Cambridge ISDN	200	Copymaster	273
Westlakes	384	Dakota Computer Solutions	258	Security	
Scanners		Evesham Micros	397-412	Microcosm	276
Choice Systems	168/9	Extreme Computer	262,263	Secure PC	276
Dabs Direct	596-627	Keyzone	315	Training	
Devcom	216,217	Novatech	348,349	Merrow Training	332
Epson	28	Pico Direct	369-376	Novatech	348,349
Evesham Micros	397-412	Roldec	202-205	Technomatic	460-499
Extreme Computer	262,263	SMC Computers	596-627	Watford Electronics	413-459
Leonardo Computer Systems	332	Technomatic	460-499	Consumables	
Linefeed	297	Tech Direct	500-531	Product Line Services	639
Microtek	228	Viglen	651	Selectafont	639
Novatech	348,349	Watford Electronics	413-459	Toner Cartridge Recharge	639
Paradigm Technology	160	Digital Cameras		Repro	
Roldec	202-205	Kodak	137	True Print Repro	295
SMC Computers	596-627	Nikon	102	Overhead Projectors	
Tech Direct	500-531	Tech Direct	500-531	Just Projectors	158
Technomatic	460-499	Westlakes	384	Dealer	
Watford Electronics	413-459	Services		General Trading Stores	637
Worthington Data Solutions	287	Renting/Leasing		Computerised Tills	
Bar Code Systems		Choice Systems	168/9	APT	311
JJA	273	Ink Refills		Data Recovery	
Paradigm Technology	160	Cartridge Care	244	Vogon	638

Advertiser	Telephone	Page	Advertiser	Telephone	Page	Advertiser	Telephone	Page
A								
3 Com	(see advert)	191	Cybermax (insert)	01462 636 600	228-9	Gultronics	0171 436 3131	351
A1 Shareware	0181 806 5769	630	Cybermex	01582 841858	153	H		
ACi	01625 526 777	226-7	D			Hi-Grade	0181 532 6123	62, 63
ADI Systems (UK)	0181 236 0801	54	Dabs Direct (insert)	0800 674467	596-627	Hitachi Europe	01628 585000	109
Advanced Network Solutions	01744 883663	308-9	Dakota	0181 452 8400	258	I		
APC	01753 511022	66	Dan Technology	0181 830 1100	20-23	IBM	0990 727272	32, 33
Aria	0161 248 4383	350	Dan Technology	01113 259 1200	333-7	Ilyama	01438 745482	185,189
ATI	01628 533 115	183	Dell	01344 724872	IFC, 5, 8,9,11	Imation	(see advert)	86
Atlantic	0990 134 725	172-5	Devcom	01324 825999	216-7	Intel	01793 696000	91
ATT	0181 520 1007	643	Diamond Multi.	01189 444400	151	International Bks (Prentice Hall)	01442 881891	142
B			Digital Equipment	0800 227228	95-7	J		
Baraka	0171 937 8066	180	Digital Workshop	01295 258 335	199	Just Projectors	07000 587 877	158
British Telecom	0800 800 001	39	E			K		
C			Electrone	01494 511999	649	Keyzone	0181 900 1525	315
C&T Group	0171 637 1767	316-7	Elonex	0500 524 444	70, 71	Kodak	01442 845 122	137
CABS	01707 258338	200	Epson	0800 220546	28	KT Computers	0181 961 8892	194
Cambridge ISDN	01223 495929	200	Evesham Micros	01386 765500	397-412	Kyocera	01734 230700	OBC
Canon	0121 6666262	30	Executive Software	01342 327 477	261	L		
CD Revolution	01932 562000	299, 307	Extreme	01709 701200	362-3	Leonardo Computers	01734 753477	332
Choice Peripherals	01909 530242	168-9, 377-80	F			Lexmark	01628 481500	69
Choice Systems	0181 993 9003	168-9	Forefront	0800 279 2009	156	Linear Computers	0800 622094	240-1
Cisco	0181 756 8886	74, 75	Fujitsu/ICL	01364 654 100	52, 53	Locland	01355 228808	162-3
Claranet	0800 072 0723	242, 292	G			Lotus	01784 455445	67
CNP	01753 535687	332	Gateway 2000	0800 362000	100	M		
Compaq (insert)	0990 232425	132-3	Gateway 2000 (insert)	0800 172000	100-1	Matrox	01793 614002	81
Compusys	(see advert)	88, 89	Global Internet	0181 957 1022	250-1	McGraw Hill	(see advert)	121
Corel	01703 814142	289	Grey Matter	01364 654 100	645	Megatech	(see advert)	178
CTX	01923 810800	104				Mertec	0181 667 0990	283-5
						Mesh	0181 452 1111	425, 48

Key: IBC inside back cover, OBC outside back cover, IFC inside front cover



Advertiser	Telephone	Page	Advertiser	Telephone	Page	Advertiser	Telephone	Page
Micro Business	0181 208 2333	154-5	R					531
Micro Direct	0161 2484848	631	Regitech	(see advert)	368	Technomatic		
Microtech	(see advert)	228	Richnight	0800 318298	353-5	(insert)	0990 559944	460-
MJN Technology	01282 777 555	267- 271	Rock Computers	01926 832291	123, 186-7	Time Computers	01282 777111	384- 396
Morgan	0171 255 2115	37	Roldec Systems	01902 456464	202-5	Tiny Computers	01293 821333	364-7
Mustard	01727 732000	192-3	S			U		
MX2	0800 731 2439	632	Semaphore	0171 625 7744	356-7	UCS	(see advert)	360-1
N			SMC Computers			V		
NEC (insert)	see insert	196-7	(insert)	01753 550333	596- 627	Viglen	0181 758 7080	651
NetDirect	01706 362814	245	Sony Europa	01784 466660	131	W		
Network Associates	(see advert)	56	Super Office	(see advert)	101	Watford Elec.(insert)	01582 745555	413- 459
Nikon	0181 541 4440	102	T			Westlakes	0181 902 2392	384
Novatech	0800 666500	348-9	Taxan (UK)	01344 484646	84, 85			
O			Tech Direct (insert)					
One Stop Direct	(see advert)	215		0181 286 2222	500-			
Option	(see advert)	111						

Advertiser	Telephone	Page
P		
Paradigm Tech.	01491 822600	160
Phillips	(see advert)	98
Pico Direct	01483 202022	369- 376
Portable Office	(see advert)	358-9
Powercom	01753 680777	149
Programmers'		
Paradise	0171 278 8345	304
Protek	0500 127 498	352
Psion Dacom	01908 261 688	127

Advertiser	Telephone	Page
Q		
QAS	0181 303 1232	64
Quantex (insert)	01438 224444	164-5

Direct Buyers' World

The place in *PCW* where you can compare prices on a wide range of hardware and software. The card insert at page 332 marks the start of the section.

Advertiser	Phone	Page	Advertiser	Phone	Page
A1 Shareware	0181 806 5769	630	Novatech	0800 666500	348, 349
Aria	0161 248 4383	350	Pico Direct t/a DIP Systems	01483 202022	369-376
ATT	0181 520 1007	643	Protek	0500 127 498	352
Choice Peripherals	01909 530242	168, 169, 377-380	Richnight	0800 318298	353-355
Dabs Direct (insert)	0800 674467	596-627	Semaphore Systems	0171 625 7744	56, 357
Dan Technology	0113 259 1200	333, 334, 335, 337	SMC Computers (insert)	01753 550333	596-627
Electrone	01494 511999	649	Tech Direct (insert)	0181 286 2222	500-531
Evesham Micros	01386 765500	397-412	Technomatic (insert)	0990 559944	460-499
Extreme Computer	01709 701200	362, 363	Time Computer Systems	01282 777111	384-396
Grey Matter	01364 654 100	645	Tiny Computers	01293 821333	64, 365- 367
Gultronics	0171 436 3131	351	Viglen Computer Supplies	0181 758 7080	651
Micro Direct	0161 2484848	631	Watford Electronics (insert)	01582 745555	413-459
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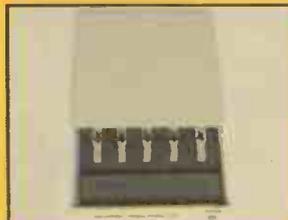
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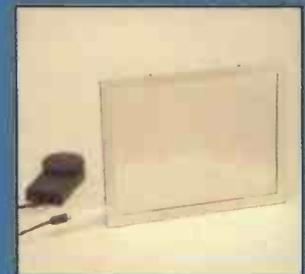
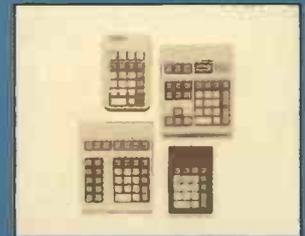
Our new trackball range features the new infrared Star Track for remote control of presentation, demonstration and any other mouse applications. Two desktop models offer the choice of thumb or finger operations with two enclosure styles. All trackballs can directly replace a serial mouse.

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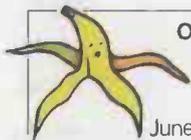
Surfers rank Hank at number one

The American rag, *People Magazine*, has had a bit of a shock. Its online 50 Most Beautiful People In The World 1998 Awards have been turned over in a display of nationwide email rebellion. Hank the Angry Drunken Dwarf has received approximately ten times more votes than the favourite for the award, golden boy Leonardo DiCaprio.

Hank the Angry Drunken Dwarf is a regular on shock jock Howard Stern's television show, and tens of thousands of fans have emailed the *People Magazine* Online awards in an attempt to have him proclaimed the Most Beautiful Person in the World. Hank was unavailable for comment, but perhaps his warm character is best reflected by one of his most famous utterances: "I got class, you don't even have an ass".

Switch on and fork off

Another blessing of life this side of the pond is the lack of Bad Manners. No, not the popular eighties band, creators of such gems as *Fatty Fatty* and *Don't Knock the Baldheads*; *ChipChat* has more than a passing fondness for their chirpy ska ballads. The manners of which we speak



Oops!

■ The review of the Sharp HC-4100 in the June issue (*First Impressions*) wrongly stated that the palmtop has a 33.6Kbps software modem.

The modem is in fact only available on the US version of the machine.

■ The spine on the June issue says Volume 21 No 4. This should have read Volume 21 No 6.

Caption competition

"Me and the rest of the Village People are going to the Space Bar. Do you want to come?..."

Think you can do better? Enter via our web site at www.pcw.co.uk or write to the usual address (p10) with your caption(s) on a postcard marked "July Caption Competition" before 26 June. We'll print the funniest entry and the winner will receive a £20 book token.



Left Congratulations to Mike Fawe, of London. He's the winner of May's caption competition, with "... and this one's the millennium bug."

are tied up with class and, indeed, the very essence of Britishness itself.

A report in the *Sunday Times* details the activities of one Lyndy Janes, an etiquette teacher from London. As well as training etiquettes (small, hairy, French pigs) she is tutoring the cream of American geek executives in basic table manners.

The initiative stems from the execs' fear of losing multimillion dollar deals because their Far East customers have a much stricter code of etiquette. The geeks "come in Armani jackets and Rolex watches and then commit the cardinal sin of poor table etiquette," says Lyndy.

ChipChat applauds any effort to civilise our North American cousins, but suspects that even Ms Janes' best efforts will not be enough to compete with the thrill of eating with the remarkable *Buster Bloodvessel*.

Legs eleven

A regular *ChipChat* reader (and this just shows what it does to you) writes: "I bought one of those new *iMacs* last month and feel

completely ripped off. It cost over a thousand times as much as my usual bottle of depilatory cream and I can't even get the top off. And as if this were not enough, I'm going on holiday next week: I'll need two suitcases just for the *iMac*! Please help."

Hairy Harry of Harlow

ChipChat replies: Dear Hairy, we suspect that answering your question would simply expose you to more ridicule. We have therefore sent the solution in a plain brown wrapper, marked "Intensely Personal", to your mother's address.

● Incidentally, *ChipChat* is currently experimenting with the reverse scenario: using a bottle of *Immac* as a computer. Inexpensive, lightweight and battery-free, its only drawback seems to be the "spurt" factor. Anyone who has ever sat heavily on an uncapped bottle will know what we mean, although this obviously can't apply to Hank the Angry Drunken Dwarf. The omission of "Hairy" from his otherwise splendid title remains one of the great mysteries of the universe. ■

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15" = 14" viewable / 17" = 15.3" viewable



TV TUNER UPGRADE

Turn your Viglen PC into a full-featured television with the addition of this clever internal card, supplied with point & click control software. View live TV transmissions, either full-screen or within a window on your PC's monitor. Full Teletext functionality is also supported. You can also freeze frames or capture video clips from TV transmissions or other external video sources and save them onto your system for later viewing or manipulation.

TV Tuner Card Upgrade £50 + VAT (£58.75 inc VAT)

Only applicable to BizPro Ultimate, Power and HomePro Ultimate systems. TV licence required. TV aerial also required (not supplied).



DVD UPGRADE

Don't be left out of the DVD revolution! DVD is the future of CD technology. By specifying a DVD ROM to be fitted to your system instead of a CD ROM, you will be able to do everything that you can with a CD ROM, plus read DVD CD's which are already sweeping the US market. Moreover, the MPEG 2 card included with our DVD solution lets you play the very latest in DVD movies.

Upgrade from a 32X CD ROM drive to a DVD ROM with an MPEG 2 card (for watching DVD movies) £179 exc VAT (£210.33 inc VAT).

PHOTO REAL PRINTERS

The following printers have been chosen as they offer the latest in colour printing by not only providing an excellent printout for normal use but also the ability to print photo real quality images.

Epson Stylus 300.

The affordable single cartridge colour printer ideal for the whole family. £110 exc VAT (£129.25 inc VAT).

Epson Stylus 600.

High definition colour printer with an amazing 1440 dpi output for professional quality results. £175 exc VAT (£205.63 inc VAT).

Epson Stylus Photo.

Dedicated photo printer, for use with digital cameras and scanners, producing prints equal to that of normal photographs. £255 exc VAT (£299.63 inc VAT). Includes FREE printer cable and FREE delivery if ordered and shipped with a Viglen PC.



Personal Systems

A HomePro Value

A fully configured multimedia and Internet ready PC, the HomePro Value offers an abundance of productivity and entertainment software packages to get you started.



EASY 2 OWN
from **£968.20**
per month*

• Desktop Case • 32MB SDRAM • 2.5GB Hard Drive • 2MB Fast PCI Graphics Card • 32X Speed CD ROM • 3.5" floppy drive • 3D Sound with Wavetable • 2 serial, 1 parallel, 1 games, 2 PS/2 ports and 2 USB ports • 33.6kbps voice/fax modem with Internet access • 15" SuperVGA Monitor with stereo speakers • Keyboard • Microsoft® Intellimouse • Microsoft® Windows® 95 • Software package A (see software packages)

		Exc Delivery & VAT	Inc Delivery & VAT	Order Code	Easy2Own
Intel® Celeron® Processor	266MHz	£799.00	£968.20	SYHV26C1	£30.91
Intel Pentium® II Processor	266MHz	£869.00	£1050.45	SYHV26C2	£33.54

UPGRADE TO 4.3GB HARD DRIVE AND 64MB RAM £60 EXC. VAT

B HomePro Ultimate

With significantly enhanced specification in almost every area, and now including free internal scanner box, the HomePro Ultimate still provides an unequalled combination of multimedia power and value for money.



EASY 2 OWN
from **£42.17**
per month*

• Desktop Case • 64MB SDRAM • 512kb Cache • 6.4GB Hard Drive • 4MB ATI 3D AGP X Graphics Card • 32X Speed CD ROM • 3.5" floppy drive • 3D Sound with Wavetable • 2 serial, 1 parallel, 1 games, 2 PS/2 ports and 2 USB ports • Internal Photoscanner • 56kbps voice/fax modem with Internet access • 15" SuperVGA Monitor with stereo speakers • Keyboard • Microsoft® Intellimouse • Microsoft® Windows® 95 • Software package B (see software packages)

		Exc Delivery & VAT	Inc Delivery & VAT	Order Code	Easy2Own
Intel Pentium® II Processor	300MHz	£1099.00	£1320.70	SYHW3021	£42.17
	333MHz	£1179.00	£1414.70	SYHW3321	£45.17

UPGRADE TO 17" MONITOR £150 EXC. VAT

C HomePro Awesome

Featuring the very latest in technology the HomePro Awesome combines 100MHz FSB (front side bus) with Intel Pentium® II processors to deliver speeds of up to 400MHz. In terms of multimedia this is the most advanced system of its kind offering breathtaking video performance, next generation graphics and you can even play DVD movies. Complete with Yamaha speakers and an impressive range of software titles, the HomePro Awesome is the perfect multimedia package.



EASY 2 OWN
from **£70.31**
per month*

100MHz FSB - FREE INTERNAL PHOTOSCANNER

• 100MHz Front Side Bus • Medium Tower Case • 64MB PC300 SDRAM • 512kb Cache • 8.4GB Hard Drive • 4MB ATI 3D Xpert@work AGP 2X Graphics Card • 3DFX Graphics Accelerator • DVD ROM • MPEG2 Card • LS-120 3.5" 120MB floppy drive • 3D Sound with Wavetable • 2 serial, 1 parallel, 1 games, 2 PS/2 ports and 2 USB ports • Internal Photoscanner • 56kbps voice/fax modem with Internet access • 17" SuperVGA Monitor • Yamaha stereo speakers with sub-woofer • Keyboard • Microsoft® Intellimouse • Microsoft® Sidewinder Joystick • Microsoft® Windows 95 • Software package C (see software packages)

		Exc Delivery & VAT	Inc Delivery & VAT	Order Code	Easy2Own
Intel Pentium® II Processor	350MHz	£1849.00	£2201.95	SYHA3521	£70.31
	400MHz	£1999.00	£2378.20	SYHA4021	£75.94

Interest Free Credit

Why not spread the cost of your purchase. As a Viglen customer you can now take advantage of our Interest Free Credit scheme. Opting for the scheme entitles you to 0% finance on your purchase for a whole 12 months. What's more if you choose to pay in full at the end of the twelve months you will incur no interest charges whatsoever.

Cash price £999. Deposit £99.90. Outstanding payable* at month 12, £899.10. Total payable £999.0%.



Software Packages

The Viglen configurations shown are bundled with different software packages. Each package is outlined here to help you choose the configuration that's right for you.

SOFTWARE PACKAGE A

Microsoft® Works for Windows® 95. Five essential tools for easier everyday computing. Word processing, spreadsheet, database, graphics and communications tools.

Microsoft® Encarta® 97. The leading interactive Multimedia Encyclopaedia bringing information to life.

Microsoft® Money. Complete set of financial management tools for managing and planning your investments.

Microsoft® Golf. The most true-to-life golf game you've ever played with realistic sound and graphics.

Microsoft® Magic School Bus: Rain Forest. Jump aboard for an amazing interactive trip through a rainforest for a fun-packed science adventure.

Microsoft® Gex. Slither with Gex the lizard through 5 TV and movie worlds of crazy over-the-top action.

Microsoft® Windows Entertainment Puzzle Pack. Exciting puzzles and games to provide hours of intrigue for the family.

CRT Easy Tutor. A comprehensive interactive tutorial guide to Windows 95.

Five MMX Technology Enhanced CD Titles. Ultimate Human Body II, Timetable of Technology, The Third Dimension, International Space Station and POD.

SOFTWARE PACKAGE B

Same as Software Package A but with the following:

Terracide Futuristic Combat Game. MGI Video Wave Video editing software. MGI Photo Suite (Image manipulator package).

SOFTWARE PACKAGE C

Same as Software Package B but with the following:

3D FX Games: F1 Formula One Racing Game, MDK Futuristic 3D action game.

SOFTWARE BONUS UPGRADES

All the configurations shown can be further upgraded to include one of the following professional integrated software applications from Microsoft at a very special bonus upgrade price.

Microsoft® Office 97 Bonus Upgrade Price £161 exc VAT (£189.18 inc VAT) (CD version with manual).

Microsoft® Office Professional 97 Bonus Upgrade Price £221 exc VAT (£259.68 inc VAT) (CD version with manual).

Microsoft® Office 97 SBE Bonus Upgrade Price £161 exc VAT (£189.18 inc VAT) (CD Version with manual).

UPGRADE PRO GAMES PACKAGE

If you need the absolute best in 3D games technology, the 3DFX card is the one for you. This bundle includes 3DFX card along with some top games optimised for it as well as a Microsoft Sidewinder joystick and games pad. £139 exc Vat (£163.33 inc VAT).

3D GAMES

Viglen

Great Minds Think Viglen

How to save money with an HP printer.



Incredible as it may seem, by chucking out your existing HP printers and starting again with brand new ECOSYS III printers from Kyocera, you'll spend less on your network printing.



The largest contributor to the total cost of ownership is the print cartridge and the big difference with ECOSYS printers is that we don't use them.

Our cartridge-free technology means that when you run out of toner, that's all you replace.

Which in turn means significant savings. According to our calculations, every single new printer on your network

could save you around 1p per page – or more than £2,600 over three years.

But that's not the whole story. Our unrivalled paper saving options, printer management software and forms handling capabilities also bring many other economies.

Are we talking rubbish, or can our cartridge-free printers really deliver what we claim? Check our calculations for yourself.

Call 0345 103 104 now for your free copy of our cost comparison disk.

It's an opportunity you really can't afford to throw away.



THE SMART MONEY'S ON

 **KYOCERA**

Ecospys

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