That's Entertainment

Some of the fastest processors and best graphics cards around are on test this month in these ultimate entertainment PCs, so start reading if you want to have fun with your PC

With the 1GHz processor now a fairly standard component in today's high-end systems, gaming has never been so good. PCs have made a transition in the past few years from work machines with possible gaming capabilities to entertainment units with speakers and graphics cards far in excess of what you'll need to watch the animations on your CD-ROM-based encyclopaedia.

This month we're looking at entertainment PCs, which is basically those that have been built not so much with office applications in mind, but rather focusing on fun stuff like gaming and DVD. The machines boast some of the fastest processors, the most advanced graphics cards and biggest and best speaker systems, which overall make these the entertainment PCs you'd most like to have. They're not cheap, but you get the best. And with DVD viewing an option too, you can share the experience around as well.

The manufacturers were given the following guidelines: a minimum 800MHz processor, at least 128MB of RAM, a good sized hard disk, a sound card and speaker system, Windows ME, a DVD, a CD-RW, a 19in monitor and a three-year warranty. It's a lot to get into a system costing £2,000 ex VAT.

Be prepared, though, for this money you can get a blisteringly fast machine that will have you glued to your monitor far longer than you might want to be.

PHOTOGRAPHY DAVID WHYTE

contents

176 Atlas Meridian A1100T PW
Carrera OctanM1000
177 Dan Ultimate X
evesham.com Origin 110
180 Mesh Matrix Ultima A1100
Panrix Magnum Max 1G
181 Polar Phantom 1000
Systemax P1000 RV
Entertainment Edition
184 Time Machine 1100-7QV Pro
Viglen HomePro P3-933 DWR
186 How we did the tests
188 Performance results
192 Features table
195 **Editor's Choice**

• PCs tested by Lars-Goran Nilsson and reviewed by Scott Montgomery

Atlas Meridian A1100T PW

THIS CAN ONLY BE described as one of the preferred systems for the hard-core gamer. Everything about it screams games as Atlas has made this one of the fastest machines you can get.

Based on the Asus A7V motherboard, the four available PCI slots remain almost empty. Only one is filled by the Sonic Fury Virtual MPU-401 sound card. The PCI/AMR shared slot houses the AMR modem, leaving three PCI slots for upgrade.

As the focus is on high performance, a 1.1GHz Athlon processor is strapped to the motherboard. This is backed by two banks of PC133 memory, giving the system a total of 256MB of RAM. This leaves one slot free, meaning memory can be boosted to a potential 768MB without throwing away what's already there.

A GeForce2 Ultra graphics card is slotted into the motherboard's AGP Pro slot. This graphics solution is currently the fastest available and, along with the processor and memory, it powers this machine to almost unheard of scores, only beaten by the Viglen in the 3DMark tests. The Atlas has good air flow through the case to keep everything cool.

The 19in CTX PR960F display is excellent with a well focused image and very good colour representation. Running Quake III at 1,280 x 1,024 in 32bit colour is a treat, especially since the PC managed 55 frames per second.

The UltraDMA100 hard disk is a 46.1GB IBM Deskstar, which runs optimally under the onboard UltraDMA-100 Promise controller. For optical reading and writing, there is an Asus DVD-ROM and a Mitsumi CD-RW. Atlas has also included some media to get you started.

The speaker system is the VideoLogic DigiTheatre, so you'll be able to get the full Dolby Digital AC-3 effect when watching DVDs. Overall, it may seem sparsely populated as a system; but for the dedicated gamer, it is fast, with every component geared for performance.

DETAILS

PRICE £2,231.32 (£1,899 ex VAT)
CONTACT Atlas 07000 285 275
www.atlasplc.com
PROS Ultra-fast gaming machine with good upgrade possibilities; good warranty
CONS Not as many extras as some of the competition
OVERALL For the dedicated gamer, this machine will appeal. For those who want extras bundled, it will seem too sparse

FEATURES	★★★★
PERFORMANCE	★★★★★
VALUE FOR MONEY	★★★★
OVERALL RATING	★★★★

Carrera Octan M1000

UNLIKE SOME OF the larger units in this month's test, Carrera's system has a standard sized midi-tower case. Despite this, there is still room for upgrade as there are two free 5.25in bays and a 3.5in bay for additional hardware.

The M1000 has a powerful 1GHz Athlon processor mounted on a VIA KT133 chipset-based Asus A7V motherboard. This excellent board has five USB ports as standard and a connector for a further two, and four EIDE sockets – two UltraDMA66 and two UltraDMA100 (the latter controlled by the onboard Promise chip). The 30.7GB IBM hard disk is connected to one of the UltraDMA100 ports, giving it access to the increased bandwidth.

A single 256MB stick of PC133 SDRAM is included, leaving two DIMM sockets free to upgrade the memory to 1.25GB without removing the installed RAM. The PCI slots are filled with the SoundBlaster Live! sound card, which pipes its signal to the Altec Lansing ACS54 speakers; while a FireWire card (with three external sockets and one internal) and a 56K modem fill two more slots. With the Hauppauge Win-TV card filling the final PCI slot, only one PCI card or an AMR can be added, but then you're unlikely to need to install any more cards. On the optical front, a Pioneer DVD-105 DVD-ROM drive and a Panasonic CD-RW enable disc-to-disc copying.

The graphics are processed by a 64MB GeForce2 GTS which is ideal for gaming purposes. There's also an S-Video out socket so watching DVDs on your TV is an option. The monitor supplied is the 19in Iiyama VisionMaster Pro 450. This is a great monitor boasting a Mitsubishi Natural Flat Diamondtron tube. The result is a clear picture with rich and vibrant colours.

Overall the Carrera is a decent system as well as being one of the fastest on test. What you get is a solid machine at a comparatively reasonable price, although Mesh offers a similar spec for £100 less.

DETAILS

PRICE Price £2,113.82 (£1,799 ex VAT)
CONTACT Carrera 020 8307 2800
www.carrera.co.uk
PROS Cheaper than most; performance is good; FireWire card
CONS Mesh has put together a cheaper alternative
OVERALL A good effort from Carrera, but the competition is pretty stiff and better deals are on offer elsewhere

FEATURES	★★★★
PERFORMANCE	★★★★
VALUE FOR MONEY	★★★★★
OVERALL RATING	★★★★

Dan Ultimate X

DAN'S SYSTEM DOES NOT sport a GHz processor and is also one of only three entrants not powered by an AMD solution. Instead, the installed CPU is a respectable 933MHz Pentium III. Although, as the Viglen has shown by topping the 3D tables, the 933MHz Pentium III can compete with the 1.1GHz Athlons when it's married to the right components.

The motherboard is an Intel 815E-based Asus CUSL2. This board walked away with the Editor's Choice award in last month's motherboard group test. Taking care of storage is a 46.1GB Maxtor hard disk, while for optical reading and writing, there's an Acer DVD-ROM and CD-RW. Installed in three of the four available PCI slots are the SoundBlaster Live! sound card (which drives the Cambridge Soundworks Desktop Theatre speaker system), the modem, and the Hauppauge Win-TV TV tuner card. This leaves one dedicated PCI slot free for upgrade, along with the two shared slots which could house another two PCI cards if required. Sitting in the AGP slot is a 64MB ATi Radeon card, making this one of the preferred systems for DVD viewing, due to the excellent motion compensation capabilities of the Radeon and Dan's inclusion of various audio/video cabling to maximise the home theatre aspect. The video card is married to a 19in Iiyama VisionMaster Pro 450 monitor, but also has video in/out for connection to a TV or video peripherals. The image on the monitor was first rate.

With a Microsoft Gamepad bundled, along with three games (albeit a little long in the tooth), you could be playing on this computer as soon as you have it set up, although it doesn't match the performance of the Pentium III-powered Viglen with its GeForce2 Ultra.

Microsoft Works 2000 is included, although Works Suite would have been preferable. This system is neither blindingly fast, nor are there lots of extras. It is a solid performer, though, and if DVD viewing or video in/out is your thing, this is worth a look.

DETAILS

PRICE £2,350 (£2,000 ex VAT)
CONTACT Dan 020 8830 1100
www.dan.co.uk
PROS DVD playback is well catered for; good monitor
CONS Performance is mid-range in this test
OVERALL A decent enough machine from Dan, but there are better models on test

FEATURES	★★★★
PERFORMANCE	★★★
VALUE FOR MONEY	★★★
OVERALL RATING	★★★

evesham.com Origin 110

WITH ITS 1.1GHZ Athlon processor and two 128MB PC133 memory modules slotted into two of the three available DIMM slots, this PC is on par with the other ultra-fast machines. However, the VIA KT133-based Chaintech CT-7AJA motherboard doesn't support UltraDMA100, so the system isn't quite as cutting edge as the other 1.1GHz PCs. This is unfortunate since the 40.9GB Maxtor DiamondMax Plus hard disk is an UltraDMA100 unit.

Apart from these limitations, this is a good all-round system. The motherboard has three free slots for upgrade: two PCI and one PCI/ISA shared slot. The AMR slot plays host to the modem. The case is neatly set out, with all cables bound in spiral plastic casing.

A Panasonic CD-RW is in one of the three 5.25in drive bays, while a 16-speed Pioneer DVD-ROM drive rounds off the optical peripherals. The 64MB ATi Radeon graphics card makes this machine great for home theatre use. The ATi card produces excellent DVD playback, as well as having video in/out sockets so you can connect up to a television instead of the supplied Mitsubishi Diamond Plus monitor for that true movie feel.

Sound is taken care of by a Sound-Blaster Live! card and Cambridge Soundworks Desktop Theatre speakers, providing the full Dolby Digital AC-3 sound experience.

The Hauppauge Win-TV tuner card, allows you to convert your PC to receive terrestrial TV channels. You could even use the PC as a video recorder, although even a large hard disk would fill up pretty quickly. A variety of cables ensure you have all you'll need to utilise the entertainment capabilities of this PC.

With no software apart from a recovery disc, you won't be playing games on the Origin out of the box, but then the price allows scope for buying some gaming peripherals and/or games to get you up and running. Overall, the Evesham's performance was quite good, and you get a three-year on-site warranty thrown into the bargain.

DETAILS

PRICE £2,231.32 (£1,899 ex VAT)
CONTACT evesham.com 0800 038 0800
www.evesham.com
PROS DVD playback is well catered for; good warranty
CONS No UltraDMA100 support
OVERALL The lack of UltraDMA100 support is disappointing, but on the whole evesham.com has put together a solid system

FEATURES	★★★★
PERFORMANCE	★★★
VALUE FOR MONEY	★★★★
OVERALL RATING	★★★★

Mesh Matrix Ultima A1100

MESH HAS OPTED FOR the fastest freely available processor for the Matrix Ultima – a 1.1GHz Athlon. To back this up, 256MB of SDRAM is installed on the motherboard in one of the three DIMM slots. Only PC100 memory is installed despite the fact that the Asus A7V motherboard can run PC133. This is unfortunate as the system could have run a bit faster. If you want to upgrade you'll need to throw away the RAM that's currently installed.

Despite this issue, the specification of this PC is excellent. The A7V motherboard has five USB ports as standard, with an onboard connector for a further two, as well as four EIDE connectors (two UltraDMA66 and two UltraDMA100), allowing connection of up to eight devices. The system comes with a 46.1GB UltraDMA100 IBM Deskstar hard disk, a Pioneer DVD-115 DVD-ROM drive, and a Philips PCRW804 CD-RW. This means five further EIDE devices can still be fitted into the machine.

With four of the five PCI slots filled, there is little room for card expansion, however there is an AMR free. The PCI slots are populated by the modem, an ATi TV tuner, a FireWire card (with three external and one internal ports), as well as a SoundBlaster Live! sound card. A FireWire cable is also included to allow connection of video peripherals.

The graphics solution is a 64MB ATi Radeon, which not only gives hardware environment bump mapping and T&L capabilities, but also has video in and out. This, along with the onboard Rage Theatre chip, makes it an ideal card for gaming and DVD playback. However, Mesh has only supplied PC Works Four Point Surround speakers, so you won't get the full Dolby Digital effect from your DVD movies. Making up the other half of the display set is a 19in Mitsubishi Diamond Plus 91 monitor that produces an excellent on-screen image.

Mesh has produced a good all-round spec and still managed to keep the price down. With Works Suite 2000 bundled, you're ready for work as well.

DETAILS

PRICE £1,996.33 (£1,699 ex VAT)
CONTACT Mesh 020 8208 4706
PROS Low cost for the specification
CONS The system memory is PC100 instead of the faster PC133
OVERALL A good all-round system that is cheaper than the competition. Not the fastest in the test, but capable of both gaming and digital video editing

FEATURES	★★★★
PERFORMANCE	★★★
VALUE FOR MONEY	★★★★★
OVERALL RATING	★★★★

Panrix Magnum Max 1G

WITH A GIANT FAN blowing warm air out the back of the case the Panrix system is cool. Thankfully that's not the only good thing about this machine. As with many of the test systems, the Asus A7V motherboard makes up the Magnum's backbone.

The processor is a respectable 1GHz Athlon: very fast, but not as expensive as the 1.1GHz. The onboard memory is a single 256MB PC100 stick. Panrix, like Mesh, opted for the slower memory and this is reflected in the system's scores.

Apart from this glitch, the rest of the spec is excellent. The massive 61.4GB IBM Deskstar hard disk uses the motherboard's Ultra-DMA100 capabilities, while a Plextor BURN-Proof CD-RW drive sits in an UltraDMA66 socket. For DVD, a Toshiba SD-M1402 is installed.

Like many of the test systems, a Hauppauge Win-TV tuner card is fitted into one of the five PCI slots, expanding the usefulness of the system. Panrix has included a remote control, which some other manufacturers did not, so a bit of armchair channel hopping is an option. Occupying some of the other PCI slots are a Creative SoundBlaster Live!, which drives the Cambridge Soundworks Desktop Theatre speaker system, giving you the option of true Dolby Digital 5.1 channel surround sound.

On the graphics front, a 32MB 3D Prophet II GTS sits in the AGP slot. Although not the 64MB version, this card is a fine example of a GeForce2 chipset-based card, and with heatsinks on the memory it runs extra cool. The Mitsubishi Diamond Plus 91 19in monitor makes another appearance, producing a quality image.

With a Gravis Blackhawk joystick and a games bundle that includes Wargasm, Rollcage, Drakan and Rollercoaster Tycoon, this machine has some gaming in it from the word go. Microsoft Works 2000 is also included, although we'd have preferred Works Suite. Overall, the Magnum Max 1G is a good system, although it is let down by the slower memory.

DETAILS

PRICE £2,348.82 (£1,999 ex VAT)
CONTACT Panrix 0113 244 4958
www.panrix.com
PROS Excellent cooling; large hard disk; good games bundle; Plextor CD-RW
CONS Let down by PC100 memory
OVERALL Panrix has put together a machine made up of quality components, but there are better machines available for less money

FEATURES	★★★★
PERFORMANCE	★★★
VALUE FOR MONEY	★★★
OVERALL RATING	★★★

Polar **Phantom 1000**

THE PHANTOM IS driven by a 1GHz Athlon processor that, sadly, is only backed by 128MB of PC100 SDRAM. There are two free DIMM sockets, although without throwing away the supplied memory, the motherboard's potential for running PC133 memory will not be realised. The QDI VIA KT133 chipset-based KinetiZ 7T motherboard does not support UltraDMA100, so this PC is not as cutting edge as some of the other 1GHz Athlon units we have tested.

As for general upgrade, there is a 3.5in bay and a 5.25in bay vacant, and of the four PCI slots present, two are filled: one by the VideoLogic Sonic Fury sound card and the other by the modem. Two remain free for upgrade along with the AMR and the shared PCI/ISA slot.

The hard disk is a 30.7GB IBM Deskstar and removable storage is covered by a Samsung SW-208B CD-RW. A Pioneer DVD-105 enables disc-to-disc copying and a DVD demo disc is included. A Hercules 3D Prophet II GTS 64MB drives the Mitsubishi Diamond Pro 1010E. At 21in this can be used as a home cinema, but the speaker system lets it down slightly.

Coming with a quality set of speakers, VideoLogic's DigiTheatre DTS, this appears at first to be an excellent setup. The problem is the sound card does not have a digital output that is compatible with the speaker's digital requirements. So you need an adaptor to use the Dolby Digital DTS element of the speakers. This is also a bizarre combination since the Sonic Fury has an onboard Dolby Digital processor, so you don't need an external one. That said, a cable won't cost much and you will have an awesome sound setup that supports DTS and AC-3.

The Polar is an acceptable system, although along with Time's PC it would not run 3DMark. The incompatibility of the speaker/sound card ports is an irritation, while the memory and UltraDMA100 limitations leave this system a little behind others in the test.

DETAILS

PRICE £2,350 (£2,000 ex VAT)
CONTACT Polar Technology 0161 482 7000
www.polartechnology.com
PROS Good 21in monitor; great speaker set when you get a cable
CONS No UltraDMA100; PC100 memory; adaptor needed to correctly utilise speakers
OVERALL The Polar is not quite as cutting edge as others in the test. Addressing some of the problems would improve the situation, but you're better off looking at the Systemax

FEATURES	★★★★
PERFORMANCE	★★
VALUE FOR MONEY	★★★
OVERALL RATING	★★★

Systemax **P1000RV Entertainment**

THE SYSTEMAX IS one seriously large machine with a huge case housing the 1GHz PIII. The unit has five 3.5in bays and five 5.25in bays. The larger bays house a Pioneer DVD-105, an Iomega Zip CD and the Live! Drive II for the Creative SoundBlaster Live! Platinum, leaving two free. There are three 3.5in bays free, the others being occupied by the floppy drive and the 30.7GB Maxtor DiamondMax hard disk.

The motherboard is an Intel 815E-based AOpen AX3S, which grabbed a Highly Commended award in last month's motherboard group test. Occupying one of the DIMM slots is a single 256MB stick of PC133 memory, leaving two slots free. For upgrade in the expansion slots, only one PCI slot is vacant. The other slots are filled by all the components you'd want from an entertainment PC. The SoundBlaster Live! Platinum card occupies two backing plate positions, effectively blocking a PCI slot, but the versatility of the card and its connectivity options more than makes up for the space it occupies. With front access to coaxial and optical digital in and out, this will be the preferred unit for the sound enthusiast, especially if you want to master to MiniDisc or DAT. The Cambridge Soundworks Desktop Theatre 5.1 produces true Dolby Digital surround sound from DVD movies. The other PCI slots are filled by the modem and the Hauppauge WinTV tuner card.

An ATi Radeon, coupled with a 19in CTX PR960F monitor with a Sony FD Trinitron tube, is a good display solution, with the Radeon being a versatile card for both graphical features and for DVD playback, while the monitor has an excellent on-screen image.

A Sidewinder Force Feedback joystick, a microphone and a couple of games (including the hit Aliens vs Predator), helps cover all the bases well. As a games platform, it will cope with all you can throw at it; and as a home theatre system it's hard to beat.

DETAILS

PRICE £2,231.32 (£1,899 ex VAT)
CONTACT Simply 0870 7297 366
www.simply.co.uk
PROS Excellent all-round system at a very reasonable price
CONS The case may be a bit too large for some people
OVERALL For gaming or DVD, this is an ideal PC. It's well-priced, has a good specification, and has lots of room for upgrades

FEATURES	★★★★★
PERFORMANCE	★★★★
VALUE FOR MONEY	★★★★★
OVERALL RATING	★★★★★

Time Machine 1100-7VQ Pro

ALTHOUGH ITS BASIC spec is similar to the Mesh entry, the Time Machine outperforms its rival by a considerable margin. Like the Mesh, the processor is a 1.1GHz Athlon and sits on the excellent Asus A7V motherboard. Unlike the Mesh, though, there is only 128MB of SDRAM, instead of 256MB. However the RAM is PC133, which may account for some of the performance boost. Two DIMM slots are free for upgrade.

Two PCI slots out of the available five are free for upgrade and there is also an AMR slot. The other three PCI slots house a modem, SoundBlaster Live! sound card, and a Hauppauge Win-TV card.

The graphics solution is geared towards gaming. The 64MB Hercules 3D Prophet II is a very fast card, although it's now eclipsed by the GeForce2 Ultra. Add to this a Saitek R4 Force Wheel and a Sidewinder Force Feedback joystick, and it's obvious that this machine is aimed at the gamer. Unfortunately the Hercules card would not run the 3DMark test due to some conflicts between the card, Windows ME and the benching software.

The 30.6GB Seagate Barracuda hard disk is not the largest in the tests, but is enough to install a few big games. A Teac CD-RW drive is included, as well as a Compaq-branded Pioneer DVD-114 DVD-ROM drive. With the Creative FPS 1000 speakers this may not be the last word in home theatre, but it's acceptable.

The 19in CTX PR960F monitor is an excellent display with a crisp image and excellent colour representation.

The PC's build quality was not as solid as some of the competition, but there were no major problems. Overall, though, with a diverse software bundle including language courses and games, and a digital camera for a bit of variety, the Time Machine is a fine system. Its processor is cutting edge and the rest of the components are of a similar standard. Overall, if you're after a gaming machine with gaming peripherals bundled, then the Time will be worth a look.

DETAILS

HIGHLY COMMENDED Recommended by COMPUTER WORLD

PRICE £2,348.82 (£1,999 ex VAT)
CONTACT Time 01282 777 555
www.time computers.com
PROS An excellent gaming bundle
CONS Only 128MB of RAM; no Dolby Digital speakers
OVERALL If you're looking for a complete gaming solution, this is ideal. It includes everything you need to get you gaming from the moment the system arrives

FEATURES	★★★★★
PERFORMANCE	★★★
VALUE FOR MONEY	★★★★
OVERALL RATING	★★★★

Viglen HomePro P3-933 DWR

THIS IS ONE OF TWO machines in this month's test to have a state-of-the-art GeForce2 Ultra graphics card, and as a result it is blisteringly fast. Despite running one of the lowest-clocked CPUs in the test: a Pentium III 933MHz, it still gave a blistering 104.7fps in Quake III at 1,280 x 1,024 with 16bit colour and textures, beating the GeForce2 GTS-based machines by a significant margin. With two sticks of 128MB PC133 SDRAM, leaving one DIMM slot free for upgrade, there has been no scrimping on the amount or quality of memory supplied.

The Intel 815E Easton motherboard supports UltraDMA100, allowing the capacious 46.1GB IBM Deskstar drive to function at its best. The motherboard also has diagnostic LEDs on the rear of the case, allowing any problems to be diagnosed without having to open the case. With five PCI slots and no AMR/CNR slots, there are two PCI slots vacant for upgrade. Occupying the other three are the modem, the SoundBlaster Live! Value sound card and an ATi TV-Wonder tuner card. The sound is piped to Altec Lansing speakers and, although these are branded as Dolby Digital speakers, the lack of a centre channel means they don't offer true 5.1 surround.

Taking care of the DVD and CD-RW duties are a Pioneer DVD-115 and a Sony CRX 140E.

The monitor is a Viglen-branded 19in FD Trinitron, and it's a fine unit, with excellent focus, colour representation and a minimum of distortion. Making good use of the monitor is the GeForce2 Ultra graphics card. If you're looking for a system with a cutting-edge gaming card and a quality monitor, the Viglen is worth a look. The inclusion of a Saitek Cyborg joystick means you have some gaming hardware to get you started, but no games are bundled. Works Suite 2000 is included though.

It may not have the fastest-clocked processor, but with the GeForce2 Ultra the 3DMark scores are outstanding. If you're after a games PC and have money to burn, it's worth checking this one out.

DETAILS

PRICE £2,348.82 (£1,999 ex VAT)
CONTACT Viglen 020 8758 7000
www.viglen.co.uk
PROS Very fast in 3D due to the GeForce2 Ultra; large hard disk
CONS Not as cheap, or with as many peripherals as our winners
OVERALL If it's the ultimate in 3D gaming speed you require, this system is the one to get

FEATURES	★★★
PERFORMANCE	★★★★★
VALUE FOR MONEY	★★★★
OVERALL RATING	★★★★

How we did the tests

SYSmark 2000

This comprises 12 application workloads and a management program. The workloads are divided into two categories: office productivity and Internet content creation. We run the benchmark at a resolution of 1,024 x 768 in 16bit colour. It loops three times, rebooting between each workload.

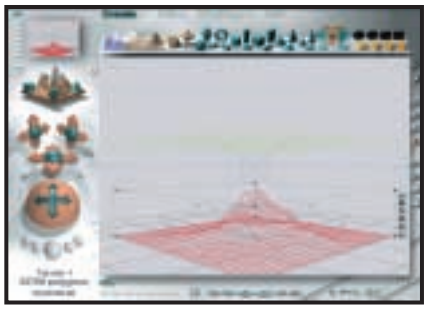
It then assigns the system a performance rating for each application, based on a comparison of workload runtimes between the system being tested and a fixed calibration platform. A rating of 100 indicates the test system has performance equal to that of the calibration platform, 200 indicates twice the performance and so on. The calibration platform is based on a Pentium III 450MHz processor, an Intel 440BX chipset motherboard, 128MB of SDRAM, a 32MB Diamond Viper V770 Ultra graphics card, an IBM DJNA 371800 and Windows 98 SE.

Each category rating is a geometric mean of the workload ratings in that category. The overall rating is a weighted geometric mean of the category ratings.

Office productivity

Corel CorelDraw 9.0
This script first takes an abstract design, applies an Art Stroke to it and runs various filter effects. It creates and manipulates a scene composed of vector graphics. Next, it takes a raster image and applies effects. It creates several 3D objects and performs 3D manipulations.

Corel Paradox 9.0
This performs SQL-style queries on a database table and runs a 'find duplicates' query. It imports other text files, formatting and exporting each to HTML. Then it opens up query forms, enters additional data and produces reports based on queries.



Bryce 4 script manipulates a wire frame scene and renders it

Microsoft Word 2000
This workload invokes word processing functions, including editing, spell checking, search and replace, font change, copy and paste, print preview, mail merge fields, insert hyperlinks, background and table formatting plus opening and viewing HTML pages.

Microsoft Excel 2000
Operations include closing and opening spreadsheets, HTML pages and data in text files, spell checks, formula calculation, plotting data, formatting charts and cells, analysing data in pivot tables, naming a cell and inserting hyperlinks.

Microsoft PowerPoint 2000
Operations include spell checks, editing, formatting and moving pictures, applying templates, formatting tables in slides, inserting hyperlinks, applying header and footer data, formatting charts, applying graphics and sound effects, and adding movie files.

Dragon NaturallySpeaking Preferred 4.0
The script plays a pre-recorded wav file into Naturally-Speaking, which then converts the wav file to text.

Netscape Communicator 4.61
This opens a website of plays by Shakespeare and selects and loads the texts several times. Then it loads a page consisting of large tables, thumbnails and images and cycles through viewing the images.

Internet content creation

Adobe Premiere 5.1
This creates an animation of about 16 bmp files and other avi clips and puts transitions between them. It superimposes two audio tracks and runs the audio through filters.

3DMark 2000 tests each system's DirectX performance (above) and OpenGL performance is tested via Quake III: Arena (right)

Adobe Photoshop 5.5
The script loads, resizes, zooms out of images, applies filters to the images, changes mode and colour settings, adjusts image brightness and contrast and saves the image to a jpeg file.

Avid Elastic Reality 3.1
The workload sets up and renders a morph between two mpeg2-sized images (720 x 480 pixels, roughly 750KB).

MetaCreations Bryce 4
This script opens an assembled wire frame scene and renders it to the final image. Then a new image is opened and saved in Metastream format. Another image is opened and saved in an HTML-compatible format.

Microsoft Windows Media Encoder 4.0
The input file is an avi clip that is encoded using the MPEG4 Video Codec.

3DMark 2000

Remedy Entertainment's MAX-FX is used to test the DirectX performance of a system. It runs two specially coded games at low, medium and high resolutions. We ran the benchmark at 1,280 x 1,024 in 16bit and 32bit colour, with each game set to loop three times. The 3DMark is calculated as 12 times the combined frames per second for each game.

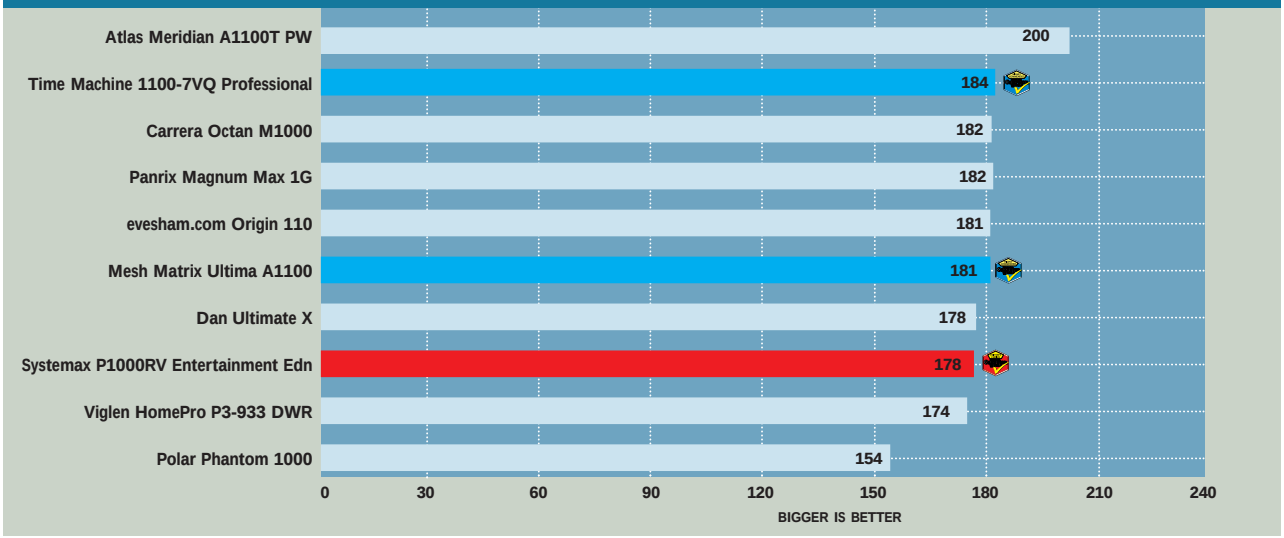
Quake III

We tested each system's OpenGL performance with Quake III: Arena (1.11). The settings were: video mode – 1,280 x 1,024; colour depth – 16bit and 32bit, full screen, highest texture detail; texture quality – 16bit and 32bit; texture filter – bilinear, lighting and lightmap.
At command prompt we typed:

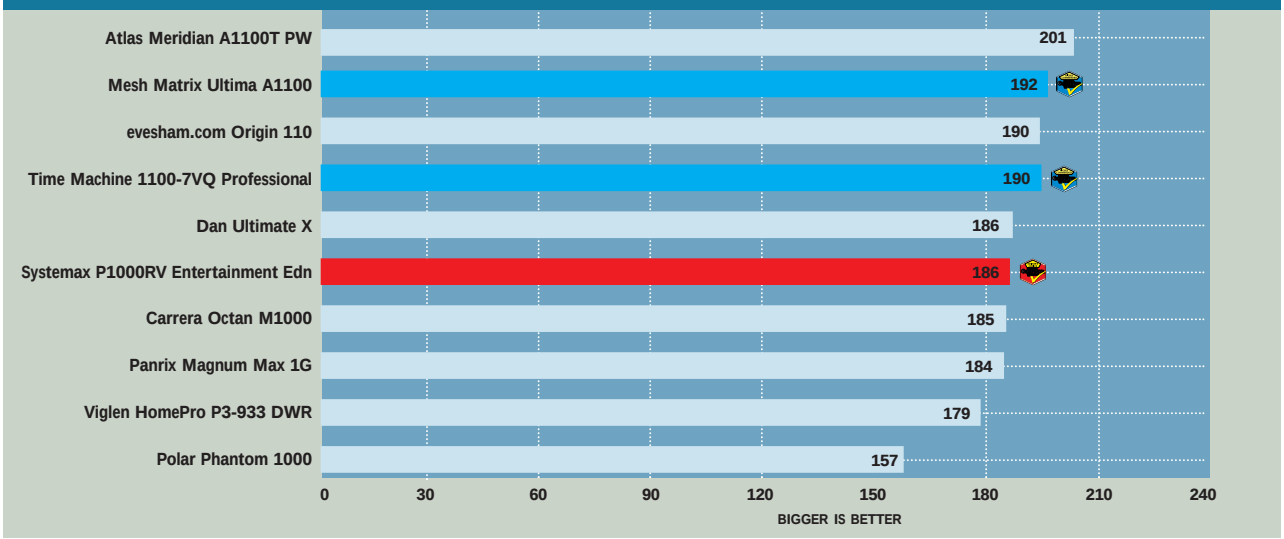
```
timedemo 1
demo demo001
```

This runs demo 1 and records the frames per second.

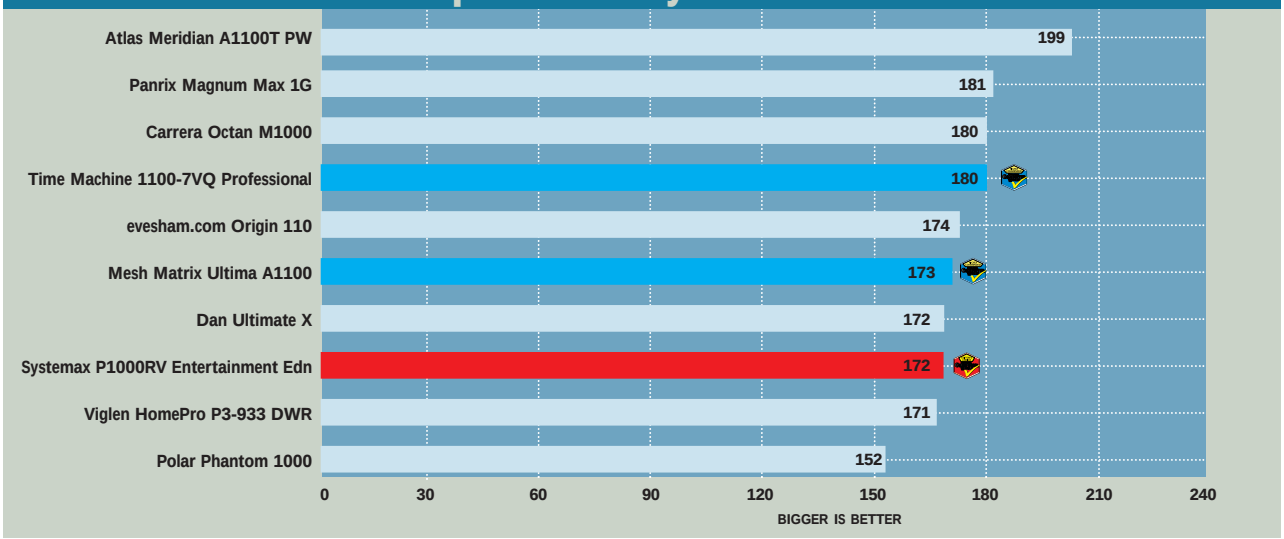
SYSmark 2000 overall



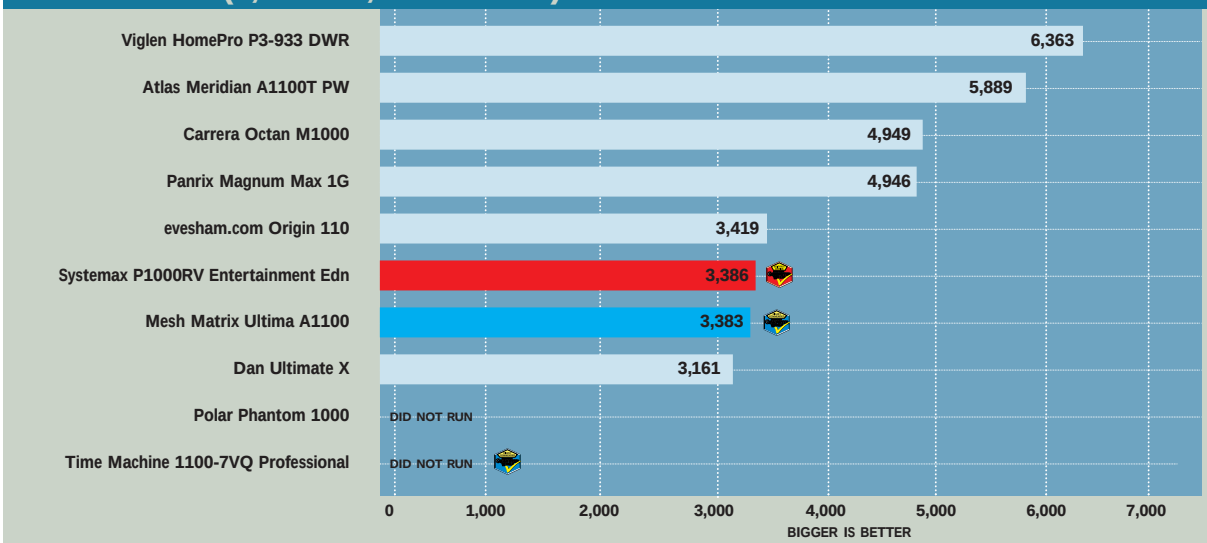
SYSmark 2000 Internet content creation



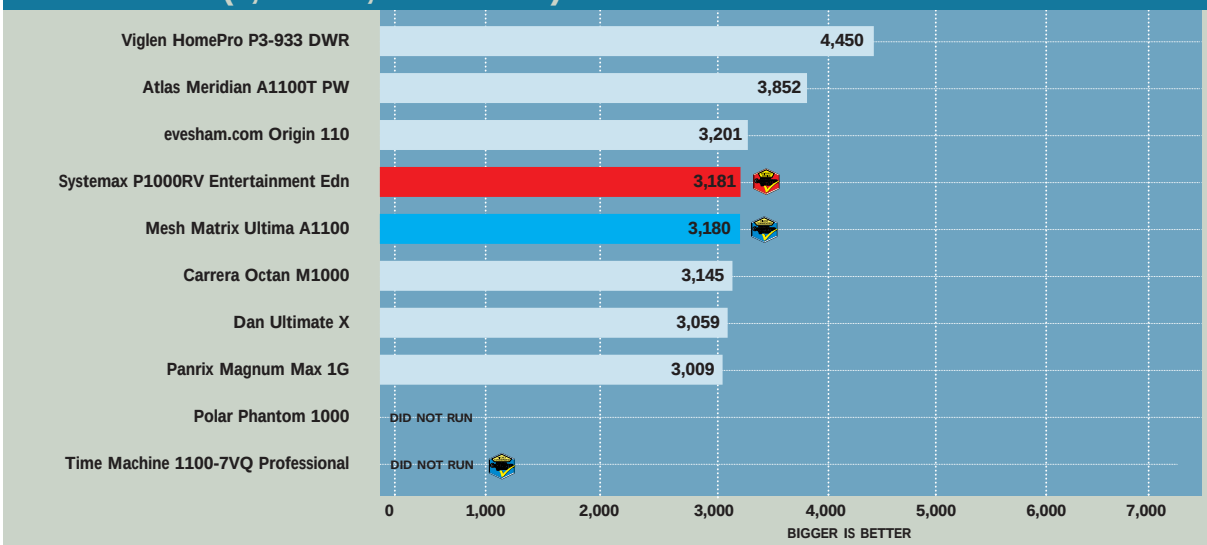
SYSmark 2000 office productivity



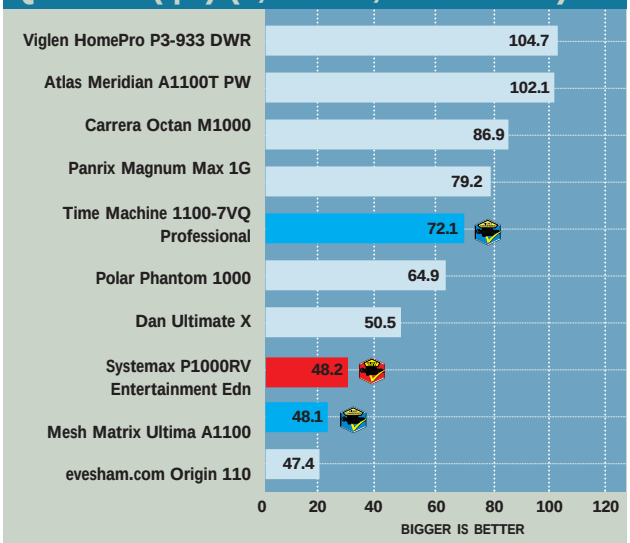
3DMark 2000 (1,280 x 1,024 at 16bit)



3DMark 2000 (1,280 x 1,024 at 32bit)



Quake III (fps) (1,280 x 1,024 at 16bit)



Quake III (fps) (1,280 x 1,024 at 32bit)

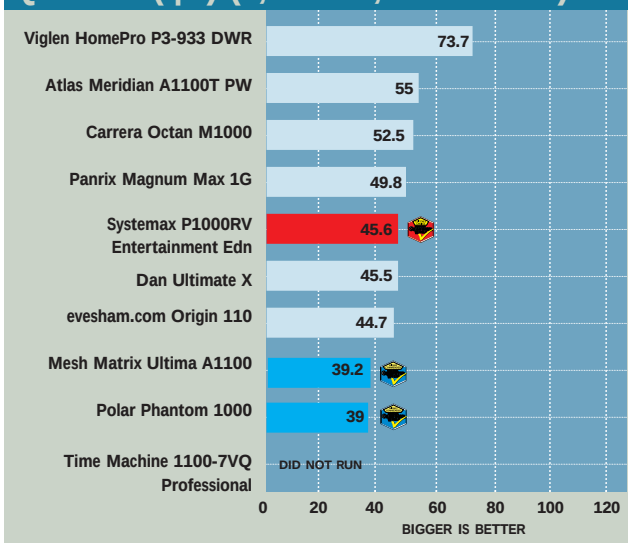


Table of features

Manufacturer	Atlas	Carrera	Dan	evesham.com
Model name	Meridian A1100T PW	Octan M1000	Ultimate X	Origin 110
Price inc VAT (ex VAT)	£2,231.32 (£1,899)	£2,113.82 (£1,799)	£2,350 (£2,000)	£2,231.32 (£1,899)
Telephone	07000 285 275	020 8307 2800	020 8830 1100	0800 038 0800
URL	www.atlasplc.com	www.carrera.co.uk	www.dan.co.uk	www.evesham.com
Hardware Specs				
Processor	1.1GHz Athlon	1GHz Athlon	933MHz Pentium III	1.1GHz Athlon
RAM/type	256MB PC133	256MB PC133	256MB PC133	256MB PC133
Occupied RAM slots/spare RAM slots	2/1	1/2	2/1	2/1
Max memory in this configuration	768MB	1.28GB	512MB	768MB
Maximum memory supported by motherboard	1.5GB	1.5GB	512MB	1.5GB
Hard disk (manufacturer and model)	IBM Deskstar	IBM Deskstar	Maxtor DiamondMax	Maxtor DiamondMax Plus
HD size/interface	46.1GB EIDE	30.7GB EIDE	46.1GB EIDE	40.9GB EIDE
Storage drive model and manufacturer	Mitsumi CR-4804TE	Panasonic CD-RW CW-7585	Acer CDRW 84321A	Panasonic CD-RW CW-7585
Size of storage drive media	650MB (1 x CD-R, 1 x CD-RW inc)	650MB	650MB (1 x CD-RW inc)	650MB
Motherboard components				
Motherboard manufacturer	Asus	Asus	Asus	Chaintech
Model/chipset	A7V/KT133	A7V/KT133	CUSL2/Intel 815E	CT-7AJA/VIA KT133
Expansion and I/O				
No of 3.5/5.25in bays	4/3	3/4	4/3	3/2
No of free 3.5/5.25in bays	2/1	1/2	2/1	1/0
No of PCI/ISA/shared/AMR slots	4/0/1/0	4/0/1/0	4/0/2/0	4/0/1/1
No of free PCI/ISA/shared/AMR slots	3/0/0/0	0/0/1/0	1/0/2/0	2/0/1/0
No of USB/serial/parallel/PS2	2/2/1/2	5/2/1/2	2/2/1/2	2/2/1/2
Multimedia				
DVD manufacturer/model	Asus DVD-ROM E608	Pioneer DVD-105	Acer DVD	Pioneer DVD-115
DVD speed/interface	8x EIDE	16x EIDE	16x EIDE	16x EIDE
Sound card manufacturer	VideoLogic	Creative	Creative	Creative
Sound card model	Sonic Fury	SB Live! Value w/out internal SPDIF	SB Live! OEM w/out internal SPDIF	SBLive!
Speakers (manufacturer and model)	VideoLogic DigiTheatre	Altec Lansing ACS54	Cambridge Soundworks Desktop Theatre 5.1	Cambridge Soundworks Desktop Theatre 5.1
Graphics card manufacturer and model	nVidia GeForce2 Ultra	3D Power GeForce2 GTS	ATi Radeon	ATi Radeon
Chipset	GeForce2 Ultra	GeForce2	Radeon	Radeon
RAM and type	64MB DDR	64MB DDR	64MB DDR	64MB DDR
Graphics card interface	AGP	AGP	AGP	AGP
Monitor manufacturer/model	CTX PR960F	Iiyama VisionMaster Pro 450	Iiyama VisionMaster Pro 450	Mitsubishi Diamond Plus 91
Monitor size/max viewable diagonal	19in/18in	19in/18in	19in/18in	19in/18in
Maximum resolution and refresh (Hz)	1,600 x 1,200/85Hz	1,600 x 1,200/85Hz	1,600 x 1,200/85Hz	1,600 x 1,200/75Hz
Other information				
Modem manufacturer and model	Supra SST 56i Pro DF	PC-Tel HSP PCI modem	Conexant HCF data fax modem	AMR voice modem
Misc hardware	Assorted audio/video cables	1394 FireWire card, FM aerial, Hauppauge Win-TV & radio with remote	Hauppauge Win-TV, Microsoft Gamepad, Assorted audio/video cables	Hauppauge Win-TV Assorted audio/video cables
Bundled software	Lotus SmartSuite Millennium Edition, Digital audio sequencer and sampler	Lotus SmartSuite Millennium Edition, Video Wave III	Microsoft Works 2000, Savage Arena, Expendable, Incoming	Recovery disc
Standard warranty	3 years on site	1 year on site, 2 years rtb	1 year on site, 2 years rtb	3 years on site

	Mesh	**Panrix**	**Polar**	**Simply**	**Time**	**Viglen**
	Matrix Ultima A1100	**Magnum Max 1G**	**Phantom 1000**	**Systemax P1000RV Entertainment Edn**	**Time Machine 1100-7VQ Pro**	**HomePro P3-933 DWR**
	£1,996.33 (£1,699)	£2,348.82 (£1,999)	£2,350 (£2,000)	£2,231.32 (£1,899)	£2,348.82 (£1,999)	£2,348.82 (£1,999)
	020 8208 4706	0113 244 4958	0161 482 7000	0870 7297 366	01282 777 555	020 8758 7000
	www.meshcomputers.com	www.panrix.com	www.polartechnology.com	www.simply.co.uk	www.timecomputers.com	www.viglen.co.uk
	1.1GHz Athlon	1GHz Athlon	1GHz Athlon	1GHz Pentium III	1.1GHz Athlon	933MHz Pentium III
	256MB PC100	256MB PC100	128MB PC100	256MB PC133	128MB PC133	256MB PC133
	1/2	1/2	1/2	1/3	1/2	2/1
	1.28GB	1.28GB	1.15GB	512MB	1.15GB	512MB
	1.5GB	1.5GB	1.5GB	512MB	1.5GB	512MB
	IBM Deskstar	IBM Deskstar	IBM Deskstar	Maxtor DiamondMax	Seagate Barracuda	IBM Deskstar
	46.1GB EIDE	61.4GB EIDE	30.7GB EIDE	30.7GB EIDE	30.6GB EIDE	46.1GB EIDE
	Philips PCRW804	Plextor CD-R PX-W1210A	Samsung SW-208B	Iomega Zip CD 1024INT	Teac CD-W54E	Sony CRX 140E
	650MB (1 x CD-R, 1 x CD-RW inc)	650MB (1 x CD-R, 1 x CD-RW inc)	650MB	650MB (1 x CD-R inc)	650MB	650MB (1 x CD-R, 1 x CD-RW inc)
	Asus	Asus	QDI	AOpen	Asus	Intel
	A7V/VIA KT133	A7V/VIA KT133	KinetiZ 7T/VIA KT133	AX3S/Intel 815E	A7V/VIA KT133	Easton/Intel 815E
	3/3	4/3	5/2	4/5	4/3	4/2
	1/1	2/1	3/0	2/2	2/1	2/0
	4/0/1/0	4/0/1/0	4/0/1/1	4/0/1/0	5/0/0/1	5/0/0/0
	1/0/0/0	1/0/1/0	2/0/1/1	2/0/1/0	2/0/0/1	2/0/0/0
	5/2/1/2	2/2/1/2	2/1/1/2	2/1/1/2	2/2/1/2	2/1/1/2
	Pioneer DVD-115	Toshiba SD-M1402	Pioneer DVD-105	Pioneer DVD-105	Compaq DVD-114	Pioneer DVD-115
	16x EIDE	12x EIDE	16x EIDE	16x EIDE	10x EIDE	16x EIDE
	Creative	Creative	VideoLogic	Creative	Creative	Creative
	SB Live! Value	SB Live! Value	Sonic Fury	SB Live! Platinum	SB Live! 1024	SB Live! Value
	PC Works Four Point Surround	Cambridge Soundworks Desktop Theatre 5.1	VideoLogic DigiTheatre DTS	Cambridge Soundworks Desktop Theatre 5.1	Creative FPS1000	Altec Lansing ADA 880
	ATi Radeon	Hercules 3D Prophet II	Hercules 3D Prophet II GTS	ATi Radeon	Hercules 3D Prophet II GTS	nVidia GeForce2 Ultra
	Radeon	GeForce2	GeForce2	Radeon	GeForce2	GeForce2 Ultra
	64MB DDR	32MB DDR	64MB DDR	64MB DDR	64MB DDR	64MB DDR
	AGP	AGP	AGP	AGP	AGP	AGP
	Mitsubishi Diamond Plus 9I	Mitsubishi Diamond Plus 91	Mitsubishi Diamond Pro 1010E	CTX PR960F	CTX PR960F	Viglen Envy 19-TF
	19in/18in	19in/18in	21in/19.7in	19in/18in	19in/18in	19in/18in
	1,600 x 1,200/75Hz	1,600 x 1,200/75Hz	1,600 x 1,200/85Hz	1,600 x 1,200/85Hz	1,600 x 1,200/75Hz	1,600 x 1,200/85Hz
	Diamond 56i Pro SupraExpress	SupraExpress ProV CC	Diamond Supra SST 56i Pro DF	Conexant HCF PCI modem	PCI 56RVP modem	Diamond Supra 56i Pro DF
	FireWire PCI host card ATi PCI TV tuner FireWire cable	Hauppauge Win-TV & remote		Hauppauge Win-TV Sidewinder Force Feedback Pro, microphone	TV-tuner card, Saitek R4 Force Wheel & Pedals, MS Sidewinder Force Feedback, joystick, AGFA E Photo CLI8 digital camera	Intel Pro/100VE network connection ATi TV-Wonder Bt878
	MS Works Suite 2000	Microsoft Works 2000, Games software pack	Works Suite 2000, DVD demo disc	Lotus SmartSuite Millennium Edition, Mixman Studio, Rollcage, Aliens vs Predator	Time standard software pack Time executive software pack	MS Work Suite 2000
	1 year on site, 2 years rtb	1 year on site, 2 years rtb	1 year c&r, 2 years rtb	3 years on site	3 years collect and return	3 years on site

Editor's **Choice**

As the previous pages show, some powerful PCs with incredible performance are available today. You could fall into the trap of thinking that because some of them have what appear to be lower scores they are poor performers. This is a myth: every system we tested will more than adequately deal with anything you care to throw at it.

Overall, the results were quite spread out, ranging from the fast to the incredibly quick. Two stand out as running significantly faster than the others, notably the Viglen and the Atlas. Both of these have a GeForce2 Ultra graphics card from nVidia bolted onto their motherboards. If you are an absolute hard-core gamer with a fair bit of cash to spend, then one of these will be your preferred system purely based on the incredible 3D performance these machines can produce. They are state-of-the-art games systems. They did not win awards purely because there are machines that reach a more than acceptable gaming performance for less cash, and are therefore a little better value for money. The hardened gamer may choose not to buy a system with bundled peripherals, in which case one of these Ultra-based machines would be ideal. But for the average prospective buyer money is an issue, so value for money (and extras) become a factor when deciding which PC to buy.

The winners

The decision as to which machine would be the Editor's Choice this month was more difficult than usual. All the systems submitted were extremely fast, so it came down to value for money and features. On this basis, the Editor's Choice award goes to the Systemax P1000RV Entertainment Edition. This spectacularly large-cased machine is both fast and versatile. With its 1GHz Pentium III, it may not have the fastest clock in the tests, but it's still a very fast chip. The motherboard is an Intel 815E-based AOpen AX3S and with 256MB of SDRAM installed you have all the memory you'll need for the foreseeable future. The hard disk may not be the biggest at 30.7GB, but it'll be a long time before it's full, and the Iomega Zip CD-RW means you can transfer stuff to disc if space does become an issue.

The graphics solution is ATi's Radeon. This 64MB card has the best features of any graphics card currently available. ATi has opted to include hardware environment bump mapping for that bit of extra visual eye candy in games, while still maintaining excellent DVD playback. The card also has video in/out to allow you to pipe your DVD to a television, or to upload video content to the PC. With A Pioneer DVD, the SoundBlaster Live! Platinum and the Cambridge Soundworks Desktop Theatre system, DVD viewing on this machine is extremely well catered for. And as the monitor is a CTX PR960F, if you choose to view the result on the monitor, you won't be disappointed with the image quality. There is also a Hauppauge Win-TV tuner card so you can watch your favourite programmes on your PC. Bundled with a Force Feedback joystick and a few games you really can't do a lot better for £2,231.32 inc VAT.

The first winner of a Highly Commended award is the Mesh Matrix Ultima A1100, which is incredible value at less than £2,000 inc VAT. Based on the Asus A7V motherboard and with 256MB of SDRAM in support, this PC is powered by a 1.1GHz Athlon processor. It has a 44.1GB UltraDMA100 hard drive, a Pioneer 16-speed DVD-ROM, a Philips CD-RW and a PCI FireWire card (with a cable) also included in the bundle. An ATi tuner card adds TV to the package, while graphics are driven again by ATi's Radeon card. The Mitsubishi DiamondPlus 91 monitor and the PC Works Surround speakers complete an excellent value ensemble.

The second Highly Commended winner is the Time Machine 1100-7VQ Professional. Time has put together a bundle that's filled to the brim. With a 1.1GHz Athlon on the Asus A7V motherboard, this system is well stacked. 128MB of PC133 SDRAM is installed, along with a 30.6GB hard disk, a Compaq DVD-ROM and a Teac CD-RW. With PCI slots occupied by a SoundBlaster Live!, a modem and a TV tuner card, and a 3D Prophet II GTS installed in the AGP slot, this system still has two free PCI slots for upgrade. The monitor is a 19in CTX PR960F, and the speakers are Creative's FPS1000. For the gamer, there is a Force Feedback wheel and joystick; and an AGFA E Photo CL18 digital camera is also included in the bundle. All for £1,999 ex VAT.

Systemax's features and value win out

Mesh has included an ATi tuner card

Force Feedback wheel with Time's offering