



# Speed merchants

As processor speeds continue to rise we challenged PC manufacturers to send us some fast systems – but speed isn't everything; we wanted some well-balanced PCs suitable for power users. So how did they fare?

**W**ith processor speeds continuing their inexorable rise, and graphics cards becoming ever more powerful, we thought this month we would place more emphasis on performance. That's not to say we wanted to see only a top-notch processor and graphics card, though. In fact, we were really looking for well-rounded systems featuring a good balance of components, all brought together in a well-built package suitable for any power user.

Bearing this in mind we sent out just a minimum specification to every top manufacturer, stipulating that the processor should be clocked at 1GHz or above and that this must be supported by at least 128MB of RAM. We wanted a hard drive with a capacity of 20GB or more, and at the very least a 17in monitor. In addition, we asked for a means of connecting to the Internet, a three-year parts and labour warranty and Microsoft's Windows Me operating system. And the asking price? £2,000 excluding VAT was our limit.

In all, 11 manufacturers responded with what can be described as an interesting collection of very fast systems. It seemed that the only common component was a CD-RW drive, and the price in particular was quite varied. It was clear, as you'll find out, that one processor manufacturer appears to be currently dominating the scene... but which one?

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• PCs tested by Lars-Goran Nilsson and reviewed by Jalal Werfalli

## Atlas Meridian A1100 CW



UltraDMA100 Promise controller, takes care of data storage. And the Teac CD-RW will come in handy for backup purposes. Sitting above this is a 12-speed Hitachi DVD-ROM drive for data transfers and DVD movies, leaving one 5.25in bay free. This is becoming a fairly standard configuration.

Inside you only have two free PCI slots as the VideoLogic SonicFury sound card and ProLink TV tuner take up the other two dedicated slots.

**ATLAS HAS OPTED** for the ever popular Asus A7V motherboard and AMD's 1.1GHz Athlon. This is supported by 256MB of PC133 memory in the form of two modules. This leaves one slot free for future upgrades, although most users will find 256MB more than sufficient for some time yet. In this configuration, the Meridian climbs to a nippy SYSmark score of 194.

A 46.1GB IBM hard disk, fully compatible with the onboard

The shared PCI/AMR slot carries a Diamond 56K modem. Surprisingly Atlas hasn't used the USB backplate that comes with the A7V motherboard and so you're left with just the two onboard USB ports.

Sitting in the AGP slot is Hercules' 64MB 3D Prophet II Ultra, one of the fastest cards around. With the GPU galloping along at 250MHz, and the memory clocked at 458MHz, excellent scores of 4,313 in 3DMark and 70.6fps in

Quake III say it all. At the rear are a DVI output for digital flat panels and an S-Video socket. Married to the Ultra is CTX's PR960F 19in monitor – a very capable screen with a Sony FD Trinitron aperture-grille tube that has good contrast, minimal reflection and vivid colour representation. D-SUB BNC connectors and four downstream USB ports also boost the monitor's connectivity.

On the audio front, Atlas has gone for VideoLogic's SonicFury card and DigiTheatre LC arrangement, capable of producing Dolby Digital 5.1 sound. Software-wise, Microsoft's Works Suite 2000 and five games are included. A Logitech Wingman joystick and webcam top everything off.

### DETAILS

**PRICE** £ 2,113.83 (£1,799 ex VAT)

**CONTACT** Atlas 07000 285 275

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

**PROS** Good-quality components; good 3D performance

**CONS** USB backplate not used

**OVERALL** A fast machine that matches the Time in overall performance

#### FEATURES

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL RATING** ★★★★★



## Compaq Presario 5WV296



by a somewhat modest 30GB Quantum Fireball hard drive, while an LG CED-8080B CR-RW drive and 12-speed Compaq DVD-ROM occupy both 5.25in bays.

Sound is handled by an integrated motherboard chipset and fed through a pair of JBL Platinum Series speakers. It's good to see the inclusion of two front-mounted USB ports, in addition to the two standard ports around the back. A Conexant HCF V.90 modem and an

**THE PRESARIO'S CASE** has an interesting style, with a front panel that drops open to reveal space to store several CDs. On the inside, the core is a 1GHz Athlon processor, coupled with 128MB of PC100 memory. Compared to the others on test this is a bit stingy and we would have preferred to have seen 256MB of PC133 memory instead, since the VIA KT133 chipset on the motherboard would be able to take full advantage of it. Storage is taken care of

Accton 10/100 network card occupy two of the three available PCI slots. However, some home consumers will have little use for this and may end up removing it to free up an additional PCI slot for other devices.

Based on nVidia's Riva TNT2 M64 Pro chipset, the graphics card lets the rest of the system down. This chipset just cannot compete with the likes of the Radeon and GeForce2-based cards in other systems on test. Given our

generous £2,000 price limit we were disappointed that Compaq supplied a card that performs so poorly. The review system came with a 17in monitor, but we have been informed by Compaq that a 19in model will ship with this package for the same price. We were unable to test the performance of this unit so we can't comment on the picture quality you can expect.

A copy of Microsoft Works Suite 2000 completes the package.

Given the rather mismatched set of components, we weren't too surprised to see the Presario finishing last in every one of our benchmark tests. On the whole, performance and specification could have been better.

### DETAILS

**PRICE** £1,769.38 (£1,505 ex VAT)

**CONTACT** Compaq 0845 270 4000

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

**PROS** Good build quality; front USB ports

**CONS** Poor performance

**OVERALL** A little more money spent on better-specified components could have made all the difference

#### FEATURES

**PERFORMANCE** ★★★

**VALUE FOR MONEY** ★★★

**OVERALL RATING** ★★★



## Dell Dimension 4100 1000MHz



**DELL IS ONE OF** three manufacturers this month to opt for an Intel-based solution. A 1GHz Pentium III processor sits in the socket of a Dell-badged 815E motherboard and is backed up by a healthy 256MB of PC133 memory. A well-designed internal cooling system helps keep the temperature down inside the case but we did find the cabling rather untidy.

A 40GB Western Digital hard drive takes care of storage, along with an LG

CED-8080B CD-RW drive and a 12-speed Samsung DVD-ROM. In terms of performance, the Dell puts in a poor show, only managing to outperform the Compaq machine in the SYSmark tests.

A Turtle Beach PCI sound card is supplied and connected to a set of Altec Lansing ACS 340 loudspeakers. Connection to the Internet is taken care of by an Aztec V.90 modem that sits in a second PCI slot, leaving three slots free on the Dell

motherboard for additional devices. The 64MB nVidia GeForce2 Ultra graphics card provides solid 3D performance and is fitted with a DVI output for connection to a digital flat panel display. There is, though, no TV-out facility, which is a little disappointing given the quality of the card.

The 17in Dell monitor is a flat-screen model with aperture-grille design and has a well-focused and stable picture. The monitor will comfortably handle

resolutions of 1,600 x 1,200 at 75Hz, but for this kind of money we would have been happier with a 19in model such as those supplied by other manufacturers this month.

A copy of Microsoft Works Suite 2000 and a Microsoft USB keyboard fitted with two pass-through USB ports is included. However, we were surprised to see that Dell had supplied a standard PS/2 mouse instead of connecting a USB model to one of the free ports.

On the whole, the Dell offers a reasonable machine but it fails to shine in any particular area. The inclusion of a larger monitor would have given the PC some added appeal but it would still have been outgunned by the higher-clocked Athlons.

### DETAILS

**PRICE** £1,936 (£1,648 ex VAT)

**CONTACT** Dell 0870 907 5664

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

**PROS** Quality graphics card; decent monitor

**CONS** Poor overall performance

**OVERALL** A decent set of components, but this machine fails to shine above the rest

<b>FEATURES</b>	★★★
<b>PERFORMANCE</b>	★★★
<b>VALUE FOR MONEY</b>	★★★
<b>OVERALL RATING</b>	★★★

## evesham.com Origin 1200 DDR Ultra



**THIS HAS ALL THE** makings of a very fast machine. Under the lid is a 1.2GHz Athlon plugged into an Asus A7M266 motherboard. This board really unleashes the power of this Athlon as the AMD 761 North Bridge supports a 266MHz front-side bus (FSB), to match the processor. Together with the single 256MB stick of PC2100 DDR SDRAM this lifts the SYSmark score to 210 – the top spot.

The Origin 1200 is also at the top of

the 3D charts where 3D Power's GeForce2 Ultra scores 4,563 3DMarks and pumps out 74.2fps in Quake III. This is thanks to the hefty 64MB of DDR SDRAM and the 250MHz processor.

As far as output goes, you'll find only a D-SUB port, so a monitor is all you'll be able to connect. In this case it's a 19in Mitsubishi Diamond Plus 91 with an excellent Diamondtron NF aperture-grille display that's easy to look at for extended periods.

The hefty 60.5GB Maxtor hard drive is a relatively new model compliant with the UltraDMA100 standard, which is supported by the motherboard's chipset. This allows data transfer rates of up to 100Mbytes/sec between the drive and interface. The drive can be backed up to the Teac W512EB CD-RW – a BurnProof drive that allows you to multitask while writing at 12-speed and rewriting at 10-speed. For expansion, there's one 5.25in bay free, while the

other is filled by a Pioneer 16-speed DVD drive. Two 3.5in bays are empty.

Inside there is a Diamond PCI V.90 modem, while Creative's SoundBlaster Live! 5.1 Player card occupies another PCI slot, leaving two free. This sound solution is impressive and coupled with Creative's Desktop Theatre 5.1 DTT2200 speaker set, you can be sure of a quality, full surround-sound effect. An AMR slot is also present, but a USB plate with two extra ports blocks this.

Microsoft Works Suite 2000 is also included. At £1,749 ex VAT for a system that makes use of some of the latest technology, you can't go far wrong – a top-notch Editor's Choice.

### DETAILS

**PRICE** £2,055.08 (£1,749 ex VAT)

**CONTACT** evesham.com

08707 28 70 70 [www.evesham.com](http://www.evesham.com)

**PROS** Blistering performance; quality monitor; large hard drive; BurnProof CD-RW

**CONS** At this price, none to speak of

**OVERALL** This machine simply oozes balance and speed – the cheetah of the PC kingdom

<b>FEATURES</b>	★★★★★
<b>PERFORMANCE</b>	★★★★★
<b>VALUE FOR MONEY</b>	★★★★★
<b>OVERALL RATING</b>	★★★★★



## Gateway Performance 1400



**THIS IS THE ONLY** system to feature a Pentium 4 processor. Running at 1.4GHz you would expect the Gateway to power its way to the top of the pile but, alas, this is not the case. We've had a look at other P4 machines recently that have completed our benchmarks, but Gateway's offering was unable to complete the SYSmark test, which is a shame as it would have been interesting to compare Intel's P4 to AMD's Athlon. It had no trouble producing 3D

scores, though, courtesy of the MSI GeForce2 GTS graphics card. A 3DMark score of 3,416 and 44.5fps in Quake III are in themselves reasonable and what you would expect of nVidia's GTS card. This graphics board comes with just a D-SUB port that's tethered by a non-captive cable to Gateway's own 19in EV910 monitor. This uses a shadow-mask tube with a very sharp and stable picture, but suffers from reflections bouncing off the curved screen. The fascia is also clean with access to the OSD controlled by a jog shuttle, hidden behind a flap on the front.

Inside the Pentium 4 is mounted on an Intel GB850 motherboard perhaps not surprisingly based on the Intel 850 chipset. This supports RDRAM of which there are four 64MB sticks filling all the memory slots. The motherboard has support for two extra USB ports and the UltraDMA100 standard, but while Gateway has used the first on the front

of the case, the latter has been shunned, as the 30GB Quantum hard drive is only UltraDMA66 ready. If you want to add extra drives, three out of the five 3.5in bays are spare, but the Philips CD-RW and 16-speed Panasonic DVD leave no 5.25in bays free. As for PCI slots, three are unoccupied for future additions.

The sound setup is not quite up to the standard set by other PCs here, as it uses Creative's lower-end SoundBlaster Live! Value card, which in this case doesn't have an external digital S/PDIF. This is disappointing as the three-piece Boston Acoustics speaker set needs this connection for digital sound, so only analog audio can be processed.

### DETAILS

**PRICE** £2,312.40 (£1,968 ex VAT)

**CONTACT** Gateway 0800 552 000

**www.gateway.com/uk**

**PROS** Decent shadow-mask monitor: the only P4 machine here; front USB ports

**CONS** Analog sound; a bit expensive; no free memory slots

**OVERALL** Not a bad PC, but no SYSmark score means it can't be judged as a speed machine

#### FEATURES

**PERFORMANCE (3D ONLY)** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL RATING** ★★★★★

## Mesh Matrix 1100T



**MESH HAS MADE A** good stab at a performance machine with the 1100T, but sadly loses out in the all-important performance stakes. Even though it comes with a 1.1GHz Athlon, supported by a single 256MB stick of PC133 memory, the Matrix is just beaten by systems that offer higher clocked processors and faster graphics.

Yet again, both the processor and memory are mounted on the Asus A7V motherboard. This has a built-in

UltraDMA100 Promise controller that allows the 30.7GB IBM Deskstar hard drive to work at its full potential. For backup there's a Teac CD-W54E CD-RW drive and for copying on the fly or watching your favourite movies a 16-speed DVD-ROM drive is fitted. This leaves one 3.5in and a 5.25in bay empty and waiting to be filled.

As for graphics, there's an ATI Radeon in the AGP slot loaded with 64MB of DDR memory and sporting VIVO (video in/video out) capabilities. This is a fine card, with a 3DMark score of 3,189 and a Quake III rating of 45fps, but it couldn't quite match the performance of some other systems. Nonetheless the Radeon does help show off the excellent 19in Mitsubishi Diamond Pro 920 monitor.

Although this monitor is similar to the Plus 91 in styling and connectivity (restricted to D-SUB), there are some differences. First, the Pro 920 employs a unified grille pitch of 0.24mm, whereas

the Plus 91's pitch varies from 0.25 to 0.27mm. Second, the Pro 920 can operate at a refresh rate of 85Hz at an impressive 1,600 x 1,200 resolution.

Inside is a Conexant 56K PCI modem and Creative's SoundBlaster Live! 5.1 Player PCI sound card. The latter has onboard Dolby Digital 5.1 processing and produces rich surround sound through the Creative Desktop Theatre 5.1 DTT2200 speakers. Even with these cards there is some room for expansion. Two PCI slots and one shared PCI/AMR slot sit empty.

Only Mesh and Panrix have enabled the third port on the A7V's USB backplate, for those with several USB devices.

### DETAILS

**PRICE** £1,761.33 (£1,499 ex VAT)

**CONTACT** Mesh Computers 020 8208 4706

**www.meshcomputers.co.uk**

**PROS** A good option for those with a smaller wallet; quality monitor; five USB ports

**CONS** Lacks the necessary performance to clinch an award

**OVERALL** A fine machine that just loses out on performance

#### FEATURES

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL RATING** ★★★★★

# NEC Direction SM-1000A



wins, largely due to its extra 100MHz of processor speed. As for Quake III and 3DMark, the results from both systems demonstrate how the Radeon, and the GeForce2 GTS chipsets are being surpassed by nVidia's GeForce2 Ultra.

A Leadtek Winfast GeForce2 GTS card is fitted into the AGP slot of a microATX MSI MS-6340 motherboard that uses the VIA KT133 chipset. This 32MB graphics card also comes with an S-Video output that

allows you to connect the card to a TV – ideal for watching DVDs.

The monitor is a 19in NEC unit with a maximum flicker-free resolution of 1,600 x 1,200 at 85Hz, although most will find a less fine setting more appropriate. While the tube is not as flat as some in this group test and suffers from reflections, the picture itself is respectable and well focused.

NEC has saved some money in the audio department as the SoundBlaster

**NEC'S DIRECTION** is the same price as the Mesh, and in terms of value for money there's little to separate them. Both have 256MB of PC133 memory, and where Mesh has offered a faster Athlon processor and a quality sound system, the Direction fights back with two 46.1GB hard drives, a range of peripherals (joystick, webcam, TV-tuner) and some extra software.

However, there are some differences in performance. In SYSmark the Mesh

Live! Value card (with CD S/PDIF port) and Labtec LCS-2632 speakers are not the most expensive.

There is a single 256MB stick of PC133 memory, leaving one DIMM slot spare. There are only two PCI slots, which house the sound card and a Conexant modem. Expansion is also hindered by the fact that no 3.5in bays are free, although having two hard drives will be useful. Two 5.25in bays (one internal) are ready to be filled. An LG CED-8080B CD-RW and a 16-speed Pioneer DVD-115 handle optical storage. A handy USB port is also conveniently located to the front of the unit.

## DETAILS

**PRICE** £1,761.33 (1,499 ex VAT)

**CONTACT** NEC Computers 0870 010 6322

[www.nec-online.co.uk](http://www.nec-online.co.uk)

**PROS** Large storage capacity; front-mounted USB port; extra peripherals

**CONS** Not the quickest; limited expansion; merely average sound

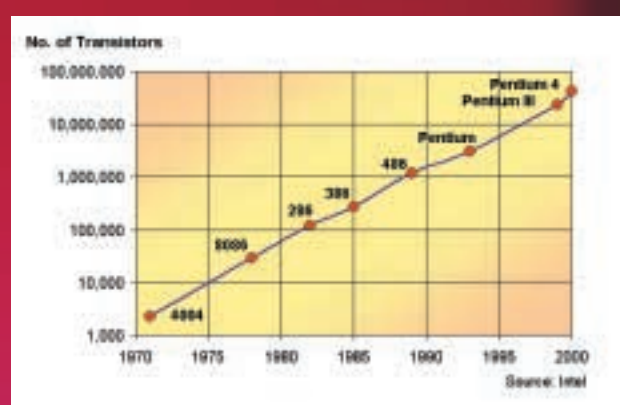
**OVERALL** A reasonable PC but it lacks speed and expandability

<b>FEATURES</b>	★★★★
<b>PERFORMANCE</b>	★★★★
<b>VALUE FOR MONEY</b>	★★★★★
<b>OVERALL RATING</b>	★★★★

# Moore processing power?

In 1965, Gordon Moore, who at the time was the R&D director of Fairchild Semiconductors, made a bold prediction about the future of the microchip industry. Moore half-heartedly predicted that the number of electronic devices on a single microchip, and with it computing power, would roughly double every year. In 1975, Moore revised his hypothesis and estimated that the number of devices on a chip would double roughly every 18 months. At this time, the microchip industry was still in its infancy. This exponential increase in performance has since come to be known as Moore's Law, and it describes a trend that, remarkably, is still true today.

Moore later went on to become co-founder of Intel and in 1971 the company introduced its first CPU, the 4004, which contained 2,300 transistors. In 1999, Intel's



Pentium III processor contained over 27 million transistors. Early versions of the Pentium III, and for that matter AMD's Athlon processor, were manufactured using a 0.25micron process. The latest models from both companies now employ a finer 0.18micron process and this is set to reduce even further over the next year. It may not be too long, though, before CPU growth starts to slow down.

Using a process called optical lithography, light is used to print the patterns of circuits onto a silicon wafer. Each time the manufacturer wants to achieve a finer manufacturing process the wavelength of the light has to be reduced. At the moment, UV light at a wavelength of 248nm is used but in the future this will be replaced by a newer technology known as Extreme Ultra Violet (EUV) lithography, which uses

an even shorter wavelength (10-14nm). This will mean that the manufacturing process should eventually reach the 0.07micron level with processors rated at 10GHz, debuting some time around 2005. It is believed that at this point silicon will have reached its maximum potential and a new chip substrate or a completely new method will have to be found.

The increasing cost of manufacturing semiconductor chips may also play a major role in the growth of computing power. More elaborate and expensive fabrication plants will be needed, as chips become faster and more complex.

The past 10 years have seen an increase in clock speeds, from the average 20MHz of a 386 to 1.5GHz in the form of the latest Pentium 4. However, we'll have to wait and see if this trend continues over the next decade.



## Panrix Magnum 1100W



**THE MOST INTERESTING** aspect of the 1100W is the inclusion of an UltraDMA100 EIDE-RAID controller from Promise. There are a number of RAID types and Panrix has opted for striping (Level 0). Using this method increases disk throughput as the two 40.9GB Maxtor drives have independent roles – one is used for read and the other for write operations. This halves the access time resulting in a system that runs at an impressive speed. In addition, the

capacities are combined into one 80GB volume – plenty of room for applications and storage.

Panrix has used Asus' A7V motherboard with a 1.1GHz Athlon, backed by a single 256MB stick of PC133 memory. This arrangement produces some decent SYSmark scores keeping the Magnum among the top performers. A Hercules 3D Prophet II Ultra with 64MB of memory allows for some excellent 3D performance with 4,538 3DMarks and a Quake III

score of 73.8fps. The Hercules drives a 19in Mitsubishi Diamond Plus 91 monitor, whose aperture-grille tube gives a flat picture that's sharp, bright and comfortable to use.

The SoundBlaster Live! 5.1 handles audio well and comes with onboard Dolby Digital decoding. When connected to the bundled Creative Desktop Theatre 5.1 DT2200 speakers you can expect to hear true Dolby Digital 5.1 channel surround sound.

An HP CD-RW is included together with a 16-speed DVD drive from Pioneer. Two dedicated PCI slots remain free while two bays – one of each size – are also vacant. Finally, if you're worried about processor temperatures, then relax. The case comes with one of the biggest rear fans we've seen, which greatly contributes to the overall cooling of the processor and motherboard.

As for software, Panrix has bundled Microsoft Works Suite 2000, which includes a full copy of Word 2000, so you can be productive from the start. A speed machine worthy of a Highly Commended Award.

### DETAILS

**PRICE** £2,348.83 (£1,999 ex VAT)

**CONTACT** Panrix 0113 244 4958

**www.panrix.com**

**PROS** RAID controller: great performance; excellent speaker system; cool case; all USB ports are usable

**CONS** A bit more expensive than others here

**OVERALL** The Panrix is one of the top performers in this group test and its sound system and build quality are excellent

#### FEATURES

**PERFORMANCE** ★★★★★

**VALUE FOR MONEY** ★★★★★

**OVERALL RATING** ★★★★★



## Polar Pinnacle 1100



**LIKE THE PANRIX**, Atlas and Mesh, Polar's entrant features a 1.1GHz Athlon processor. This finds a home on an Asus A7V motherboard, complete with 256MB of PC100 memory. This time, though, the memory has been divided into two modules. This leaves one memory slot for future upgrades. With this arrangement the overall SYSmark score is a fairly average 187.

Housed in two of the four PCI slots you'll find a Diamond modem and

VideoLogic SonicFury sound card. The latter is identical to the US Turtle Beach card in the Dell system and differs only in its marketing. Needless to say, the sound produced by this combined with the VideoLogic DigiTheatre DTS speakers is excellent, with a quality purported to be even better than Dolby Digital as less signal compression is involved.

With USB devices becoming ever more popular it's a shame that the A7V's USB backing

plate was only partially connected, again leaving just two of the three ports functional. Polar is not alone in this oversight – Systemax and Time have done the same.

In the AGP socket there's a 32MB Hercules 3D Prophet II GTS card based on nVidia's GeForce2 chipset. This was once the hottest card on the market but now, as the 3D results show, the systems sporting Ultra cards from the same stable are clearly faster. Linked to this is

the same good-quality 19in Mitsubishi Diamond Plus 91 supplied by Panrix and evesham.com. Other components include a vertically mounted UltraDMA100 30.7GB IBM hard drive, a Hitachi 12-speed DVD-ROM drive, and a Delta OME-W141 CD-RW for burning backups. This leaves just three 3.5in bays available for expansion.

With relatively middle-of-the-road scores you may find yourself asking why the Pinnacle's price is so high. There's no RAID controller and no extra peripherals. The only real difference is the DTS sound system but for £500 less you could buy the Mesh or even the cheaper DDR system from evesham.com. At this price, it's difficult to recommend this fairly average setup.

### DETAILS

**PRICE** £2,348.83 (£1,999 ex VAT)

**CONTACT** Polar Technology 0161 482 7000

**www.polartechnology.com**

**PROS** Good sound system and monitor

**CONS** Performance is only average

**OVERALL** A reasonable machine that is overpriced and doesn't really sparkle

#### FEATURES

**PERFORMANCE** ★★★

**VALUE FOR MONEY** ★★★

**OVERALL RATING** ★★★

## Systemax P1000RV Lifestyle 0390



32MB GeForce2 GTS AGP card. This has S-Video output – handy for those who want to send its output to a television – but as far as speed goes it's a bit under-powered, beating only the TNT2 M64-based Compaq in both the 3DMark and Quake III tests. A 19in CTX PR960F completes the visual output setup.

The EIDE bus on the motherboard supports the UltraDMA100 standard and it's no surprise to see a compliant 40.9GB

**THIS IS THE SECOND** machine in this test to use the already outranked 1GHz Pentium III housed in an Intel 815E-based motherboard – the CUSL2 from Asus. With 256MB of PC133 memory occupying one of the three DIMM slots, you'd expect the P1000RV to be a fair performer, but like the Dell it finds itself hanging about the lower half of the SYSmark graph, with a score of 181.

This Socket 370 motherboard comes with an AGP Pro slot housing AOpen's

Maxtor hard drive connected to this channel for maximum efficiency. For removable storage requirements, a Plextor BurnProof CD-RW that writes at 12-speed and rewrites at 10-speed is slotted into one of three 5.25in bays. With another bay filled by a 16-speed slot-loading Pioneer DVD-ROM drive, one 5.25in bay is left free. For smaller devices, two 3.5in bays are also vacant.

There are six PCI slots, one of which shares a blanking plate with a CNR slot.

This sounds like a lot but you can only add one card without removing what's already in place. The occupied slots are home to a VideoLogic SonicFury sound card piping out to an excellent digital sound system in the shape of VideoLogic DigiTheatre LC speakers, and Hauppauge's WinTV DVB-S Digital Satellite TV Tuner. Finally, there's a standard Conexant 56K V.90 modem.

As well as two USB ports on the board itself, there is a backing plate mounting another three ports, but Systemax has not connected the third port to the motherboard. To top everything off Logitech's cordless keyboard and mouse, a webcam and gamepad are bundled.

### DETAILS

**PRICE** £2,290.08 (£1,949 ex VAT)

**CONTACT** Simply 08707 297 366

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

**PROS** Lots of features; good monitor; BurnProof CD-RW; good audio setup

**CONS** Outperformed in this group test

**OVERALL** A great set of features and peripherals, but rather lethargic performance

<b>FEATURES</b>	★★★★
<b>PERFORMANCE</b>	★★★★
<b>VALUE FOR MONEY</b>	★★★★
<b>OVERALL RATING</b>	★★★★

## Time Machine 1200-7 VQ Pro



to eight drives. Finding somewhere to put them, though, would be a challenge as only two 3.5in and one 5.25in bays are free. Two of the EIDE channels meet the UltraDMA100 protocol and Time has connected a 46.1GB IBM hard disk to the primary connector.

Time has also fitted the extra optional USB backplate, bringing the USB port count to five. However, like the Polar, only four can be put to use, as the cable that connects the third port on

**TIME HAS CERTAINLY** fulfilled our criteria by supplying a machine built around a beefy 1.2GHz Athlon processor backed up by 256MB of PC133 memory. The latter comes as two 128MB modules, which leaves one slot free for memory upgrades.

The performance is impressive with an overall SYSmark score of 205. This is helped in no small part by the excellent Asus A7V motherboard that has four EIDE channels to allow connection of up

the plate has not been fitted.

You won't find any ISA slots onboard the A7V, but there is one shared PCI/ANR slot, and two PCI slots are free. Occupying the AGP slot is a Hercules 3D Prophet II GTS Pro card sporting 64MB of DDR SDRAM. This makes for some great scores in 3DMark and Quake III (3,619 and 51.3fps respectively), even though they are overshadowed by those from nVidia's Ultra card.

Samsung's SyncMaster 900NF monitor, with its 19in Mitsubishi Diamondtron aperture-grille flat screen, produces a vibrant picture that's both stable and in focus across its surface.

Audio is handled by Creative's SoundBlaster Live! 1024 card and FPS-1000 four-point surround speakers, while an Etech 56K PCI modem allows you to connect to the Internet. Bundled software includes Microsoft Works 2000, three decent software packs, and Microsoft's SideWinder Force Feedback joystick, steering wheel and pedals are also included. Don't expect too much from the Agfa CL18 camera, though.

### DETAILS

**PRICE** £2,113.83 (£1,799 ex VAT)

**CONTACT** Time 01282 777 555

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

**PROS** Fast processor and graphics card; decent monitor; good price

**CONS** Fifth USB port not enabled

**OVERALL** Among its rivals Time has managed to put together a tidy system that performs admirably

<b>FEATURES</b>	★★★★
<b>PERFORMANCE</b>	★★★★
<b>VALUE FOR MONEY</b>	★★★★
<b>OVERALL RATING</b>	★★★★







## 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.

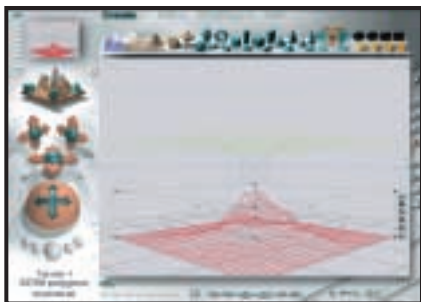
### Office productivity

#### 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



*Bryce 4 script manipulates a wire frame scene and renders it*

charts, applying graphics and sound effects, and adding movie files.

additional data and produces reports based on queries.

#### 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

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

#### Dragon NaturallySpeaking Preferred 4.0

The script plays a pre-recorded wav file into NaturallySpeaking, 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.



#### 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 32bit colour, with each game set to loop three times. The 3DMark is calculated by adding the frames per second for each game together and multiplying the result by 12.

### Quake III

We tested each system's OpenGL performance with Quake III: Arena (1.11).

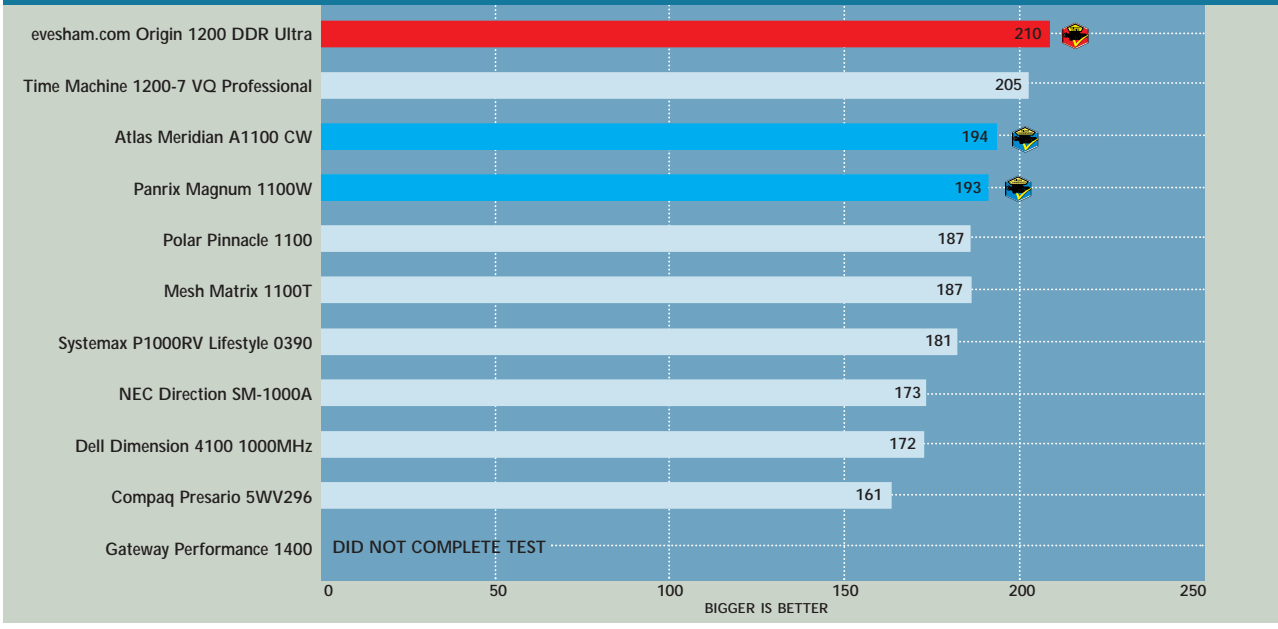
The settings were: video mode - 1,280 x 1,024, colour depth - 32bit, full screen, highest texture detail, texture quality - 32bit, texture filter - trilinear, lighting and lightmap.

At command prompt we typed:  

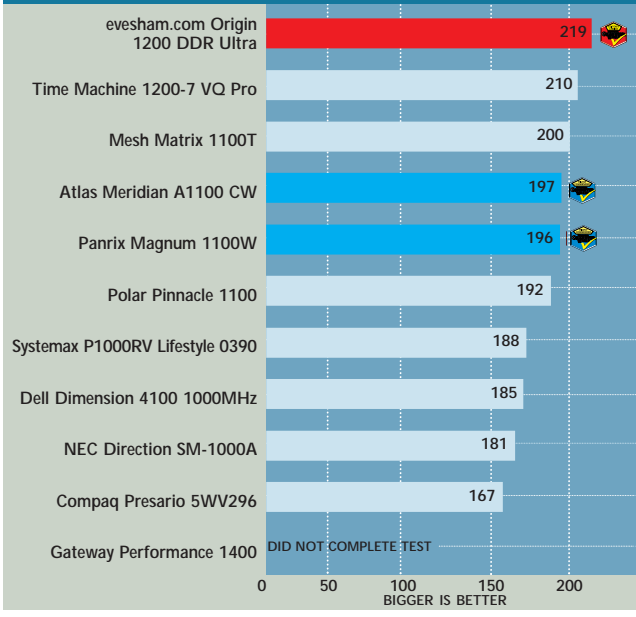
```
timedemo 1
demo demo001
```

This runs demo 1 and records the frames per second.

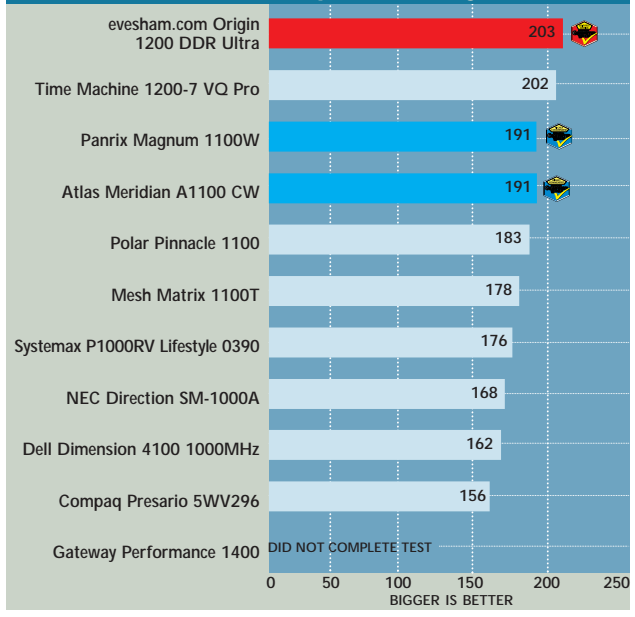
## SYSmark 2000 overall



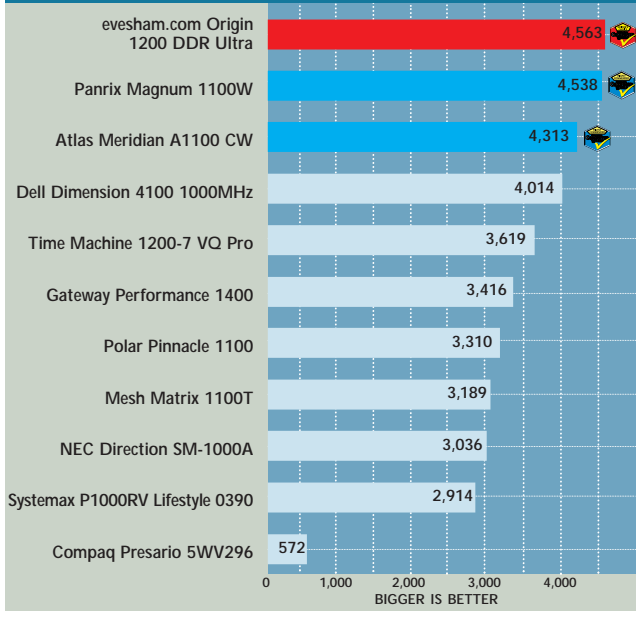
## SYSmark 2000 Internet content creation



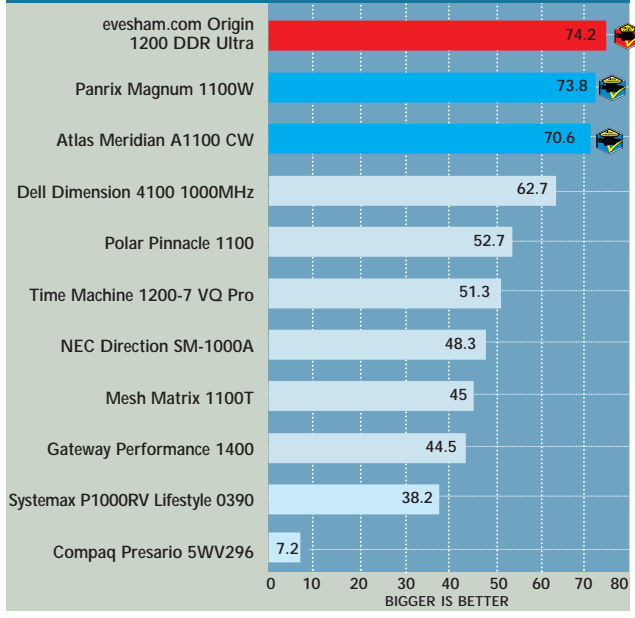
## SYSmark 2000 office productivity



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









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



### Table of features



MANUFACTURER	ATLAS	COMPAQ	DELL	EVESHAM.COM	GATEWAY
MODEL NAME	MERIDIAN A1100 CW	PRESARIO 5WV296	DELL DIMENSION 4100 1000MHZ	ORIGIN 1200 DDR ULTRA	PERFORMANCE 1400
Price inc VAT (ex VAT)	£2,113.83 (£1,799)	£1,769.38 (£1,505)	£1,936 (£1,648)	£2,055.08 (£1,749)	£2,312.40 (£1,968)
Telephone	07000 285 275	0845 270 4000	0870 907 5664	08707 28 70 70	0800 552 000
URL	<a href="http://www.atlaspc.com">www.atlaspc.com</a>	<a href="http://www.compaq.co.uk">www.compaq.co.uk</a>	<a href="http://www.dell.co.uk">www.dell.co.uk</a>	<a href="http://www.evesham.com">www.evesham.com</a>	<a href="http://www.gateway.com/uk">www.gateway.com/uk</a>
<b>HARDWARE SPECS</b>					
Processor	Athlon 1.1GHz	Athlon 1GHz	Pentium III 1GHz	Athlon 1.2GHz	Pentium 4 1.4GHz
RAM/type	256MB/PC133	128MB/PC100	256MB/PC133	256MB/PC2100 DDR	4x64MB Rambus RDRAM/PC800
Occupied/spare RAM slots	1/2	1/2	1/1	1/1	4/0
Max memory in this configuration	1.28GB	1.15GB	512MB	768MB	256MB
Max mem supported by m'board	1.53GB	1.53GB	512MB	1GB	1GB
Hard disk (manufacturer/model)	IBM Deskstar DTLA-307045	Quantum Fireball Ict15	Western Digital Caviar WD400BB	Maxtor DiamondMax Plus 40 57060H6	Quantum Fireball LM30
HD size/interface	46.1GB/EIDE	30GB/EIDE	40GB/EIDE	60.5GB/EIDE	30GB/EIDE
Storage drive maker/model	Teac CD-W54E	LG CED-8080B	LG CED-8080B	Teac W512EB (BurnProof)	Philips CDD 4801 CD-RW
Size of storage drive media	650MB	650MB	650MB (1xCD-R, 1xCD-RW)	650MB (1xCD-R, 1xCD-RW)	650MB
<b>MOTHERBOARD COMPONENTS</b>					
Motherboard manufacturer	Asus	Compaq OEM	Dell OEM	Asus	Intel
Model/chipset	A7V/VIA KT133	UWave/VIA KT133	Intel/815E	A7M266/AMD761 & VIA686B	GB850(10A)/Intel 850
<b>EXPANSION AND I/O</b>					
No of 3.5/5.25in bays	4/3	4/2	5/2	4/3	5/2
No of free 3.5/5.25in bays	2/1	2/0	3/0	2/1	3/0
PCI/ISA/shared/AMR slots	4/0/1/0	3/0/0/0	5/0/0/0	4/0/1/0	4/0/1/0
Free PCI/ISA/shared/AMR slots	2/0/0/0	1/0/0/0	3/0/0/0	2/0/0/0	3/0/0/0
No of USB/serial/parallel/PS2	2/2/1/2	4/1/1/2	2/1/1/2	4/1/1/2	4/1/1/2
<b>MULTIMEDIA</b>					
DVD manufacturer/model	Hitachi/GD-7500	Compaq/SD-612B	Samsung/SD-612	Pioneer/DVD-115	Panasonic/SR-8586
DVD speed/interface	12x/EIDE	12x/EIDE	12x/EIDE	16x/EIDE	16x/EIDE
Sound card manufacturer	VideoLogic	SoundMax	Turtle Beach	Creative	Creative
Sound card model	SonicFury	Integrated Digital Audio	Santa Cruz	SoundBlaster Live! 5.1 Player	SoundBlaster Live! Value
Speakers (manufacturer/model)	VideoLogic DigiTheatre LC	JBL Platinum Series	Altec Lansing ACS 340	Creative Desktop Theatre 5.1 DTT2200	Boston Acoustics BA735
Graphics card manufacturer/model	Hercules 3D Prophet II Ultra	nVidia Riva TNT2 M64 Pro	nVidia GeForce2 Ultra	3D Power Ultimate GeForce2 Ultra	MSI MS-StarForce 815
Chipset	nVidia GeForce2 Ultra	nVidia Riva TNT2 M64 Pro	nVidia GeForce2 Ultra	nVidia GeForce2 Ultra	nVidia GeForce2 GTS
RAM and type	64MB DDR SDRAM	32MB SDRAM	64MB DDR SDRAM	64MB DDR SDRAM	32MB DDR SGRAM
Monitor manufacturer/model	CTX PR960F	Compaq MV940	Dell UltraScan P790	Mitsubishi Diamond Plus 91	Gateway EV910
Monitor size/max viewable diag	19in/18in	19in/18in	17in/16in	19in/18in	19in/18in
Max resolution at VESA refresh	1,600 x 1,200 at 85Hz	1,280 x 1,024 at 75Hz	1,600 x 1,200 at 75Hz	1,600 x 1,200 at 75Hz	1,600 x 1,200 at 75Hz
<b>OTHER INFORMATION</b>					
Modem manufacturer/model	Diamond SupraSST 56i Pro DF	Conexant HCF V.90 56K PCI	Aztec MDP3880-W (B) PCI 56K V.90	Diamond SupraSST 56i Pro DF	56K PCI Voice Modem SF-11561V+
Misc hardware	ProLink TV tuner, Logitech webcam and Wingman Extreme Digital 3D joystick	Accton EN 1207D PCI 10/100 network card, 2x front USB ports	USB keyboard with 2 ports		
Bundled software	MS Work Suite 2000, games bundle	MS Works Suite 2000	MS Works Suite 2000	MS Works Suite 2000	MS Works Suite 2000
Warranty (RTB = return to base C&R = collect and return)	3yrs on-site	1st yr on-site, plus 3yrs on-site Compaq Care Pack	1st yr on-site, 2yrs C&R	2yrs on-site, 3rd RTB	1st yr on-site, 2yrs RTB

					
MESH COMPUTERS	NEC COMPUTERS	PANRIX	POLAR TECHNOLOGY	SIMPLY COMPUTERS	TIME COMPUTERS
MATRIX 1100T	DIRECTION SM-1000A	MAGNUM 1100W	PINNACLE 1100	SYSTEMAX P1000RV LIFESTYLE 0390	TIME MACHINE 1200-7 VQ PROFESSIONAL
£1,761.33 (£1,499)	£1,761.33 (£1,499)	£2,348.83 (£1,999)	£2,348.83 (£1,999)	£2,290.08 (£1,949)	£2,113.83 (£1,799)
020 8208 4706	0870 010 6322	0113 244 4958	0161 482 7000	08707 297 366	01282 777 555
<a href="http://www.meshcomputers.co.uk">www.meshcomputers.co.uk</a>	<a href="http://www.nec-online.co.uk">www.nec-online.co.uk</a>	<a href="http://www.panrix.com">www.panrix.com</a>	<a href="http://www.polartechnology.com">www.polartechnology.com</a>	<a href="http://www.simply.co.uk">www.simply.co.uk</a>	<a href="http://www.timecomputers.com">www.timecomputers.com</a>
Athlon 1.1GHz	Athlon 1GHz	Athlon 1.1GHz	Athlon 1.1GHz	Pentium III 1GHz	Athlon 1.2GHz
256MB/PC133	256MB/PC133	256MB/PC133	256MB/PC100	256MB/PC133	256MB/PC133
1/2	1/1	1/2	2/1	1/2	2/1
1.28GB	768	1.28GB	768MB	512MB	768MB
1.53GB	1GB	1.53GB	1.53GB	512MB	1.58GB
IBM Deskstar DTLA-307030	2 x NEC Telesio (IBM Deskstar DTLA -307045)	Maxtor DiamondMax Plus 40 54098H8	IBM Deskstar DTLA-307030	Maxtor DiamondMax Plus 40 54098H8	IBM Deskstar DTLA-307045
30.7GB/EIDE	46.1GB/EIDE	2x 40.9GB/EIDE (RAID ctrlr)	30.7GB/EIDE	40.9GB/EIDE	46.1GB/EIDE
Teac CD-W54E	LG CED-8080B	HP 9150i	Delta OME-W141 (CD-RW)	Plextor 12/10/32A Burnproof	LG CED-8080B
650MB	650MB	650MB (1xCD-R)	650MB	650MB (1xCD-R, 1xCD-RW)	650MB
Asus	MSI	Asus	Asus	Asus	Asus
A7V/VIA KT133	MS-6340/VIA KT133	A7V/VIA KT133	A7V/VIA KT133	CUSL2/815E	A7V/VIA KT133
3/3	2/5	4/3	5/2	4/3	4/3
1/1	0/2	1/1	3/0	2/1	2/1
4/0/1/0	2/0/1/0	4/0/1/0	4/0/1/0	5/0/1/1	4/0/1/0
2/0/1/0	0/0/1/0	2/0/0/0	2/0/1/0	1/0/1/1	2/0/1/0
5/2/1/2	3/2/1/2	5/2/1/2	4(5)/2/1/2	4(5)/1/1/2	4(5)/2/1/2
Pioneer/DVD-115	Pioneer/DVD-115	Pioneer/DVD-105s	Hitachi/GD-7500	Pioneer/DVD-105s	Pioneer/DVD-105s
16x/EIDE	16x/EIDE	16x/EIDE	12x/EIDE	16x/EIDE	16x/EIDE
Creative	Creative	Creative	VideoLogic	VideoLogic	Creative
SoundBlaster Live! 5.1 Player	SoundBlaster Live! Value	SoundBlaster Live! 5.1 Player	SonicFury	SonicFury	SoundBlaster Live! 1024
Creative Desktop Theatre 5.1 DTT2200	Labtec LCS-2632	Creative Desktop Theatre 5.1 DTT2200	VideoLogic DigiTheatre DTS	VideoLogic DigiTheatre LC	Creative FPS-1000
ATI Radeon 64MB DDR VIVO	Leadtek Winfast GeForce2 GTS	Hercules 3D Prophet II Ultra	Hercules 3D Prophet II GTS	AOpen GeForce2 GTS	Hercules 3D Prophet II GTS Pro
Radeon	nVidia GeForce2 GTS	nVidia GeForce2 Ultra	nVidia GeForce2 GTS	nVidia GeForce2 GTS	nVidia GeForce2 GTS Pro
64MB DDR SDRAM	32MB DDR SGRAM	64MB DDR SDRAM	32MB DDR SGRAM	32MB DDR SGRAM	64MB DDR SDRAM
Mitsubishi Diamond Pro 920	NEC VR19	Mitsubishi Diamond Plus 91	Mitsubishi Diamond Plus 91	CTX PR960F	Samsung SyncMaster 900NF
19in/18in	19in/18in	19in/18in	19in/18in	19in/18in	19in/18in
1,600 x 1,200 at 85Hz	1,600 x 1,200 at 85Hz	1,600 x 1,200 at 75Hz	1,600 x 1,200 at 75Hz	1,600 x 1,200 at 85Hz	1,600 x 1,200 at 85Hz
Conexant HCF V.90 56K PCI	Conexant soft K56	Diamond Supra Express 56i Pro VCC	Diamond SupraSST 56i Pro DF	Conexant HCF PCI	Etech 56k PCI modem PCI 56 MRXV
	Logitech Wingman Extreme Digital 3D joystick & USB webcam, Hauppauge WinTV USB	Promise Fast Trak UltraDMA100 RAID controller		Happauge WinTV DVB-S Digital Satellite TV tuner, Creative Webcam Go Plus, MS SideWinder Freestyle Pro	MS Force Feedback Pro joystick, headset mic, Agfa digital camera, SideWinder Force Feedback steering wheel
MS Works Suite 2000	Multimedia software pack, MS Works Suite 2000, 4 games	MS Works Suite 2000	MS Works Suite 2000	Lotus Smartsuite Millennium, games bundle	MS Works 2000, Standard, Exec and Premium software
1st yr on-site, 2yrs RTB	3yrs on-site (parts and labour)	1st yr on-site, 2yrs RTB	3yrs on-site	3yrs on-site	3yrs C&R



# Editor's Choice

It was pretty evident early on in this group test that the contenders were going to adopt one of two approaches, with some going for all out speed, while rest seemed a little more concerned with how many peripherals they were able to bundle with the PC.

What was interesting was the dominance of AMD with all but three systems sporting a processor from the company. Out of those three, two opted for Pentium IIIs and one chose the cutting-edge Pentium 4. In addition, Asus was very well represented with its DDR A7M266, CUSL2 and A7V motherboards present, the latter in no fewer than five of the 11 PCs.

On the graphics front, nVidia's GeForce2 chipset was clearly most suppliers' favourite, and was present in most of the offerings in its Ultra, Pro or GTS form. The amount of memory installed on the motherboard is always an influence on the overall speed of a system, and at this price point 256MB of PC133 memory was the *de facto* standard. It was therefore a surprise that the Compaq machine came with only 128MB.

Although it wasn't requested in our original invitation, it was nonetheless pleasing to see that every manufacturer chose to go with a means of removable storage. No Zip drives this time – the decision to opt for the humble CD-RW was unanimous. Some manufacturers even went for BurnProof drives that allow the user to make backups while completing other jobs.

Enhancing the variety, many systems

came with full Dolby Digital 5.1 surround sound capabilities, making a PC-based home cinema/music centre a real prospect. Hard drives also appeared at all sizes ranging from 30.7GB to an 80GB RAID system.

Ultimately, the decision had to come down to who could best combine top performance with a decent blend of quality components, while remaining below the £2,000 ex VAT ceiling.

## The winners

If speed is your ultimate goal, then you should look no further than the machine submitted by evesham.com. Winner of this month's overall **Editor's Choice** award, the **Origin 1200 DDR Ultra** also qualifies as the best all-rounder on test. With its Athlon processor clocked to an impressive 1.2GHz most of the competition was behind right from the start. Add to this the fact that the 256MB of PC2100 memory, and the processor, each run on the 266MHz FSB on the motherboard, and you're bound to have a system that shifts.

But it's not only about all-out speed, and evesham.com has really gone to town with supporting components. For starters the hard drive is a massive 60.5GB, and it's compatible with the UltraDMA100 standard. This can be backed up to CD while you work – with the help of the BurnProof Teac CD-RW. The GeForce2 Ultra coupled with the excellent 19in Diamond Plus 91 monitor can only be described as one of the best graphics solutions around. The sound system is also splendid offering true

Dolby Digital 5.1 surround sound. While other machines did come with similar components we believe that evesham.com's Origin has struck the right balance, and for £1,749 ex VAT you can't really argue.

Hot on its heels and winner of our first **Highly Commended** award comes the **Panrix Magnum 1100W**. What we liked about this system was they way it's been put together. It's a little more expensive than some but what you get for your money is a tidy system with a great case, ideal for cooling down today's hot processors. The 1.1GHz Athlon, 256MB of memory, and GeForce2 Ultra worked well together to put in a great performance in each benchmark. It also boasts a massive 80GB RAID array, that not only operates more efficiently, but will future-proof the system for some time to come. The monitor and sound system are the same quality products as in the Origin system.

Deciding on the final **Highly Commended** system proved to be the trickiest part of the test as the submissions from Time, Mesh and Atlas all proved to be worthy candidates. In the end the award had to go to the **Atlas Meridian A1100 CW** as it managed to eke out every last Hz from the 1.1GHz Athlon processor. So much so that it rivalled the faster 1.2GHz in the Time machine. As for 3D performance, the 64MB Hercules 3D Prophet lifted the Atlas Meridian to third place and with a decent price of £1,799 ex VAT the extra peripherals that the Atlas comes with make it even better value for money.



*evesham.com's Origin was the best all-rounder in terms of speed and components*



*Panrix is more expensive than others but you get a good system – and a RAID array*



*Atlas rivalled the faster 1.2GHz Time Machine and has great 3D performance*