



Sheer Power

Athlon has finally reached 1GHz.

Simon Williams

looks at two machines selling this new processor

If you want one of the fastest PCs on the planet, you can now have one for under £2,500. That figure in itself shows how things have progressed in the PC world. Five years ago, cutting-edge technology could well have set you back twice that.

When both AMD and Intel announced 1GHz processors, you might have assumed both chips would be available within a month or so. This is certainly true of the Athlon, though numbers are still restricted, but we found to our cost that Intel's 1GHz Pentium III is still some way from general availability.

Several OEMs we contacted tried to obtain chips for what was originally intended to be a head-to-head of commercial Athlon and PIII systems. None was successful and some were even told it would be next quarter before the chip was available for production systems.

So this is a review of two rival Athlon offerings, from Gateway and Panrix. The two suppliers have taken very different routes to designing their 1GHz Athlon machines. Gateway obviously sees the processor as the latest extension to a range of Athlons of increasing clock rate. As such it doesn't see the necessity of building in a lot of expensive bells and whistles and has decided to keep the price down instead.

Panrix, on the other hand, has positioned its machine as a luxury high-end system and has added in a lot of extras to keep the entire specification in line with the high performance – and high cost – of the processor.

Both approaches are valid, and it's useful to know that you can achieve roughly the same performance out of two machines at different price-points. You aren't paying just for high throughput by buying a fast processor. There are other variables which affect the overall usefulness of the machine, including facilities for connecting other equipment and making the PC the centre of a sound or video system.

Now here's a thing. A PC from Gateway with one of the world's fastest processors on-board, but with 17-inch monitor and a graphics card which you would hardly call state-of-the-art. An interesting concept, especially if money is a bit tight.

Performance was surprisingly good, though. The SYSmark benchmark outscored the Panrix by a margin of nearly six per cent, coming in with a PC Plus Index of 11.59. However, this was still lower than Dell's Dimension XPS B1000r SE, tested last month.

Overall, this is a good way to buy some of the latest PC technology in a workaday but well configured PC

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ON TRIAL

Faster memory

One of the main innovations due to come in this year is the use of 133MHz memory, rather than the 100MHz devices we've been using for the last few years. As the numbers suggest, it is possible to read from and write to PC133

memory a third faster than PC100. So a PC133 machine should run a third faster, shouldn't it?

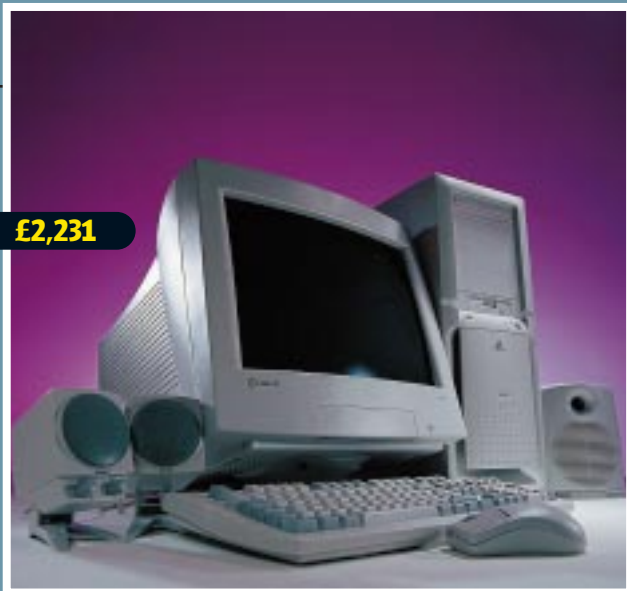
As always, it's not quite as easy as this. The main reason is cache. Even at 133MHz, main memory is still very slow, with a 1GHz processor running

7.5 times as fast. To cope with this, most processors have 256K or 512K of cache memory, an intermediary store running much faster than main memory and built into the chip's die. In current 1GHz Athlons, the cache runs at 333MHz, though the new Thunderbird chips – out later this year – will have it running at a full 1GHz.

Many tasks the processor is required to do require the same data

as previous tasks. If the data is still in the cache, the processor uses that rather than fetching it again from main memory. This is a lot quicker, but means that increases in the speed of main memory have less affect on the overall speed of a PC than you'd think. Current estimates expect a performance increase of around 10 per cent for the 100MHz to 133MHz upgrade.

£2,231



GATEWAY SELECT 1000

Gateway's stripped down 1GHz Select has a fine turn of speed and is designed not to cost the earth

■ PRICE £2,231 ■ EX VAT £1,899 ■ SUPPLIER Gateway ■ PHONE 07000 285275 ■ WWW www.gateway.com

Gateway's Select 1000 uses a standard midi tower case, which holds a fairly standard DVD drive and a less standard, but very welcome, LS-120 Superdisk. This is one of the double-speed versions, which offers faster reading of 120MB and floppy disks alike. Unfortunately, no disks are included, which is a bit stingy of Gateway, given the asking price.

Inside, there's a 19.1GB Western Digital hard drive to complete a good balance of local storage. The 1GHz Athlon processor is cooled by a small fan on the heatsink and a large one fitted to the rear panel of the case. The unhelpful AMI BIOS says little about processor or memory, but a label on the single 128MB SDRAM module proclaims it 100MHz. This also sells the processor short, since the AMD chipset on the system board can support PC133 memory.

There are five PCI expansion slots on the system, with three available for upgrades. The other two contain an unnamed V90 hardware modem and a Creative SoundBlaster Live! Value card. This runs a trio of Altec Lansing speakers which give well balanced sound and are capable of high sound levels, but aren't by any means top of the range devices.

Gateway has fitted a generic graphics adaptor, partnering an nVidia Riva TNT 2 with 32MB of memory. While the Riva TNT 2 is a good video chip, it's more appropriate these days to the budget end of the market. More recent releases, particularly nVidia's own GeForce 256 chip, are considerably faster than the Riva when handling 3D scenes.

PC Plus

VERDICT

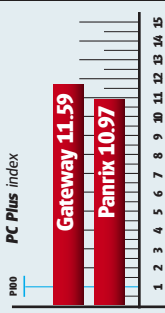
GATEWAY SELECT 1000

System unit	8
Keyboard & mouse	8
Video system	9
Performance	7
Bundles & warranty	8
Value for money	7

8/10

PC PLUS INDEX RESULTS

	GATEWAY	PANRIX
SYSMARK 98 RESULTS		
Office Productivity	318	276
Content Creation	361	383
MMARK/3DMARK RESULTS		
MultimediaMark	2,018	2,106
3DMark 640 x 480 x 32-bit	6,832	5,879
OTHER PERFORMANCE RESULTS		
MM Video Playback	558	631
MM Image Processing	2,706	2,763
3DM 1,024 x 768 x 16-bit	5,487	7,452
CDTach	22.1x	Wouldn't run



£2,873



PANRIX MAGNUM MAX 1G

Panrix has surround the 1GHz Athlon in its Magnum MAX 1G with cutting-edge everything

■ PRICE £2,873 ■ EX VAT £2,445 ■ SUPPLIER Panrix ■ PHONE 0113 244 4958 ■ WWW www.panrix.com

The Magnum MAX 1G isn't a cheap machine, but Panrix has made efforts to match the processor to other top-rank components. It's built into one of the company's wider than normal midi tower cases and uses a combined DVD and CD-RW drive in the top drive bay to provide just about any kind of CD playback or recording.

There's a standard floppy drive below the combined drive and inside is a massive 38.1GB Maxtor hard drive. The 1GHz Athlon is well supported with memory, too, with a more than generous 256MB. Unlike Gateway, Panrix fits 133MHz memory, so you may see a performance boost there. However, the bandwidth of even 100MHz memory doesn't cause a bottleneck in most PC applications, so the current push for PC133 memory and Rambus will not show much benefit. Even if you're using the machine for heavyweight applications like video editing, you should have few problems with the 100MHz memory.

The processor is again cooled by a substantial extra fan on the back panel of the PC and the processor grew barely warm during tests. Two of the five PCI expansion slots were filled by a Diamond Supra V90 modem and another SoundBlaster Live! card, though this time the Platinum version. This card comes with a front panel which fits in a spare drive bay and provides all manner of audio I/O sockets – ideal for the music or audio experimenter. Sound runs to a set of Desktop Theatre 5.1 speakers, offering six channel sound and full Dolby Pro Logic decoding.

Panrix fitted a 3D Prophet DDR graphics adapter, which gives excellent video performance alongside a 19-inch Mitsubishi Diamond Plus 9I monitor. This flat-screen display gives a geometrically accurate picture, with virtually no visible distortion and high contrast.

Performance from the Magnum MAX 1G was very strong, notably better in 3D aspects than the Gateway but not as fast on the straight SYSmark average. The 3DMark results were particularly impressive, but the PC Plus Index of 10.97 wasn't that strong for the specification.

The only real let down with the Magnum Max G is the copy of Microsoft Works 2000 included with the system. At this price you really should be seeing some variety of Microsoft Office. Even so, this is a superb machine, opening up a lot of possibilities for creative work or leisure activities.

PC Plus

VERDICT

PANRIX MAGNUM MAX 1G

System unit	10
Keyboard & mouse	10
Video system	10
Performance	8
Bundles & warranty	8
Value for money	7

9/10



PC Plus Verdict

These two PCs are each, in their own way, worthy of recommendation – until we see some more machines

SIMON SAYS

MHz vs GHz

Just to keep a sense of realism about it all, what will a processor obeying a billion instructions a second do that one obeying 500 million won't?

In the last week, three people have asked me what PC they should buy. To each I've asked, in a boring consultancy kind of way 'What do you want to use it for?' and each has replied, 'Oh, general office work and correspondence'. None of them seemed impressed when I said 'A 500MHz Celeron should do you nicely. They all looked faintly

disappointed and not a little sceptical.

Perhaps it's my fault, in part. When reviewing the latest processor release or a do-it-all wizzy PC, it's easy to get excited with all the numbers and to be impressed by the Ferrari effect. Looking at machines, whether with four wheels and several hundred BHP under the bonnet or with 40GB hard drives and 1GHz processors, it's sometimes hard to hide my lolling tongue or glazed look of devotion.

I don't use one myself, though. Until recently, I wrote on a 300MHz K6-II and only upgraded because I was offered new bits at a foolish price. At no time on the old system was my writing held up by the PC. I suspect it's the same for most of you.

Of course it's fun to look at the latest technology and decide on its benefits, and that's one of the aspects of all technology magazines. And with PCs,

there are tasks where you can never get enough processing power.

If you edit video, for example, shifting recordings in and out of memory and storing them on hard drive, you have a legitimate use for a 1GHz processor.

If you are setting out to host a Web site offering MP3 files to the masses, there's a good excuse for having banks of fast UDMA 66 or Ultra SCSI 160 hard drives to service it.

If you're a game demon who must play the latest 3D marvel the day it's released, you may justify a graphics accelerator with a processor and memory that out-specifies the total computing power of Lesotho. For the most part, though, you should think long and hard about the specification of the PC you actually need. If you over-specify a PC, you won't gain a lot that's noticeable, but you will lose – money.



BEST BUY – VALUE

SELECT 1000

PRICE £2,231 EX VAT £1,899 SUPPLIER Gateway PHONE 07000 285275 WWW www.gateway.com

Gateway's Select 1000 is a machine built for performance, but more as a TVR than a Jag. This is the lean cut sports car rather than the luxury grand tourer. It has most of the things you want in a high-performance machine, but without the instructions to fasten your belt in five languages.

Gateway's Select 1000 could just as well have been mentioned as another Performance Best Buy. Its SYSmark results were better than from the Panrix, but Gateway's odd decision to use a Riva TNT2 graphics card brought down its overall 3D performance in the way we expected.

Still, this is obviously a machine built to take advantage of the latest in performance processors, without breaking the bank. We'd have like to see it come it at just under £2,000, but even at £2,231 there's enough here to consider the overall package as good value.



BEST BUY – PERFORMANCE

MAGNUM MAX 1G

PRICE £2,873 EX VAT £2,445 SUPPLIER Panrix PHONE 0113 244 4958 WWW www.panrix.com

Panrix's Magnum MAX 1G is a machine you can show off to your friends. In the same way you might spend an extra hour cleaning a new S-Type Jag on your front drive (we wish!), you'll want to show off what this machine looks like and can do. Fitted with all the extras, like 256Mb of 133MHz memory, a hard drive of nearly 30GB – enough to record a day's TV in MPEG 2 – and a superb 19-inch flat face monitor, it has the power and equipment to do a lot.

Although the straight application benchmark may not have been a top scorer, a high resolution 3Dmark result of nearly 7,500 shows the real muscle lies in 3D graphics. With an excellent graphics system and a well balanced sound card and speakers, you can use the Magnum MAX for nearly anything and expect good performance.



PC PLUS PRODUCT FACTS

	Select 1000	Magnum MAX 1G
Supplier	Gateway	Panrix
Supplier type	Direct	Direct
Telephone number	07000 285275	0113 244 4958
Price	£2,231 (£1,899 ex VAT)	£2,873 (£2,445 ex VAT)
Warranty	1 year on-site + 2 back to base	1 year on-site + 2 back to base
Delivery charge	£41	£29
Credit card surcharge	None	2%
Proc. type – Speed (MHz)	Athlon – 1,000	Athlon – 1,000
Chipset – Bus speed (MHz)	AMD – 100	VIA – 133
Supplied memory (Mb)	128	256
Maximum memory (Mb)	1,500	1,500
Secondary cache (K)	512	512
Hard drive capacity (Gb)	19.1	38.1
Hard drive make	Western Digital	Maxtor
CD-ROM make – speed	Toshiba DVD – x10	Ricoh DVD/CD-RW – x10
Other drives and devices	LS-120, V90 h/w modem	Floppy, Diamond Supra V90, 2 extra USB sockets
ISA Expansion slots – free	0	0
PCI Exp slots – free, AGP	5 – 3, 1	5 – 3, 1
Monitor	Gateway EV700	Diamond Plus 9i
quoted diagonal (in)	17	19
measured diagonal (in)	16.00	18.25
dot pitch (mm)	0.28	0.25
Video adapter	nVidia Riva TNT2	Hercules 3DProphet
Video memory (Mb)	32	32DDR
Serial ports	2 x 9, 2 x USB	2 x 9, 4 x USB
Parallel	1	1
Make of mouse	MS Intellimouse	MS Imouse Explorer
Operating system	Windows 98 SE	Windows 98 SE
Bundled software	MS Works Suite 2000, DVD/modem/ sound utils	MS Works 2000, DVD – CD-RW/modem/ sound utils
Sound card	Creative SB Live! Value	Creative SB Live! Platinum
Speakers	Boston BA735	Desktop Theatre 5.1
BIOS make	AMI	Award
Power – Suspended (W)	190 – 55	245 – 137
Faults as supplied	None	None
	8/10	9/10