
Benchmarking Software And Resources

There are various benchmarking software tools available which claim to be able to judge the relative performance of two or more workstations or servers. But just how reliable is this type of software?

By Phil Morris
Technical Writer

Benchmarks can be a very contentious issue. When buying a new PC, server or component, the buyer will often examine some reviews and compare benchmarks with other similarly specified competing models. The problem is that a reviewer in one magazine who is reviewing server A might use one well-known benchmark program, while a review of server B in another magazine might very well use another. Hopefully the benchmark software that was used will be mentioned, but this isn't even always the case.

Even when the same programs are utilised the results can still be very misleading, as some benchmarking software can inadvertently (or otherwise) favour one type of hardware over another. This can be especially noticeable when comparing benchmarks for video cards.

Benchmarking software has been around for quite some time but over the past few years has taken on a more prominent role in the selling of new workstations and servers. The software has certainly evolved greatly over the years. Early benchmarks consisted of running simple PRINT "HELLO WORLD" loops in interpreted GWBASIC in order to compare the performance of 2 PCs. Nowadays, thankfully, benchmarks tend to measure the time taken to complete real-world tasks.

The rapid development in benchmarking software is undoubtedly due to the rapid acceleration of hardware development with new processors, video cards, hard disk drives and the like seemingly coming out at an ever increasing rate. This can cause much consternation to someone wishing to purchase new hardware so it is natural that the potential buyer will turn to whichever source of figures is most readily available. People like numbers, as they are easy to read and look especially good on a page when drawn as coloured bar charts.

This article lists some of the more popular system and component benchmark tools and discusses whether they really are useful when purchasing servers and other hardware. You may also have a requirement to test existing installed systems, so downloading/purchasing these tools might also prove beneficial.

Video Benchmarking

In the home PC domain possibly the most used and referred to program for analysing the performance of video cards is a game - Quake III Arena. Naturally there are other programs to do this job, but games are often useful because they need to squeeze more performance from a video subsystem than the average network application does. And Quake helpfully has an option which displays the number of frames per second that it has achieved under the current configuration. However, with the widespread adoption of technology such as videoconferencing and animated presentations, it is no longer the case that video performance doesn't matter in the office as much as it does on home machines.

Of course there are also plenty more serious programs designed for this task, some of which are designed just for video benchmarking, with others aimed at measuring hardware components besides just the video, for example the CPU performance, hard disk drive data access times, memory speed, and so on.

BAPCo (Business Applications Performance Corporation) is one of the leading producers of benchmark tools and is responsible for, amongst others, the free Video2000 product (and the Pro version which has extra features and which is not free). This is designed to test the cards' video stream pipeline for such applications

as NetMeeting, video editing and DVD playback. Not only does it measure the aforementioned performance and features of a video card, but it also features tests which allow the image quality of the card to be analysed.

Today the world of video cards is dominated by adapters with 3D capabilities and as a result of this many of the test programs are geared towards testing this side of things, so naturally many of the programs are aimed squarely at the games-purchasing crowd. Don't let this put you off though, as the test results will still be beneficial if the PC is to be used for 3D related work. One example of such a program for video testing is 3DMark2001 (also from BAPCo), which is available as a free download. BAPCo is allied with MadOnion.com - for further information on 3DMark2001, see the Resources box below. 3D WinBench is another well known 3D video card analyser which is available as a free download from ZDNet. It is, though, only designed for use under Windows 98 and 2000.

CPU Benchmarking

In the realms of CPU benchmarks, once again the ubiquitous Quake III Arena takes a prominent role in a good number of reviews. Although this may seem unprofessional, to a certain extent that doesn't matter. Most important in benchmarking is for all systems under test to be evaluated with the same software. Again, for those requiring results from a more serious source there are a number of available programs. One is SysMark2001 from BAPCo (also responsible for the aforementioned Video2000 and 3DMark2001 products). It is designed as an overall system tester so can be used in many test/benchmarking environments, but this doesn't stop it (and its earlier incarnation, SysMark2000) from being one of the most commonly used references for CPU benchmarks. It is not available as a free download.

PassMark Software produces a few system tools. For CPU testing, the one we are interested in is PassMark PerformanceTest (see Figure 1). Various system baseline results can be displayed which the tested PC can be judged against. The product is available to download for a 30-day evaluation period after which it must be registered. Another popular tool used for performance testing is SiSoftware Sandra (more commonly referred to as SiSoft Sandra, Sandra being an abbreviation for System ANalyser, Diagnostic and Reporting Assistant). The standard version is available as a free download with the Pro version available to purchase. It is designed more as a diagnostic and information tool, but that hasn't stopped it from being used a lot for benchmarking purposes (see Figure 2).

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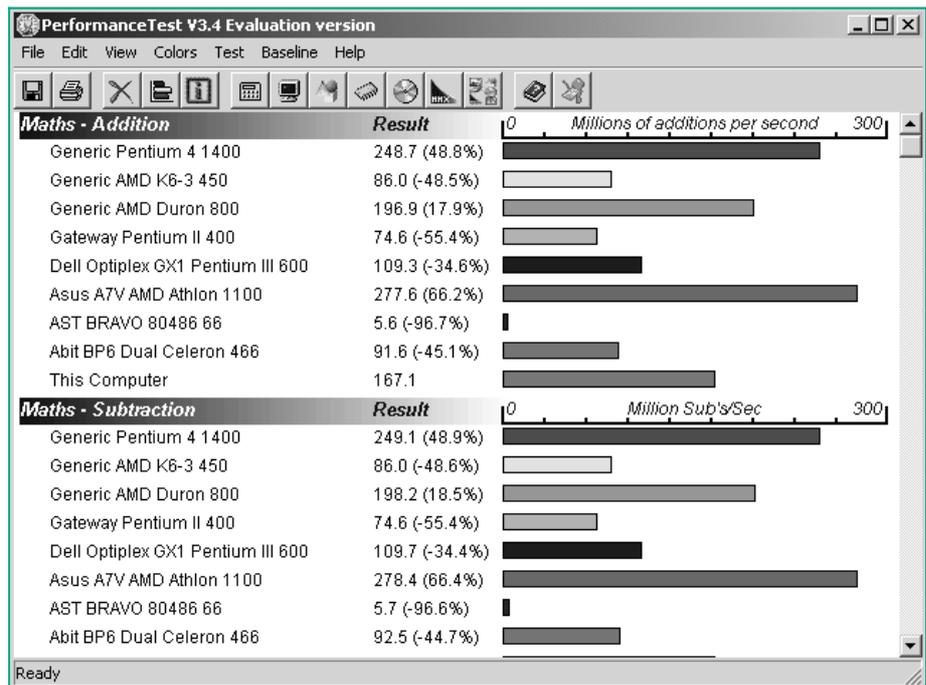
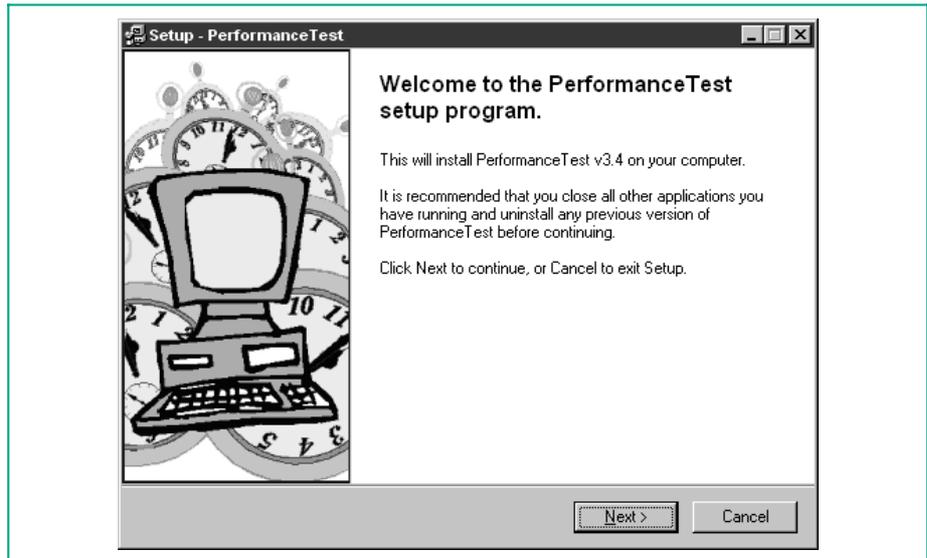


Figure 1 - PassMark PerformanceTest.



Resources

Video2000
labpro.madonion.com/products/video2000

3Dmark2001
labpro.madonion.com/products/3dmark2001

Various useful tools
www.benchmarkhq.ru/english.html

PassMark
www.passmark.com/products/pt.htm

SiSoft Sandra
www.sissoftware.demon.co.uk/sandra/

Benchmark Studio
www.csaresearch.com/bstudio.htm

ZDNet assorted tools
www.zdnet.com/etestinglabs/filters/benchmarks

i-Bench
i-bench.zdnet.com/ibench/i-bench.htm

Benchmark Databases
www.cpuscorecard.com/benchmarks2.htm

Intel's iComp
www.intel.com/procs/perf/icompile/index.htm

Tom's Hardware
www.tomshardware.com

ing decisions? As with everything in the computer industry, that depends on a number of factors. For one, benchmarking software can be tailored to favour one particular product over another, either unwittingly or otherwise. Just because processor A obtains a better benchmark than processor B from a rival manufacturer doesn't necessarily mean that processor A is any better, even though both might both share a number of common features such as the clock rate.

The microarchitecture of processors varies widely, with manufacturers using many tricks and advanced techniques in order to squeeze out every last drop of power while at the same time ensuring that the silicon doesn't run so hot that it self-destructs in a short space of time. One particular part of a processor benchmark test might hammer one element of a processor's design and obtain relatively bad results, yet might obtain far better results from its competitor for the same test. This doesn't mean to say one processor is better though as it might excel at other tests. This rule especially applies to video cards - such is the diversification in the way that the chips throw textures and polygons at the screen that it is all too easy for one test to come out strongly in favour of one card that, overall, isn't necessarily faster than its rivals.

One particular area where benchmarks must be closely scrutinised is that concerning servers. An overall test result for one server compared to another of a similar specification isn't necessarily going to reveal all that much. Both servers for example will probably use a totally different motherboard, video card/chipset, hard drive controller(s), hard drive(s), CD-ROM drives, RAM type and speed and possibly even processors. In this case it is best to study benchmarks for individual components, with special note taken of the use the server is to be put to. If for example it is to be used primarily for storage of a large central database then the benchmark of the hard drive system will play a large role alongside that of memory capacity. If the machine scores badly on video performance, this is unlikely to matter at all.

The use to which the hardware is to ultimately be put should be uppermost in the mind when calculating benchmarks for a product. Even then, it rarely pays to use a benchmark figure as a deciding factor when making a purchase, however impartial the benchmarking software might be and however tempting it may be to seek an easy way to evaluate machines against each other. There are simply too many factors which can sway the result. The best option is to use benchmarks as a guide only, perhaps in order to produce a shortlist of products which can then be evaluated in real conditions.

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