

## Re: Dedicated CAD computer?

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- *From:* Stephan Rose <[kermos@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:kermos@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Sun, 16 Jul 2006 17:50:41 +0200
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On Sun, 16 Jul 2006 04:30:31 GMT, "Brad Velandar"  
<[bveland@xxxxxxxxxxxxxx](mailto:bveland@xxxxxxxxxxxxxx)> wrote:

Howdy Mike,  
So you are liking AD6.

One suggestion regarding your faults/GPF faults. Years ago any number of P99SE users were getting numbers of crashes and faults. After much discussion, trials and testing, the problems were generally eliminated by one of two things. Rigorous memory testing (long periods of in-depth pattern testing) showed intermittent faults. Also video cards were the cause of a lot of the faults. The guys either updated video drivers or bought other video cards. Those two solutions have always seemed to relieve the problems for most Altium/Protel users.

To assist in your quest you could check the Altium user forum, I know that not that long back (maybe 3 or 4 weeks max) there was a similar discussion when someone asked the same question regarding what was a good machine for running AD6. I believe that a significant number of the responses were running Nvidia Quattro 4400 video cards (don't quote me on that though).

As Stephan mentioned, don't bother with a dual core processor because AD6 definitely doesn't use it and probably never will. Some users were even turning off their dual core capabilities through their Bios and claiming improvements in speed. I don't know if that makes sense or not, but that is what they claimed.

It actually does make sense. When Dual Core is enabled there is additional overhead required to distribute the workload across the two cores, whichever way you slice it and dice it, this requires additional CPU time.

Now if you have multiple tasks running in parallel then this overhead is irrelevant because the benefits by far outweigh it.

But in case of a single threaded app the other core sits there idle

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while you still have the overhead to check and see if there is something that the other core could do (and the answer is always no). So this time ends up wasted slowing the app down.

Sadly from a programming perspective, multithreading is "difficult" to implement for someone that's been writing single threaded all their life. There are many things that need to be taken into consideration that you just don't need to worry about when writing single threaded apps (deadlocks for example) and it's easy to make a mistake.

In addition to that algorithms also need to be written very differently to be able to even take advantage of multi threading.

My EDA app actually is multi threaded where it makes sense to do so such as my rendering loop for PCB Boards. The rendering loop is setup to distribute the workload across all available CPUs (in case of hyperthreading, dual core, or multiple CPUs) and both threads load the GPU with video data in parallel as well. Allows me to render a board with almost 20,000 objects (lines, vias, pads, text, etc.) including all necessary triangulation resulting in almost 100k triangles in less than 90ms. Layer sorting included (done via hardware z-buffering).

I only worry about this though to that extend for the PCB rendering pipeline. Pattern editor, symbol editor, and schematic capture all run single threaded as I've yet to come across a data set that requires me to get that fancy =)

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Stephan  
2003 Yamaha R6

kimi no koto omoidasu hi  
nante nai no wa  
kimi no koto wasureta toki ga nai kara  
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