What are dual core processor's?

Dual Core processor's for dummies, explained.

When talking to a customer about building a new computer, the question often comes up "What's the difference between a single core and a dual core processor?". Lately the talk in geek circles has been about multiple core processor's and which is the best. But to the average consumer, that geek speak tends to fly way over their head and they are left right back at the beginning not knowing any more then they did when they started.

So with the help of Wikipedia (the best free online encyclopedia on the net) I hope to be able to break down for you in simple terms what a dual core processor really is.

To put it very very simply, a dual core processor is basically two micro processors in one package. Since the first PC was introduced to the public all those years ago, it has been driven by one very important piece, the Central Processing Unit or CPU. Since the beginning they always contained one single microprocessor . Then in 2003 AMD introduced the dual core Operton processor for servers. The geek world exploded and the computer world started to shift. By 2005 everything you heard about processors was usually about dual core technology. Today a new home desktop or laptop with a dual core processor can be purchased for hundreds less then when they were first introduced.

But what does a dual core processor do for you? Is it even worth it, or is it just a bunch of hoopla designed to sell more products? Well yes and no. While dual core processor technology has the potential to do great things, the software companies have been slow to write new programs that can utilize dual core technology to it's fullest (to explain that further would mean to have to use a whole bunch of geek speak that would either loose you or bore you in less then one paragraph). It's not that they don't want to utilize this new technology, but the process for which they have to write the programs is much more detailed and time tasking.

What this means is that, when you open up Outlook 2003 on your computer, you may not see any serious improved response times as Outlook 2003 even with it's current updates is not a program that has been written for a dual core system.

So how will a dual core processor benefit you?

From Wikipedia.com

"As of September 2006, with the typical mix of mass-market applications **the main benefit to an ordinary user** from a multi-core CPU will be improved multitasking performance, which may apply more often than expected. Ordinary users are already running many threads; operating systems utilize multiple threads, as well as antivirus programs and other 'background processes' including audio and video controls. The largest boost in performance will likely be noticed in improved response time while running CPU-intensive processes, like antivirus scans, defragmenting, ripping/burning media (requiring file conversion), or searching for folders. Example: if the automatic virus scan initiates while a movie is being watched, the movie is far less likely to lag, as the antivirus program will be assigned to a different processor than the processor running the movie playback."

Does that make any sense to you? What that one paragraph is really saying, that while just running a single program like Outlook 2003 may not see the benefits of a dual core processor, running Outlook 2003 with virus scanning turned on, playing music, and browsing the internet all at the same time will. Like the paragraph from Wikipedia said, most modern computers tend to use multiple programs at one time regardless if the user knows it or not. Don't believe me? Take a look down at the bottom right of your screen next to your system clock. How many little icons are next to the clock? Each one of those little icons represents a program running on your system. The more of those little icons you see, in combination with what ever you currently see right now (most likely Internet Explorer or Firefox), the more processing power it is using. The more microprocessors you have then the more information you can handle at one time, thus making your programs run a bit faster and better.

Which processors are dual core processors?

When shopping for a computer one thing that always stands out on the info sheet is the processor. Chances are it is manufactured by Intel or AMD. You see various models from the Pentium to the Athlon to the Celeron, to the Core 2 Duo. What's the difference in all of those brands and how do you know which one is a dual core? Well with the ever constantly changing world of computers, the list I am going to give you now will most likely be outdated with in a few months, but regardless I'll give it a shot.

Note – This list does not contain every processor known, just the most popular consumer products that you are most likely to see when shopping around).

Single Core Processors:

Intel Celeron (Entry Level)
AMD Sempron (Entry Level)
Intel Pentium 4 (Probably the most well known single core processor ever)
AMD Athlon (Considered by many to be the best single core processor on the market)

Dual Core Processors:

Intel Pentium D
AMD Athlon X2
Intel Core 2 Duo (Considered by most to be the best dual core processor on the market)
AMD Athlon FX
AMD Turion X2 (For laptops)
Intel Centrino Duo (For laptops)

Each of the above processors comes in multiple speeds and models. There are also the Core 2 Extremes and other processors made for high end gamers and computer enthusiast.

One thing you will almost always see is the GHZ speed or Gigahertz speed of the processor. I will admit it, anymore today the GHZ speed of a processor is mostly a gimmick to help sell the processor. While in the past (prior to 2003) the GHZ speed was important to determine how fast and how well the processor would work, today the speed is not nearly as important has how much information the processor can handle at once. This is usually measured in the form of the L2 cache and other geek terms. But without a standardized way of measuring a processors ability in simple terms that the average consumer can understand, we are all still stuck with displaying the obsolete GHZ speed. However that may actually be changing very soon.

While for the past few years the GHZ speeds really didn't matter, Intel and AMD are both attempting to push their new model processors as far as they can, thus increasing the GHZ speeds enough so that it actually does make a bit of a difference. However these new processors won't really be available until Q4 07 at the earliest. As it is, for top of the line processors like the Core 2 Duo and the Athlon FX, ghz speeds are usually a lot slower, usually in the 1.8 to 2.8 ghz range. This is because to push them any faster would require much more power and thus generate a lot more heat causing the system to actually run slower (because heat is not a good friend of a computer or electronics in general).

Before I leave you I should also note that geek circles are now all buzzing about Quad Core. Yup you guessed it, 4 microprocessors on one dye. It's basically the same thing as dual core but with more microprocessors.

If you would like more information about dual core processors and what exactly all the specific details are, I suggest the page from Wikipedia.com. A quick search on Google will also bring you tons of information that if you are truly interested, you could spend days reading. Trust me when I tell you, that what I have explained here is just the very basics.

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