Subject: Re: OT: recommendations for high preformance workstations
Posted by Nigel Wade on Mon, 14 May 2007 08:29:08 GMT
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Mirko wrote:

> I've been going "backwards" in my thinking lately. For my particular
> application, I need two CPU's/cores with about 8-12GB of RAM.
>
> What I find interesting is that my current desktop has two 3.6GHz
> single core Xeon processors. and 2GB or RAM. Intel's latest dual core
> offering is 3GHz.
>
> So, my current workstation with two separate CPU's is faster than a
> dual core Xeon.

It has a faster clock. If that is your only measure of "speed" then, yes, it's faster...

> (Unless the chip architecture is so radically
> different that the 3GHz dual core outperforms two 3.6GHz single cores.
> (I am neglecting bus speed and topology here).
>

If you want the full picture you need to run benchmarks. Published benchmarks can give you an indication of how different systems handle various types of application. Probably the best overall is SPEC http://www.spec.org/benchmarks.html. There are results there for hundreds of systems containing various processors/cores and memory configurations. Look through the lists of systems and compare how the CPUs you are interested in compare. It is not just a case of "biggest is best" in terms of raw GHz as different CPU architectures get different throughput at the same core speed. Also, there is no benefit in having a multi-core/multi-CPU system running several parallel processes on a system with badly designed memory access, or all attempting to read data from the same disk, so that the CPUs/cores are starved of work.

The SPEC marks consist of 4 basic sets of tests. SPECint, SPECfp, SPECint_rate and SPECfp_rate. The int/fp compare the basic integer and floating point speed of a single processor/core, whilst the int_rate and fp_rate compare how well the system handles multiple processes/threads for multi-processor/core systems. Be careful when comparing rates between systems as multiple processors/cores are used in these tests, so you need to check each benchmark to find out how many of each were used.

Within each benchmark there a many different tests run. If you look in detail at the individual tests you might find one which is similar to the type of work

you intend to do. If there is then concentrating on that test, or at least giving it significant weight over other tests, might give you a good handle on how well different architectures will work for you.

But there is no better benchmark than your code.

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