Re: [OT?] MHz vs. MIPS in processors

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Date: 06/30/04

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"Chaos Master" <chaosmater@pop.com.br.INVALID> wrote in message
news:MPG.1b4adb3f84b209e7989bad@130.133.1.4...

> > : Q: For someone new in the area, what is the biggest difference between
telling
> > : processor speeds in MIPS and in MHz?
> >
> > The biggest difference is that MHz is a real quantifiable value of clock
> > speed, MIPS is a highly subjective marketing fluff word of little value.
>
> I always thought that MIPS = MHz or something like, so I sometimes said
that a
> 1GHz Pentium III processor was 1000 MIPS. Now things make more sense :P

Only if the processor in question executes, on average, one instruction per clock cycle. That's not the norm, and in fact there is no fixed number of clock cycles required per instruction that applies to all processor architectures − so there's no equating MIPS and MHz.

Having said that, though, the notion that "MHz is a real quantifiable value of clock speed," as if that alone told you something about the relative performance of various processors, is equally nonsensical. You can compare performance by looking at clock speeds alone ONLY if the processors in question have basically identical architectures − but not in general. For instance, suppose we have one processor which on average requires four clock cycles to complete an instruction, while another requires only two. Further assuming that the instruction sets of the two are comparable (in simple terms, you "get as much done" per instruction, on average, between the two), then the second processor at 2 GHz will outperform the first at 3 GHz. So...it ain't that simple. And you definitely don't have anything to brag about if you look at clock rates alone.

This whole situation is what leads to performance benchmark testing, in which programs are written to simulate the sort of real− world tasks that the processor will be called upon to do. You

run these benchmarks on the processors you want to compare,
and the one which finishes the job first is the higher−performance
processor. Simple, and not as subject to marketing spin as the
more−simplistic MIPS or MHz numbers alone.

Bob M.