

# *Information Technology*

## **Core Wars!**

In the summer of 2004, Intel quietly dropped plans to release a 4.0GHz Pentium 4 processor, ending a decades-long Mega/Giga Hertz race. The reason? Heat: the fastest Pentium 4s consume 115 watts, most of which ends up as heat. (Think of a 100-watt light bulb half the size of your thumbnail.) 115 watts is a lot of power – AMD processors use half that, and a whole laptop much less. Anticipating this problem years ago, Intel devised Plan B, bringing us the most interesting technology changes in desktop computers in 5 years. Hang on, everybody: here come the Core Wars!

(Warning – mildly technical discussion follows.) Today's desktop PCs have a single processor chip, containing one processor core, which executes program instructions, L1 and L2 cache memory, and support circuitry. Until now, Intel's approach to increasing performance has been to run the chips faster and add more cache; hence the heat problem.

The new approach is to run the chips at a slightly lower speed and add another processor core, so that two programs can be running simultaneously. While not as fast as having two complete processors, it's much less expensive. Dual-core chips are appearing in high-end machines now and will migrate down over the next year. If you think computer descriptions are confusing now, it's about to get worse. Processors used to be named by family and speed: 2.8GHz Pentium 4. Now they have model names, too: Pentium 4 520 with HT (2.8GHz). The dual-core processors have 8xx model names, but the 5xx models aren't disappearing.

Confused yet? Here's more: AMD, the other major processor maker, introduced its 64-bit processors two years ago. Without 64-bit software, there hasn't been much benefit, but Windows XP Professional and Server 2003 now fully support 64-bits, and as applications are updated, performance will increase. The new Intel processors are compatible with AMD's 64-bit implementation. Of course, AMD is also introducing dual-core processors. (End technical discussion.)

Over the next several months, expect a lot of hot air about the merits of 64-bit and dual cores. I've dubbed it "Core Wars". So, what's a confused business owner to do? Should you buy now or wait? As I've said before, analyze your needs, talk to your IT consultants, and focus on maximizing the value of your investment.

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