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Gauging Quad-Core's Effect on the Enterprise

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Intel, trying to jump back in front with a quad-core product by the end of the year, and AMD, working to provide a quad-core response of its own, may be ahead of a market that does not yet have quad-core software or support. However, the chip makers must get the new technology into the market so users and testers can get familiar with it, says Semico Research Chief of Technology Tony Massimini.

Just as dual-core processor technology is making its way into mainstream enterprise IT environments, [AMD](#) (NYSE: AMD) and [Intel](#) (Nasdaq: INTC) and [Sun Microsystems](#) (Nasdaq: SUNW) are pushing for even more processor cores. Quad-core processing is on the way.

The market is ready for this cutting-edge technology, though, thanks to IT architectures, servers and applications that are already parallel and multithreaded.

In fact, parallel applications are the first target for quad-core, said [Appro](#) Director of Sales Anthony Kenisky, whose company enables high-performance computing (HPC) for enterprises. "It's very easy to adopt and take advantage of each of the cores," he told TechNewsWorld.

Instant Gratification

HPC customers will immediately see dramatic performance increases accompanied by negligible increases in [power consumption](#) with quad-core processing, according to Kenisky.

"The power, density and performance are all addressed, and what you end up with is performance per square foot that is incredible," he said. A typical Appro server rack

jumps from .68 teraflops (trillion floating operations per second) per rack with dual-core to 4 teraflops per rack with quad-core technology.

Today's multitasking IT environments are ripe for quad-core technology and will likely embrace the gains right away, Insight64 Principal Analyst Nathan Brookwood told TechNewsWorld.

"Users will benefit as soon as it's available," he said, referring to multithreading and concurrent applications. "Servers are ready for this today."

Quad-Core Start

[Intel](#), trying to jump back in front with a quad-core product by the end of the year, and AMD, working to provide a quad-core response of its own, may be ahead of a market that does not yet have quad-core software or support.

However, the chip makers must get the new technology into the market so users and testers can get familiar with it, Semico Research Chief of Technology Tony Massimini told TechNewsWorld.

"They have to get the stuff out there for people to work on it," he said. "They need to get it into people's hands."

There will probably be little uptake of quad-core technology next year, but a pickup is likely in 2008, predicted Massimini, particularly in high-end servers, workstations and desktops.


Manufacturing Matters

Another key to further adoption of quad-core processing will be manufacturing, specifically the move from current 65-nanometer chip making to more advanced and efficient 45-nanometer manufacturing, according to Massimini.

"That will do for quad-core what 65-nanometer did for dual-core," he said, referring to the expectation that manufacturing cost savings, design maturity and accompanying software support will fuel the market.

Even with existing servers, the use of quad-core processors will deliver the 50 percent performance boost promised by Intel, Massimini maintained.

Likely Apps

At the start, quad-core computer processing power will likely be paired with compute-intensive applications such as databases, enterprise resource planning  (ERP), or mission-critical Web servers, Brookwood said.

"That sort of stuff would be a natural," he remarked.

As for measuring the gains or savings from quad-core, Brookwood indicated there are two ways to look at it: how many fewer servers to perform the same workloads with better productivity; or how much more work is done with the same number of servers by adding cores.

Intel is pursuing a first-to-market strategy with quad-core, while AMD expects to hit the market later with its integrated core approach, according to Brookwood. He also mentioned the multi-core technology Sun is incorporating in its eight-core Niagara processor design.

Next Core Level

The likelihood that quad-core will move beyond adoption by the HPC enterprise and extreme gamers into more mainstream business IT environments is tied to the availability of more multithreaded computing support, Appro's Kenisky said.

While there is a need for more testing, which has been ongoing with parallel and graphics applications customers, he believes that large IT players will likely embrace quad-core right away.

"We see it being adopted real quick in the oil and gas industry," Kenisky said. **EDT**