

Dual Core Dueling

By Jessica Davis -- 12/28/2005

Electronic News

<http://www.reed-electronics.com/electronicnews/article/CA6292988.html>

The rivalry between compute processor semiconductor players got turned up a notch in 2005 as AMD beat Intel to the punch in several technology announcements. But even as the rivalry got revved up, the big news for the year, no matter how you looked at the space, was dual core.

Both companies put the laser focus on this architecture which holds the promise of providing the big increases in performance that customers have come to expect from processor makers as they move down the process nodes, but without incurring the leakage and heat penalties brought about through clock speed increases.

"We gained a lot of performance in the past by ramping up clock speed," said Matthew Wilkins, an analyst covering the processor space for iSuppli. "The fact that we haven't gotten to a 4 gigahertz Pentium indicates we've reached a barrier. It's those issues that made AMD and Intel look at dual core and multi-core chips."

Both companies shipped dual core products in 2005, although they certainly had not reached large volumes or the mainstream. But both companies, this year, outlined product plans that included dual core processors for their x86 servers, desktops and mobile processor chips. Those devices are due to hit the market in the first half of 2006.

Strength in manufacturing will be key to getting the chips to market, according to Tony Massimini, chief of technology at Semico Research. And while Intel remains the dominant force in manufacturing in the semiconductor industry as a whole, AMD has improved its position.

"It's pretty clear that AMD has been able to make inroads," he said. "They have improved their manufacturing capability. They are moving ahead with their manufacturing process and capacity -- not just themselves but with alliances with Chartered and IBM. That's important because Intel's strength has been in manufacturing.

"Now with Fab 36 opening in Dresden, AMD is in a better position than it's been in a very long time," he added

AMD enjoyed the momentum of being ahead of its rival in several key announcements in 2005, led by CEO Hector Ruiz who was appointed to head the company in 2004 after joining it as COO in 2000.

At a recent AMD analysts' day, Ruiz attributed AMD's recent success to "a cadre of talented executives" and took advantage of the opportunity to introduce some of these executives for the first time, including a new CTO who had only joined AMD weeks before the event.

"Ruiz brought in a lot of new blood," said Massimini. "I was surprised at how many people I met that day that had only been there for a few months. Hector is known to shake things up. I think he's brought in a lot of people with fresh outlooks and fresh ideas. The level of enthusiasm I encountered was very high."

That new blood may have been part of the force that pushed AMD enough to edge out Intel on announcing dual core and other technologies over the past few years.

"Over the past couple years AMD has done fantastically in design, product quality and execution," said Wilkins. "We can talk about the race to one gigahertz, which depending on what press release you read first, AMD won. Then 64-bit memory extensions – AMD did it first. Then dual core – AMD did it first. Then Intel quickly had to put out an equivalent product.

"If you are talking about the things that would annoy Intel, that is one of them. It's going to be interesting to observe how these two continue battle over next few years," he said.

But while AMD may have made inroads against its much larger rival in 2005, maintaining those inroads may present an even greater challenge.

"I would expect Intel to come back fighting next year," said Wilkins. "They have huge financial resources that they can call on. Plus they have great products, as well."

Wilkins noted that Intel has said it is working on 17 different multicore designs.

"That's the sort of thing that only a company like Intel can do," he said. Intel can start 17 designs and go with the best two, whereas a smaller rival like AMD must carefully choose its next architecture because it doesn't have the resources to spend on investigating so many different options. Nonetheless, AMD may have a few tricks up its sleeve, too.

"AMD's edge will not go away immediately," said Wilkins. "I think that there's less information in the public domain as to what AMD is working on. The issue with microprocessor design is that it's not a quick process. It does take a couple of years." Some observers have said that AMD has a lead in server processors of about 17 months, according to Wilkins.

For 2006 the focus will be on an intensifying battle between the Intel and AMD and more talk of dual core and multicore technology, both Massimini and Wilkins agree.

"This year was the early roll out," said Massimini, "and was really setting the stage for 2006. Dual core from both companies will become more and more prevalent. Dual core will become the defacto standard among all the segments, desktop, enterprise, and mobile."

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