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# Getting By with a Little Help from Its Friends… AMD Launches Opteron

*By Charles King*

Advanced Micro Devices (AMD) has announced availability of its Opteron processor, a two- and four-way 64-bit "hybrid" server chip which extends the x86 instruction set to support both 32-bit Windows/Linux software and 64-bit UNIX/Windows/Linux software. Opteron includes two performance-enhancing AMD technologies: an integrated memory controller for enhancing the flow of data between the processor and memory, and Hypertransport which replaces conventional central bus architecture. According to AMD, benchmark testing suggests that running in 32-bit mode Opteron will outperform equivalent competing x86 processors. A wide variety of companies and vendors voiced support for Opteron including Oracle, Computer Associates, SuSE, Fujitsu Siemens, RackSaver, LSI Logic, Newisys, and nVIDIA. Microsoft reiterated plans to develop a 64-bit operating system for Opteron, with a beta version available by mid-2003. Additionally, IBM became the first global OEM to commit to building Opteron-based systems.

## Pricing/Availability

The new chips are currently available in three models/prices for two-way servers: the Model 240 at $283 in volume, the Model 242 at $690 in volume, and the Model 244 at $794 in volume. Opteron processors in the 800 series for up to eight-way servers will be available later this quarter, and AMD expects processors in the 100 series for one-way servers to be available in Q3/2003.

## Net/Net

Most every tale contains both text and sub-text, literal and mythic elements that turn a flat storyline into a three-dimensional narrative. IT stories are no different. In AMD's case, the drama surrounding the company's Opteron processor includes a bit of unconventional thinking, a soupçon or two of technical whiz bang, ongoing struggles made more difficult by a notably lousy economic environment, and a David vs. Goliath match-up that makes the Biblical bad guy look like a piker. Is there a way to step cleanly through this high tech pasture without encountering (or disturbing, anyway) too many metaphorical cow flops? Stick with us.

Simply put, Opteron is a 64-bit technology that extends the x86 instruction set architecture so that users can run both 64- and 32-bit applications without degradation of performance. In other words, 32-bit code will run natively on Opteron without being recompiled or using an emulator. This makes Opteron unlike any other 64-bit platform. Additionally, the Opteron is an especially radical departure from Intel's strategy of creating a clean sheet 64-bit architecture (Itanium) entirely separate from the popular 32-bit Pentium and Xeon processor lines from which the company's fortunes and reputation flow.

Practically, what do Opteron's unique qualities mean? For IT vendors, AMD's new platform offers a flexible, cost-effective, and powerful solution capable of supporting a wide range of 32- and 64-bit software and workloads, making it a potential solution option in most any IT environment. The growing availability of 64-bit Windows and Linux applications is also likely to enhance the benefits of Opteron-based solutions, and might also drive some interesting synergies. For business users, Opteron provides options they have simply





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not had in the past. Rather than buying and deploying dedicated 64-bit servers or workstations, small and mid-tier companies could use Opteron as a platform for experimenting and working with 64-bit applications before committing to an outright upgrade throughout the infrastructure. Large enterprises could use Opteron-based servers for work groups and remote locations that might profit from 64-bit apps but do not require full time access. Graphics professionals who use 32-bit CAD and similar applications could use the same workstations to support 64-bit software without declines in performance. IT staff who utilize 32- and 64-bit environments for technical management tasks, and sales and marketing execs who need to demonstrate both 32- and 64-bit applications could eventually simplify their work with dual-purpose desktops and laptops.

So given all this optimism and joy, Opteron is likely to provide AMD exactly what the company needs to take on Intel and become the industry player it has always imagined itself. Right? Well, not exactly, but for reasons as dependent on the competition as they are on AMD. The fact is that Opteron would likely not be generating its current buzz if Intel had not made some serious missteps with Itanium. From a long series of blown deadlines and crushed expectations to the woeful performance of the chip's first generation, Itanium has hardly been the shining light Intel originally proposed.

While Intel should be lauded for admitting its errors and delivering an enterprise-class product in the processor's second generation, a continuingly lousy economy, geopolitical uncertainty, ongoing IT malaise, and tightfisted enterprise customers continue to plague sales of Itanium2. Additionally, the company also has a happy problem on its hands in the guise of Xeon, a 32-bit server processor that looked like a stopgap when it arrived on the scene, but just keeps scaling and scaling. This is good enough from an earnings perspective, but could also be offering some 32-bit players a reasonable excuse to further postpone the jump to Itanium. Finally, Intel's good buddy and stellar partner Microsoft has made some seriously ham-fisted moves in its enterprise licensing practices over the past year or so, self-sabotaging its own migration into the 64-bit world and adding a bit of gasoline to the fire burning brightly under enterprise Linux solutions.

We do not expect this situation to continue forever. The economy will eventually right itself (though given the current President's fondness for what his progenitor called "voodoo economics" we will not guess when), Itanium2 is likely to improve further (perhaps even developing native 32-bit support? What a thought!), and Microsoft may likely decide that fewer golden eggs than planned are better than a dead goose.

That said, AMD's Opteron launch offers a great deal to chew on. AMD's decision to simply extend the x86 ISA to 64-bit computing appears to solve the irksome performance potholes the Itanium2 hits when running 32-bit apps. Additionally, Hypertransport seems a particularly elegant solution for reducing the overall number of buses in a system, and allowing the processor to utilize system memory more efficiently. Most impressive, though, are the partners and supporters AMD brought to the podium. It is natural enough to see companies like LSI, Fujitsu, and nVIDIA stand shoulder-to-shoulder behind a new processor, but the inclusion of Oracle and CA lends the group additional gravity. Additionally, declarations of support from both Microsoft and SuSE bolster AMD's roadmap for Opteron in both Windows and Linux environments. Finally, though, IBM's commitment to developing Opteron systems is very big news indeed for AMD, and will likely give pause to some Opteron detractors.

So what would we tell AMD to do to make Opteron a success? Two things. First, execute on your plans, avoiding at all costs the deadly production delays and missteps that plagued, crippled, or killed previous AMD solutions such as the K-6 processor. Second, rely on your partners. Given the current rocky times, nervous users and uncertain future, IT vendors of every stripe have found comfort in playing together nicely. Overall, while we are impressed by Opteron's technological underpinnings and estimates of the new chip's price/performance, what truly caught our attention in this announcement are the players AMD brought to the game. If Opteron does perform as advertised and AMD can deliver to its end users and leverage its partners effectively, we expect the company will find a good deal of hard-earned and well-deserved success.





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