

AMD Kills 29000 Development

Company Retires Its Only Original Microprocessor Architecture

by **Jim Turley**

In an abrupt move, AMD announced it is canceling all further development of its embedded 29000 RISC architecture and redirecting its efforts to x86 chips. Production will continue for all 29K processors that are currently shipping, and the company will still service existing 29K customers with technical support and development tools. However, no new 29K products will be developed, and the entire 29K development organization has been disbanded.

AMD shifted most of the technical personnel from its 29K group into the E86 group, which is responsible for embedded x86-compatible chips like the 186, 386SE, and 486DE. Other engineers will move to the company's PC processor division. A small number of nontechnical staff will be reassigned elsewhere within the company.

The cancellation of the 29K family will have repercussions throughout the embedded microprocessor industry as competing CPU vendors rush to fill the void left by AMD while embedded customers ponder whether the architecture on which they have based their entire product line might be next under the axe.

New Product Plans Canceled

AMD maintained a brave face right up until the end, even hiring new employees from crosstown rival Motorola as recently as one week before the announcement. The company was also preparing to release two new chips this week but now will not.

AMD's much-awaited superscalar 29K was among the casualties. The basic architecture of the superscalar 29K design was borrowed by AMD's PC processor division as the heart of K5. In a sense, K5 is the superscalar 29K with x86-specific enhancements. Given the greater importance of the K5 and the uncertain volume for a high-end 29K, the company focused its resources on x86.

Development and Support Prove Too Costly

Although the 29K family was popular in a number of embedded applications, shipping nearly two million units in 1995, the product line was not profitable enough to warrant its continued development. For a publicly held company like AMD—which has come under especially tough scrutiny lately because of shrinking margins in the PC processor market—even a marginally profitable product must either shape up rapidly or be cut.

Despite the 29K's widespread use in printers and datacommunications equipment, AMD could not pene-

trate the most lucrative segments of those markets. In printers, the 29K was arguably the most popular architecture, accounting for a large share of new ink-jet and midrange laser printer designs. Unfortunately, the majority of design wins does not equate to the majority of volume or revenue. AMD sorely needed high-volume customers like HP, a cash cow that is largely responsible for Intel's success with the 960 family.

The printer market, although large and growing, is notoriously price sensitive, forcing the 29K to survive on thin margins. In the end, the cost of supporting a large number of different, competing customers and an in-house development program outweighed the advantages of supporting the company's proprietary architecture. Given finite resources, AMD stands to profit more from x86 chips than from perpetuating its own RISC design.

Although the 29K and E86 families do not often compete directly, the company was forced to fund both architectures and to duplicate staff. Whereas AMD shouldered much of the burden of 29K support, the x86 architecture supports itself almost for free; the huge infrastructure of third-party development tools has already been established and is self-maintaining.

Likewise, chip development in the 29K line had to be financed with 29K sales revenue, while most E86 development had already been amortized when the 386 and 486 were selling into high-margin PC designs.

Finally, the company's goal to give Intel a run for its money in the x86 desktop market sealed the 29K's fate. Competing with Intel at the high end is an expensive and time-consuming business. The 29K was doomed to be the less profitable of the company's two 32-bit microprocessor families.

No Grim Reaper for Embedded CPUs

The demise of the 29K is, in large part, an anomaly. Motorola and Intel are both big enough to support proprietary architectures—AMD simply is not. Most other vendors' embedded processors are licensed instruction sets. CPUs that are multiply sourced or licensed—specifically, ARM, MIPS, PowerPC, SPARC, and x86—will now appear more attractive to gun-shy buyers.

Designs at risk are those that play a subordinate role to a company's main goals and fall behind in performance and fabrication technology. Over the next decade, some further shakeout of the microprocessor market is likely, but with so many competitors vying for so many new applications, it is impossible to predict which 32-bit architectures will be next on the block.♦