

# PC Processor Market Stratifies

## *AMD Only Vendor Making Broadside Attack*



As the positions of each of Intel's competitors in the PC microprocessor market have evolved, it has become clear that most of the battle has been for the least expensive processors.

PC vendors have worked hard to bring down entry-level PC prices, scrutinizing the cost of every component in the system—and the microprocessor is no exception. Even Intel has gotten into the act, with the Celeron-266 soon to hit \$86. Judging from the PCs that have been announced, Celeron's price seems acceptable for \$999 models but not for systems selling for \$799 or less.

AMD and Cyrix have, between them, captured design wins at all six of the top PC makers in the U.S. retail channel: Compaq, Hewlett-Packard, Packard-Bell, IBM, CTX, and Acer. According to ZD Market Intelligence, these companies accounted for about 90% of all PCs sold in that channel in the first half of this year. Of course, each of these companies also sells Intel-based systems, and most PCs are sold through other channels. Nevertheless, it can no longer be said that non-Intel processors are associated with third-tier PCs. Now that Intel's competitors have a foot in the door at most major PC makers, it will be easier for them to move into other parts of those companies' product lines.

Cyrix and IDT appear content to focus on the entry-level market. Cyrix will continue advancing the speed of its MII processor, but next year the company plans to focus primarily on the MXi, the next-generation version of the MediaGX that combines the Jalapeno core and a 3D graphics unit. Cyrix also will debut by mid-1999, if all goes well, a highly integrated single-chip PC. Cyrix has no plans for a Socket 7 version of Jalapeno, nor, despite some reports to the contrary, any commitment to a Slot 1 processor.

Cyrix's strategy leaves its partner IBM in an awkward position. IBM has never marketed the MediaGX (although it has built all the chips for Cyrix), and it prefers to use its technology to deliver more leading-edge products. And now that Cyrix has National's fab, as well as the ability to use Asian foundries, it doesn't need IBM as much. This division of interests has led IBM to work with x86 startups, rumored to include Rise Technology and Transmeta.

IDT is focused on the entry level, both by design and by necessity. Its WinChip 2 is compact and implements 3DNow, but IDT expects its top speed to be only 266 MHz this fall. Its WinChip 2+, due early next year, and WinChip 3, due by mid-1999, will both plug into Socket 7; they may be the last

Socket 7 processors to be introduced. In the second half of 1999, IDT plans to introduce the WinChip 2+NB, integrating the north bridge with the processor. Unlike Cyrix, however, it is in no hurry to make this shift; its emphasis is on the superpipelined WinChip 3, which it expects to hit 500 MHz. IDT should have an easy time gaining share from its current 1% position, but shipments are likely to be at a very low ASP.

AMD is the only company that hopes to compete with Intel across nearly its full product spectrum. With the K6-2, AMD has kept only two speed grades behind Intel. For 3D applications that make use of 3DNow, AMD's chip offers competitive 3D performance—something no other competitor can claim today. AMD expects to reach 350 MHz about the time Intel delivers Pentium II at 450 MHz, and to ship at 400 MHz before Intel reaches 500 MHz. If AMD can keep the K6-2 from falling rapidly to low-end price points, it might even make money by the end of the year.

Intel's Mendocino will soon make life more difficult for AMD, forcing its prices down. Katmai will further raise the bar for AMD in 1Q99, adding new instructions and possibly other enhancements. AMD plans to respond with its K7, which the company hopes will enable it to match Intel's performance all the way to the high end. With the Slot A interface, based on the 21264 Alpha bus, AMD expects to offer multiprocessor support. Though the challenge is considerable, with Compaq as an ally AMD may be able to make inroads into servers.

AMD is making progress in gaining market share; in 2Q98, it broke through 10%, while Cyrix and IBM combined fell to about half that. With its Dresden fab coming on line next year, AMD will have plenty of capacity; now it needs to get its chips into more systems. AMD must hope that the acceptance the K6 has achieved in the consumer market will spill over into increasing acceptance in business PCs. And it must execute on its K6-3 and K7 plans better than on its past product ramps, so it doesn't have to slug it out with Cyrix and IDT for the entry-level market.

For Intel, perhaps the biggest question is whether it will continue to leave the market for \$50-\$80 processors to its competitors. IDT and Cyrix (and, presumably, Rise) are dependent on this market for their future success. Should Intel find itself with excess capacity, however, it just might decide not to leave this opportunity wide open; once its mainstream processors move to a 0.18-micron process, Intel could use Mendocino to attack the very low end. □

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