■ Katmai Becomes Pentium III

Intel has announced it will market Katmai under the name Pentium III. Intel needed a new name for Katmai because it will overlap Pentium II in clock speed but will include new instructions (known as KNI) that offer a performance boost on certain multimedia applications. Instead of extending the Pentium II brand, as it did by creating the Pentium/MMX name in a similar circumstance, Intel has apparently decided to simply increment the model number.

The new name is easy for consumers to remember and shorter than "Pentium II Processor with KNI Technology." Experienced PC buyers, however, may expect more from a processor with a new model number. When Intel went from Pentium to Pentium II, the new processor delivered significantly more performance than Pentium, even at the same clock speed. At the same clock speed, Pentium III will deliver the same performance as Pentium II on most mainstream applications, according to preliminary benchmarks.

Thus, the Pentium III name could oversell the capability of the new processor. Intel's name inflation may have been spurred by AMD's aggressive schedule for its K7 processor. Unlike Pentium III, the K7 is a true seventh-generation core that should deliver much more performance than the K6 core. The K7 is expected to ship around midyear, while Intel's seventh-generation core, code-named Willamette, isn't due until 2000 (see MPR 1/25/99, p. 3). By releasing a Pentium III product this year instead of next, Intel is keeping pace with AMD in the name game if not in the microarchitecture race.

By lowering the bar for moving to Pentium III, Intel will have to do something bigger when Willamette debuts. Look for Intel to create two new brands next year, one for Willamette and another for Merced, phasing out the venerable Pentium brand. —*L.G.*

■ AMD Escalates Notebook Battle With K6-2

Having swiped a third of the U.S. retail desktop-PC market out from under Intel's nose, AMD is stepping up its efforts to repeat in the notebook market. Already at 21% of the U.S. retail notebook market with the Mobile K6 (according to *PC Data Hardware Report*, 11/98), AMD has announced that the K6-2 is now ready for mobile duty as well.

The K6-2 adds three important features to AMD's mobile line: a 100-MHz bus, superscalar MMX, and 3DNow. The 100-MHz system bus offers notebook users 50% more bandwidth than the current 66-MHz Mobile K6 bus. The 3DNow and superscalar-MMX features will dramatically improve 3D graphics (games) and multimedia performance, enabling, for example, soft DVD playback.

With Mobile K6-2, the scrappy x86 competitor had wanted to claim the title of highest-clock-rate mobile processor and, at a top speed of 333 MHz, could have if it weren't for that rascally Intel upstaging it with a 366-MHz Dixon

(see MPR 1/25/99, p. 20). The Mobile K6-2 looked very attractive next to Intel's pre-Dixon lineup, outperforming Intel's previous top-of-the-line Deschutes-based Mobile Pentium II-300 by almost 20% (Winstone 99) while using 15% less power and costing less than half as much.

In the Dixon era, however, the Mobile K6-2 is less compelling. Intel's new mobile roadmap has AMD's surrounded: at the top end, the Dixon-based Mobile Pentium II-366—with 256K on-chip level-two cache—will handily outperform the Mobile K6-2/333. The $299 (quantity 1,000) Mobile K6-2/333 is a closer match to Mobile Pentium II-300PE on performance but is only 7% less expensive and, with external cache, burns more power. At the low end, the Mobile K6-2/300 and /266 are priced the same as Mobile Celeron-300 and -266: $187 and $106. The Celerons, however, have a 128K on-chip L2 cache, giving them power, space, and system cost advantages over the AMD parts.

AMD has found one taker for the K6-2 already: Toshiba, the number-one notebook supplier, is shipping the Mobile K6-2 in its Satellite 2520 notebook in Japan. Other OEMs will announce K6-2 notebooks soon. The K6-2 is compatible with the existing 66-MHz Socket 7 notebook infrastructure, and 100-MHz Super 7 mobile chip sets from ALi and VIA are scheduled to ship later this quarter.

Although the Mobile K6-2 is a significant improvement over the Mobile K6, prices will have to be heavily discounted if AMD hopes to gain market share. Intel's position in notebooks is already more dominant than it is in desktops, and, with its new Dixon processor, the company has signaled that it does not intend to relinquish that position. There may be a few customers unhappy enough with Intel to buy the AMD parts at current prices, but that set is probably small.

To penetrate this market more deeply, AMD will have to wait on its Sharptooth processor (aka K6-3). Due in 2Q99, Mobile Sharptooth will match Dixon's 256K on-chip L2 cache, eliminating the performance gap. The part should give Intel a harder run for its money; at only 118 mm², Sharptooth will be about 40% less expensive to build than the 180-mm² Dixon. —*K.D.*

■ Xeon Gets 2M Cache

Forging further into the server space, Intel has added a 2M cache to its Pentium II Xeon line. Previous Xeon processors (see MPR 7/13/98, p. 1) include either 512K or 1M of cache. The larger cache will increase performance on most large applications, particularly in systems with four Xeon processors sharing a bus. In these systems, the extra cache will reduce bus traffic, making all processors more efficient.

The 2M cache will also be important in systems with more than four processors. Intel is developing a chip set for eight-processor Xeon systems, using technology acquired

from Corollary (see MPR 9/16/96, p. 9); this chip set should be available by midyear. Some vendors are already shipping eight-way Xeon systems, using proprietary chip sets, and will benefit immediately from the new parts.

Intel also introduced a Xeon-450 with 1M of cache at $1,980 (in 1,000-unit quantities), the same price as the earlier Xeon-400/1M. Intel was already shipping a Xeon-450/512K (see MPR 10/26/98, p. 4) at $824. All of the new Xeons are qualified for systems with four or more processors.

The 2M Xeon carries a list price of $3,692, setting a new record for Intel. This price puts Xeon in line with the few other high-end server processors that are openly available. Sun, for example, sells an UltraSparc-2 module with 4M of cache for $4,249 (see MPR 12/28/98, p. 22). This comparison also shows, however, that while 2M of cache represents a step up for Intel, many RISC systems today ship with 4M or more of cache, giving Intel something to aspire to.   —*L.G.*

■ Intel Offers New Low-Cost PC Chip Sets

Intel has expanded its line of PC core logic with new chip sets meant for low-cost desktop and mobile systems. The new 440ZX, 440ZX-66, and 440DX chip sets, shipping now, bring to 13 the number of distinct PC chip sets that are offered by Intel.

The 440ZX desktop chip set is offered with 66-MHz or 100-MHz CPU bus support for Celeron and Pentium II processors, respectively. The 440ZX is a cost-reduced version of the 440BX, using the BX's core design but providing fewer features and less expandability at a lower price. The 440ZX-66 sells for just $25.50, while the 100-MHz 440ZX is priced at $28.50. Both are well below the current $35.50 price of the 440BX.

This discount is achieved by eliminating features unneeded in low-cost PCs. Cutting these features also ensures adequate product differentiation and protects the 440BX's higher margins. The 440ZX and 440ZX-66 both support only one desktop processor, in lieu of the BX's dual-processor and mobile capabilities. Both lack the BX's ability to generate and test DRAM error-correcting codes (ECC) and handle only four banks of SDRAM, for a total of 256M. The 440BX can drive up to eight banks and 1 Gbyte of SDRAM. Also, the ZX chip set supports a maximum of four PCI slots, one fewer than the BX.

The 440DX provides a lower-cost option to the 440BX for mobile applications. The DX differs from the BX in only two respects: the processor-bus interface on the DX operates at just 66 MHz, and the DX does not include an AGP interface. The 440DX is priced at $29.50 in quantity.

Intel's earlier 440LX chip set and its low-cost derivative, the 440EX, are now priced the same, at just $15.50. This price, lower than that of previous Intel chip sets, will put pressure on VIA and others competing for $599 PCs.   —*P.N.G.*   Ⓜ