National Snuffs IBM's Cyrix Business

After a long negotiation, IBM has agreed to give up its right to market the Cyrix-designed 6x86MX (aka M II) processor by the end of the year. This agreement will make National, Cyrix's new parent, the sole supplier of the chip, leaving IBM out of the x86 processor business, at least temporarily.

The announcement brings to an end a long-standing processor partnership. IBM has been manufacturing processors for Cyrix since September 1993 and quickly became Cyrix's primary foundry when neither SGS-Thomson nor Texas Instruments could meet the fabless design firm's needs. In April 1994, IBM and Cyrix inked a five-year pact giving IBM the right to sell the Cyrix processors under its own label. Specifically, for each wafer it fabricated for Cyrix, IBM could build one of its own and sell the parts.

Under these terms, IBM could not gain more than 50% of the total market for Cyrix-designed chips, but the chips it could sell carried no license fee and no R&D cost. This situation allowed IBM to sell chips at very low prices. Although in theory IBM and Cyrix together were competing against Intel and AMD, in practice they often competed against each other. This competition reduced profits on both sides. Having already tried most of the Intel-licensed foundries in the world, Cyrix had little choice but to put up with this deal.

Cyrix is no longer fabless: National is now building the Cyrix chips at its new fab in South Portland, Maine. This accomplishment spurred the negotiation with IBM. To buy out the remainder of the contract, which was due to expire in 1999, National paid IBM about $50 million, although this price included purchasing some of IBM's CPU inventory.

National hopes that by becoming a single-source supplier, it will be able to avoid the brutal price competition with IBM and raise its profit margins. Margins on the M II have been so slim that increasing prices by only a few dollars could make a big difference in profit. Some IBM customers, however, may switch to AMD over National, which is not a proven x86 processor supplier. In particular, the fate of M II design wins at IBM PC Company is hanging in the balance.

While IBM is about to make an orderly exit from the x86 processor business, the company isn't planning to fold its tent. IBM won't comment on its future plans, but it appears the company will reenter the x86 market next year using a newly licensed CPU.

Sources indicate the company is working with one or more x86 startups, possibly including Rise Technology (see MPR 6/22/98, p. 4) and the mysterious Transmeta. IBM also recently cut a deal with STMicroelectronics that could eventually give IBM access to the Metaflow processor STM is funding (see MPR 6/23/97, p. 4). IBM even has a foundry arrangement with IDT, although that agreement does not give IBM any marketing rights at this time.

We have little doubt that IBM will soon reemerge as a strong x86 processor vendor. The company has a sales and marketing force, a leading-edge fab, brand recognition, and an Intel patent license. It lacks only one key ingredient: a product to sell. Borrowing a cup of sugar from a neighbor should quickly complete the recipe. —*L.G.*

Alpha Gets New Life at Tandem

Making its strongest commitment yet to the Alpha architecture, Compaq has announced it will convert the bulk of its Tandem products to use Alpha processors instead of Merced. The fault-tolerant Himalaya servers, which run Tandem's proprietary NonStop operating system, currently use MIPS R10000 processors. Compaq did not disclose the fate of Tandem's Unix-based Integrity servers, which also use MIPS processors. The Himalaya systems, however, contribute more than 85% of Tandem's revenue.

The first Alpha-based Himalaya systems are not due until 2001 and will be based on the forthcoming EV7 processor. (At the Microprocessor Forum later this month, Compaq will disclose features of the EV7 that are optimized for such high-end servers.) Tandem, now a fully owned subsidiary of Compaq, will continue developing MIPS-based products in the interim.

Tandem says the delays in Merced played a role in the decision, but Compaq's acquisition of Alpha paved the way for the switch. Because Digital had previously made a transition from MIPS to Alpha, it already has porting and binary-translation tools that will ease the transition for Tandem.

In terms of volume, the announcement is likely to be the biggest design win for Alpha (outside of Digital) in its history. More important, it signals a long-term commitment to Alpha on Compaq's part. Surely Compaq would not force Tandem's customers through a transition from MIPS to the EV7 if the company weren't confident it would fund the EV8 and successor processors to completion.

When Compaq purchased Digital last year, many observers, including ourselves, questioned whether the company would maintain Alpha in the long term, given its existing commitment to Merced. Although Compaq will certainly produce some Merced systems, the Tandem win indicates that the company is putting its money where its mouth is. Now the Alpha architects must outmuscle Merced to make Compaq's decision look good. —*L.G.*

Mobile K6 Comes Out of Closet

Although AMD has been silently shipping a mobile K6-266 to Compaq since the beginning of the year, AMD did not make the mobile version openly available—until now. Leaving no stone unturned in its search for market share, the company is now going after a sizable slice of the notebook market, hitherto dominated by Intel.

To that end, AMD has finally announced the mobile K6-266 along with a mobile K6-300, matching Intel's fastest mobile processors in clock speed, if not benchmark performance. AMD says that the K6-300's Winstone 98 performance is similar to the Pentium II-266's in similar system configurations. Because these parts are based on the original K6 core, they lag Pentium II by a greater degree on MMX and floating-point performance.

While the 300-MHz part lists for $229 (in 1,000-piece lots), the 266-MHz version lists for just $159, making it suitable for sub-$2,000 notebooks. These prices are 24% to 40% below the prices of comparable Intel processors. Compaq has already upgraded its Presario notebook to the new 300-MHz part, and AMD expects the part to surface in other notebook products for the Christmas season.

Although the K6-266 operates at 2.0 V, AMD had to push the supply voltage to 2.1 V for the K6-300 to increase yield. The K6-300 is rated at 6.5 W (typical), similar to the power level of Intel's mobile processors, so OEMs will not have to redesign their notebooks for the AMD part.

In fact, notebooks with a Pentium/MMX socket can easily accept the new K6. For smaller subnotebooks, AMD offers a BGA-360 package that is just 3 mm thick.

AMD appears poised to mount a full-scale attack on the notebook market, announcing plans to offer a mobile K6-2 in early 1999, probably at 300 MHz, and a mobile K6-3 in 1H99. These parts bring 3DNow to the notebook platform, further differentiating them from Intel's offerings. The company will position the K6-2 against Mobile Pentium II (based on Deschutes) and the K6-3 against Intel's upcoming Dixon, which, like K6-3, will have a 256K on-chip L2 cache. The K6-2 and K6-3 processors will use AMD's 100-MHz Socket 7, supported by mobilized AGP chip sets from ALi and VIA.

Although these parts will be competitive with Intel's mobile offerings in performance, breaking into the mobile market will be tough. AMD's biggest success has been in the consumer desktop market, as many businesses still have a strong Intel preference. Very few notebook PCs, however, are bought by consumers. AMD must be willing to start small and be patient with its new mobile offerings. —*K.D.*

Cascades To Follow Tanner

At the Intel Developer Forum (see MPR 10/5/98, p. 16), Intel disclosed for the first time a processor code-named Cascades. This device, part of the server line, is slated to ship in 2H99 as the successor to Tanner. Cascades will use a 0.18-micron process to boost clock speeds beyond the 500 MHz expected from Tanner. Intel offered no other details on Cascades.

We expect that Cascades, like Tanner, will be based on the new Katmai core. Sources indicate that Intel is moving its 0.18-micron desktop processors to a 133-MHz bus in 2H99; if Cascades follows suit, it could reach 733 MHz with that bus. The faster CPU and bus speeds will provide a large performance boost in the high-end workstation and server applications that Cascades is designed to support.

Intel also acknowledged for the first time the code name McKinley (see MPR 8/3/98, p. 3), which applies to the second IA-64 processor core, the successor to Merced. Intel said only that McKinley is due to ship in 2H01 and will deliver twice the performance of Merced. To sustain this powerful CPU, McKinley will have a different system interface than Merced, possibly including a dual-channel Direct RDRAM interface built right into the processor. With Merced delayed until mid-2000, Intel is counting on McKinley to demonstrate the full potential of IA-64's performance. —*L.G.*

PCI-X Proposal Conflicts With Intel's

With Gigabit Ethernet and other high-speed interconnects poised to appear in future servers, the current PCI specification just isn't enough, as it tops out at a 64-bit, 66-MHz configuration with 533 Mbytes/s of peak throughput. The recent PCI-X proposal aims to solve this problem, offering a 64-bit, 133-MHz extension to PCI that allows more high-speed slots or a higher peak bandwidth.

In addition to its speed, PCI-X represents a break from PCI's Intel-dominated origins: the proposal was developed by Compaq, HP, and IBM without Intel's backing. If approved by the PCI special interest group (SIG), PCI-X will be used first in servers where the need for high-performance I/O is greatest; but we believe it will migrate down into workstations and high-end PCs over the next few years.

Intel has not been idle, however. The company has sketched its own plans for a next-generation I/O (NGIO) bus. Though offering no detail, Intel says NGIO will provide a substantial increase in point-to-point bandwidth through a switching fabric rather than a PCI-style bus. Sources say NGIO is based on a 16-bit, 400-MHz interface not unlike that used in the Rambus Direct RDRAM. A low-pin-count interface is well suited to a switching architecture.

Assuming Intel submits NGIO to the PCI SIG, the group will have to weigh the two competing high-bandwidth proposals. We hope the SIG is willing to accept Intel's revolutionary NGIO if it is offered. If NGIO remains a proprietary interface, it will serve only to limit much-needed innovation in this critical aspect of PC platform technology. —*P.N.G.*

Intel Trims Pentium II Package Cost

Intel plans to reduce the cost of its Pentium IIs by removing their heat plates. This change, to be phased in during 4Q98, is made possible by a switch to a plastic package that Intel calls an organic LGA (OLGA). The plastic package relies on C4 bonding to mount the die face down instead of face up, providing a direct heat-transfer path. The new Pentium II module looks the same from the front but, like a hospital gown, has an open back, allowing the OEM to mount a heat sink directly to the CPU package. Being directly attached, the heat sink is more efficient and thus can be smaller, further lowering the OEM's costs. The sides of the new modules are also open, so the new Pentium II parts will use the same retention mechanism as the current Celeron processors. —*L.G.*