

## ■ Compaq Buys Alpha

The company that broke IBM's stranglehold on corporate computing in the 1960s will soon be part of the company that broke IBM's stranglehold on the PC industry in the 1980s. By agreeing to acquire Digital Equipment Corp. for roughly \$9 billion, Compaq will gain a broad range of products, including Digital's \$4 billion Alpha-based workstation and server line. Compaq, however, is deeply committed to Intel's x86 and IA-64 architectures, casting further doubt on the future of Alpha.

Compaq has made no bones about its desire to be one of the top computer (not just PC) companies in the world, and combining its revenues with Digital's could vault it past Hewlett-Packard into the number-two spot, behind IBM. In recent years, Compaq has moved beyond the PC market by launching successful server and workstation lines, both based on Intel processors.

Digital provides a large direct sales force and one of the best computer-service organizations in the world, two key areas where Compaq has been weak. These groups will help Compaq sell expensive systems into large corporations, where HP and IBM are currently the top suppliers. Digital also has a sizable cash hoard and tax-loss carryforwards that will help defray the cost of the acquisition.

Because Compaq has already deployed its own workstations and servers, there is a tremendous overlap between its products and Digital's. Digital's Intel-based products (and the employees working on them) are likely to disappear quickly, as Compaq can simply substitute its own equivalent versions. In the few cases where Digital's x86 systems have a technological edge, such as its HiNote portables, Compaq can simply relabel those products.

The fate of the Alpha line is less clear. Upon announcing the acquisition, Compaq stated its commitment to Alpha products, as indeed it must if the company hopes to retain these customers. Compaq has no Intel-based systems powerful enough to replace the Alpha units, and most of those boxes run Digital Unix or VMS, operating systems that don't work on Intel processors.

Much of this will change, however, with the introduction of Merced-based systems next year. Both companies had already embraced Merced, the first in Intel's IA-64 family. Digital is working to port its Unix, and possibly VMS, to the forthcoming processor.

Merced will greatly reduce Alpha's performance lead, making the Intel chip suitable for most of the high-end systems in the companies' product lines. Digital claims Alpha will still have a performance advantage over Intel's fastest processors, but that gap is less than 50% today (except on floating-point code, an area that Merced will emphasize). Since IA-64 should give Intel a significant boost relative to Alpha, the gap will probably diminish to 20% at best.

Compaq has previously said it will offer IA-64 workstations and servers in high-end configurations. Once Digital ports its operating systems, these IA-64 boxes will offer performance and capabilities similar to those of the Alpha systems, but probably at a lower cost and with better software support. We expect a large number of Alpha customers will switch to IA-64 over time.

If this switch occurs, Compaq is likely to question the need to support a small and largely duplicate product line. The Alpha line will require a far greater investment than the IA-64 boxes, given the proprietary processor and system logic. If future Alpha processors provide a significant performance advantage over IA-64 chips, Compaq could keep Alpha as a high-end extension to the IA-64 line. If not, Compaq is likely to begin phasing out Alpha by 2001.

To garner enough income to support Alpha, which generates the least revenue of the five RISC architectures (see [MPR 1/26/97, p. 5](#)), Compaq could go to the other extreme and back Alpha over x86 in high-end PCs, workstations, and servers. Compaq has had numerous opportunities in the past to adopt Alpha or another RISC processor, however, and despite many flirtations, it has never consummated a relationship. We believe the Digital purchase reflects Compaq's desire to be a world-class computer company rather than some sudden change of heart over RISC.

This acquisition could play out like another vaunted deal, HP's 1989 purchase of Apollo Computer. At the time, the two companies' combined share of the workstation market exceeded leader Sun's. HP quickly substituted its own 68K systems for Apollo's and, despite initial statements of support, dumped Apollo's Prism architecture in favor of HP's own PA-RISC. By the time the dust settled, HP had gained little ground on Sun. Today, not much remains of Apollo except an HP plant in Chelmsford (Mass.), where none of the employees are developing workstations. —L.G.

## ■ VIA Boosts Socket 7 to 100 MHz

Becoming just the second core-logic vendor to support 100-MHz Socket 7 systems, VIA Technologies ([www.via.com.tw](http://www.via.com.tw)) has introduced the Apollo MVP3 chip set. Like Acer's Aladdin V (see [MPR 12/29/97, p. 4](#)), the MVP3 supports x86 processors with a 100-MHz system interface as well as 100-MHz SDRAM and AGP. Although no such processors are shipping today, products are expected in the next few months from AMD, Cyrix, and IDT (see [MPR 1/26/98, p. 1](#)).

The MVP3 chip set, priced at \$29 in 10,000-unit quantities, consists of the VT82C598AT north bridge, packaged in a 427-contact BGA, and the VT82C586B south bridge, which uses a 208-pin PQFP package. Both chips are fabricated in 0.35-micron technology. VIA says the MVP3 is already in volume production, and the company claims over 20 OEMs are using the chip set. —P.N.G.

■ **S3, Cirrus, Oak Signal Instability in 3D Market**  
Recent announcements from S3 and Oak Technology illustrate the difficulties facing participants in the PC multimedia market. S3 has been forced to take radical steps to stay in the market, while Oak has decided to abandon the market altogether, putting its unprofitable audio and graphics product lines up for sale.

S3 ([www.s3.com](http://www.s3.com)) announced a company-wide restructuring to reduce its operating expenses. As of January 20, the company had eliminated about 100 positions. S3 also sold one-third of its interest in United Semiconductor Corporation for \$72 million, then spent \$40 million to purchase 10 issued and 25 pending patents from Cirrus Logic ([www.cirrus.com](http://www.cirrus.com)), giving Cirrus a much-needed infusion of cash. The two companies also agreed to a comprehensive cross-licensing of their other patents.

Cirrus's departure from the mainstream 3D-graphics market created an opportunity for S3 to strengthen its graphics patent portfolio, says S3. The company also purchased patents from Exponential (see next item). S3's business remains strong—the company sold over 38 million graphics chips in 1997—but it has only a small share of the lucrative market for 3D-game accelerators.

Oak, for its part, has had enough of the PC multimedia business. In explaining its decision to sell off its audio and graphics units, Oak ([www.oaktech.com](http://www.oaktech.com)) disclosed that these products represented 20% of its operating costs but produced less than 5% of the company's revenues for the quarter. The graphics group in particular may represent a bargain for some other 3D vendor, since Oak's Warp 5 contains some interesting and unique technology. Backed by a larger and more committed company, Warp 5 could become a successful product in its own right, or elements of its architecture could be incorporated into other designs. —*P.N.G.*

### ■ Exponential Patents Surface at S3

The mystery buyer of Exponential's patent portfolio (see [MPR 12/29/97, p. 4](#)) turns out to be S3. The new mystery is why the leading graphics-chip vendor would spend \$12 million to purchase the patents, since it does not sell microprocessors and has no announced plans to do so.

The Exponential patents are mainly in the areas of BiCMOS circuit design and CPU microarchitecture. The purchase suggests S3 may be preparing to develop its own x86 processor core. Cyrix's MediaGX, a processor with on-chip graphics, has proved popular, and Intel is likely to deploy similar chips in the future, perhaps using its i740 graphics core (see [MPR 2/16/98, p. 1](#)). S3 may have decided that in the long run, to survive as a graphics company, it must also be a processor vendor.

A set of patents is a poor way to start a processor design, however. S3 must still design its own CPU, or else purchase a design, perhaps by buying an x86 startup such as Transmeta. Another possibility is that S3 is the unnamed investor in EVSX (see [MPR 12/29/97, p. 4](#)), an Austin startup led by

several former Exponential employees developing "high-performance microprocessors for visual computing." In that case, S3's patent purchase could be aimed at giving these EVSX employees access to the intellectual property they developed at Exponential.

The patent portfolio could also be the basis of a legal strategy allowing the company to defend itself against a potential Intel lawsuit, which would be likely if S3 marketed an x86 processor. One key patent in the Exponential portfolio describes a dual-mode processor with CISC and RISC instruction sets. This patent could bear on Intel's forthcoming Merced processor, and many observers believed Intel would purchase the patent to stave off a future lawsuit. Intel's willingness to let the patent go to S3 seems to indicate it is not concerned about this possibility. —*L.G.*

### ■ National, Intel Extend License

A key advantage for Cyrix in its acquisition by National (see [MPR 8/25/97, p. 1](#)) is that company's patent cross-license agreement with Intel. National and Intel have recently announced an agreement to extend that license, which was due to expire in 2000, giving Cyrix further protection as it develops future x86 processors. The companies did not reveal the duration of the new agreement.

As part of the agreement, National ([www.national.com](http://www.national.com)) has withdrawn the patent-infringement suit originally filed by Cyrix against Intel (see [MPR 6/2/97, p. 26](#)). Now that Cyrix's patents are part of National's portfolio, Intel has the right to use them but could still have been sued over products shipped before the National acquisition. Intel did not admit any infringement, of course, but the company apparently found the combined patent portfolio of National and Cyrix strong enough to extend the cross-license agreement without any exceptions or fees.

This agreement not only gives National a relatively unfettered ability to design and manufacture x86 processors, it opens the door for National to build products that plug into Intel's Slot 1. Doing so could give National a big advantage over AMD, which is barred from Slot 1 and future Intel slots by the terms of its patent license (see [MPR 1/22/96, p. 5](#)).

By extending the agreement beyond 2000, National also gains access to future IA-64 patents. This access will aid the company if it wishes to build an IA-64-compatible processor, although such an effort will still be difficult, as National would have to develop an independent design as well as extensive verification suites. AMD may have a tougher time with IA-64. Many IA-64 patents are likely to be filed after 1999, when AMD's current license expires. The license, however, requires the companies to negotiate "in good faith" on an extension.

AMD's license also requires royalty payments, another indication of its weaker patent position. National has gained a clearly superior deal from Intel; now the company must translate this advantage into products. —*L.G.* □