Most Significant Bits

DEC Has $5000 Alpha Box, Higher Performance
Digital dropped the other shoe on the workstation market, announcing a set of new Alpha systems that stretches from the 100-MHz Model 300L to the 200-MHz Model 500X. The 300L starts at under $5000 and is rated at 46 SPECint92 and 52 SPECfp92. The high-end system achieves 110 SPECint92 and 163 SPECfp92 in a deskside box starting at $70,000. Both systems, as well as the new 150-MHz Model 300, are available immediately with either VMS or a 64-bit port of OSF/1.

The new systems create a full line of Alpha workstations that appear to outperform the competition at nearly any price point. For example, the 300L offers 70% higher integer performance than any other $5000 workstation. (DEC plays the usual games of using a grayscale monitor and no disk to reach that price point; the Sun Classic remains the only fully configured workstation under $5000.) The 500X is nearly 40% better on SPECint92 than the HP 735, its nearest competitor.

Initial 500X shipments use the 0.75-micron EV-4 chip but boost the power supply from 3.3 to 3.4 volts, improving yield at 200 MHz. The system will move to the 0.68-micron EV-4S sometime this summer.

The latest compilers improve the SPECint92 rating of the Alpha CPU by about 10% over previous figures while floating-point scores remain about the same. The 150-MHz 21064 is now rated at 84.4 SPECint92. The 200-MHz part, slated for volume availability in July *(see **0704MSB.PDF**)*, now pegs the meter at 116.5 SPECint92 with the maximum cache, extending its lead as the world's fastest microprocessor.

The new announcements give Digital an impressive set of platforms. One weakness is limited software availability; there are only a few hundred OSF/1 applications available for Alpha today, and most are public-domain programs. By clearly establishing itself as the "hot box" vendor, DEC hopes to quickly increase that number.

Sun to License SPARC CPU Designs
Sun announced that it will, for the first time, license complete CPU and board designs so that customers can create derivative products. For example, Force Computer plans to modify the SPARCstation LX motherboard for use in VME systems. Initial products from the new STB (SPARC Technology Business) division include the SPARC2 integer unit and microSPARC designs as well as the LX and SS10 motherboards. Fees for the chip designs are comparable to a MIPS processor license; for example, it costs $1.75 million up front and a 10% per-chip royalty for the right to develop and market microSPARC derivatives.

STB will also sell "naked iron" (systems without Solaris) to resellers who add alternative operating systems. Novell plans to provide NetWare on SPARC through this channel. Real-time OSs are another alternative.

SMCC (Sun's hardware arm) controls all licensing and has aimed the services at embedded applications while discouraging compatible SPARC system products. For instance, the SuperSPARC design is not available, although this may change "if there is enough customer demand," according to Sun. The new business strategy should make SPARC more popular for embedded designs and could help Sun defray the development cost of current and future low-end processors.

Dallas Semi Announces Fast 8-Bit Controller
Dallas Semiconductor has designed an 8051-compatible microcontroller that it claims is two to three times faster than the original 8051. The 80C320 High-Speed Micro achieves this speed by reducing the cycle count for a typical instruction from 12 to 4. Both pin- and software-compatible with the 8051, the chip is a simple upgrade for existing designs. At its top speed of 25 MHz, the C320 reaches 6 MIPS (peak native instructions).

Since the chip uses about the same amount of power as the 8051 at any given frequency, in low-power applications the C320 clock rate can be reduced while still achieving the same performance as a faster 8051. For example, the Dallas part draws about 5 mA at 5 MHz but provides the same instruction throughput as a 12-MHz 8051 drawing 15 mA, according to the company.

The chip also incorporates several extensions to the base 8051 feature set, including all of the 8052 enhancements plus a second data pointer, a second UART, a watchdog timer, power monitor, and additional interrupts (multiplexed onto existing pins). It is available in a 40-pin DIP or 44-pin PQFP. Dallas expects to sample the C320 in May and be in production by July. Pricing is $6.50 (DIP) for quantities of 10,000.

AMD 29205 Wins Apple Printer Design
Apple has selected AMD's 29205 laser-printer controller *(see **0613MSB.PDF**)* for its new low-cost printer, the LaserWriter Select 310. The $1079 printer is the first announced laser-printer design win for the 29205.

The 29K family has been quite successful in the laser-printer market with major design wins at Hewlett-Packard, Apple, and Compaq, but Intel recently placed its i960CF in HP's new LaserJet 4si. This printer obsoletes the LaserJet IIIsi, knocking AMD out of the HP line. The next big announcement, due this summer, will reveal the processor for HP's low-cost LaserJet 4P, which will replace 68K-based IIIP printers. Also up for grabs are Apple's high-end printers, which currently use 68K

chips. Apple's very-low-cost LaserWriters use a custom ASIC instead of a microprocessor.

Laser-printer vendors have shown little loyalty to any given processor architecture; the volumes are so high that saving a few dollars per part more than makes up for any incremental design costs due to switching architectures. One trend is that RISC chips have taken all of the recent design wins over Motorola's 68K family, which had been the leading CPU for laser printers. The i960 became the highest-selling RISC processor last year with lots of help from the LaserJet 4 family.

Cirrus to Build, Sell Newton Chip Set

Cirrus Logic announced that it has signed an agreement with Apple to develop a system-logic chip set for second-generation Newton systems. To help reduce power, size, and cost, the new chip set will reduce the number of chips in the core design to three and eventually to one. This will require combining the CPU core and peripheral interfaces on a single chip; Cirrus is negotiating with Advanced RISC Machines for an ARM610 license.

Cirrus brings a range of expertise to this task. In addition to its leading position in graphics controllers for portable systems, the company has subsidiaries specializing in audio (Crystal Semiconductor), DSP (R. Scott Associates), and wireless communication (Pacific Communication Sciences).

This announcement demonstrates Apple's intent to be more open with its Newton architecture than with its desktop products, but Cirrus is licensed to sell its chip set only to companies that have licensed the Newton operating system. Thus, Apple can still control the extent of the Newton market.

Motorola and Kyushu, a division of Matsushita, are the newest licensees of the Newton OS, joining Sharp. Apple also announced a separate agreement with Rolm, now a subsidiary of Siemens, allowing Rolm to build "Newton phones" that will transmit audio, video, and data. Interestingly, both Motorola and Matsushita are also licensees of General Magic's "Magic Cap" software *(see **070303.PDF**)*, and Matsushita builds personal communicators for EO *(see **061509.PDF**)*. It appears that these companies are hedging their bets until the winners in the PDA market become clear.

IBM Makes Its 486SLC2 Available via OEMs

Although IBM is prohibited by its contract with Intel from selling its 486-derivative chips on the open market, the new Big Blue is aggressively pushing its parts in alternative forms. The company has signed Kingston Technology to distribute small modules that allow a 486SLC2 *(see **0604MSB.PDF**)* to plug into a 386 or 286 chip socket. The 25/50 MHz SLC2 module is priced at $425. Initially, Kingston will sell the modules only as PS/2 upgrades, but plans to eventually offer upgrades to non-IBM systems as well.

IBM also announced agreements to build SLC2-based motherboards for two companies, Eteq Microsystems and Alaris, which will then resell the boards. The contracts total $350 million over the next year. IBM, which only does things in a big way, hopes to do over $1 billion in related business this year.

ET8000 Chip Set Targets Notebook PCs

Eteq, also a chip-set maker, announced an upgrade to its ET9000, a single-chip system-logic solution. The new ET8000 adds a power-management capability that uses the processor's system management mode (SMM) to reduce power consumption. Like the OPTi SCNB *(see **0704MSB.PDF**)*, the chip is intended for use with Intel's unannounced 486 "S-Series" processors, since all current Intel CPUs with SMM have their own power-management logic. The ET8000 also supports AMD, Cyrix, and TI processors that have a power-management mode.

The Eteq chip triggers SMI# (system management interrupt) to enable SMM software. It allows this software to reduce the clock speed to frequencies as low as 2 MHz, or to stop the clock entirely. A set of activity indicators and power-control outputs helps the processor detect idle I/O devices and disable their power. The chip also supports Cyrix's "suspend" mode.

The ET8000 controls up to 512K of cache and up to 64M of DRAM. It works with most x86 processors at up to 50 MHz. The chip uses a 208-pin PQFP package. Eteq expects to begin sampling by June and to have volume production by July at $25 in quantities of 1000, comparable to the price of the OPTi part.

Sun to Port Solaris to PowerPC

Underscoring high expectations for the PowerPC architecture, SunSoft announced that it plans to port its Solaris operating system to the joint IBM/Motorola platform, even though that architecture has no installed base today. Both IBM and Apple plan to ship high volumes of PowerPC systems starting around the end of the year, but IBM will rely on its AIX operating system while Apple will use its proprietary System 7 software *(see **0704MSB.PDF**)*.

Motorola hopes to attract other system vendors to its flagship RISC architecture, and the availability of Solaris could help. The company will continue to pursue other operating systems and is rumored to be working on a Windows NT port.

With the x86 version of Solaris just about ready to ship, SunSoft is apparently ready for a new challenge. Assuming normal development and testing cycles, however, the new PowerPC version won't ship until around 2H94. Since the handful of PowerPC system vendors all recently affirmed their commitment to AIX, it will be interesting to see who will sell systems with Solaris. ♦

