



Sun sheds light on chip path

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update Sun Microsystems said it will come out with microprocessors running at 1,500 MHz, or more than four times faster than its current microprocessors, in less than four years under an aggressive roadmap that puts the company in the race to establish the standards for the next generation of computing.

Intel, IBM, and Compaq along with its Alpha partners have all laid out plans for futuristic processors that will run at or beyond 1,000 MHz, take advantage of copper technology, and push the envelope on known manufacturing techniques. These chips are all due in 2000 to 2001.

The company that can develop the most compelling platform will likely be in position to exploit that advantage in the server and workstation markets. Of course, getting there won't be easy. Nearly all have suffered setbacks recently.

Sun's strategy revolves around rapid improvements in the UltraSparc family of processors. Right now, Sun's premier commercially available chip, the 64-bit UltraSparc II, runs at a maximum of 360 MHz.

By 2002, Sun will be commercially producing the UltraSparc V, which will run at 1.5 GHz (1,500 MHz), said Anant Agrawal, vice president of engineering in Sun's Microelectronics division.

The chip will also be made on an ultrafine 0.07 micron manufacturing process, he added. The micron measurements refer to the distance between circuits on a microprocessor. Generally, the smaller the number, the faster and the more powerful the chip is. Current UltraSparc IIs and Pentium II processors from Intel are made on a much less advanced and "fatter" 0.25-micron process.

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Sun will keep delivering the type of processor performance that will keep it at the forefront of the industry," Agrawal said.

Between then and now, Sun will conjure up a number of improvements to the UltraSparc line. Sun will release a 400-MHz version of the UltraSparc II later this year, according to Agrawal, and follow the release with 440-MHz and 480-MHz chips in the first half of next year. Besides the speed boost, the upcoming version of the UltraSparc II will be made on a relatively advanced 0.18-micron process.

The company is expected to release a line of workstations concurrently with the faster UltraSparc II chips, said sources at the company.

Meanwhile, Sun will be working on succeeding processors. Samples of the 600-MHz UltraSparc III will come out at the end of the year, he said, with products shipping toward the later part of 1999. The UltraSparc III will go up to 1 GHz.

By the middle of 2000, Sun will then come out with the UltraSparc IV, which will start at 1 GHz and involve further shrinks in process technology. The first UltraSparc IV chips will start at 0.15 microns and go down, he said. The UltraSparc IV will also be Sun's first copper-based chip, he said.

Along with these chips, the company will come out with a series of integrated microprocessors for lower-end workstations and embedded processors for devices such as hubs and routers. These chips will be based around the same technology developed for the UltraSparc line, but will trail by a generation or two.

The details of Sun's road map follows a series of delays and bug reports on other high-end processors. Earlier this year, Intel delayed the release of its 64-bit Merced chip from late 1999 to mid-2000. The delay of Merced has prompted a number of analysts to say that Intel's main thrust into the 64-bit arena won't occur until the release of McKinley, Merced's successor, in 2001.

More recently, Intel postponed the release of its fastest Xeon processor for four-processor servers. When used in four-processor configurations, the 450-MHz version of Xeon was disabling the error correcting cache function, a crucial function for servers. Intel is now currently working internally, and with its server vendors, to increase the thermal protection on four-way Xeon servers.

On Friday, Compaq announced that it was delaying its first Alpha-based workstations from September until the fourth quarter of the year, and possibly the first quarter of next year.

Sun, of course, hasn't been immune from development problems itself. The first samples of the UltraSparc III, which will run at 600 MHz, have been delayed from late summer until the end of the year or the beginning of 1999, several sources at Sun have said. The delay comes from an "over-aggressive"

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