

Chip manufacturers to roll out new RISC designs

AMD, MIPS, and others will unveil offerings at Microprocessor Forum

BY YVONNE L. LEE AND BROOKE CROTHERS

RISC will be the order of the week, as a number of manufacturers are set to provide the details of their next generation of chips at the Microprocessor Forum, in San Mateo, Calif.

Advanced Micro Devices Inc. will unveil its K5 Pentium-compatible processor, which it touts as a

"true RISC chip," and MIPS Technology Inc. will introduce its R10000 RISC processor.

AMD's K5 is a "true super-scalar, RISC microprocessor" that boasts six parallel execution units and a four-instruction-issue pipeline, said industry sources familiar with the chip.

Samples of the K5 will ship by year's end, they added.

The Pentium-class AMD processor is designed to eliminate bottlenecks inherent in Intel Corp.'s x86 architecture by converting the x86 instruction stream into fast RISC operations, sources said.

Instructions are executed with a high degree of parallelism in AMD's RISC core and then go into a "re-order buffer" that converts

them back into x86-ordered instructions, sources said.

The K5 uses techniques such as out-of-order execution, branch prediction, and speculative execution to keep the pipeline filled.

MIPS' new RISC offering, the R10000 superscalar processor, is scheduled to ship in volume in the second half of 1995. The R10000 can fetch four instructions and issue five instructions during each clock cycle. Other features include performance of over 300 SPECint92, 32KB of instruction cache, and 32KB of data cache.

In addition to the introductions by AMD and MIPS, other chip manufacturers plan to unveil processors with improvements that will boost performance to more than 300 SPECint92.

Hewlett-Packard Co. and

The next generation of RISC chips

	Due date	Clock speed
DEC Alpha 21164	First quarter '95	266 MHz
HP PA-8000	Fourth quarter '95	NA
MIPS R10000	Second half '95	200 MHz
IBM PowerPC 620	Second half '95	150 MHz
Sun UltraSparc	Second half '95	140 MHz to 200 MHz

IBM will discuss, but not formally announce, characteristics of their PA-8000 and PowerPC 620 processors, respectively.

Digital Equipment Corp. and Sun Microsystems Inc.'s Sparc Technology Business will also discuss their previously announced Alpha 21164 and UltraSparc processors.

Speculative execution and an increased capability to handle multiple instructions at a time are common characteristics of most of the RISC chips being announced at the conference.

Speculative execution anticipates which of two branches a set of instructions will take, and performs those even before checking whether the condition for the branch has been checked. All the RISC processors unveiled at the

show, except Digital's Alpha AXP 21164 and Sun's UltraSparc, can process instructions out of sequence, with the chip determining when to schedule the instructions for processing.

The UltraSparc uses branch prediction, where the processor anticipates the likely branch and holds the instructions in a buffer until the branch condition can be checked. Speculative execution goes a step further, and actually processes the set of branched instructions.

If the wrong branch is predicted, the processor will end up taking more time recovering from the incorrect condition than it would have spent just processing them, said Linley Gwennap, editor in chief of *Microprocessor Report*. But most prediction algorithms are 80 to 90 percent accurate, he added.

IBM PCs set to rejoin club

Big Blue's new line will adhere to industry standards

BY THE INFOWORLD STAFF

IBM is reversing six years of hardware development on Monday and coming out with a new IBM PC line that relies heavily on industry standards.

Gone will be the PS/2 line that was to transform the industry in 1988, along with the ValuePoint series that was IBM's first attempt to rectify the mistakes made with PS/2.

Instead of Micro Channel and XGA, the IBM PC line will feature support for the EISA, ISA, PCI, and VESA bus architectures, and hard drive capacities will range from 230MB to 2 gigabytes, sources said.

The new line's state-of-the-art 64-bit graphics accelerator is based on the industry's Super VGA standard, and sources indicate that IBM's implementation of PCMCIA will be among the most compatible versions of that fickle standard.

IBM is also sticking with the Intel Corp. standard for this introduction, with systems based on Intel's 33-MHz 486; 486DX2/66; 75-MHz and 100-MHz IntelDX4; and 66-MHz, 90-MHz, and 100-MHz Pentium processors.

Pricing for the Series 300 and Series 700 systems will also reflect IBM's new willingness to compete in the trenches; prices will range from \$1,000 to \$3,500, sources said.

"IBM is making a statement with this technology," said John Dunkle, president of Workgroup Technologies Inc., a mar-

ket research firm, based in Hampton, N.H.

"These products will offer users superior performance at a competitive price, and they aren't based on IBM-only technology. That's a big difference from when it introduced the PS/2 line," Dunkle said.

IBM will also be introducing new versions of its desktop, ThinkPad, and server lines, along with a host of value-added services, products, and touch-screen displays, sources said.

Gone will be the PS/2 line and ValuePoint series.

IBM will offer some unique technology with its new IBM PC line, including the Select-A-Bus, which lets users upgrade their bus architecture via a riser card.

Software bundled with the IBM PC line will include the NetFinity client software, along with a number of desktop applications designed to make system setup and communications easier, sources said.

With IBM's build-to-order program — which resellers will also participate in — users can order virtually any configuration and equip it with either

Windows or OS/2, sources said.

IBM would be ecstatic if the switch from the PS/2 to the IBM PC line simply leads the company right back to where it was in 1988, when IBM replaced its original IBM PC line with the PS/2.

But at that point, IBM's market share stood at 50 percent — and no one expects the new PC line to be as successful.

"The market's changed. No one's going to dominate it like IBM did then," said Richard Zwetckkenbaum, a senior analyst for International Data Corp., in Framingham, Mass.

"The important thing about this announcement is not the products, it's how well IBM can restructure itself and what kind of management it has," Zwetckkenbaum said.

IBM needs to show that it has hit bottom and is now capable of righting itself, Zwetckkenbaum added.

One of the things IBM has to do right is make sure that it is able to immediately meet demand for the systems, something the company has had trouble doing lately.

According to sources familiar with the company's plans, the Series 300 — mostly 486-based systems — won't ship until mid-November.

Most of the Pentium-based Series 700 won't be available until December, sources said. And some products, such as a Micro Channel card for the systems, won't be available until February, sources added.

Cabletron readies LAN-to-SNA modules

BY BOB WALLACE

Cabletron Systems Inc., one of the industry's leading hub makers, starting this week will roll out add-ons to enable its MMAC hubs to tightly link IBM mainframes with LAN and terminal users, as well as LAN-to-LAN traffic.

Modules for Cabletron's midrange Multi Media Access Center and high-end MMAC Plus will link LANs to Systems Network Architecture (SNA) and Advanced Peer-to-Peer Network (APPN); will send IP and IPX traffic over LU 6.2; and will even include channel attachments, according to analysts briefed by the company.

These are the latest among a long string of module announcements that began earlier this month when the company introduced a slew of Token Ring interface and management wares for its two largest

hubs. Cabletron declined comment.

"Cabletron is enabling users to integrate capabilities in its hubs rather than using stand-alone boxes," said one analyst. "This approach greatly simplifies network management by cutting the number of devices managed."

The hub vendor's 3174 Establishment Controller Media Interface Module will allow network managers to link 3270 terminals to the MMAC instead of controllers. The module provides access to hosts through X.25 and Synchronous Data Link Control (SDLC).

The new module, shipping today, supports APPN and TCP/IP and will cost about \$11,000, one analyst said.

Cabletron's SNA Network Access Controller Module for Ethernet enables managers to connect SDLC devices to an Ethernet LAN by transforming

SDLC to Logical Link Control. The module is shipping now for more than \$3,500.

The SNA Network Access Controller Module-SNA-to-WAN Concentrator loads several types of traffic onto a frame-relay or X.25 WAN link. It will ship early 1995 for more than \$5,000, one analyst said.

A 7020 module will let managers link LANs over a backbone network by putting IP and NetWare IPX traffic in LU 6.2. The module will ship early next year at roughly \$11,000.

Analysts said Cabletron will likely announce two channel attachment modules.

Enhancements are also planned for Cabletron's Blue-Vision network management system. A key improvement will be that users can manage both SNA and LAN networks without having IBM's NetView network management platform running on a host.