

X86 Outdoes RISC Performance 1
 As far as servers and workstations are concerned, 1999 was the year of the x86. During the year, x86 processors from AMD and Intel gave RISCs a sound trouncing. Athlon and Coppermine approached the mighty Alpha in both frequency and SPECint performance, and surpassed all other RISCs on those two metrics. X86 processors are also stealing the show on server benchmarks, such as SPECweb and TPC, and they are even gaining ground on RISC's last stronghold—floating-point. And when it comes to market performance, well, the light of RISC is rapidly being extinguished. With this impressive showing, how could we award our annual **Best Server and Workstation Processor** award to anyone but . . .

Editorial: Brainiacs, Speed Demons, and Farewell 3
 Over the past seven years we have watched a battle to the death between brainiacs and speed demons. The speed demons have clearly won and most next-generation processors will adopt the philosophy of frequency first, IPC second. Merced apparently fell into the brainiac trap, a mistake that McKinley will undoubtedly attempt to remedy.

Most Significant Bits 4
 Intel counters Athlon with Pentium III-800; BIST bug bites Coppermine; Direct RDRAM directions disclosed; Compaq, Samsung commit to Alpha.

Embedded News 10
 SiByte licenses MIPS for network processor; Motorola releases specs for on-chip bus; Embedded benchmarks ready for prime time.

NEC VR4122 Wrestles StrongArm 11
 Although it took 0.18-micron technology to do it, someone has finally delivered a processor with a better performance/power ratio than the venerable 0.35-micron StrongArm. NEC's new VR4122 improves on the company's current VR4121 with larger caches, higher frequency, lower power, and a PCI controller.

Processors Put Pressure on Packages 12
 As microprocessors continue their relentless march toward higher frequency, the power-delivery and signal-integrity demands placed on packages become increasingly severe. To meet these challenges, packaging technology is evolving to lidless flip-chip bonding, copper wiring, and organic substrates while still preserving the popular PGA and BGA formats.

The Slater Perspective: The Microprocessor Millennium 16
 Microprocessors have certainly come a long way in their 30-year evolution from 10³ to 10⁸ transistors. But the goal of an artificially intelligent computer is still just a pipe dream. The best leverage will come from computing devices that complement, not replace, human abilities.

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