

Pentium® Processor

Answers to Commonly Asked Questions



Technical Information

What are the key technical features of the Pentium® processor?

The Pentium® processor is the result of many innovations. Some of these include:

Superscalar Architecture

Enables the processor to execute two instructions simultaneously in one clock cycle.

64-Bit Data Bus

This wider data bus doubles the speed at which information is carried between the processor and memory subsystem.

Branch Prediction

Allows the Pentium processor to boost performance by predicting which way an instruction will branch, thus executing it more quickly.

Separate 8K Data and 8K Code On-Chip Cache Memories

On-chip caches keep the most important information on the processor for faster access. Separate data and code caches further increase performance by allowing each type of information to flow without bottlenecks.

High-Performance Floating-Point Unit (FPU)

For graphics and mathematical calculations, the pipelined FPU uses improved algorithms and dedicated logic for common floating-point functions, resulting in up to nine times the performance of IntelDX2™ processor-based computers.

SL Technology and Power-Management Features

Stop clock, autohalt, I/O restart and other features provide superior power-management capabilities on energy-efficient desktop and notebook computers.

Multiprocessor Support

An on-chip multiprocessor interrupt controller supports up to 60 processors while Dual Processor Mode enables two processors to share a single second-level cache for low-cost, high-end desktops, workstations or entry-level server designs.

What causes the differences in clock speeds of various Pentium® processors?

Improvements in the clock speeds of Pentium® processors are due, in large part, to our constant efforts to improve our manufacturing processes. Our 60-66 MHz processors were manufactured using a .8 micron process, the 75-120 MHz processors are manufactured with a 0.6 micron process, and the 120-166 MHz processors are manufactured at 0.35 microns. As the microns (or distance between transistors) decreases, cost of production decreases and performance increases. The result is top-to-bottom solutions for all price points and performance needs.

What are CISC and RISC? How do they affect users?

CISC (Complex Instruction Set Computing) and RISC (Reduced Instruction Set Computing) are two theoretical approaches to designing microprocessors, each with its own advantages. Microprocessors like the Intel386™ were entirely CISC-based, but today's Pentium and Pentium® Pro processors include both CISC and RISC features. The superscalar design of Pentium processors and the Dynamic Execution microarchitecture of Pentium Pro processors offer functionality that is similar to RISC microprocessors, but allows Intel architecture-based microprocessors to offer a distinct advantage.... They are fully compatible with virtually all the software designed for the PC.

Performance

What are performance benchmarks?

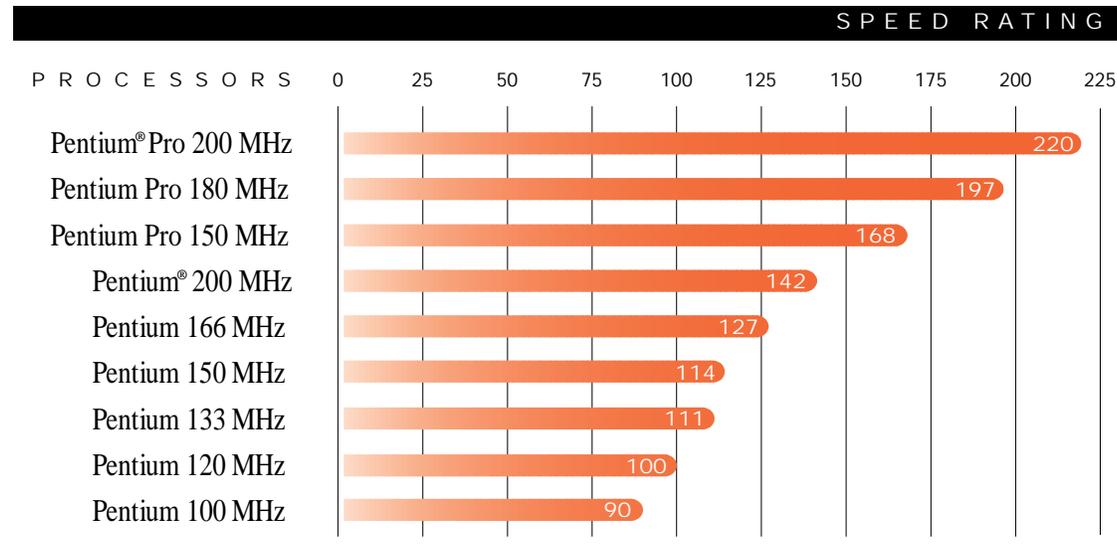
A performance benchmark is a software program which measures the performance of a computer, or the parts of a computer, by running the same task in different circumstances. Benchmarks help users compare different component performance and evaluate the performance of systems under different hardware and software configurations.

What is megahertz (MHz)?

Megahertz is a measure of the clock speed (or frequency) of the processor and not how fast the processor works. For example, a 150 MHz Pentium processor does not have the same performance as a Pentium Pro processor at 150 MHz. Therefore, despite its common use, MHz alone is not an effective indicator of microprocessor performance.

What is the iCOMP® Index 2.0 for the Pentium® processor?

iCOMP® Index 2.0 measures the relative performance of Intel microprocessors. The index is as follows:



Differences in hardware and software configuration will affect actual performance. iCOMP® Index 2.0 reflects 32-bit applications and benchmarks. It combines 5 benchmarks: CPUmark32®, Norton SI-32®, SPECint95®, SPECfp95®, and Intel Media Benchmark. Each processor's rating is calculated at the time the processor is introduced. Ratings for processors introduced before iCOMP Index 2.0, were calculated upon version 2.0's release. For more information about iCOMP Index 2.0, including a description of the systems used to calculate ratings, contact Intel at 1-800-628-8686.

What are the SPECint95* and SPECfp95* benchmarks for Pentium processors?

This benchmark measures how fast integer and floating-point calculations are performed inside the microprocessor.

PROCESSORS	SPECint95*	SPECfp95*
Pentium® 200 MHz	5.47	3.68
Pentium 166 MHz	4.82	3.40
Pentium 150 MHz	4.35	3.11
Pentium 133 MHz	4.20	3.08
Pentium 120 MHz	3.77	2.82
Pentium 100 MHz	3.33	2.60



Software

Is new software necessary for Pentium® processor-based systems?

Software that runs on an Intel286™, Intel386™ or Intel486™ processor-based system will run on a Pentium® processor-based system.

Can software be “optimized” for the Pentium processor?

Yes, much of the software being developed today is designed to take greater advantage of the Pentium processor's capability to help increase the software's performance. But even if the software has not been “optimized” for Pentium processors, it still gets a significant boost in performance when run on a Pentium processor-based system.

What is the difference between the Pentium processor and the Pentium® Pro Processor?

The Pentium Pro processor family is Intel's newest generation of performance for desktops, workstations and servers. The family consists of processors at 150, 166, 180 and 200 MHz and is easily scalable up to four microprocessors in a multiprocessor system. The Pentium Pro processor delivers more performance than previous generations through an innovation called Dynamic Execution. This is the next step beyond the superscalar architecture implemented in the Pentium processor. The Pentium Pro includes manageability, performance and scalability features for business-critical applications.

The Pentium Pro processor was designed to excel in pure 32-bit software environments, such as Windows* NT and UNIX*, while offering 16-bit performance comparable to that of a high-speed Pentium processor (150 and 166 MHz). If your organization is migrating to Windows* NT and/or 32-bit applications under Windows* 95, Pentium Pro processor-based systems are an excellent investment. The Pentium Pro processor also offers excellent performance in mixed environments, such as 16-bit applications running on Windows* NT. For 16-bit applications on Windows 95, the Pentium processor delivers excellent performance and price/performance.



For more information on Intel microprocessors, please call 800-628-8686, or see the Intel World Wide Web Home Page at <http://www.intel.com>

*Other brands and names are the property of their respective owners.

© 1996 Intel Corporation

242008-008

Printed in U.S.A./0796/18K/KDM/SB/LS/ZM