

Purpose of this Utility

The Intel(R) Processor Identification Utility is provided by Intel Corporation to enable customers to identify the brand, features, package, intended frequencies and actual operating frequencies of their Intel microprocessor. Customers can also use the utility to discern whether or not an Intel processor is being operated above its Intel rated frequency.

The main features of the utility are available via buttons on the left side of the utility display:

- The **Frequency Test** section of the utility provides information regarding the operating status of the selected processor.
- The **CPU Technologies** section of the utility displays the Intel processor technologies and features present in the selected processor.
- The **CPUID Data** section of the utility identifies the Intel processor(s) in the system.
- The **Save** feature enables the processor information to be saved into a text file.
- The **Web Update** feature enables updating to the latest version of the Intel Processor Identification Utility.

The Intel Processor Identification Utility is not intended to identify microprocessors manufactured by companies other than Intel.

For additional help on the utility, click the **Help Topics** button in this Help window or click on a topic below:



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* Other names and brands may be claimed as the property of others.

How the Utility Works

The **Frequency Test** section of the Intel(R) Processor Identification Utility runs a frequency determination algorithm (speed test) to determine at what internal speed the processor is running. The utility then examines internal data in the processor and makes a comparison between this data and the operating frequency it measured. The utility then informs the user of the overall system status as a result of this comparison.

The **CPU Technologies** section of the utility reads the internal registers of the processor to identify and display the Intel processor technologies that the processor supports.

The **CPUID Data** section of the utility identifies Intel processors by reading a precise instruction embedded in the processor. The utility translates this instruction and uses it to display information about the processor.

The **Save** button generates a text log file containing all of the information obtained by the Intel Processor Identification Utility. The utility asks for the filename and location in which to save the log file. Multiple writes to the same log file (e.g. in a multiprocessor system) are appended in that log file.

The **Web Update** button opens the default web browser on the system to the Intel web site containing the latest version of the Intel Processor Identification Utility.

Information Reported by the Utility

The Intel(R) Processor Identification Utility reports information on the Intel processor being tested.

The **Frequency Test** section displays the following information:

- Processor brand logo
- [Processor brand name](#)
- [Processor number](#)
- [Expected processor operating frequency](#)
- [Reported processor operating frequency](#)
- Expected system bus operating frequency
- Reported system bus operating frequency
- Reported size of the highest-level cache in the processor

The above information may be accompanied by a message about the operating frequency status. This message details whether or not the processor is operating at a frequency higher than Intel specifications for the tested processor. In some cases (e.g. processor [overclocking](#) or [system bus overclocking](#)), the frequency test will produce an **Advisory** button. Click this button to view advisory messages about the operating status of the tested processor.

The utility may report a current operating frequency that is slightly higher or lower than the expected frequency for your processor, without providing an advisory message. Frequency differences within 1% are due to slight variations in the manufacturing of system components, and are considered to be operating within specifications.

The **CPU Technologies** section lists all of the following technologies that are supported by the processor:

- [Hyper-Threading Technology](#) (HT Technology)
- [Intel\(R\) Extended Memory 64 Technology](#) (Intel(R) EM64T)
- Intel MMX(TM) technology
- [Streaming SIMD Extensions](#) (SSE)
- Streaming SIMD Extensions 2 (SSE2)
- Streaming SIMD Extensions 3 (SSE3)
- [Intel\(R\) SpeedStep\(R\) technology](#)
- Enhanced Intel SpeedStep technology

The utility may include a **Technical Advisory** button with the processor technologies. Clicking the button will display information about system support features required to be present to fully enable certain advanced Intel processor technologies:

- Hyper-Threading Technology requires a computer system with an Intel Pentium(R) 4 processor supporting Hyper-Threading Technology and an HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See <http://www.intel.com/info/hyperthreading/> for more information including details on which processors support HT Technology.
- Intel Extended Memory 64 Technology requires a computer system with a processor, chipset, BIOS, OS, device drivers and applications enabled for Intel EM64T. The processor will not operate (including 32-bit operation) without an Intel EM64T enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel EM64T enabled OS, BIOS, device drivers and applications may not be available. Check with your vendor for more information.

The **CPUID Data** section of the utility provides the following information to help identify your Intel microprocessor:

- Processor classification:
 - Processor brand name
 - Processor number
 - [Processor type](#)
 - [Processor family](#)
 - [Processor model](#)
 - [Processor stepping](#)
 - [Processor revision](#)
- Processor details:
 - [Cache information](#)
 - [Packaging information](#)
 - [Platform Compatibility Guide](#) information
- Other Intel processor features:

- [Execute Disable Bit](#)
- [Enhanced Halt State](#)

Multiprocessor or Dual Processor Support

The Intel(R) Processor Identification Utility can identify and determine the frequency of each Intel processor in a multiprocessor system (between 2 and 32 processors). The utility displays the processor that is currently being tested or read in the **Multi-Processor** selection box.

Multiprocessor support in the Intel Processor Identification Utility is only available when using the utility on an operating system with multiprocessor support. Multiprocessor features are disabled when using the utility on other operating systems and in single processor systems.

To switch between processors, select the processor you wish to query in the **Multi-Processor** selection box (e.g. select Processor #2 to run the utility on Processor #2).

In a system with [Hyper-Threading Technology](#) (HT Technology) enabled, the utility will list each physical processor in the Multi-Processor selection box, but it will not list a separate entry for each logical processor. If the system contains only one physical processor, the Multi-Processor selection box will be disabled.

Multi-language Support

The Intel(R) Processor Identification Utility for Microsoft Windows* operating systems is available in the following languages from Intel's support web site at:

<http://support.intel.com/support/processors/tools/piu/sb/cs-014921.htm>

- English
- French
- Italian
- Spanish (Modern Sort)
- Brazilian Portuguese
- German
- Russian
- Korean
- Chinese (Traditional)
- Chinese (Simplified)
- Japanese

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Supported Processors

The Intel(R) Processor Identification Utility is designed to operate on computer systems containing an Intel processor found in the following list:

- Intel Xeon(TM) processor
- Intel Pentium(R) 4 processor Extreme Edition
- Intel Pentium 4 processor
- Intel Celeron(R) D processor
- Intel Celeron processor
- Intel Pentium M processor
- Mobile Intel Pentium 4 processor-M
- Mobile Intel Pentium 4 processor
- Intel Celeron M processor
- Mobile Intel Celeron processor

Older Intel Celeron processors, and other older Intel processors not listed above, are not supported by the Intel Processor Identification Utility. To identify older Intel processors, download the Intel(R) Processor Frequency ID Utility from the following Intel web site:

<http://support.intel.com/support/processors/tools/frequencyid/freqid.htm>

Effects of Power Management Features

Some power management features (e.g. [Intel\(R\) SpeedStep\(R\) technology](#)) throttle or reduce the operating frequency of components within the PC. These types of power management features may result in very low tested frequency results. This does not mean that the processor is operating at degraded performance levels. It means that the enabled power management feature is optimizing the efficiency of the processor, either to save power or reduce heat within the system. For instructions on how to disable these power management features, please contact your PC system manufacturer.

Definitions

Cache Information

Cache is very high-speed memory that stores frequently used instructions and data. Cache information reported by the utility may include level 3, level 2, and level 1 data and instruction cache sizes, depending on what types of cache are present and enabled in the processor.

Enhanced Halt State

The Enhanced Halt State processor feature is designed to improve acoustics by lowering the power requirements of the processor.

Execute Disable Bit

The Execute Disable Bit capability is a processor feature that can help prevent buffer overflow virus attacks.

Expected Frequency

This is the frequency at which Intel intended the processor and the system bus to run. This should be the speed physically marked on the processor's packaging.

Hyper-Threading Technology

Hyper-Threading Technology (HT Technology) enables the processor to execute two threads (a part of a program) in parallel - so your software can run more efficiently and you can multitask more effectively than ever before. A PC based on the Intel(R) Pentium(R) 4 Processor with HT Technology can enable you to run multiple demanding applications at the same time.

Intel(R) Extended Memory 64 Technology

Intel Extended Memory 64 Technology (Intel EM64T) is an enhancement to Intel's IA-32 architecture. The enhancement allows the processor to run newly written 64-bit code and access larger amounts of memory.

Intel(R) SpeedStep(R) Technology

Intel SpeedStep(R) technology allows the system to operate in maximum performance mode when plugged into an AC power source, and in battery-optimized performance mode when running on battery power. Enhanced Intel SpeedStep technology allows the system to dynamically adjust processor voltage and core frequency according to the power source and application demand. The results are decreased power consumption and decreased heat production.

Overclock

Operation of a processor above the manufacturer's specified frequency (e.g. operating at 3.2 GHz with a processor that Intel manufactured to run at 2.8 GHz).

A processor being operated above its frequency specification (overclocked) may become unstable, or produce unpredictable or erroneous results. These conditions might not be readily apparent and the life of the processor may also be shortened. Intel's warranty does not cover processors that have been overclocked.

Packaging Information

The Packaging entry on the CPUID Data section of the utility displays the type of physical package that contains the processor. The possible package types are:

- FC-PGA2 - the Flip Chip Pin Grid Array 2 package is a more compact version of the FC-PGA package. It appears as a smaller thin square of green material with shorter and more closely separated gold pins. An integrated heat spreader may obscure the top of FC-PGA2 processors.
- uPGA/BGA - a Micro Pin Grid Array or Ball Grid Array package.
- OOI - an OLGA (Organic Land Grid Array) On Interposer package. The interposer translates the fine pitch pads of the OLGA package to a pin field, which connects into the socket on the system main board.
- uFCPGA or uFCPGA2 - a Micro Flip Chip Pin Grid Array package used for mobile processors.
- uFCBGA or uFCBGA2 - a Micro Flip Chip Ball Grid Array package used for mobile processors.
- LGA775 - a 775 pin Land Grid Array package used for desktop processors.

For more information, see the packaging information on Intel's website at:
<http://www.intel.com/support/processors/procid/ptype.htm>

Platform Compatibility Guide

Platform Compatibility Guide (PCG) encompasses all of the platform power requirements necessary for the proper functionality of the processor as it relates to the motherboard. PCG also provides an easier method of identifying which processor works with which motherboard.

Processor Brand Name

Branded name assigned by Intel Corporation to a specific processor, e.g. Intel Pentium 4 processor.

Processor Family

This classification indicates the Intel microprocessor generation and brand. For example, Intel Pentium 4 processors have a Family value of "F".

This information can be useful for validating information from the "Quick Reference Guide" that is available for the specific family of your processor.

Processor Model

The "model" number identifies to Intel the microprocessor's manufacturing technology and design generation (e.g. Model 4). Model number is used along with family to determine which specific processor in a family of processors that your computer contains. This information is occasionally needed when communicating with Intel to identify the particular processor.

Processor Number

Intel uses processor numbers to enable consumers to quickly differentiate among comparable processors and to analyze or take into account more than one processor feature during the selection process. Processor numbers should be used to differentiate between the relative overall features *within* a certain processor family (e.g. within the Intel(R) Pentium(R) 4 processor family) and *within* a numbering sequence (e.g. 550 vs. 540). Processor numbers are **not** a measurement of performance. For more information, visit Intel's website at http://www.intel.com/products/processor_number/.

Processor Revision

The "revision" number indicates version information for Intel processors within a stepping. The revision information may be useful when communicating with Intel to determine the processor's internal characteristics.

Processor Stepping

The "stepping" number indicates design or manufacturing revision data for production Intel microprocessors (e.g. Stepping 4). Unique stepping numbers indicate versions of processors to facilitate change control and tracking. Stepping also allows an end user to identify more specifically which version of the processor their system contains. This classification data may be needed by Intel when trying to determine the microprocessor's internal design or manufacturing characteristics.

Processor Type

"Type" indicates whether the Intel microprocessor was designed for installation by a consumer (end user) or by a professional PC system integrator, service company, or manufacturer. Type 1 indicates that the microprocessor was intended for installation by a consumer (e.g. upgrade such as an Intel OverDrive(R) processor). Type 0 indicates that the microprocessor was intended for installation by a professional PC system integrator, service company or manufacturer. The processor type depends on whether the processor is a single processor, dual processor, or an Intel OverDrive processor.

Reported Frequency

This is the actual operating frequency of the processor and system bus as measured by the Intel Processor Frequency ID Utility. The utility may report a current operating frequency that is slightly higher or lower than the expected frequency for your processor. Frequency differences within 1% are due to slight variations in the manufacturing of system components, and are considered to be operating within specifications.

Streaming SIMD Extensions

Streaming SIMD Extensions (SSE) are new instructions designed to reduce the overall number of instructions required to execute a particular program task, which can result in an overall performance increase.

System Bus Overclocking

Operation of the system bus above the processor's specified system bus frequency (e.g. operating the system bus at 533 MHz with a processor intended for operation on a 400 MHz system bus). This will typically force the processor to run at a frequency above its intended specification. Refer to the **overclock** definition for more information.

Utility Updates

Click the **Web Update** button to check for updates to the Intel(R) Processor Identification Utility. The utility will open the default web browser to bring up the download page on the Intel website. On the download page, select and download the utility in the desired language.

The Intel Processor Identification Utility download page is located at:

<http://support.intel.com/support/processors/tools/piu/sb/cs-014921.htm>

