

# **Choosing the right processor**

**Intel's naming convention explained**

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For years, users have been focused on clock speed as a measure of processor performance: the higher the GHz, the better the performance, or so users often thought. With its new naming convention, Intel is setting out to change this perception and to simplify the purchase decision process.

This article covers the following topics:

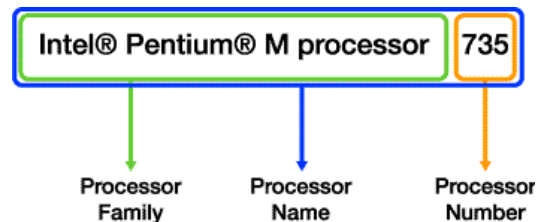
- what the new Intel naming conventions mean
- the main components to consider when judging processor performance
- provides a quick buying chart to help choose the right mobile processor

## Introducing the new Intel® line-up

The new Intel processor naming convention introduces a new naming convention, which consists of the Processor Family, Processor Name and Processor Number.

Processors will be available in three distinct models:

- **700-series** – the high-performance processor for the highly mobile user, road warrior, pro or enthusiast. Value for money is important.
- **500-series** – a favourite for business or home use, offers portability, the powerful processing performance easily handles multitasking, multimedia applications or other processor-intensive tasks, delivers a strong price/performance ratio.
- **300-series** - delivers reliable performance at an affordable price, emphasis on value and mobility, ideal for students and budget-conscious users.



*Graphic courtesy of Intel*

## Speed demons beware: power is the more than the sum of the parts

For many years, users have focussed on clock or processing speed (measured in GHz) as the primary factor that defines how powerful the processor is. In fact, performance isn't simply about speed, but includes many other considerations, which together interact to produce a certain level and kind of performance.

Just think about it, when buying a car, the potential buyer considers many factors, including: fuel efficiency, price, size and type of engine (number of cylinders, turbo), size of car, etc. Similarly, choosing the right processor means considering all the factors combined, which make for the right choice.

In addition to **Processor Clock Speed**, there are several additional main processor features, which together contribute to overall performance:

- **Chip Architecture** refers to the basic design of the processor (comparable to the architecture of a building), often consisting of multiple technologies combined to produce the desired performance results.

- **Cache** refers to the amount of memory available on the processor for data storage, processing, quick access and retrieval. Having certain data stored in cache speeds up the operation of the computer.
- **Front Side Bus (FSB)** is a term used when describing the size and speed of the “pipe” between the central processing core and main memory. Faster FSB speeds mean the CPU can access data at a higher frequency, while wider FSBs (e.g. 64-bit) allow more data per clock cycle to be sent to the CPU.

Other key technologies include: **Hyperthreading**, which is especially important when running multiple, processor-intensive applications, this technology enables multi-threaded software applications to execute threads in parallel; **Advanced Branch Prediction**, which analyses running software to determine how to most efficiently run it; **Power Aware Cache**, which is a technology that turns off cache transistors not being used to conserve power; and **Micro-Ops Fusion**, which allows several processes to be executed in a single clock cycle.

### Using the numbers to chose a processor

The change in naming convention means that end-users will now be able to differentiate individual CPU’s, based on a number of important features and considerations. A business or individual will be able to identify a processor that corresponds to specific usage needs or scenarios.

Mobile Processor Family	Number Sequence
Intel® Pentium® M processor	7xx
Intel® Pentium® M processor Low Voltage	7xx
Intel® Pentium® M processor Ultra Low Voltage	7xx
Mobile Intel® Pentium® 4 processor (including the Mobile Intel® Pentium® 4 processor supporting Hyper-Threading Technology and Mobile Intel® Pentium® 4 processor with HT Technology)	5xx
Intel® Celeron® M processor	3xx
Intel® Celeron® M processor Ultra Low Voltage	3xx

*Graphic courtesy of Intel*

To help you choose the processor that is right for you, here is a quick reference chart, mapping current processors against the new series numbers.

**Processor orientation – a first glance**

The chart below is designed to give users a first glance at the Intel naming convention and how it translates into a practice.

Potential Implementation:	Factors to consider:	Suggested processor line:
Highly mobile, high-performance user	Enables extended battery life in high-performance notebooks, light, thin and easy	Intel® Pentium® M 700 Series, preferably ultra low voltage
High-performance office and mobile working	High-performance, multitasking, easy mobility, reliable	Intel® Pentium® M 700 Series or Mobile Intel® Pentium® 4 processor 500 series
General-purpose business notebook.	Great all-around performance, reliable, portable among sites. Good price/performance ratio.	Mobile Intel® Pentium® 4 processor 500series
Home office	Great all-around performance, reliable, portability within the home. Normally plugged into the outlet at a site. Good price/performance ratio.	Mobile Intel® Pentium® 4 processor 500 series
Desktop replacement	Reliable all-around performance, multitasking, multimedia. Portability is important as is value for money.	Mobile Intel® Pentium® 4 processor 500 series or Intel® Celeron® M processor 300 series
Multimedia and gaming	Immersive gaming, 3D effects, watch movies, mobility within the home or office. Value for money.	Mobile Intel® Pentium® 4 processor 500-series
Value notebook, home use	Reliable performance at an affordable price.	Intel® Celeron® M processor 300 series
Student	Affordable, reliable, mobile working at school and extended battery-operating time is important.	Intel® Celeron® M processor 300 series, Ultra Low Voltage