Intel 4th Generation Core Processors

Something Epic Has Arrived

The word "epic" tends to be a tad overused these days, but in the case of Intel's new 4th Generation Core Processors, it might be an apt descriptor. After all, what would you call a chip that is noticeably faster at everything than the world's previous performance champ and that still manages to be even more energy efficient?

"With every iteration of new Intel processors, we continually see improvements in power efficiency and overclocking capabilities," says Eddie Vong, head of R&D for gaming PC powerhouse CyberPowerPC. "The 4th Generation Core Processors continue this tradition with astounding overclocking headroom coupled with lower operational voltages."

iBuyPower Marketing Manager Ricky Lee agrees. "In general, we've observed an increase in compute performance across the board, when compared clock-for-clock against the previous generation. Video conversion performance benefits hugely from Quick Sync; the performance gain is pretty phenomenal."

Intel Technical Marketing Engineer Darrin Lynch has more to say about improvements to Quick Sync: "The performance increase is up to 50% on some applications, and if you used it before you know what kind of speed that is," he says.

& That's Not All . . . .

In addition to video performance increases, games and other applications run faster on 4th Generation Core Processors, as well.

"There are increases everywhere, but the real advantages are in the multi-core applications," Lynch says. "Each of our cores is faster than the previous generation, so when

you tell the CPU to use four cores or four cores and four additional threads, you see tremendous overall performance increases."

Vong says CyberPowerPC has seen these increases in its benchmarking comparisons. "We've observed anywhere from a 10 to 20% increase on the majority of our benchmark suites using Intel's new 4th Generation Core Processors. From 3DMark Vantage to 3DMark 11, PCMark, and a variety of gaming titles we routinely FPS-test and benchmark."

The best part is that these performance increases will provide meaningful benefits to everyone, from early adopters and hardcore gamers to content creators and casual users.

Of course, as nice as higher performance is, it's only the beginning of the story.

More Power . . . & Less

In most cases, power and efficiency are a trade-off; you have to give up one to get the other. That's not the case with Intel's 4th Generation Core Processors, however. The 22-nanometer manufacturing process they share with the previous generation is highly efficient, of course, but Intel didn't stop there.

"We have further refined features we had in previous generations, such as the ability to completely turn off cores vs. putting them in a deep sleep—off is better than sleeping when it comes to power savings," Lynch says. However, one of the biggest architecture changes is the fully integrated voltage regulators. We pulled the voltage regulators for each individual CPU power rail off the motherboard and put them into the CPU. This allows the CPU tremendous control over the power coming into it."

Redefining Processor Graphics

The benefits of Intel's 4th Generation Core Processors' compute performance and power savings are pretty clear, but Intel is also proud of the impressive leaps it has made with its HD Graphics technology.

"For most users, the largest single performance increase will be with the new HD Graphics," Lynch says. "While this is not a hardcore gaming graphics solution, it is definitely equal to the task of most games and any of your video playback requirements."

"Intel's HD Graphics technology has continually improved with each generation of CPUs, dating back to Lynnfield and the P55 chipset," says Vong. "With the latest HD 4000 series graphics in Haswell CPUs, we're seeing it as a strong competitor to some of the entry-level graphics from NVIDIA and AMD, which is a remarkable improvement in just a few years."

The Total Package

When combined with an 8-series chipset-equipped motherboard, Intel's 4th Generation Core Processors represent the best total computing solution on the market today, for a wide variety of users.

"We have made improvements across the entire platform," Lynch says, "from USB 3.0 and SATA 6Gbps ports on the chipset to exciting new features inside the CPU."

All of this, and suggested retail pricing in line with 3rd Generation Core Processors at their launch? Epic, indeed. ■