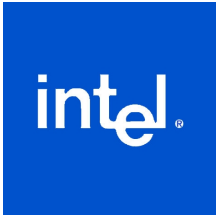


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By: Bogdan Botezatu, Hardware Editor



Intel needs some
serious graphics cores
Intel

[Intel's GPU-in-CPU Chips Will Arrive in Mid-2009](#)

Will be based on the Nehalem silicon

Integrating graphics cores inside CPUs has triggered yet another competition between Intel and AMD. The latter company has been working on its Fusion chip for quite some time now, and it seems that the company's need for producing graphics cores has pushed it into buying the Canada-based ATI. AMD's upcoming Fusion processors has been already detailed and slated for a Q2 2009 release, but it won't come alone on the market. It seems that Intel is also working on its own version of processors with integrated graphics cores. World's number one x86 chip manufacturer will release a similar CPU/GPU product, based on the Nehalem silicon. As if a single GPU-in-GPU product were not enough, Intel will roll out two versions of the processor, called Havendale and Auburndale. Both versions will be comprised of two CPU core and a single GPU one, based on Intel's G45 successor. However, the integrated core can hardly be referred to as a fully-fledged GPU, given the fact that it lacks some essential features in both DirectX 9 and DirectX 10 APIs. The two offerings will be built on a Nehalem silicon, which should come in handy, given the fact that its micro-architecture is extremely customizable. As [previously reported](#), the Nehalem silicon can be modified to fit another CPU or GPU core, an integrated memory controller, or even to have the number of operating processing engines changed. The Havendale and Auburndale chips will come with hyperthreading technology, which would allow the processor to handle four threads at a time. As you probably know, Havendale is a desktop part, while Auburndale is especially designed for notebooks. Each of the chips features an integrated dual-channel memory controller supporting DDR3-1333 memory, but, despite the fact that they are Nehalem-descendants, neither of the chips will support the new Quick Path Interconnect. The two chips will also differ in sockets: while the Havendale will sit on Intel's LGA-1160 socket, the Auburndale will work with the newer mPGA-989 socket. The good news is that the chips will be manufactured at the 45-nanometer production node, which would allow them to run at lower energy requirements: 75 watts for the desktop CPU, and 45 or 55 watts for the mobile processor. This is quite impressive, given the fact that they come with graphics cores included.