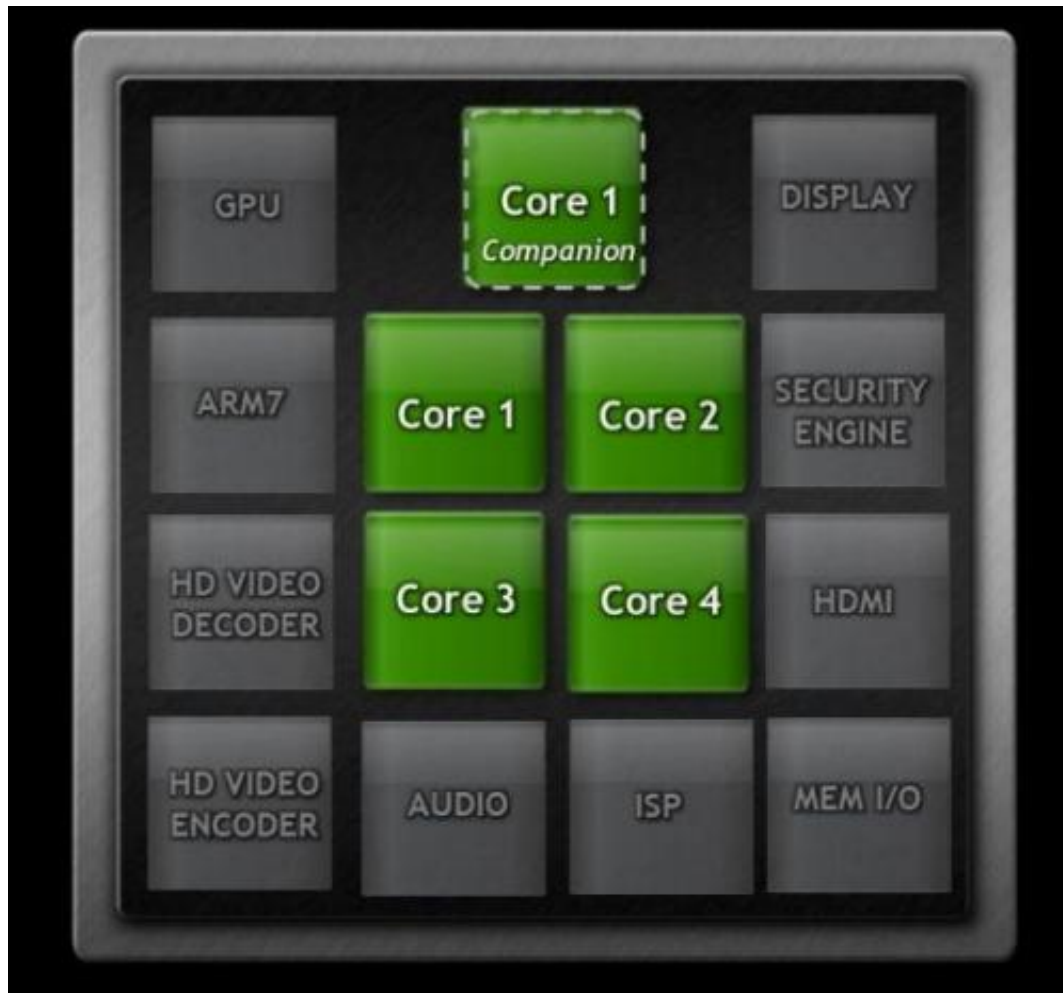# Nvidia says Kal-El chip will have five cores

September 22 2011, by Nancy Owano



(PhysOrg.com) -- Nvidia says its upcoming Kal-El chip (Tegra 3) will have five cores, not four. The news appeared this week when the Santa

Clara company announced a [white paper](#) describing the architecture of this system-on-a-chip for mobile computing.

There had already been considerable interest in what was assumed would turn out to be a quad-core processor,

However, the news of a fifth [core](#) this week generated a flood of online headlines in the tech and business media seeing Nvidia's five-core approach as a right step in addressing the performance/[power-consumption](#) demands of [mobile computing](#).

The processor, code-named Kal-El, treats the newly announced fifth core as a "companion" core to the other four. The fifth operates at low power when the mobile device is doing something that does not require a lot of power, like reading or music and [video playback](#). At those times, Kal-El completely powers down the four performance-tuned cores and instead uses this companion core.

For higher performance tasks, Kal-El disables the companion core. [Multitasking](#) and browsing Flash-based web pages might take several of the four cores, while four cores are operating for power-intensive tasks like gaming and media processing.

Multiple cores are seen as the right construct for [mobile devices](#); outside [Nvidia](#), the company's nimble approach is being referred to as chip gymnastics; inside Nvidia, the technical term used is Variable Symmetric Multiprocessing (SMP) technology. With today's marketplace demands for high-performance smartphones and tablets, Nvidia believes its five-core approach in Kal-El will achieve energy efficiency, delivering powerful performance while improving battery life.

The company has in the past been best known for its graphics chips for PCs. The focus appears to have shifted. Using chip designs from

U.K.-based ARM Holdings, the company has expanded into chips for smartphones and tablets.

All five CPU cores are ARM Cortex A9 CPU based.

Earlier this month, Nvidia president and chief executive officer Jen-Hsun Huang said that a vast majority of the company's revenue will be generated by its mobile processor business and not its longstanding graphics card division. No specific dates have been announced, but expectations outside Nvidia are for the first Kal-El (Tegra 3)-based products to appear later this year. Tablets carrying Kal-El are anticipated first, following by smartphones in 2012.

**More information:** Nvidia blog: blogs.nvidia.com/2011/09/quad-core-kal-el%E2%80%99s-stealth-fifth-core-lets-it-save-on-energy/

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