

Intel Centrino Core Duo & Solo specs

We recently spoke with Graham Tucker from Intel Australia, who was over here in New Zealand for the product launch of the Centrino Duo. Questions ranged from handheld mobile devices through to mobility questions about benefits to notebooks/laptops we'll see in the near future.

For those of you who aren't sure about the new naming, Intel have switched away from the Pentium brand and are now calling their processors Core Duo or Core Solo depending on how many cores (CPU core logic) the processors contain. The Centrino Core Duo/Solo is an evolution of the Centrino Pentium M range and offers improved FSB speed, power consumption, instructions and of course, the ability to have two CPU cores in on fab (Fabrication container, the plastic thing that provides an interface between the mainboard and the processor(s)).

First off the current release of Centrino Core Duo contains no 64bit extensions. However, in the 2nd half of 2006, there are plans to release a 64bit edition. Speculating, this will most likely coincide with the release of Windows Vista. Unfortunately there is no technology bleed between the Centrino Duo/Solo and the XScale processors, currently used in handheld mobile devices. Intel is targeting both those products at different audiences and their architecture makes reusing the technology impossible.

Right now the Core Duo provides no hardware hooks for DRM software. DRM is being left to the OS and other application software at this stage. Intel doesn't want to be seen getting mixed up with this hornet's nest. We think the last thing they would want is to drive consumers into the arms of AMD.

The backbone of the Centrino Duo/Solo is the 945 Express chipset. This chipset is "based" on the 900 series of chipsets from Intel, but has been reengineered to provide lower power requirements, less heat and laptop centric features. This is the technology also known as "Napa". However, you can only call it "Napa" if the ODM is using a complete Intel solution, Processor, 945 Express chipset and Intel's wireless chipset that couples with it.

The chipset offers an integrated video chipset, that can be superseded by an additional video card, in the same way that you would with a desktop mainboard.

Intel claims that the performance of this chipset is very solid for 2D work. This has been obtained by implementing DirectX 9.0 features in hardware, allowing for vast improvements which frees the CPU as the GPU is now performing that work. Graham mentioned that the a 945 system is capable of rip, encode and playback simultaneously without frame drop for playback even with 1080 encoded content.

Of course, a much improved chipset is crucial with the upcoming rollout of HD-DVD / Bluray content and Windows Vista, with its Aero interface. So it makes sense that the Intel graphics chipset would address the most common denominator needed for any laptop in the next 12 months and beyond. Of course in terms of performance against an ATI or nVidia GPU, the 945 is a poor contender. But most serious gamers don't buy a laptop. That said, there are dual SLI laptops up and coming for various providers soon, so once their prices fall below the novelty of the bleeding edge, this could be a different story.

Looking into the future, the low power consumption, increased performance and flexible reference design of the 945 chipset combined with the Core Duo/Solo are ideal to breath life back into the Tablet PC market. Graham confirmed that Intel's roadmap includes their "Next Generation Micro Architecture" which enables very small form factor.

Combine this with the technology of a Polymer display, a Core Solo "L" (Low voltage) and the abundance of cheap solid state memory and you've got the perfect combination for a durable, long battery life, always on, useful tablet PC.

A big power benefit of the 945 Express chipset is that it brings a 667 FSB to notebooks and even though the 945 north bridge chipset still uses 90nm it can still perform at 667 FSB without the need to be cooled with a fan. Intel provides it's ODMs with a reference design for basic layout. This includes thermal models conducted by Intel showing how to cool the chipsets effectively.

Intel also provides improved security at the CPU level with the Execute Disable Bit. In short, it indicates whether programs contained within memory ranges are executable or non-executable. If they are non-executable and they attempt to be executed, the processor raises an error to the OS. Basically the processor won't load the program into the stack for execution. This is designed to foil some classes of worms, trojans and viruses that exploit the buffer overrun vulnerabilities.

Both the 945 Express and the Centrino Duo/Solo top the solution off by offering advanced power management by turning off unused cores, slowing down cores that are not being utilized and having the 945 Express chipset perform

similar power saving operations on the video core. In short, the battery life of the Napa solution is tangible real world benefit, with many technology previews of the chipsets reporting gains of around 15%.

At the US launch (5th January 2006) there were 230 designs for Napa notebook systems.

In conclusion, while the release of the Centrino Duo/Solo and the 945 Express chipset does not seem to be hugely exciting, it is because many of the features and benefits of this new chipset and processor have yet to be realized. This new technology will make for a smooth transition for those wanting to get Windows Vista while those who remain with XP will see improved speed and battery life.