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Fact Sheet

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Intel Introduces New Intel® Ultra-Low Voltage (ULV) Processors

June 2, 2009 – Intel Corporation is now introducing new Intel® Ultra-Low Voltage (ULV) processors, Intel® Core 2 Duo processors, and a value chipset (Mobile Intel GS40 Express chipset). These products join the recently released Intel® ULV Core 2 Duo processor and Intel® Core 2 Solo processor based on Intel® Centrino® 2 processor technology and Intel® Centrino™ processor technology respectively. These processors will enable a host of new, very thin consumer laptop PC designs with long battery life and at mainstream price points.

These processors run cooler (TDP-10W) than the standard volt processors (TDP 25W-35W), thus enabling very thin (0.8”-1”) laptops that are quieter and typically have longer battery life (over 7 hours with a 57Whr battery) at mainstream system price points.

Intel is also enhancing the Intel® My WiFi technology introduced in Q1’09, with more devices that can wirelessly connect to notebooks with Intel® Centrino® 2 processor technology – without using an Access point.

Intel is also introducing speed bumps on the Standard Voltage (SV) Intel® Core 2 Duo processors. The SV Core 2 Duo processor is Intel’s energy-efficient microprocessor delivering breakthrough mobile performance and responsiveness for demanding business users and consumers alike. Users will see improved performance when running multiple, intense applications simultaneously, as well as dual-core optimized applications.

Key features of the Intel® Core 2 Duo processor include:

- **Intel® 45nm Hi-K Metal Gate Silicon Technology** – Nearly 2x more transistors and lower leakage than 65nm technologies, delivering new levels of performance and power efficiency.

- **1066 MHz Front Side Bus (FSB)** – Faster performance as compared to the previous generation 800MHz FSB.
- **Intel® HD Boost** – Faster performance on such intensive multimedia applications as High-Definition (HD) video encoding.
- **6MB L2 Cache** – Performance improvements for data-intensive applications.
- **Deep Power Down Technology** – Shuts down processor cores and L2 cache when they are not needed for greater energy efficiency.

Key architectural features of the Intel® Core 2 micro-architecture include:

- **Intel® Wide Dynamic Execution:**
 - **Wider** – A full, 4-wide super scalar pipeline that can fetch, decode, execute and retire instructions at a sustained rate of four instructions-per-clock vs. three for the Intel® Core Duo processor.
 - **Deeper** – Buffer sizes optimize the effective number of instructions in flight relative to the pipeline, allowing the processor to look deeper into the program flow to find instructions that can be executed in parallel.
 - **Faster** – Efficiency-optimized pipeline improves the architectural critical path for a very short, efficient 14-stage pipeline, attributing to higher frequency while delivering higher instructions-per-clock.
 - **Smarter** – Macro fusion combines commonly used instruction sequences into a single instruction for execution, reducing the internal resources required and increasing the instructions-per-clock rate, thus enabling the retiring of five instructions with the same work it would normally take to retire four.
- **Intel® Intelligent Power Capability** – A set of capabilities designed to reduce power consumption and design requirements by managing the runtime power consumption of all the processor's execution cores. The result is excellent optimization, enabling the Intel Core micro-architecture to deliver more energy-efficient performance notebook PCs.
- **Intel® Advanced Smart Cache** – A multi-core, optimized cache that significantly reduces latency to frequently used data, improving performance and efficiency by increasing the probability that each execution core of a multi-core processor can access data from a higher-performance, more efficient cache subsystem.
- **Intel® Smart Memory Access** – Improves system performance by optimizing the use of the available data bandwidth from the memory subsystem and hiding the latency of memory accesses. This innovation also includes a capability called “memory disambiguation,” which increases the efficiency of out-of-order processing by providing the execution cores with the built-in intelligence to speculatively load data for instructions that are about to execute before all previous store instructions are executed.
- **Intel® HD Boost** – Significantly improves performance when executing streaming SIMD extension (SSE/SSE2/SSE3/SSE4) instructions, accelerates a broad range of applications, including video, speech and image, photo processing, encryption, financial, engineering and scientific applications.
- **Intel® 64** – 64-bit headroom in hardware to take advantage of 64-bit operating systems such as Microsoft Windows Vista*, as well as 64-bit applications as they become available for the mobile client, delivering greater system memory to support applications with larger datasets.

Mobile Intel® GS40 Express Chipset

The Mobile Intel® GS40 Express chipset is the new Intel® chipset for new ultra-thin laptops for consumers.

- A suite of drivers enabling a robust and outstanding Windows® Vista™ Premium experience featuring Windows* Aero across all platforms.
- Improved game playability with more execution units (10, as compared to 8 in previous generation).
- Enhanced Intel® Clear Video Technology with software features including ProcAmp, high-quality scaling, film-mode detection and correction, MPEG2, and WMV9 hardware acceleration, enabling a high-definition video experience with smoother, stutter-free playback, sharper image quality, customizable color controls and fewer motion artifacts.
- Intel® Graphics Media Accelerator 4500M offers a graphics core frequency of 400MHz @1.05 and up to 384 MB of video memory.
- Integrated HD playback (Blu-ray*) with native hardware-based decoding of HD video streams (AVC, VC1, MPEG).
- Native support for digital displays with Integrated HDMI with HDCP key.

Intel® WiFi Link 5000 Series

The Intel® WiFi Link 5000 series is Intel's second-generation 802.11 Draft-N wireless LAN solution offering maximum network connectivity for the home and the enterprise. 802.11 Draft-N technology, with its superior performance and range, is a key requirement for Intel® Centrino® 2 processor technology and Intel® Centrino® 2 with vPro™ technology platforms.

- **Intel® Ultimate N WiFi Link 5300** – The world's first 450 Mbps⁶ Draft-N WLAN adapter offering superior performance, features, and increased range compared to legacy 802.11a/g solutions. The Ultimate N WiFi Link 5300 enables faster uploads and downloads, more reliable and predictable connections, and enterprise-class manageability via Wireless support for Intel® Active Management Technology (AMT) version 4.0. In addition, the Ultimate N WiFi Link 5300 is available in a PCIe Half Mini Card form factor to enable thinner and lighter notebook designs.
- **Intel® WiFi Link 5100** – 802.11 Draft-N WLAN adapter providing up to 300Mbps of Rx bandwidth, a 5x increase as compared to legacy 802.11a/g solutions.⁶

Intel® My WiFi Technology

A WiFi Personal Area Network (PAN) technology, Intel® My WiFi is a combination of driver and application that allows laptops with the latest generation of Intel WiFi adapters to connect to a Wireless LAN and run a WiFi PAN simultaneously. Up to eight WiFi Certified™ devices are supported on the PAN, allowing personal devices to print, share, show and synchronize content to and from the laptop.

- **The adapters supporting Intel® My WiFi are the Intel Ultimate N WiFi Link 5300, WiFi Link 5100, and the upcoming WiFi Link 1000** – each a highly capable adapter with advanced features and optimized for low-power consumption.

Intel® 82567 Gigabit Network Connection:

- **Intel® 82567LM** – Gigabit networking solution for high-end corporate designs. It supports Intel® Centrino® 2 with vPro technology (Intel AMT and the System Defense Filters) for leading system manageability (or ASF 2.0), integrated Auto Connect Battery Saver (ACBS), Link Speed Battery Saver, Low Power Link Up (LPLU), System Idle link downshift for Energy Star* power savings, Jumbo Frames, Receive Side Scaling, and the Intel® Stable Image Platform Program (SIPP).
- **Intel® 82567LF** – Gigabit networking solution for mainstream notebook systems that require only basic manageability. It supports ASF 2.0, integrated ACBS, Link Speed Battery Saver, Low Power Link Up (LPLU), and System Idle link downshift for Energy Star* power savings as well as the Intel® Stable Image Platform Program (SIPP).
- **Intel® 82567V** – Gigabit networking solution for basic consumer notebook systems. It supports basic low-power modes, Link Speed Battery Saver, Low Power Link Up (LPLU), and System Idle link downshift for Energy Star™ power savings.

Switchable graphics

Switchable graphics is a new (optional) feature now available on Intel® Centrino® 2-based laptops that allows users to switch between energy-efficient integrated graphics, which enable longer battery life and discrete graphics, delivering greater 3-D performance to give users the best of both worlds.

Intel® Turbo Memory

An optional feature available on many Intel® Centrino® 2 processor technology and Intel® Centrino® 2 with vPro technology-based notebooks, now available in a larger capacity 2GB module, that improves performance, boot time and battery life. It is a non-volatile memory module that increases system performance while reducing power consumption.⁵

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¹ System performance, battery life, high-definition quality video playback and functionality, and wireless performance and functionality will vary depending on your specific operating system, hardware, chipset, connection rate, site conditions, and software configurations. References to enhanced performance including wireless as measured by SYSMark* 2004 SE, PCMark* 2005 and 3DMark*06, SPEC* CPU2006* and Adjacent Channel Interface (ACI)* refer to comparisons with previous generation Intel® Centrino® technologies. References to improved battery life as measured by MobileMark* 2007, if applicable, refer to previous generation Intel Centrino processor technology. Wireless connectivity and some features may require you to purchase additional software, services or external hardware. Availability of public wireless LAN access points is limited, wireless functionality may vary by country and some hotspots may not support Linux-based Intel Centrino processor technology systems. See www.intel.com/products/centrino/more_info for more information.

² Intel Graphics with Intel® ClearVideo Technology, including improved video quality are available on systems based on the Mobile Intel® GM45 Express Chipset.

³ As measured by 3D Mark*06 comparing latest generation Intel® Centrino® 2 processor technology-based notebooks including Intel Graphics, with first generation dual-core Intel Centrino processor technology based notebooks. Actual performance may vary. See www.intel.com/go/consumerbenchmarks for important additional information.

⁴ As measured based on VirtualDub* 1.1.2 with DivX* 6.7 codec comparing Intel® Centrino® 2 processor technology-based notebooks with comparable frequency first generation dual-core Intel Centrino processor technology-based notebooks. Actual performance may vary. See www.intel.com/go/consumerbenchmarks for important additional information.

⁵ Performance measured based on TMPGEncoder* Xpress* 4.4 comparing Intel® Centrino® 2 processor technology-based notebooks with comparable frequency first generation dual-core Intel® Centrino® processor technology-based notebooks. Actual performance may vary. See www.intel.com/go/consumerbenchmarks for more important additional information.

⁶ Up to 2x greater range enabled by 3x3 Draft-N implementations with 3 spatial streams. Up to 8x Bandwidth increase or up to 450 Mbps of Bandwidth based on the theoretical maximum bandwidth enabled by 3x3 Draft-N implementations with 3 spatial streams in combination with a 3 spatial stream Access Point. Up to 5x Bandwidth increase or up to 300 Mbps of Receive Bandwidth based on the theoretical maximum receive

bandwidth enabled by 1x2 Draft-N implementations with 1 transmit spatial stream and 2 receive spatial streams. Actual wireless throughput and/or range will vary depending on your specific operating system, hardware, and software configurations. Check with your PC and access point manufacturer for details.

⁷ *Intel® Active Management Technology requires the computer to have an Intel® AMT-enabled chipset, network hardware and software, as well as connection with a power source and a corporate network connection. Setup of Intel AMT requires configuration by the purchaser and may require scripting with the management console or further integration into existing security frameworks to enable certain functionality. It may also require modifications or implementation of new business processes. With regard to notebooks, Intel AMT may not be available or certain capabilities may be limited over a host OS-based VPN or when connecting wirelessly, on battery power, sleeping, hibernating or powered off. For more information, see www.intel.com/technology/manage/iamt.*

⁸ *Tests run on customer reference boards and preproduction latest generation Intel® Centrino® processor technology with optional Intel® Turbo Memory enabled against like systems without Intel® Turbo Memory. Results may vary based on hardware, software and overall system configuration. All tests and ratings reflect the approximate performance of Intel products as measured by those tests. All testing was done on Microsoft® Vista® Ultimate (build 6000). Application load and runtime acceleration depend on Vista®'s preference to pre-load those applications into the Microsoft® ReadyBoost® cache. See www.intel.com/performance/mobile/Intel_Turbo_Memory.htm for more information.*

⁹ *Requires WiFi-enabled devices connecting to the PC via the Intel® My WiFi Technology. WiFi devices must be certified by the WiFi Alliance for 802.11b/g/a. Check with your PC manufacturer for more details*

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