



Intel® Centrino® 2 with vPro™ Technology

Increase security and productivity while lowering TCO¹ and energy consumption.²

- Brings hardware-based technologies that deliver enhanced maintenance and management capabilities with Intel® vPro™ technology.³ Readily integrates with leading management software solutions and delivers proactive security in an open LAN – even outside the corporate firewall.
- Enjoy more than twice the CPU performance when doing processor-intensive tasks like multitasking compared to the previous generation of Intel® Centrino® processor technology-based laptops⁴
- Designed for longest possible battery life⁵ with the energy-saving features Intel® Intelligent Power Capability and Deep Power Down Technology.
- Up to 5x faster wireless performance than 802.11a/b/g solutions with Intel® Next-Gen Wireless-N.⁶

Intel® Centrino® 2 with vPro™ technology features hardware-based proactive security and built-in maintenance and management capabilities that readily integrate with software management solutions to help lower IT costs and improve IT efficiency. Powered by the Intel® Core™2 Duo processor engine for outstanding mobile performance, it delivers great battery life and enhanced wireless connectivity.



- Intel® Core™2 Duo processor
- Mobile Intel® GM45/PM45/GS45 Express Chipsets
- Intel® vPro™ technology
- Intel® Next-Gen Wireless-N (Intel® WiFi Link 5300 Series) or optional WiMAX support with Intel® WiMAX/WiFi Link 5350
- Intel® 82567LM Gigabit Network Connection
- Intel® Turbo Memory (Optional)

Building on a common technology foundation, laptops and desktop PCs with Intel® vPro™ technology enable IT organizations to manage and protect more PCs more effectively and with fewer resources. With the latest IT management consoles, you can monitor and maintain your laptops and desktops over a wired or secure wireless network even if the PC is powered off or down. You can also remotely power up, reboot, diagnose, and repair wireless laptops – even if the OS is unresponsive or management agents are missing. With Intel hardware capabilities, you get powerful proactive security, built-in manageability, and energy-efficient performance for your laptop and desktop PCs.

Laptops with Intel vPro technology are part of the Intel® Stable Image Platform Program⁷ (Intel® SIPP), so you can avoid unexpected changes that might force software image revisions or hardware requalifications. This helps your team more effectively plan replacement cycles and reduce the number of deployed PC configurations.

All this in a variety of laptop designs so you can choose the right one for your business.

Discover more about Intel Centrino 2 with vPro technology now at www.intel.com/go/vpro.

Blog with the experts that have deployed Intel vPro technology at www.intel.com/go/vproexpert.



Intel's Best Technologies for Business Laptops

Feature	Benefit
Intel® vPro™ Technology	
The best Intel-based mobile PC for business brings you hardware-based technologies that deliver proactive security and enhanced maintenance and management capabilities.	Strengthened security measures plus greater manageability capabilities that lower the total cost of servicing, maintaining and managing both wired and wireless laptop PCs.
Intel® Active Management Technology (Intel® AMT) 4.0³	
Remotely configure, diagnose, isolate, and repair infected PCs even if they are off or OS is unresponsive, to significantly reduce desk-side maintenance visits.	<ul style="list-style-type: none"> ▪ Added protection against viruses and attacks via programmable defense filters and from unsolicited tampering via continuous agent presence checking. ▪ Better security compliance with faster, more accurate asset inventory and faster time to patch saturation. ▪ User-initiated secure communication tunnel to IT, for improved diagnostics, repair, and management – even outside the corporate firewall⁹ ▪ Support for 802.1x, Cisco SDN* and Microsoft NAP* ▪ More secure, hardware-assisted remote management features to shut down, wake up, and update PCs more easily off hours.
Intel® Virtualization Technology⁹ (Intel® VT)	
Run multiple OSs – with their associated applications – simultaneously inside “virtual machines.”	Reduced overhead and better isolation of each virtual machine helps simplify virtualization, make it easier to build lightweight virtual machine monitors (VMMs), and make virtualization more efficient and secure.
Intel® Anti-Theft Technology – PC Protection¹⁰ (Intel® AT)	
Uses a set of programmable and interdependent hardware-based triggers and responses to identify unauthorized attempts to access encrypted data or the OS.	Can help protect encrypted data from unauthorized access if a laptop PC is lost or stolen.
Industry-Standard Trusted Platform Module 1.2¹¹ (TPM 1.2)	
Provides a hardware-assisted safe place to store information (such as keys), store and report integrity metrics, and a set of cryptographic operations that execute in a protected place.	Security measures such as hard-drive encryption are more effective and more reliable.
Built on Industry Standards	
Built on industry standards to give you many choices in selecting OEMs and software vendors.	Supports industry-wide management standards, including ASF, XML, SOAP, TLS, HTTP, WS-MAN, and DASH.
Intel® Core™2 Duo Processor	
Revolutionary mobile, dual-core processor architecture puts two complete execution cores in the same processor.	Industry-leading performance and responsiveness to run multiple demanding applications simultaneously with the same great energy efficiency, enabling great battery life ⁵
Intel® Advanced Smart Cache	
A shared L2 cache allows both cores access to the full L2 memory area, and allows shared data to be accessed from cache, minimizing bus traffic. It also allows one core to use the entire cache when the other core is inactive. Provides twice the bandwidth to L1 caches compared to Intel® Core™ Duo processor.	More efficient cache and bus design enables better performance, responsiveness and power savings.
Intel® 64 Architecture¹²	
Allows the user to take advantage of 64-bit applications as they become available. Process more in RAM, resulting in less data caching to and from HDD to enable greater performance.	Headroom for the user to take advantage of 64-bit applications as the ecosystem continues to grow.
Power-Optimized 1066 MHz Front Side Bus	
Increased processor system bus speed.	Provides increased data bus bandwidth, vs. prior generations, for up to four full instructions simultaneously (previous generation could only handle three instructions).
Intel® FSB Frequency Switching	
At minimal workloads, Intel FSB Frequency Switching helps to lower FSB data transfer rate.	Enhanced Intel SpeedStep® technology directly benefits from Intel FSB Frequency switching because the reduced CPU frequency allows a lower operating voltage to be used in minimal workloads. This ultimately leads to lower power consumption.

Intel's Best Technologies for Business Laptops

Feature	Benefit
Intel® Core™2 Duo Processor <i>continued</i>	
Intel® Intelligent Power Capability	
Ultra fine-grained control over the CPU's logic circuitry to turn on only the parts that are needed.	Power management features that enable the same great battery life as Intel® Centrino® Duo processor technology with Intel Core Duo processor.
Intel® Dynamic Power Coordination	
Helps manage voltage and power consumption. One core can demand high performance while the other core can independently transition to a low-power state.	Enables reduction in power consumption and enables great battery life ⁵
Improved Security	
Better security built right into the chipset through Execute Disable Bit. ³	Unique technology integrated into all Intel processors guards against an entire class of viruses and worms.
Mobile Intel® Graphics Media Accelerator X3100	
Next-generation graphics includes software enhancements and support for new and enhanced battery conservation features that minimize power consumption, enabling great battery life.	Microsoft Windows Vista* and Windows 7* support with highest level of Aero experience across all chipsets within Mobile Intel® GS45/GM45 Express Chipsets.
Intel® Clear Video Technology	
Video technology that delivers enhanced video quality.	Provides outstanding video playback with sharper image quality, increased clarity, and customizable color controls.
Enhanced Support for a high-definition experience	
Support for digital interface with integrated audio and HDCP content protection. ⁴	<ul style="list-style-type: none"> Enhanced high-definition experience with improved HDTV connectivity and HDMI supporting up to 1080p and easy-to-use TV configuration utility, Intel® TV Wizard. Enhanced hardware acceleration for MPEG2 and WMV9B* formats.
Intel® Next-Gen Wireless-N (Intel® WiFi Link 5300 Series)	
<p>Connects to most available industry-standards-based wireless LAN (802.11b, 802.11a, and 802.11g and Draft 802.11n) infrastructures.⁴</p> <p>Up to 5x faster compared to 802.11a/g products with data rates up to 450 Mbps⁶ Support for legacy and latest high throughput WLAN technologies provides connectivity options for multiple environments.</p> <p>Optional WiFi/WiMAX support, with Intel WiMAX/WiFi Link 5350 and Intel WiFi Link 5300.¹⁵</p>	<ul style="list-style-type: none"> Flexibility to connect to your wireless home network and public wireless LAN hotspots located in airports, hotels, restaurants, and coffee shops around the world.⁵ Enables wireless Intel® Active Management Technology 4.0.³ Helps overcome network capacity issues, allowing increased simultaneous network activity for large file transfers, streaming HD video, VOIP and more. Allows users to experience broadband connectivity on the go for wireless access beyond today's hot spots.
Up to 2x⁶ greater range with MIMO and antenna diversity support	
MIMO technology leverages multipath behavior by using multiple, "smart" transmitters and receivers with an added "spatial" dimension to increase performance and range.	Reduces the number of "dead zones," dropped data packets, network reconnects, and dramatically improves connectivity throughout the home.
Great battery life with optimized power modes	
Reduced WLAN power consumption can help deliver great platform battery life.	Allows for greater utility, enjoyment, and convenience.
Intel® 82567LM Gigabit Network Connection	
Single-port Gigabit Ethernet Physical Layer Transceiver (PHY) that connects to its MAC through a dedicated interconnect. It is based on Intel's Gigabit PHY technology, and supports operation at data rates of 10/100/1000 Mbps.	Offers high performance and low power consumption for fast throughput and seamless transfers of large amounts of data.

Optional Feature	Benefit
Intel® Turbo Memory¹⁶	
Extended memory. Nonvolatile cache device supporting Windows Vista* ReadyDrive and ReadyBoost functions. Allows application swap from main memory into NVCACHE rather than to HDD. Boot and application loading acceleration reduces latency for data transfer from hard disk for random read/writes.	Look for systems with new Intel® Turbo Memory for faster performance when loading frequently used applications and faster boot time. ¹⁶

¹ Wipro Technologies, March 2009 "Using Total Cost of Ownership to Determine Optimal PC Refresh Lifecycles" <http://communities.intel.com/docs/DOC-3053>.

² Energy Cost EEP - EEP 2.0 methodology is built on six SYSmark* 2007 Preview runs per day. Standard benchmarking practice runs each benchmark three times and uses the median of the three runs. For illustrative purposes, however, we will use a single run. The key metrics for EEP 2.0 are performance, as represented by the SYSmark* 2007 score, and the average power draw. For more information on EEP, go to www.intelcapabilitiesforum.net/EEP-page_all/.

³ Intel® vPro™ technology includes Intel® Active Management technology (Intel® AMT). Intel AMT requires the computer system 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 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 of implementation of new business processes. With regard to laptops, 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/platform-technology/intel-amt/.

⁴ As measured by SPEC® CPU2006 comparing latest generation Intel® Core™2 Duo Processor T9500 & T8100 with a comparable frequency single-core Intel® Pentium® M Processor. Actual performance may vary. See <http://www.intel.com/performance/mobile/benchmarks.htm> for important additional information. SPEC, SPECint, SPECfp, SPECrate, SPECweb, SPECjbb are trademarks of the Standard Performance Evaluation Corporation. See: www.spec.org for more information on the benchmarks.

⁵ System performance, battery life, power savings, high-definition quality, video playback, 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 refer to comparisons with previous generation Intel technologies. 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/index.htm and www.intel.com/performance/mobile/benchmarks.htm for more information on performance, wireless, power savings and energy efficiency.

⁶ Up to 2x greater range and up to 5x better performance with optional Intel® Next-Gen Wireless N technology enabled by 2x3 Draft N implementations with 2 spatial streams. Actual results may vary based on your specific hardware, connection rate, site conditions, and software configurations. See www.intel.com/performance/mobile/index.htm for more information. Also requires a Connect with Intel® Centrino® processor technology certified wireless n access point. Wireless n access points without the Connect with Intel Centrino processor technology identifier may require additional firmware for increased performance results. Check with your PC and access point manufacturer for details.

⁷ Intel® Stable Image Platform Program (Intel® SIPP) - Check with your PC vendor for availability of platforms that meet SIPP guidelines.

⁸ Systems using Client Initiated Remote Access (CIRA) require wired LAN connectivity and may not be available in public hot spots or "click to accept" locations. For more information on CIRA visit, www.intel.com/products/centrino2/vpro/index.htm.

⁹ Intel® Virtualization Technology (Intel® VT) requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain platform software enabled for it. Functionality, performance or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

¹⁰ Intel® Anti-Theft Technology—PC Protection (Intel® AT). No computer system can provide absolute security under all conditions. Intel Anti-Theft Technology (Intel AT) requires the computer system to have an Intel AT-enabled chipset, BIOS, firmware release, software and an Intel AT-capable Service Provider/ISV application and service subscription. The detection (triggers), response (actions), and recovery mechanisms only work after the Intel® AT functionality has been activated and configured. Certain functionality may not be offered by some ISVs or service providers and may not be available in all countries. Intel assumes no liability for lost or stolen data and/or systems or any other damages resulting thereof.

¹¹ Trusted Platform Module (TPM), the original equipment manufacturer must provide TPM functionality, which requires a TPM-supported BIOS. TPM functionality must be initialized and may not be available in all countries.

¹² 64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Consult with your system vendor for more information.

¹³ Enabling Execute Disable Bit functionality requires a PC with a processor with Execute Disable Bit capability and a supporting operating system. Check with your PC manufacturer on whether your system delivers Execute Disable Bit functionality.

¹⁴ Some features and security solutions may not be supported by your PC's operating system and may require additional software and/or certain hardware as well as wireless LAN infrastructure support. Check with your PC manufacturer for details.

¹⁵ Requires WiMAX service subscription.

¹⁶ Tests run on 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. Boot-time performance depends on BIOS and POST execution times as well as hard drive performance. Power savings will depend upon the system power management settings as well as the specific hard drive used. See www.intel.com/performance/mobile/Intel_Turbo_Memory.htm for more information.

All Intel® Centrino® brand family-based laptops, using Intel graphics, meet Microsoft's Windows Vista® Capable PC program requirements. Check with your PC manufacturer for details on discrete graphics solutions. Microsoft program requirements, availability and timelines are subject to change.

* Other names and brands may be claimed as the property of others. SPEC, SPECint, SPECfp, SPECrate, SPECweb, SPECjbb are trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information on the benchmarks.

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