

# The 2nd Generation Intel® Core™ vPro™ Processor Family: Increasing Performance and Productivity with Microsoft Windows 7\*

A visibly smarter way to power business PCs with new levels of security, manageability, and responsiveness

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Over the past 10 years, the IT industry has seen a shift in the ways that computers are used to enhance worker productivity and the company's bottom line. What we need and expect from our PCs has changed. Microsoft and Intel offer the perfect solution to increased productivity demands with PCs that run Microsoft Windows 7\* on 2nd generation Intel® Core™ vPro™ processors. With built-in visuals<sup>1</sup> and industry-leading performance and security, 2nd generation Intel Core vPro processors and Windows 7 help IT staff streamline PC management while giving end users the tools they need to be productive anywhere. The 2nd generation Intel Core vPro processor family complements Windows 7 by building new levels of security, manageability, and responsiveness into the hardware. It also features built-in visuals for a visibly smart processor.

The combination of 2nd generation Intel Core vPro processors, Windows 7, Internet Explorer 9\*, and Microsoft Office 2010\* delivers software tools and hardware-based technologies that meet expanding needs in the workplace. This paper explains how 2nd generation Intel Core vPro processors and Windows 7 can enhance a mobile workforce with greater performance, security, and manageability to help organizations achieve visible results in productivity.



## 2nd Generation Intel Core vPro processors and Windows 7: Better for Business

2nd generation Intel Core vPro processors and Windows 7 offer tangible productivity and performance benefits to businesses.

- 2nd generation Intel Core vPro processors can increase performance for end users and can boost productivity in programs such as Microsoft Office 2010 and Internet Explorer 9, while strengthening security in a mobile workforce.
- IT staff can deploy Windows 7 more efficiently with tools that are built into Microsoft System Center Configuration Manager\* and 2nd generation Intel Core vPro processors.<sup>2</sup>
- Organizations that standardize on PCs built on 2nd generation Intel Core vPro processors can gain greater flexibility when they deploy Windows 7 through Windows Virtual PC\* and Intel® Virtualization Technology (Intel® VT) for optimized desktop virtualization.<sup>3</sup>
- Intel® vPro™ technology, included on 2nd generation Intel Core vPro processors, delivers powerful remote management and control capabilities, enabling you to keep your PCs running smoothly, without taking them out of the hands of users. For example, once activated, Intel® vPro™ Technology allows you to remotely configure, diagnose, isolate, and repair an infected PC—even if it is unresponsive.<sup>4</sup>

Furthermore, organizations that migrate to Windows 7 can make additional performance gains in Office 2010 and Internet Explorer 9 when these applications are deployed on PCs powered by 2nd generation Intel Core vPro processors. These processors and Windows 7 enhance security and manageability to help keep information protected and streamline administration. The combination can also help reduce costs through energy-efficient technologies that are built into the processors and power management features that are included in Windows 7.

Windows 7 lets users work more efficiently and take on more complex workloads, from more places, using more types of computing devices than previously possible. The increased performance, ease of use, enhanced security, and improved manageability make it possible for users—from information workers to corporate IT managers—to get the most out of their computing experiences. But to do so, users need to run Windows 7 on hardware that releases the full power of the software, such as 2nd generation Intel Core vPro processors. With industry-leading processor and memory technologies, these processors let users run more software applications faster and more reliably.

## Do More, Faster with High-Performance 2nd Generation Intel Core vPro Processors and Windows 7

Users need to accomplish an increasing number of tasks in their jobs, but time spent launching or switching between applications hinders productivity. 2nd generation Intel Core vPro processors running Windows 7 can increase users' productivity by helping them work faster and more efficiently.

2nd generation Intel Core vPro processors enhance the Windows 7 user experience with the following technologies:

Intel® Turbo Boost 2.0 <sup>5</sup>	Boosts max core speeds at times of heavy utilization, enabling up to a 60 percent boost in performance for business productivity applications when compared to Intel® Core™ 2 Duo processor family. <sup>6</sup>
Intel® Hyper-Threading Technology <sup>7</sup>	Provides enhanced multitasking performance because each processor can work on four or more threads at a time (depending on the number of cores). This capability delivers up to 2x faster multitasking than Intel Core 2 Duo processor family. <sup>8,9</sup>
Intel® Dynamic Execution	Helps users stay productive with faster PC execution times and more instructions per clock cycle.
Intel® Advanced Smart Cache	Helps users load applications faster to boost efficiency and performance. This technology increases the probability that each execution core can access data from the faster, more efficient processor cache subsystem.
Intel® Smart Memory Access	Helps to increase productivity by improving system performance across a wide range of applications. This technology minimizes memory latency through predictive caching, which optimizes data bandwidth to the memory subsystem.

<p>Intel® Advanced Digital Media Boost</p>	<p>Helps users accomplish digital media tasks faster by improving system performance when Streaming Single Instruction Multiple Data (SIMD) Extension (SSE, SSE2, and SSE3) instructions are executed. These instructions enable Intel Core vPro processors to deliver superior performance and energy efficiency to a broad range of 32-bit and 64-bit applications, including graphics, video encoding, 3-D imaging, and high-performance line-of-business applications.</p>
<p>Intel® Advanced Vector Extensions (AVX)<sup>10</sup></p>	<p>Drives increased worker productivity by helping users manage data and general-purpose applications, like image, audio/video processing, scientific simulations, financial analytics, and 3-D modeling and analysis.</p>

Integrated technology on 2nd generation Intel Core vPro processors can significantly improve return on investment (ROI) when Windows 7 is installed on PCs, with greater efficiency, power-savings, and manageability.

### View the World through Visibly Smart Processors

The workplace is becoming increasingly graphically-intense. Flash\* is widely accepted in the Enterprise,<sup>11</sup> while YouTube\* accounts for 10 percent of all corporate bandwidth.<sup>12</sup> In combination with the new graphical capabilities of Internet Explorer 9 and Office 2010, the built-in visuals of 2nd generation Intel Core vPro processors help you blur the line between documents and graphics. Now you can create more visually compelling documents, including embedding video into PowerPoint 2010\* presentations, which helps you illuminate more complex ideas. And with Lync 2010\*, part of Office 2010, you have a range of connectivity options to stay in contact with your peers, as video conferencing becomes increasingly important in the modern workplace.

Getting the most out of graphics-based programs used to require high-end graphics cards. With visibly smart 2nd generation Intel Core vPro processors, users can get the full visual experience—from browsing the Web faster, to a smooth experience with engineering software, to gaming—without the need to pay for and maintain an add-in graphics solution. With the built-in visuals of 2nd generation Intel Core vPro processors, you no longer need to invest in discrete graphics cards to achieve high-quality graphical output.

### Built-in Visuals Provide a Stunning Graphical Experience

2nd generation Intel Core vPro processors include built-in technologies to improve the visual experience. These technologies bolster a range of graphically intense programs, from improving floating-point calculations to supporting high-definition video conferencing. These built-in visuals are closely integrated with the rest of the CPU for increased productivity. In addition, 2nd generation Intel Core vPro processors include Intel® Wireless Display technology, which lets you wirelessly project animations, images, Web sites, and movies from your PC onto your conference room TV or other device.<sup>13</sup>

### Unleash a More Beautiful Web and Richer Web Sites

With Internet Explorer 9, Microsoft makes it easier to unleash a more beautiful Web. Internet Explorer 9 is graphically enhanced and built to integrate with Windows 7 to provide a more intuitive user experience. 2nd generation Intel Core vPro processors accelerate Internet Explorer 9 with increased multi-tasking capabilities<sup>14</sup> and built-in visuals. Internet Explorer 9 running on 2nd generation Intel Core vPro processors not only improves the user experience, but it also enhances the experience for Web designers, who can now design Web sites and Web applications that are more complex than ever, using a platform that is all around fast, clean and trusted.

### All Around Fast

2nd generation Intel Core vPro processors feature a fast CPU and fast built-in visuals that make it possible for users to fully realize the potential of Internet Explorer 9. Internet Explorer 9 supports hardware-accelerated graphics, enabling the CPU to devote more

resources to other elements of a Web page. Internet Explorer 9 graphics acceleration increases 2-D rendering performance using the Direct2D\* and DirectWrite\* DirectX\* APIs. In addition, JavaScript code is compiled into machine code (x86) to take advantage of extra threads for enhanced performance on multi-core processors. This process is further accelerated through 2nd generation Intel Core vPro processors. As the line between documents and graphics blurs, Web pages are becoming increasingly graphically intense, with images, videos, animations, and other graphics-based elements. With Internet Explorer 9, the CPU calculates motion and the final layout of a page, while the graphical hardware renders graphics, resulting in much higher frame rates than previous browsers (see Figure 1).<sup>15</sup>

### View a Cleaner Web

When working online you want to see Web sites, not the browser’s user interface. Internet Explorer 9 features a streamlined user interface that emphasizes Web pages without distracting from them. Users can enjoy various tools made available in nonintrusive ways to let them see what they want to see.

In addition, Internet Explorer 9 integrates with the intuitive functionality of Windows 7. For example, it includes built-in technologies like tab-tearing, which removes a tab from the window and lets you view tabs side by side or create new collections of windows or tabs. You can also pin Web sites to the taskbar to more quickly access Web sites that you use frequently. Internet Explorer 9 and Windows 7 deliver one coherent user experience that is streamlined to maximize ease of use and user productivity. With the speed, multitasking, and built-in visuals of 2nd generation Intel Core vPro processors, users have more than enough processing power to fully experience Internet Explorer 9 with Windows 7.

### Browse in a Trusted Environment

Security is a fundamental concern when browsing the Web, especially inside the enterprise. The Internet is littered with malicious threats, and it is important that your organization’s PCs be protected from a growing and ever-changing risk profile. Internet Explorer 9 is built on a foundation of trusted Microsoft technology. For example, the new Download Manager utility tracks downloads and warns users when a file could be malicious. The notification bar similarly notifies users of security concerns as they browse, but does not interrupt the browsing experience.

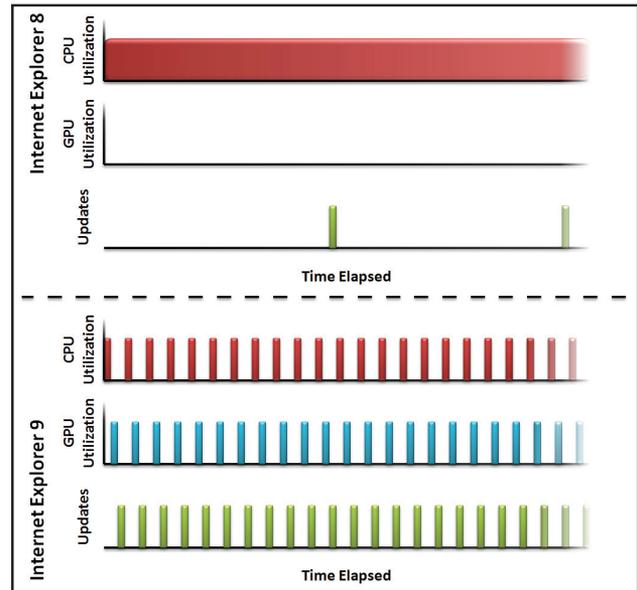


Figure 1. Graphics acceleration features in Internet Explorer 9 improve system utilization and graphics performance

### Bring Office 2010 to Life

Microsoft Office has long been a staple of the workplace, providing a full productivity suite to enhance user performance across the board. Office 2010 includes important updates with improved graphical capabilities and connectivity options. Users can now work on documents with others simultaneously, broadcast their presentations online, and create graphics and documents with a more intuitive and powerful interface. With 2nd generation Intel Core vPro processors, users can take full advantage of Office 2010 capabilities, from enhanced graphical capabilities to a range of connectivity possibilities that benefit from powerful processors.

### Empower Productivity with 2nd Generation Intel Core vPro processors

The enhanced capabilities of Office 2010 are complemented by powerful hardware. 2nd generation Intel Core vPro processors feature built-in visuals that bring vivid life to the enhanced graphical capabilities of Office 2010. For example, users can embed videos in PowerPoint presentations and take advantage of greater image manipulation and integration capabilities, which are all rendered in high quality with 2nd generation Intel Core vPro processors.

In addition, 2nd gen Intel Core vPro processors automatically adapt performance to meet the processing needs of whatever the user is doing. Additional PC performance is enabled by 4-way (or 8-way) multi-task processing that allows users to move between Office 2010 applications quickly and seamlessly, and helps users take advantage of the powerful analysis capabilities in Microsoft PowerPivot for Excel 2010\*.<sup>16</sup>

### Microsoft Lync 2010\* Connects the Workplace

Globalization and the dawn of the mobile workforce mean that workers increasingly need to work with remote coworkers across the world. 2nd generation Intel Core vPro processors work together with Lync 2010, available with Office Professional Plus 2010, to help facilitate this connectivity. Lync 2010 enhances workers' remote interactions throughout the suite by letting workers communicate from within Office 2010 applications. Users can see when others are available in a variety of simultaneous applications so that they can multitask and switch processes easily. Users can also search for coworkers with the needed expertise, connect to people outside the organization, and direct incoming calls to a variety of devices, including mobile and home phones, in addition to the desktop client.

Lync 2010 shines when it comes to company meetings. Users can set up meetings, invite coworkers or clients, and talk through projects with them with high-quality video communication. Users can even design their own client experience on Lync 2010 to meet organization-specific needs. With 2nd generation Intel Core vPro processors, users can experience high-definition video conferences in real time, with hardware that supports and enhances fast and effective communication without the added resource costs of a discrete graphics card. Lync 2010 experiences faster transfer time with 2nd generation Intel Core vPro

### Intel IT Boosts Employee Productivity with Solid State Drives

Intel IT has found that an Intel® SSD, especially when combined with the Intel® Core™ vPro™ processor and Microsoft Windows 7\*, provides significant benefits to employees. Read more at [www.intel.com/it/](http://www.intel.com/it/).

processors, taking advantage of Intel® SSE4.1 instructions for faster video encryption and decryption. In conjunction with strong multitasking capabilities to fully utilize Lync 2010, the visibly smart Intel processors maximize Lync 2010 video conferencing with high-definition quality and the ability to view video on remote screens with Intel® Wireless Display technology.

### Be Protected from Anywhere and Streamline PC Management

Security is an increasingly prevalent concern, with malicious software and social engineering exploits threatening the integrity of the services and data that help drive business success. Tools to simplify management are also increasingly important as systems become more complex and IT staff are stretched to do more. 2nd generation Intel Core vPro processors can help to protect and manage PCs running Windows 7 so that IT staff can shift from a costly reactive stance to a cost-effective proactive position.

### Windows 7 Security Features Use 2nd Generation Intel Core vPro Processor Speed

Windows 7 helps secure the PC fleet by introducing new operating system security features that work with Intel technologies. These features include BitLocker\* and AppLocker\*—tools that prevent unauthorized access to applications, mobile data, or even entire hard drives. 2nd generation Intel Core vPro processors enhance Windows 7 security features because they can encrypt data up to four times faster than the Intel Core 2 Duo processor family by offloading the encryption and decryption to the hardware—a capability now expanded to quad-core processors.<sup>17</sup>

### Block Buffer Overflow Attacks with Intel Execute Disable Bit

The Intel® Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when it is combined with a supported operating system, such as Windows 7.<sup>18</sup> Intel Execute Disable Bit allows the processor to classify areas in memory where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage and worm propagation, and allowing IT staff to repair the PC.

## Protect Information on Lost or Stolen PCs

2nd generation Intel Core vPro processors protect PCs coming out of a sleep state, a traditionally vulnerable period, with Intel® Anti-Theft Technology 3.0.<sup>19</sup> IT staff can configure an amount of time within which users can be required to enter a password from waking the PC or risk being locked out. You can protect company data and assets from potential theft through the deterrent of PC lockout and the security of time-lock password protection.

In the case of loss or theft, 2nd generation Intel Core vPro processors can help keep your information safe (see Figure 2). IT staff can record a PC as lost or stolen and can completely disable the PC the next time it connects to a network—or even with a 3G SMS text message. This technology can even help locate stolen PCs, greatly increasing the chances of recovery. Upon recovery, IT staff can enter a key to restore all previously erased data.

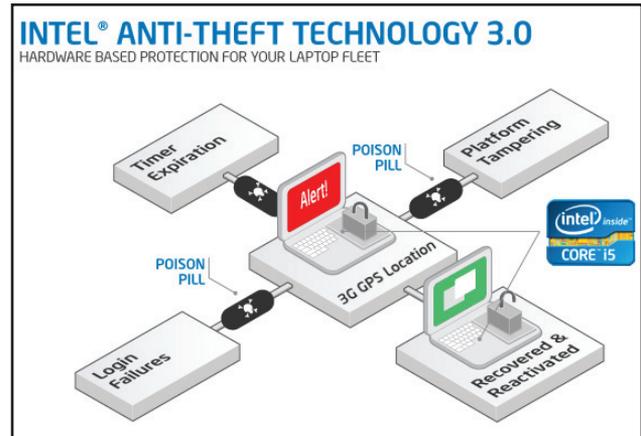
## Filter Threats and Isolate PCs Based on IT Policy

The 2nd generation Intel Core vPro processor family includes Intel vPro technology, which enables PCs to include programmable filters that monitor inbound and outbound network traffic to help IT staff detect and manage threats faster. Hardware-based filters examine packet headers for suspicious behavior and monitor the rate of outbound traffic to help identify suspicious behavior, including both fast-moving and slow-moving worms. With 2nd generation Intel Core vPro processors, IT administrators can use third-party software to define the policies that will trigger hardware-based network isolation of a PC.

## Enhance Remote Security and Management Regardless of the PC Power State

2nd generation Intel Core vPro processors include a secure, encrypted power-up capability that helps IT staff prepare systems for updates. Intel vPro technology also helps to substantially accelerate critical updates and patches, and ensure greater patch saturation. With Intel vPro technology, IT personnel can:

- Remotely power up notebook and desktop PCs from an IT management console, such as Microsoft System Center Configuration Manager\*, so updates can be pushed to PCs that were powered off at the start of the maintenance cycle.



### Timer Expiration

An IT administrator can define intervals at which the laptop must check in.

### Login Failures

IT can specify a number of login failures to trigger theft protection.

### Poison Pill

If the PC is lost or stolen it can be deactivated via wired or wireless connection, or even through 3G SMS.

### 3G GPS Location

If the PC has 3G functionality it can be located using GPS functionality.

### Recovered and Reactivated

Once recovered the PC can be fully reactivated with a passphrase or code.

**Figure 2. Intel® Anti-Theft technology protects data in case of laptop loss or theft**

- Deploy more updates and critical patches outside of business hours or when the update will not interrupt users and impact their productivity.
- Check a PC's software version information, .DAT file information, asset tag, or other data stored in nonvolatile memory and determine, without waking a PC, if anything needs to be updated.
- More simply configure Intel vPro capabilities on a PC. The process is now similar to deploying a software update to a PC.
- "Get behind" the user's keyboard, video monitor, and mouse to see what the user sees exactly as it appears on the screen and to interact directly with the PC. This capability allows IT staff

members to solve problems remotely with Keyboard-Video-Mouse (KVM) Remote Control and the Microsoft Diagnostics and Recovery Toolset\*. IT staff members can provide faster, more efficient incident response while cutting expenses and improving overall service quality.<sup>20</sup>

- Use a regular, programmable “heartbeat” presence check to alert IT staff members of critical services that are turned off or not running.

On PCs powered by 2nd generation Intel Core vPro processors, network security credentials can be embedded in the hardware. This capability means that the network security profile is stored in protected, persistent memory and is presented to the network for authentication, which enables communication to the hardware when the system is powered off. This way, the network can authenticate a PC before the operating system and applications load and before the PC is allowed to access the network. The result is better security for PCs and a more reliable network, regardless of the operating system state, the application state, or the presence of management agents.

## Improve Mobility and Remote Manageability with DirectAccess\*

An increasing number of workers are working outside of the central office, with many working from branch offices. Mobile workers need to access information that is hosted on the corporate LAN, regardless of their locations. Traditional solutions include network-level VPNs and remote access gateways. Although these solutions let motivated users connect to the resources they need, they often require users to carry out additional steps to connect to the network.

### Increase Enterprise Security with Windows 7\*

As part of a three-month evaluation, Intel IT identified broad new security capabilities in Windows 7 that significantly enhance enterprise security. These include features that address many existing threats and potentially reduce the need for additional controls and mitigation. Read more about the evaluation at [www.intel.com/it/](http://www.intel.com/it/).

### With Intel® vPro™ Technology, IT Personnel Can:

- Remotely power up and power down PCs
- Push updates to remote PCs outside business hours
- Check software information and configure software on remote PCs
- “Get behind” the user’s keyboard, video monitor, and mouse for remote trouble-shooting
- Program regular “heartbeat” present checks to monitor remote PCs

### Enable Mobile Workers’ Security and Anytime, Anywhere Access to Information

Windows 7 and Windows Server 2008 R2\* introduce a new remote access solution that is completely transparent to users. DirectAccess\* provides secure connectivity to the corporate LAN without requiring user action. The remote access connection is established when the PC starts, before users log on, enabling instant access to network applications and files. As a result, users can spend time on productive activities instead of logging in and securing a remote connection.

### Extend IT Staff’s Management Reach to Mobile Assets

IT professionals face the problem of managed mobile computers quickly falling out of compliance because the PCs receive software updates and group policy configuration only when they are connected to the LAN. Remote workers might never connect to the corporate LAN, which increases the risk to the mobile fleet’s security and compliance.

Windows 7 improves serviceability because IT staff can easily connect to DirectAccess clients without user intervention. Additionally, IT staff can manage mobile PCs with Intel vPro technology in the same way that they manage wired and wireless clients on the corporate network—using protected in-band and out-of-band connectivity.

2nd generation Intel Core vPro processors include Fast Call for Help functionality that lets you connect a disabled remote PC with the corporate network. Even if the system is unable to boot, the user can connect using the PC’s BIOS through the Client Initiated

Remote Access feature of Intel® Active Management Technology (Intel® AMT). Through this connection, IT personnel can use Intel vPro technology to access, diagnose, and repair the PC.<sup>21</sup>

## Boost Energy Efficiency and Stay Productive Longer

Business users traditionally keep their PCs running around the clock so that their desktops are ready when they start work. However, the “always-on PC” is no longer a viable option given the skyrocketing costs of electricity and subsequent pressure for energy-efficient computing.

With this pressure in mind, Microsoft and Intel have collaborated to investigate power usage in PCs. This collaboration led to modifications to Intel products and changes in Windows 7 that enable PC OEMs to build more energy-efficient PCs. The result is longer battery life on most PCs that run Windows 7 than was possible with Windows Vista\* during typical PC use, such as watching training videos, browsing the corporate intranet, using productivity applications, and leaving the PC idle.

2nd generation Intel Core vPro processors further improve energy efficiency by the addition of a full visual experience. They feature built-in visual technologies that remove the need for dedicated graphics cards, which are traditionally a large drain on power. Now users can enjoy greater performance from graphically intensive programs powered by graphics capabilities on the processor.

## Lower Overall Power Consumption with 2nd Generation Intel Core vPro Processors

2nd generation Intel Core vPro processors can also help businesses reduce power consumption through Intel Turbo Boost 2.0 and Enhanced Intel SpeedStep® Technology. Intel Turbo Boost 2.0 increases the speed and voltage draw of a heavily taxed computer in increments to match your computing needs based on workload, while keeping the hardware operating within safe thermal and electrical limits. Enhanced Intel SpeedStep Technology, meanwhile, slows down idle processors to conserve power and cool down the system. Additional Intel technologies further coordinate power usage by automatically adjusting processors and cores to turn them on when they are needed and off when they are not. This capability helps users to maintain

productivity while their PC adjusts power needs accordingly. These built-in energy saving features can help PCs meet ENERGY STAR\* requirements.<sup>22</sup>

## Help Maximize Client-Side Virtualization with Intel® Virtualization Technology and Windows Virtual PC

As companies push toward increased virtualization for greater efficiency and security, they are slowed by the limitations of software-based virtualization. Hardware-assisted virtualization, such as Intel® Virtualization Technology (Intel® VT), works with the operating system to offload some of the virtualization work to the hardware platform. This approach decreases virtualization overhead, which helps provide flexibility for evolving computing needs. With support from the processor, chipset, BIOS, and enabling software, Intel VT improves traditional software-based virtualization to streamline workloads and enhance virtualization performance and security.

Complementary to Intel VT on 2nd generation Intel Core vPro processors, Windows Virtual PC is the latest Microsoft virtualization technology designed for Windows 7. Windows Virtual PC provides an integrated experience between host and guest systems. It enables IT staff to publish and launch applications seamlessly on guest systems, helping to streamline deployment and maintenance. Windows Virtual PC also provides support for many USB devices and allows users to run many applications installed on the virtual machine directly from the host Windows 7 desktop with a single click.

## Summary

The combination of the operating system improvements in Windows 7 and performance, security, and manageability enhancements in 2nd generation Intel Core vPro processors helps users do more from any place at any time. Windows 7 makes new productivity possible and helps users to work the way they want to work. 2nd generation Intel Core vPro processors optimize the computing experience, help reduce the total cost of ownership, and can increase the return on both hardware and operating system investments while providing a stunning visual experience.

With the release of Internet Explorer 9 and Office 2010, Microsoft is expanding the Windows 7 experience with hardware-enhanced, graphically intensive, and high-connectivity applications. Workers can accomplish more in less time with high-performance productivity options and streamlined interfaces and capabilities. With 2nd generation Intel Core vPro processors, businesses can take full advantage of Lync 2010 to connect their mobile workforce—and of Internet Explorer's hardware-enhanced browsing. Visibly smart processors enable faster and higher quality video conferencing, graphics work, and viewing of videos and animations.

2nd generation Intel Core vPro processors work in tandem with Windows 7 to boost performance, reduce power use, and increase battery life to help PC users be more productive whether in the office, working from home, or on the go. And with the enhanced security and management capabilities, IT staff can streamline workflow—enabling them to proactively plan security and management policy rather than reacting after the fact, reducing costs and risk.

Learn more today by visiting  
<http://www.intelalliance.com/microsoft/>.

## Resources and Links

- Windows 7  
<http://www.microsoft.com/windows/windows-7/>
- Enterprise Security Benefits of Microsoft Windows 7  
[http://download.intel.com/it/pdf/Enterprise\\_Security\\_Benefits\\_of\\_Microsoft\\_Windows\\_7.pdf](http://download.intel.com/it/pdf/Enterprise_Security_Benefits_of_Microsoft_Windows_7.pdf)
- Accelerating the Deployment of Intel® Solid-State Drives throughout the Enterprise  
[http://download.intel.com/it/pdf/Accelerating\\_Deployment\\_Intel\\_Solid-State\\_Drives\\_throughout\\_Enterprise.pdf](http://download.intel.com/it/pdf/Accelerating_Deployment_Intel_Solid-State_Drives_throughout_Enterprise.pdf)
- Remediating Applications When Migrating from Microsoft Windows XP\* to Microsoft Windows 7\*  
[http://download.intel.com/it/pdf/Remediating\\_Applications\\_When\\_Migrating\\_From\\_Microsoft\\_WindowsXP\\_to\\_Microsoft\\_Windows7.pdf](http://download.intel.com/it/pdf/Remediating_Applications_When_Migrating_From_Microsoft_WindowsXP_to_Microsoft_Windows7.pdf)
- Windows 7 on Microsoft TechNet  
<http://technet.microsoft.com/en-us/windows/dd361745.aspx>
- Intel vPro technology  
<http://www.intel.com/technology/vpro/>
- Intel vPro Expert Center  
<http://communities.intel.com/community/openportit/vproexpert;jsessionid=CA2051C8265F9C3CF9D67C7B1C09219E.node6COM>
- Intel and Microsoft Alliance  
<http://www.intelalliance.com/microsoft/>
- Video demonstration of Windows 7 and vPro migration  
<http://www.vimeo.com/4430604>

<sup>1</sup> Built-in visual features are not enabled on all PCs and optimized software may be required. Check with your system manufacturer. Learn more at <http://www.intel.com/go/biv>.

<sup>2</sup> Intel® vPro™ Technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software, and IT environment. To learn more visit: <http://www.intel.com/technology/vpro/>.

<sup>3</sup> Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, and virtual machine monitor (VMM). Functionality, performance, or other benefits will vary depending on hardware and software configurations. Software applications may not be compatible with all operating systems. Consult your PC manufacturer. For more information, visit <http://www.intel.com/go/virtualization>.

<sup>4</sup> Requires activation and a system with a corporate network connection, an Intel® AMT-enabled chipset, network hardware, and software. For notebooks, Intel AMT may be unavailable or limited over a host OS-based VPN, when connecting wirelessly, on battery power, sleeping, hibernating, or powered off. Results dependent upon hardware, setup, and configuration. For more information, visit <http://www.intel.com/technology/platform-technology/intel-amt>.

<sup>5</sup> Requires a system with Intel® Turbo Boost Technology capability. Intel Turbo Boost Technology 2.0 is the next generation of Turbo Boost Technology and is only available on select Intel® processors. Consult your PC manufacturer. Performance varies depending on hardware, software and system configuration. For more information, visit <http://www.intel.com/go/turbo>.

<sup>6</sup> Software and workloads used in performance tests may have been optimized for performance only on Intel® microprocessors. Performance tests, such as SYSmark™ and MobileMark™, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

<sup>7</sup> Requires an Intel® Hyper-Threading Technology-enabled system; consult with your PC manufacturer. Performance will vary depending on the specific hardware and software used. Not available on all Intel® Core™ processors. For more information including details on which processors support Intel HT Technology, visit <http://www.intel.com/info/hyperthreading>.

<sup>8</sup> (Cross Client) Cross-client claim based on lowest performance data number when comparing desktop and mobile benchmarks. Configurations and performance test as follows: (Mobile) Comparing pre-production Intel® Core™ i5-2520M Processor (2C4T, 2.5 GHz, 3 MB cache), Intel reference board, 4 GB (2x2 GB) PC3-10700 (DDR3-1333)-CL9, Hitachi™ Travelstar 320 GB hard-disk drive, Intel® HD Graphics 3000, Driver: 2185 (BIOS:v.34, Intel v.9.2.0.1009), Microsoft® Windows® 7 Ultimate 64-bit RTM Intel® Core™2 Duo Processor T7250 (2M Cache, 2.00 GHz, 800 MHz FSB), Intel reference board, Micron™ 4 GB (2x2 GB) PC3-8500F (DDR3-1066)-400, Hitachi™ 320 GB hard-disk drive, Mobile Intel 4 Series Express Chipset Family w/ 8.15.10.2182 (BIOS: American Megatrends AMVACRB1.86C.0104.B00.0907270557, 9.1.2.1008) (Desktop) Pre-production Intel® Core™ i5-2400 Processor (4C4T, 3.1GHz, 6 MB cache), Intel reference board, Micron™ 4 GB (2x2 GB) PC3-10700 (DDR3-1333)-CL9, Seagate™ 1 TB, Intel® HD Graphics 2000, Driver: 2185 (BIOS:v.35, Intel v.9.2.0.1009), Microsoft® Windows® 7 Ultimate 64-bit RTM Intel® Core™ 2 Duo E6550 (2C2T, 2.33 GHz, 4 MB cache), Intel DG945GCL Motherboard, Micron 2 GB (2x1 GB) DDR2 667 MHz, Seagate 320 GB hard-disk drive, Intel® GMA 950, Driver: 7.14.10.1329, (BIOS:CL94510J.86A.0034, INF: 9.0.0.1011), Microsoft Windows® 7 Ultimate 64-bit RTM Business productivity claims based on SYSmark™ 2007, which is the latest version of the mainstream office productivity and Internet content creation benchmark tool used to characterize the performance of the business client. SYSmark 2007 preview features user-driven workloads and usage models developed by application experts. Multitasking claims based on PCMark Vantage™, a hardware performance benchmark

for PCs running Microsoft® Windows® 7 or Windows Vista™, includes a collection of various single and multi-threaded CPU, Graphics, and HDD test sets with a focus on Windows® application tests. Security workload consists of SiSoftware Sandra™ 2010—AES256 CPU Cryptographic subtest measures CPU performance while executing AES (Advanced Encryption Standard) encryption and decryption algorithm. For more information go to <http://www.intel.com/performance>.

<sup>9</sup> See note 6.

<sup>10</sup> See note 1.

<sup>11</sup> Adobe Flash Player Enterprise Penetration, Adobe, last retrieved August 16, 2010 - [http://www.adobe.com/products/player\\_census/flashplayer/enterprise\\_penetration.html](http://www.adobe.com/products/player_census/flashplayer/enterprise_penetration.html)

<sup>12</sup> Business internet traffic increases to Facebook and YouTube, Simon Heron, Redscan, 15 April 2010, <http://www.network-box.com/node/533>

<sup>13</sup> Requires an Intel® Wireless Display enabled PC, compatible adapter and TV. 1080p and Blu-ray or other protected content playback only available on 2nd gen Intel® Core™ processor-based PCs with built-in visuals enabled. Consult your PC manufacturer. For more information, see [www.intel.com/go/widi](http://www.intel.com/go/widi).

<sup>14</sup> Requires an Intel® Hyper-Threading Technology-enabled system; consult with your PC manufacturer. Performance will vary depending on the specific hardware and software used. Not available on all Intel® Core™ processors. For more information including details on which processors support Intel HT Technology, visit <http://www.intel.com/info/hyperthreading>.

<sup>15</sup> For a full discussion of the image and how Internet Explorer 9 accelerates graphics, see <http://blogs.msdn.com/b/ie/archive/2010/04/07/a-closer-look-at-internet-explorer-9-hardware-acceleration-through-flying-images.aspx>

<sup>16</sup> See note 6.

<sup>17</sup> Intel® AES-NI requires a computer system with an AES-NI-enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. AES-NI is available on select Intel® Core™ processors. For availability, consult your system manufacturer. For more information, see <http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/>.

<sup>18</sup> Requires an Execute Disable Bit-enabled system. Check with your PC manufacturer to determine whether your system delivers this functionality. For more information, visit <http://www.intel.com/technology/xdbit/index.htm>.

<sup>19</sup> No system can provide absolute security under all conditions. Requires an enabled chipset, BIOS, firmware and software, and a subscription with a capable service provider. Consult your system manufacturer and service provider for availability and functionality. Intel assumes no liability for lost or stolen data and/or systems or any other damages resulting thereof. For more information, visit <http://www.intel.com/go/anti-theft>.

<sup>20</sup> KVM Remote Control (Keyboard, Video, Mouse) is only available with Intel® Core™ i5 vPro™ and Core™ i7 vPro™ processors with Intel® Active Management technology activated and configured and with integrated graphics active. Discrete graphics are not supported.

<sup>21</sup> Requires activation and a system with a corporate network connection, an Intel® AMT-enabled chipset, network hardware, and software. For notebooks, Intel AMT may be unavailable or limited over a host OS-based VPN, when connecting wirelessly, on battery power, sleeping, hibernating, or powered off. Results dependent upon hardware, setup, and configuration. For more information, visit <http://www.intel.com/technology/platform-technology/intel-amt>.

<sup>22</sup> ENERGY STAR™ is a system-level energy specification, defined by the Environmental Protection Agency, that relies on all system components, such as processor, chipset, power supply, etc. For more information, visit <http://www.intel.com/technology/epa/index.htm>.

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