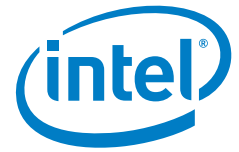


SOLUTION BRIEF

The 4th Generation Intel® Core™ Processor Family
Retail, Industrial, Healthcare, Gaming, Digital Security
and Surveillance, Military/Aerospace/Government



Ignite Opportunity with Intelligent Systems

The 4th generation Intel® Core™ processor family offers advancements in security, CPU, media, and graphics performance, helping to advance the Internet of Things



Faster data encryption is crucial for securing personal data in retail point-of-sale devices, especially during the busiest shopping days.

CHALLENGES

- **Today's technology solutions and applications are increasingly compute-intensive**, driving a need for superior performance.
- **The need to support fast, secure transactions, during peak times** requires solutions that don't sacrifice performance.
- **Industries from retail to healthcare demand improved visual quality and playback** to support today's high-end media and graphics.
- **Growing productivity demands require long-lasting, portable devices** that enable employees to remain responsive to business needs when and where they happen.

SOLUTIONS

- **Intel® Advanced Vector Extensions (Intel® AVX) 2.0** enhancements accelerate integer/matrix compute performance for signal- and image-processing applications.
- **Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)** enhancements allow security algorithms to benefit from hardware acceleration for data encryption and decryption without slowing response times.¹
- **Intel® HD Graphics 4600 and other built-in visual features** enable rich, interactive 2D and 3D graphics with high-quality visual playback and support for HDMI 4K, delivering compelling media experiences.
- **The 4th generation Intel® Core™ processor family U-series** offers significantly lower power design compared to previous generations.²



SUPERIOR PERFORMANCE COMPARED TO 3RD GENERATION INTEL® CORE™ PROCESSORS:

- Increased CPU performance² with enhancements like Intel® AVX 2.0
- Expanded media and graphics performance²
- Increased signal- and image-processing performance
- Performance improvement in floating-point-intensive computations



INCREASED POWER EFFICIENCY FOR THINNER, LIGHTER DEVICES

Lower design power



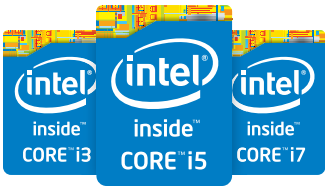
RICHER GRAPHICS FOR COMPELLING VISUAL EXPERIENCES

Improvement in HD 1080p video playback and support for HDMI 4K resolution²



CRUCIAL SECURITY FOR SENSITIVE DATA

Acceleration of data encryption and decryption



The 4th generation Intel® Core™ processor family helps advance the Internet of Things

The next generation of intelligent systems is driving new opportunities for original equipment manufacturers (OEMs) and developers in markets as diverse as retail, industrial, surveillance, military, and healthcare. Powered by the 4th generation Intel® Core™ processor family manufactured on industry-leading 22nm process technology, this new era in innovative solutions harnesses advancements in CPU performance, media and graphics capabilities, security, and power efficiency to better meet the growing technological needs of these industries.

Superior Performance

Whether it's a radiologist interpreting an ultrasound or a military sonar technician reviewing radar, users depend upon superior processing. The 4th generation Intel Core processors include enhancements to Intel® Advanced Vector Extensions, which provide a significant performance improvement in integer/matrix-based calculations, ensuring quicker delivery of the images these professionals need to make critical decisions.

Media and Graphics

When developing intelligent systems, both graphics quality and performance are important considerations. The 4th generation Intel Core processor family delivers rich interactive graphics with high-quality visual playback, including excellent 3D performance and support for HDMI 4K, enabling compelling visual experiences in a wide range of intelligent systems that rely on interactive content, such as digital signs.

The high-quality media experience remains consistent thanks in part to Intel® Media SDK 2013, which is optimized to harness the power of 4th generation Intel Core processors. In addition to supporting accelerated H.264 encode and decode and video processing filters, the new SDK includes enhanced support for Windows* 8, Microsoft DirectX* 11, fully accelerated MPEG2 encode and MPEG/JPEG decode, and a Windows Store* development sample.

Enhanced Security

The hardware components of your intelligent system can carry the security load by using the Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) enhancements, which allow security algorithms to benefit from hardware acceleration for data encryption and decryption without slowing response times in applications like point-of-sale devices, medical equipment, and digital security devices.¹

Greater Power Efficiency

Future 4th generation Intel Core processor offerings will pack higher performance processing into a single-chip footprint, enabling OEMs to develop portable computing platforms for intelligent systems, including thinner, lighter devices such as portable ultrasound equipment and patient monitors.

Business Segments

Digital Security and Surveillance (DSS)

Enhancing user experiences in full-HD intelligent security and surveillance systems

- **Video management, analytics, storage, and streaming** benefit from real-time platform performance. The 4th generation Intel Core processor family delivers extraordinary CPU and GPU (HD graphics) performance for video management applications and video encoding, decoding, and transcoding. It also offers improved signal processing capabilities with Intel® Advanced Vector Extensions (Intel® AVX) 2.0, especially on performing 256-bit integer in matrixes, and arrays to accelerate the video analytics algorithm.
- **Smoother playback** on DSS devices improves user experience, and the 4th generation Intel Core processor family serves it up, with smoother, full HD 1080p video playback and enhanced display capability (up to 4K resolution) when compared with the 3rd generation Intel Core processor.²
- **Video data integrity** must be protected on DSS devices. The 4th generation Intel Core processor family brings security enhancements not available on 3rd generation Intel Core processors, providing faster data encryption for securing video data through transmission channels. Intel's platform security technologies are also designed to complement comprehensive software security solutions from McAfee* to protect systems against attacks, viruses, and malware, including providing security protection below the operating system.
- **Unattended DSS devices** require the enhanced out-of-band manageability features of the 4th generation Intel Core processor family. Intel® Active Management Technology (Intel® AMT) 9.0 can now provide remote access manageability to DSS devices—even if the system is down due to a crashed OS or application.

For more information on 4th generation Intel Core processors in intelligent systems for digital security and surveillance systems, visit <http://www.intel.com/content/www/us/en/intelligent-systems/digital-surveillance/digital-surveillance-intel-dss-enhances-video-security-solutions.html>.

Business Segments *(continued)*

Military, Aerospace, and Government

Enhanced security and performance drive improved decision making

- **Digital signal- and image-processing applications** such as radar and sonar, as well as communication systems and scientific simulations, rely on floating-point-intensive computations. Enhancements to Intel® Advanced Vector Extensions (Intel® AVX) 2.0 in the 4th generation Intel® Core™ processor family accelerate integer/matrix compute performance for signal- and image-processing applications.
- **Data encryption and decryption** are vital for security, and the enhanced Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) included in the 4th generation Intel Core processor family allow security algorithms to benefit from hardware acceleration for data encryption and decryption without slowing response times, helping protect media, data, and assets from loss.¹
- **Compelling visuals** are a key aspect for training and simulation environments in avionics, and the 4th generation Intel Core processor family provides extraordinary graphics improvement compared with the previous generation of Intel Core processors.²

For more information on 4th generation Intel Core processors in intelligent systems for military, aerospace, and government, visit <http://www.intel.com/content/www/us/en/intelligent-systems/military-aerospace-government/mag-overview.html>.

Retail

Driving enhanced user experiences and intelligent retail with the 4th generation Intel Core processor family

- **Captivating visuals** are vital for attracting retail customers. The built-in visual technologies on 4th generation Intel Core processors boast market-leading video playback and improved graphics, for rich interactive 2D/3D graphics and compelling interactive digital experiences.
- **Secure, fast transactions** at point-of-sales devices are a must-have during peak selling times. The 4th generation Intel Core processor family delivers security enhancements when compared with the previous generation processor, such as Intel Advanced Encryption Standard New Instructions (Intel AES-NI), which provides faster data encryption and decryption for securing personal data, without compromising performance.¹
- **Unattended retail device deployments** require the enhanced remote manageability features of the 4th generation Intel Core processor family. Intel® vPro™ technology, enabled when processors are paired with the Intel® Q87 chipset, simplifies the security and management of unattended systems.³ Intel® Active Management Technology (Intel® AMT) 9.0 allows retailers to roll back firmware images and ease the provisioning of end devices at a lower cost, without compromising features or security.⁴
- **Anonymous viewer analytics** are the foundation of directed promotions, and the compute power of the 4th generation Intel Core processor family delivers faster analytics and decisions for customized promotions, while also offering a smooth, responsive interactive experience, thanks to significant CPU performance upgrades over the 3rd generation Intel Core processor family.²

For more information on 4th generation Intel Core processors in intelligent systems for retail, visit <http://www.intel.com/content/www/us/en/retail/retail-digital-signage.html> and <http://www.intel.com/content/www/us/en/intelligent-systems/point-of-sale/retail-pos-intelligent-computing-technology-at-the-point-of-sale.html>.

Gaming

Built-in graphics and next-generation power expertly deliver the latest HD consumer experiences

- **Electronics, gaming machines, and digital signs demand the latest in high-performance graphics.** Powered by 4th generation Intel Core processors with built-in Intel® HD Graphics 4600, these machines deliver the latest in high-quality visual playback and 3D performance for interactive content. Plus, graphics on the chip means no external graphics card is necessary, enabling cost savings and simplifying maintenance.
- **Simplify and secure the remote management of gaming systems** with Intel® vPro™ technology, available in 4th generation Intel Core processors when paired with the Intel® Q87 chipset. Equipped with Intel® Virtualization Technology, Intel vPro speeds the transfer of platform control and the movement of data between the virtual monitor and guest OS, increasing real-time performance, reducing downtime, and making applications more secure.³
- **System-level and data security are paramount** and the 4th generation Intel Core processor family with Intel Advanced Encryption Standard New Instructions (Intel AES-NI) delivers faster encryption/decryption without sacrificing performance, better protecting media, data, and assets from loss.

For more information on 4th generation Intel Core processors in intelligent systems, visit <http://www.intel.com/content/www/us/en/intelligent-systems/is-4th-gen-core-processors.html>.

Industrial

Enabling a new era of industrial automation solutions with the 4th generation Intel® Core™ processor family

- **Consolidating multiple automation workloads** such as control and human machine interfaces (HMIs) on a single computing device requires superior performance. The 4th generation Intel® Core™ processor family delivers incredible CPU processing performance.
- **Factory workspace is a premium.** The single-chip footprint of the U-processor platform of the 4th generation Intel Core processor family offers the same high performance of 3rd generation Intel® Core™ processors at significantly less power.² This enables support for smaller form factors, while helping industrial managers save factory floor space and address new environments and approach 1:1 HMI per worker.
- **Factory operations must remain secure.** The 4th generation Intel Core processor family offers security enhancements not available in 3rd generation Intel Core processors, such as faster data encryption with Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) and greater “below the OS” malware protection on industrial devices, such as controllers and human machine interfaces (HMIs) with enhanced malware protection, which increases the performance of virtualization-based security solutions, such as McAfee Deep Defender*.

For more information on 4th generation Intel Core processors in intelligent systems for industrial, visit <http://www.intel.com/content/www/us/en/intelligent-systems/industrial-applications/embedded-controller-automation-solutions-with-intel-architecture.html>.

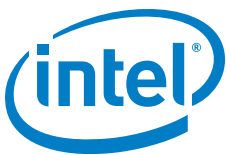
Healthcare

Driving healthcare innovation with the 4th generation Intel Core processor family

- **Increased performance of ultrasound imaging beamforming algorithms.** The Intel Advanced Vector Extensions (Intel AVX) 2.0 in the 4th generation Intel Core processor family accelerates integer/matrix compute performance for signal- and image-processing applications.
- **Thinner, lighter, and sleeker medical devices,** such as portable ultrasound equipment and patient monitors, are now possible for medical OEMs with the 4th generation Intel Core processor family.
- **Sensitive patient data** can be handled securely and efficiently with the 4th generation Intel Core processor family. Security enhancements help protect data and provide greater “below the OS” malware protection on healthcare devices, such as patient monitors.

For more information on 4th generation Intel Core processors in intelligent systems for healthcare, visit <http://www.intel.com/content/www/us/en/intelligent-systems/medical-applications/medical-embedded-systems-intel-technology-in-life-saving-devices.html>.

SOLUTION PROVIDED BY:



To learn more about 4th generation Intel® Core™ processors in intelligent systems, visit <http://intel.ly/15PBqRu>.

1. 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® processors. For availability, consult your reseller or system manufacturer. For more information, see <http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/>.

2. 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 purchase, including the performance of that product when combined with other products.

3. 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 environments. To learn more, visit: www.intel.com/content/www/us/en/architecture-and-technology/vpro/vpro-technology-general.html.

4. 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 www.intel.com/technology/vpro/index.htm.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. UNLESS OTHERWISE AGREED IN WRITING BY INTEL, THE INTEL PRODUCTS ARE NOT DESIGNED NOR INTENDED FOR ANY APPLICATION IN WHICH THE FAILURE OF THE INTEL PRODUCT COULD CREATE A SITUATION WHERE PERSONAL INJURY OR DEATH MAY OCCUR.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked “reserved” or “undefined.” Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them. The information herein is subject to change without notice. Do not finalize a design with this information.

The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request. Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order. Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or by visiting Intel's website at www.intel.com.

© 2013, Intel Corporation. All rights reserved. Intel, the Intel logo, the Intel Inside logo, Intel Core, and Intel vPro are trademarks of Intel Corporation in the U.S. and/or other countries.

*Other names and brands may be claimed as the property of others.