SOLUTION BRIEF
The 4th Generation
Intel® Core™ Processor Family
Healthcare

Enhancing Cost, Quality, and Access

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

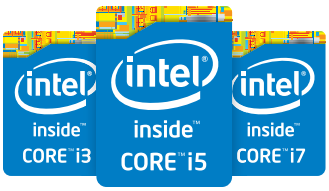
Many healthcare organizations are finding the powerful solution they need in the new 4th generation Intel® Core™ processor family.

CHALLENGES

- **Healthcare organizations are moving from 2D to 3D**, adding richer content in an attempt to meet the growing need for better, faster data acquisition and use.
- **The move to higher-quality graphics content, including increased use of video and HD content, requires a new level of performance** to meet growing compute-intensive demands.
- **Today's competitive medical device marketplace is driving OEMs to continually reduce time to market**.
- **Greater optimization of the rising volumes of data must be achieved** via improved analytics that can turn data into improved care.

SOLUTIONS

- **The 4th generation Intel® Core™ processors include enhancements to Intel® Advanced Vector Extensions (Intel® AVX) 2.0**, which provide a significant performance improvement in integer/matrix-based calculations. The result is improved performance of image processing compared to the previous streaming SIMD extensions (SSE) industry-standard architecture (ISA).
- **The hardware-assisted encryption capabilities like new Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)[1] for fast encryption enable ubiquitous platform encryption** without slowing response times or affecting performance.
- **The compute power of the 4th generation Intel Core processor family delivers faster analytics for improved decision making**. It also offers a smooth, responsive interactive experience thanks to significant CPU performance upgrades compared to the 3rd generation Intel® Core™ processor family.[2]
- **The 4th generation Intel Core processor family enables compelling visual experiences in a wide range of intelligent systems** that rely on interactive content, such as intensive care monitors, ultrasound systems, and bedside terminals.
- **Thinner, lighter, and sleeker medical devices, such as portable ultrasound equipment and patient monitors, are now possible** 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.



The 4th generation Intel® Core™ processor family advances healthcare innovation

Better, Faster Data Supports Improved Patient Outcomes

Healthcare decision makers around the world struggle today with tighter budgets, rising costs, worker shortages, an explosion of data, and higher rates of chronic disease as populations age. Technology, business, and regulatory landscapes are also changing, shifting rapidly toward team-based care, personalized medicine, and patient participation in health decisions.

As these trends gather momentum, the emerging Internet of Things (IoT) is also enabling intelligent systems to communicate with each other and through the cloud. This unprecedented development is inspiring healthcare organizations to pursue innovation across the entire spectrum of care, from imaging and diagnostics to therapeutics and proactive health.

Many healthcare organizations are finding the powerful solution they need in the new 4th generation Intel® Core™ processor family. Manufactured on industry-leading 22nm process technology with 3D Tri-Gate transistors, the 4th generation Intel Core processor offers superior CPU, graphics, and media performance. With its flexibility and enhanced security, it is ideal for a wide range of intelligent systems, including those used in today's demanding healthcare environments.

Meeting Patient Needs

An ambulance arrives at the home of a man who is thought to have suffered a heart attack. Response time in such situations is critical. The paramedics begin assessing his condition. One uses a ruggedized tablet to consult the patient's electronic health records (EHR), entering current data including real-time heart rate and O_2 levels. His partner uses a mobile ultrasound device to conduct an echocardiogram (ECG).

Fast collection and interpretation of sound waves in the ultrasound and quicker delivery of real-time images allow the radiologist back at the hospital to review and diagnose faster than ever before. The medical device OEM selected the 4th generation Intel Core processor family in part because digital signal and image-processing applications, such as those produced by an ultrasound, rely on floating-point-intensive computations. Enhancements to Intel® Advanced Vector Extensions 2.0 accelerate integer/matrix compute performance for signal and image processing applications. In addition, the 4th generation Intel Core processor family delivers significant CPU processing performance improvement over 3rd generation Intel® Core™ processors.

Delivering Premier Graphics

The next-generation Intel® graphics engines significantly improve graphics and media performance. As the paramedics conduct their evaluation, the tablet and ultrasound transmit critical data back to the emergency room, including high-quality images and video. Accurate visuals are vital to coordinated care, and the built-in visual technologies on 4th generation Intel Core processors boast market-leading video playback and improved graphics compared to 3rd generation Intel Core processors.[3]

The 4th generation Intel Core processor family also supports up to three independent displays, enabling one system to drive multiple screens without the need for a discrete graphics card. Visual features, including Intel® Clear Video HD technology and Intel® Quick Sync Video 2.0, deliver smoother visual quality, improved ability to decode and transcode simultaneous video streams, and outstanding HD media playback. Additionally, the platform supports next-generation graphics APIs, such as Microsoft DirectX* 11.1, OpenGL* 4.0, and OpenCL* 1.2.

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As the ambulance transports the patient to the hospital, the EHR is updated in real time as the doctors at the hospital review and prepare to respond. Once they reach the hospital, 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.

Securing Patient Data

The patient data being gathered and shared during the emergency call and treatment are sensitive, and protecting the data is key. The 4th generation Intel Core processor family delivers Intel® Data Protection Technology (Intel® DPT) security enhancements not available with the previous generation processor, including hardware-assisted encryption capabilities like new Intel® AES-NI.[1] Intel AES-NI provides faster data encryption and decryption for securing data and helping protect media and assets from loss—all without slowing response times or compromising performance.

In addition, the 4th generation Intel Core processor family is equipped with Intel® Platform Protection Technology with boot guard configurable boot. This prevents repurposing the platform to run unauthorized software and

protects against execution of boot-block-level malware. It works with both UEFI Secure Boot and Intel® Trusted Execution Technology (Intel® TXT). And Intel® Platform Trust Technology[4] helps ensure integrated secure storage of root-of-trust values for improved platform security.[5]

Turning Data into Value

Effective analytics are an increasingly important facet of providing enhanced care and improved patient outcomes, and the compute power of the 4th generation Intel Core processor family delivers faster analytics for improved diagnoses and decision making. It also offers a smooth, responsive interactive experience, made possible by the significant CPU performance upgrades compared to the 3rd generation Intel Core processor family.[2]

LEARN MORE ABOUT INTEL IN HEALTHCARE

For more information on 4th generation Intel® Core™ processors in intelligent systems for healthcare, visit **http://intel.ly/1eQnEUa**.

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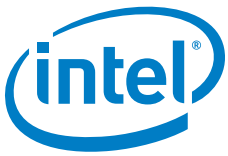

1. Intel® AES-NI requires a computer system with an AES-NI-enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. AES-NI is available on select Intel® processors. For availability, consult your reseller or system manufacturer. For more information, see http://software.intel.com/en-us/articles/intel-advanced-encryption-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. Projected performance based on 3DMark Vantage* Performance Profile Scores.

4. Targeted for 4th generation Intel® Core™ Processor ULT (Mobile) only.

5. Not available on Intel® vPro™ technology, uses Trusted Platform Module (TPM) instead.

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