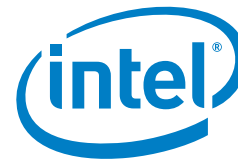


Technology Brief

Intel® Embedded
Processors and Chipsets

Product Development



Intel® Architecture Platforms for Scalable Medical Devices

Intel eases the development and integration of interoperable medical products capable of scaling to any application

Medical devices are increasingly required to handle data-intensive workloads, complex algorithms, multiple functions and multi-protocol wireless networking. In addition, these devices must provide secure integration with IT systems and address the unrelenting pressure to reduce costs and improve the quality of patient care.

Intel enables device manufacturers to meet all these requirements with I/O-rich platforms featuring breakthrough performance per watt and advanced technologies. Intel protects product investments by supporting its embedded platforms for an industry-leading seven years.

Benefits of Intel® Architecture (IA)

Developing on Intel® platforms means access to a broad range of software libraries, development tools, and technical resources that can help accelerate time-to-market and keep costs down. Intel® Architecture also allows for true scalability with software stack compatibility and well-defined upgrade paths.

Intel Architecture Already Fits the IT Infrastructure

The development of standards for security, privacy, integration, sharing, exchange and retrieval of electronic medical records and transactions requires the smooth integration of medical devices and IT infrastructure. Such standards include those required by the Health Insurance Portability and Accountability Act (HIPAA) and developed by Standards Developing Organizations (SDOs) like Health Level Seven (HL7).

Embedded IA Processors for Medical Devices

Sample medical applications:

- High-End Imaging
- Portable Imaging
- Patient Monitoring
- Handheld Devices
- Infusion Pumps



The Intel® Atom™ processor — the performance of IA in small form factor for thermally constrained and fanless embedded applications



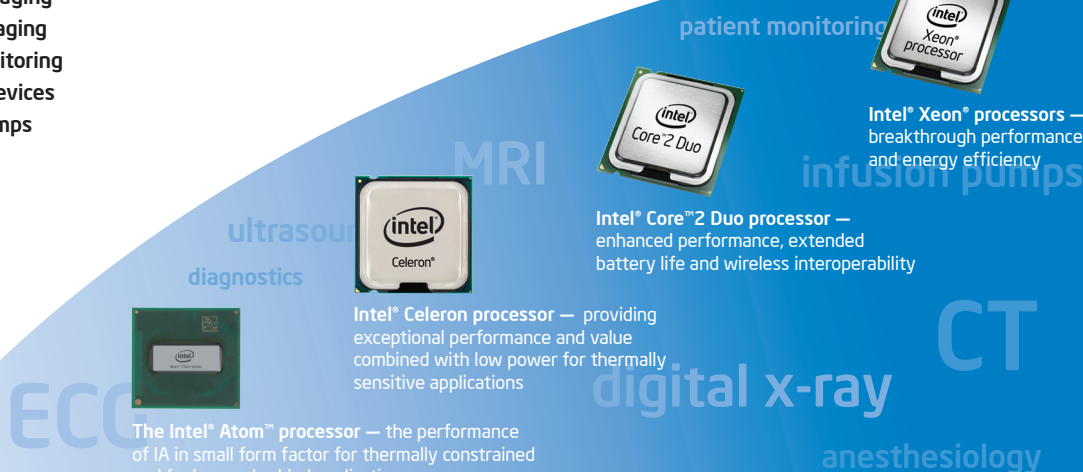
Intel® Celeron processor — providing exceptional performance and value combined with low power for thermally sensitive applications



Intel® Core™2 Duo processor — enhanced performance, extended battery life and wireless interoperability



Intel® Xeon® processors — breakthrough performance and energy efficiency



The use of Intel® embedded processors in medical devices enables the implementation of these standards, with support for widely used communications protocol stacks including Zigbee,* Bluetooth* and Wi-Fi* for compatibility and reliable integration with the IT infrastructure.

Intel® Advanced Platform Technologies

Intel provides integrated platform solutions that enhance security, manageability and reliability – key attributes in new medical devices and applications. Intel offers a wide choice of processors and chipsets for medical applications; the following technologies can be found in many of the choices:

- **Intel® Virtualization Technology¹ (Intel® VT)** is hardware-based assistance for virtualization software that offers the ability to run different operating systems on a single device, allowing divergent applications to run in parallel.
- **Intel® Active Management Technology²** is a hardware-based remote management mechanism that enables faster and less costly servicing and troubleshooting of medical devices. Maintenance can be performed over a network, reducing device downtime where it matters – including emergency rooms, operating rooms and ICUs.
- **Intel® Trusted Execution Technology³** is a set of hardware extensions to Intel processors and chipsets that can help prevent execution of software that has been tampered with or illegally loaded on the computer. This feature adds a level of security from viruses and other unwanted execution of software that can enhance the security of medical data.
- **Intel® Anti-Theft for HDD Data Protection** is efficient and flexible hardware-based full hard drive encryption that enhances platform-level security with built-in encryption and key management, protecting sensitive patient information. It is designed to complement third-party encryption solutions.

Tools to Accelerate Development and Optimize Performance

Estimates have shown that software development can contribute up to 80% of the cost of an embedded device. When you design on Intel platforms, you have access to software tools and extensive code libraries, including Intel® Performance Primitives (Intel® IPP). These IPP libraries are optimized for both performance and multi-core/multi-threaded applications. These optimized libraries in combination with the Intel VTune™ Performance Analyzer will help speed development of high-performance multi-core/multi-threaded applications in a cost-effective manner.

The Intel® Software Network provides free technical articles and training to help you maximize code performance and minimize development effort. Visit us at softwarecommunity.intel.com.

In addition, the Intel® Architecture Embedded Design Center (launching in Q1, 2009) is your source for design-in support, technical documentation, software, tools, training and community collaboration on Intel's latest platforms available online at intel.com/embedded.

The Intel® Embedded and Communications Alliance is an extensive ecosystem of hardware, software, BIOS, OS, service and complementary silicon companies that provides customers with a trusted supply line of Intel-based products and services, offering benefits such as:

- leading-edge products
- design and development expertise
- total lifecycle support from worldwide organizations

For More Information

Contact your Intel representative for more details, and visit us online at www.intel.com/go/medical.

Learn more at intel.com/embedded.

¹ Intel® Virtualization Technology 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.

² Intel® Active Management Technology (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. For more information, see www.intel.com/technology/platform-technology/intel-amt/.

³ No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology is a security technology under development by Intel and requires for operation a computer system with Intel® Virtualization Technology, an Intel Trusted Execution Technology-enabled processor, chipset, BIOS, Authenticated Code Modules, and an Intel or other compatible measured virtual machine monitor. In addition, Intel Trusted Execution Technology requires the system to contain a TPMv1.2 as defined by the Trusted Computing Group and specific software for some uses. See <http://www.intel.com/technology/security/> for more information.

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