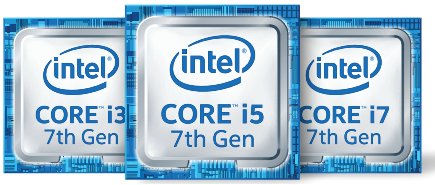
BUSINESS BRIEF

Retail Industry
Internet of Things for Point of Sale and Digital Signage

Excite Customers with Exceptional Experiences on the Latest Fast, Efficient Intel® Technology

7th Gen Intel® Core™ Processors Empower Your Most Innovative Solutions



Never before has brick-and-mortar retail experienced such a disruptive time. As the Internet of Things (IoT) continues to spur innovation, the potential for a seamless blend of physical and digital spaces has never been better, delivering the rich experiences that consumers have come to expect.

Intel is driving the transformation to unified commerce with tools, platforms, and solutions that harness the power of cloud computing, machine learning, data analytics, and intelligent devices to fundamentally change how retailers engage with customers through smarter point-of-sale (POS) transactions, as well as interactive kiosks, digital signage, menu boards, and even mobile POS devices.

Intel brings together best-in-class technology, extensible architectures, and a broad partner ecosystem to enable retailers to integrate existing IT investments into scalable, unified commerce platforms that securely connect every channel and system in the retail organization to deliver on today's consumer expectations.

With immersive, amazing video experiences, 7th gen Intel® Core™ processors and select Intel® Celeron® and Intel® Atom™ processors promise to help retailers build greater customer engagement, heighten excitement and interest with context-rich visual experiences, personalize the experience to build customer loyalty, and gather and analyze customer purchase and behavior data quickly. Intel enables the ecosystem to provide extensible, vendor-neutral platforms that reveal data-driven insights to help optimize labor productivity, inventory, and merchandising and fuel new value-added services. And all this is possible with security beyond compliance. Intel and its partners offer a robust portfolio of security technologies that help safeguard data from end to end.

Point-of-Sale Performance and Scalability

Intel's 7th generation Intel Core processor family features ultra-low-power, 64-bit, multicore processors built on the latest 14 nm technology. Designed for small-to-large form-factor applications, this multichip package integrates better CPU performance compared to the previous generation with improved power efficiency and the same great range of power options. And multiple form factors are available to fit both handheld/mobile and fixed POS uses:

- High volume
- New sleek all-in-ones
- Self service
- Flexible usage

And because 7th gen Intel Core processors are footprint compatible with 6th gen Intel Core processors,[2] they can be dropped into the same DDR4-based board designs and extend product lifetimes up to seven years.

Intel® vPro™ technology-enabled remote device management capability saves $170 for every service call[3]

Manageability and Security with Intel® vPro™ Technology

Providing a highly integrated transactional infrastructure and common brand experience across every touch point in retail requires the highest level of manageability and interoperability. Whether fixed, mobile, or kiosk, the complexity of managing and maintaining service-level agreements for a fleet of devices is steadily increasing. Intel® vPro™ technology—available on a wide variety of Intel Core and Intel® Core™ M processors—can help retailers achieve a unified retail architecture that can reduce costs and complexity. With Intel vPro technology and Intel® Active Management Technology (Intel® AMT), retail IT managers and managed service providers (MSPs) can solve everyday issues remotely—significantly reducing the need for in-person service calls, or the intervention of on-site staff.

And because it's hardware based, Intel vPro technology can operate below the operating system and also add a layer of security that goes beyond what most software-based security solutions can achieve. It enables technicians to remotely service a computer as though they are sitting in front of it, even if the OS is not booting. This can result in both reduced service delivery costs and improved customer experiences by enabling:

- Keyboard-video-mouse capability that allows IT managers to see and control a device even when it's down
- Scheduled wake-up times and update intervals
- Remote power on for devices and terminals
- Recovery of faulty systems remotely

By working with a large ecosystem of device manufacturers and software partners—HP, NCR, Toshiba, Fujitsu, Seneca, and many more—Intel offers retailers the advantage of one: one infrastructure, one operating system, one application, one remote management, and one security.

Enhanced, Hardware-Based Security

POS devices are under constant threat from increasingly sophisticated cybercriminals. Few incidents are more damaging to a retailer than a high-level security breach. The personal information of thousands of customers can be exposed to criminals in mere seconds. Intel® technologies enable the ecosystem to develop and build innovative solutions that encourage the "shift to digital" by protecting the most sensitive data. Intel vPro technology provides a protection layer beneath the OS that makes it much more difficult for hackers to access sensitive transaction information.

Intel vPro technology enables Software Guard Extensions (SGX), which protect select code and data from disclosure or modification, and can prevent malware and rootkits from releasing. Data protected by SGX remains protected even when the BIOS, VMM, OS, and drivers are compromised, meaning that an attacker with full execution control over the platform can be kept at bay. The features of SGX, as well as many other security features including Intel® Data Protection Technology for Transactions, which protects against data skimming at the POS, are at their best with the latest Intel vPro technology-enabled Intel Core processor family. The latest Intel Core processor family has the greatest advantage against today's sophisticated cybercriminals, because they employ our most advanced tools for hardened multifactor authentication and secure platform access and lock.

Stunning Visual Displays and Signs

In addition to improvements for transactional retail solutions, 7th gen Intel Core processors deliver richer user experiences to customers with premium high-fidelity color content to digital kiosks, menu boards, wayfinding kiosks and signs, and interactive digital signs in stores and public areas. With new 4K Ultra HD capabilities, retailers can captivate customers with cutting-edge digital signage thanks to:

- Wide color gamut: A wider selection of colors and increased bit depth produce noticeably better pictures on display monitors.
- Four times the number of pixels as standard full HD: 3,840 x 2,160 pixels or 8.3 million pixels at a 16 x 9 display.
- Higher frame rates—up to 120 frames per second.
- HEVC 10-bit color format for smoother transitions, 10-bit compression for efficiency, 10-bit graphics output for playback with color precision.
- BT.2020 expands dynamic range between the lightest and darkest areas of a frame significantly by defining a minimum 10-bit color depth. By adding another two bits to each color representation, the number of overall possibilities increases to 1.07 billion (210 = 1024 x 1024 x 1024).
- Up to 9.5 hours of 4K UHD video playback with smoother multitasking and smooth video playback.

Innovative Experiences

Kiosks and interactive displays powered by 7th gen Intel Core processors can support demanding workloads for 1:1 engagement, including 4K interactive displays and gesture recognition, while delivering real-time content management and valuable audience analytics.

And for powerful content management, numerous ecosystem partners and Intel® Retail Client Manager support the development and real-time management of video, text, and graphic content. Retailers know if their content is capturing the right audience at the right time, with measurement and analytics tools in the Intel® AIM Suite and other third-party viewer analytic applications. Finally, Intel® RealSense™ technology can be used for gesture-based interaction and feedback.

Efficient Display Management and Power Use with Intel vPro Technology

Retailers can remotely manage and maintain a digital signage network with Intel AMT, part of Intel vPro technology-enabled Intel Core processors, thereby reducing service costs and enabling seamless, always-on consumer experiences. In a large environment with many displays and signs, Intel vPro technology remote management capabilities can be used to power on and off displays at opening and closing, quickly and efficiently from one central terminal, to save on electricity costs while the venue is closed.

Tight integration of hardware- and software-based Intel® Security solutions protect devices and data from endpoints to cloud, helping ensure that on-screen content is secure and controlled.

Learn More

Find more ways that 7th gen Intel® Core™ processors can boost your retail business. Contact your Intel representative or visit **intel.com/retail**.

Intel® Iris™ Graphics in Mobile U Series Processor Family

- Up to 12% faster CPU productivity[4]
- Up to 80% better 3D graphics performance[4]

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. For more complete information visit intel.com/benchmarks.

1. Compared to 6th Gen Intel® Core™ processor platform. Results have been estimated or simulated using internal Intel analysis or architecture simulation or modeling, and provided for informational purposes. Any differences in your system hardware, software or configuration may affect your actual performance. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors.
2. Only refers to LGA processor socket compatibility. For SW, new graphics driver required to support new graphics and media HW features.
3. Source: Intel ISG forecasting, using industry benchmarks, 2016; Intel Retail Solutions Division, 2016.
4. Intel® Core™ i7-6500U w/Intel® HD Graphics 520 compared to Intel® Core™ i7-6560U w/Intel® Iris™ Graphics 540 and Intel® Core™ i7-6567U w/ Intel® Iris™ Graphics 550. Configuration info:
   - Intel® CRB, Intel® SKL-U 2+2 PL1=15W, Intel Core i7-6500U w/ Intel® HD Graphics 520 (estimated from top bin measurement), TDP, 2C4T, turbo up to 3.1GHz, Memory: 2x4GB DDR4-2133, Storage: Intel® SSD, Display Resolution: 1920x1080.
   - Intel CRB, Intel® SKL-U 2+3e, Intel Core i7-6560U w/Intel® Iris™ Graphics 540, PL1=15W TDP, 2C4T, turbo up to 3.4GHz, Memory: 2x4GB DDR4-2133, Storage: Intel SSD, Display Resolution:1920x1080.
   - Intel CRB, Intel® SKL-U 2+3e, Intel Core i7-6567U w/Intel® Iris™ Graphics 550, PL1=28W TDP, 2C4T, turbo up to 3.6GHz, Memory: 2x4GB DDR4-2133, Storage: Intel SSD, Display Resolution: 1920x1080.

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