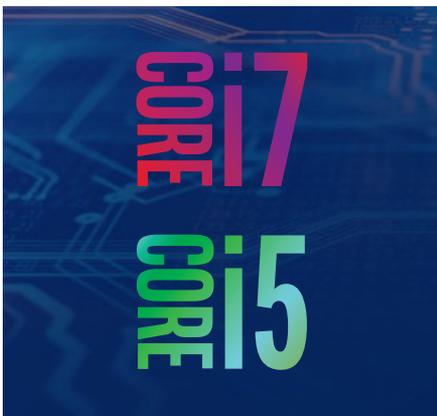intel®

8TH GENERATION INTEL® CORE™ PROCESSORS

Mobile U-Series: Peak Performance on the Go

The new 8th generation Intel® Core™ Processor U-series—for sleek notebooks and 2 in 1s elevates your computing experience with an astounding 40 percent leap in productivity performance over 7th Gen PCs,[1] brilliant 4K Ultra HD entertainment, and easier, more convenient ways to interact with your PC. With 10 hour battery life[2] and robust I/O support, Intel's first quad-core U-series processors enable portable, powerhouse thin and light PCs, so you can accomplish more on the go.

Extraordinary Performance and Responsiveness

With Intel's latest power-efficient microarchitecture, advanced process technology, and silicon optimizations, the 8th generation Intel Core processor (U-series) is Intel's fastest 15W processor[3] with up to 40 percent greater productivity than 7th Gen processors and 2X more productivity vs. comparable 5-year-old processors.[4]

• Get fast and responsive web browsing with Intel® Speed Shift Technology.

• Intel® Turbo Boost Technology 2.0 lets you work more productively by dynamically controlling power and speed—across cores and graphics— boosting performance precisely when it is needed, while saving energy when it counts.

• With up to four cores, 8th generation Intel Core Processor U-series with Intel® Hyper-Threading Technology (Intel® HT Technology) supports up to eight threads, making every day content creation a compelling experience on 2 in 1s and ultra-thin clamshells.

• For those on the go, PCs enabled with Microsoft Windows* Modern Standby wake instantly at the push of a button, so you don't have to wait for your system to start up.

Immersive Entertainment

Impressive built-in media capabilities enhance your editing and viewing experiences with 4K Ultra HD video, 360° video, and premium content streaming, enabling new ways to enjoy and engage content across a range of form factors. Intel® UHD Graphics, integrated into these next-generation processors, deliver advanced, efficient performance for visual brilliance, so you can easily watch, create, edit, share, and game. Our media engine, with power-efficient VP9 and HEVC 10-bit hardware acceleration, means great battery life, even with 4K UHD viewing and content creation. You can root for your favorite sports team and stream movies and TV shows in rich, detailed 4K UHD from a burgeoning content ecosystem. Gamers can play their favorite games on the go in HD with fluid, texture-rich graphics.

For an enhanced gaming experience, connecting to an external graphics dock via Thunderbolt™ 3 delivers spectacular gaming performance with one simple connection, even with a thin and light notebook. Enjoy the freedom—and the results.

8th Gen Intel Core processors will be Microsoft Mixed Reality-ready[5]—great for 360° photos and video, including discovering new HoloTour places.

Simply, Convenient, Intuitive

With today's diverse designs supporting touch, voice, and stylus input, the 8th generation Intel Core Processor is designed to deliver intuitive experiences, enabling you to simplify your interactions and unleash your creativity. Supporting digital assistants like Cortana* and capabilities like Windows Ink*, new PCs offer flexible and natural ways to communicate and express yourself. On notebooks with fingerprint sensors or cameras supporting Windows Hello* facial recognition, you can securely[5] log into your PC and websites hassle-free.

Intel® Online Connect technology takes this convenience even further, making secure payments a breeze while shopping online, enabling hardened password managers, and providing built-in 2-factor authentication for some of your favorite sites.[5]
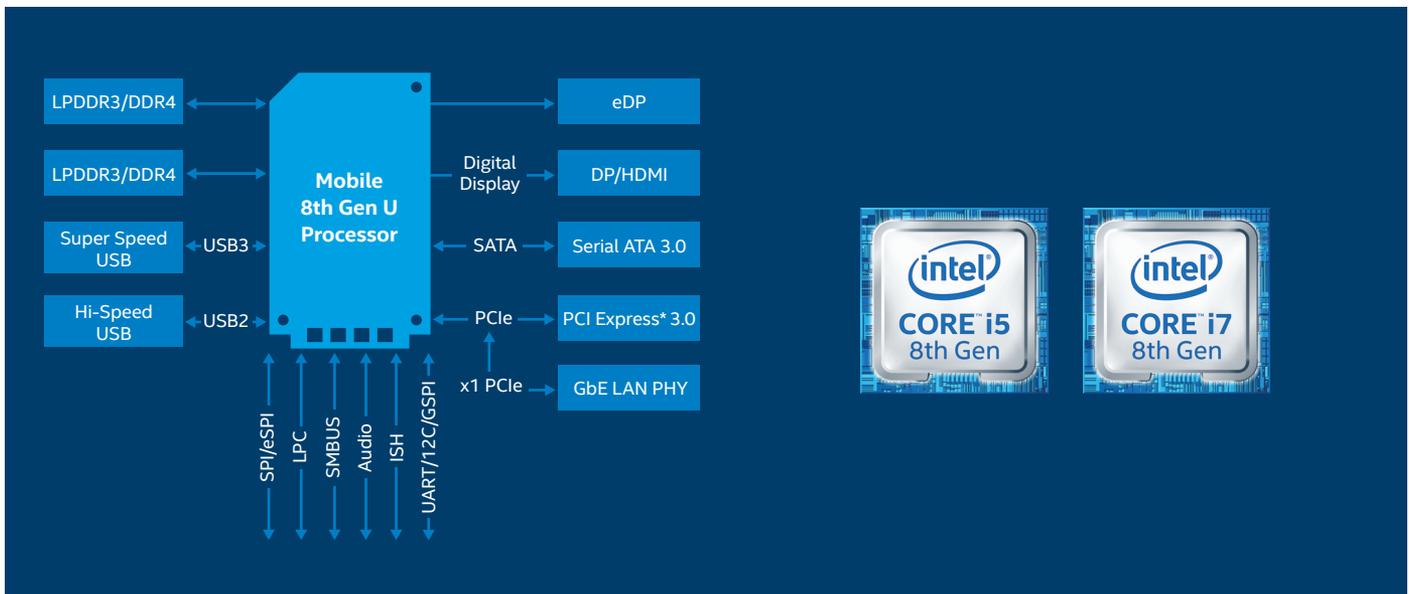
Extended Battery Life

By meticulously engineering power efficiency at a processor and platform level, Intel delivers performance without sacrificing battery life,[6] enabling enhanced productivity and creativity in increasingly slim form factors. Dedicated hardware acceleration dramatically reduces power consumption, enabling exceptional battery life during 4K video playback.

I/O Support

I/O in 8th generation Intel Core Processor U-series includes PCIe* 3.0, delivering data transfer rates at 8 GT/s versus 5 GT/s with PCIe 2.0. The latest Intel® Rapid Storage Technology supports NVMe* PCIe x4 Solid State Drives, and it is capable of utilizing PCIe 3.0 speed. The Intel® Context Sensing SDK for the Intel® Integrated Sensor Solution allows third-party software vendors to develop exciting sensor-enhanced applications. This rich combination of technologies means fast response and movement of data throughout the platform for unique user experiences.

Thunderbolt™ 3: The USB-C that Does it All

Notebooks with the versatile Thunderbolt 3 technology—the USB-C that does it all—provide incredible I/O performance. Declutter your desk with a single cable that conveniently supports up to 40 Gbps transfer speeds, two 4K 60 Hz displays, system charging up to 100W, external graphics, and Thunderbolt networking to bolster productivity and deliver amazing experiences on your PC.

8TH GENERATION INTEL® CORE™ PROCESSOR FEATURES AT A GLANCE

FEATURES	BENEFITS
Intel® Turbo Boost Technology 2.0	Dynamically increases the processor's frequency, as needed, by taking advantage of thermal and power headroom when operating below specified limits.
Intel® Hyper-Threading Technology	Delivers two processing threads per physical core. Highly threaded applications can get more work done in parallel, completing tasks sooner.
Intel Built-In Visuals	Intel® HD Graphics—Allows playing of HD videos with exceptional clarity, viewing and editing of even the smallest details of photos, and playing today's modern games. Intel® Quick Sync Video—Delivers excellent video conferencing capability, fast video conversion, online sharing, and fast video editing and authoring. Intel® Clear Video HD—Visual quality and color fidelity enhancements for HD playback and immersive web browsing.
Integrated Memory Controller	Offers stunning memory read/write performance through efficient prefetching algorithms, lower latency, and higher memory bandwidth.
Intel® Smart Cache	Dynamically allocates shared cache to each processor core, based on workload, reducing latency and improving performance.
Intel® Virtualization Technology	Allows one hardware platform to function as multiple "virtual" platforms. Offers improved manageability by limiting downtime and maintaining productivity by isolating computing activities into separate partitions.
Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)	Fast, secure AES engine for a variety of encryption apps, including whole disk encryption, file storage encryption, conditional access of HD content, Internet security, and VoIP. Consumers benefit from protected internet and email content, plus fast, responsive disk encryption.
Intel® Power Optimizer and Processor C-States	Intel® Power Optimizer increases periods of silicon sleep state across the platform ingredients, including the CPU, chipset, and third-party system components, to reduce power. Processor C-states (C8–C10) provide low idle power.
Configurable TDP Power	With Configurable TDP, the processor is now capable of modulating the maximum sustained power vs. performance. Configurable TDP thus provides design and performance flexibility to control system performance based on the cooling capability and usage scenarios. For example, a detachable Ultrabook™ may need more performance when used in a full clamshell mode (vs. tablet mode), or when balanced performance is needed in a quiet conference room setting.
Intel® Secure Key (formerly Digital Random Number Generator ((DRNG))	Security hardware-based random number generator that can be used for generating high-quality keys for cryptographic (encryption and decryption) protocols. Provides quality entropy that is highly sought after in the cryptography world for added security.
Intel® Advanced Vector Extensions (Intel® AVX2) 2.0	AVX 2.0 is an extension of AVX 1.0 with new optimized instructions to deliver enhanced performance on floating point–intensive apps. AVX 2.0 adds 256-bit integer instructions and new instructions for FMA (Fused Multiply Add). FMA delivers better performance on media and floating point computations, including face recognition; professional imaging; high-performance computing; consumer video and imaging; compression; and encryption.
Collaborative Processor Performance Control (CPPC)	A technology based on the ACPI 5.0 specification that dynamically modulates performance vs. active application power. It reduces active power to deliver better battery life and allows deep low power states to be reached.
Intel® Software Guard Extensions (Intel® SGX)	A processor enhancement designed to help protect application integrity and confidentiality of secrets and withstand software and certain hardware attacks.
Intel® Memory Protection Extensions (Intel® MPX)	Provides hardware accelerated mechanism for memory testing (heap and stack) buffer boundaries in order to identify buffer overflow attacks.
Intel® BIOS Guard	Intel BIOS Guard is an augmentation of existing chipset-based BIOS flash protection capabilities targeted to address the increasing malware threat to BIOS flash storage. It helps protect the BIOS flash from modification without platform manufacturer authorization, helps defend the platform against low-level DOS (denial of service) attacks, and restores BIOS to a known good state after an attack.
Intel® Boot Guard	Hardware-based boot integrity protection that helps prevent unauthorized software and malware takeover of boot blocks critical to a system's function, thus providing added level of platform security based on hardware. Configurable boot types include: Measured Boot—Measures the initial boot block into the platform storage device such as trusted platform module (TPM) or Intel® Platform Trust Technology (PTT). Verified Boot—Cryptographically verifies the platform initial boot block using the boot policy key.
Intel® Platform Trust Technology	A trusted element of the platform execution that provides enhanced security by verifying the boot portion of the boot sequence on U-series processors.
Intel® Rapid Storage Technology (Intel® RST)	Offers excellent levels of performance, responsiveness, and expandability. Take advantage of the enhanced performance and lower power consumption available with Intel® RST with one or more SATA or PCIe storage drives. With additional SATA drives, Intel RST provides quicker access to digital photo, video, and data files with RAID 0, 5, and 10, and greater data protection against a storage disk drive failure with RAID 1, 5, and 10. Dynamic Storage Accelerator unleashes the maximum performance of Solid State Drives (SSD) when multitasking.

FEATURES	BENEFITS
Intel® Speed Shift Technology	Delivers dramatically quicker responsiveness with single-threaded, transient (short duration) workloads, such as web browsing, by allowing the processor to more quickly select its best operating frequency and voltage for optimal performance and power efficiency.
Intel® Smart Response Technology	Spend less time waiting, with fast access to the files and applications you use the most.
Intel® High Definition Audio	Integrated audio support enables premium digital surround sound and delivers advanced features such as multiple audio streams and jack re-tasking.
Intel® Smart Sound Technology	A dedicated audio Digital Signal Processor designed to process audio for media playback and voice for PC interactions like Cortana*, Nuance Dragon*, or Skype*. Enables long battery life while providing new usages and maintaining high-end audio playback.
Universal Serial Bus 3.0	Integrated USB 3.0 support enhances performance with a design data rate of up to 5 gigabits per second (Gbps) with up to 6 USB 3.0 ports.
Universal Serial Bus 2.0	Hi-Speed USB 2.0 support with a design data rate of up to 480 megabits per second (Mbps) with up to 6 USB 2.0 ports in Y-series and 10 USB 2.0 ports in U-series.
Serial ATA (SATA) 6 Gb/s	Next-generation high-speed storage interface supporting up to 6 Gb/s transfer rates for optimal data access with up to 2 SATA 6 Gb/s ports in Y-series and 3 SATA 6 Gb/s ports in U-series. The PCH SATA controller also supports SATA 3 Gb/s and 1.5 Gb/s transfer capabilities.
eSATA	SATA interface designed for use with external SATA devices. Provides a link for 3 Gb/s data speeds to eliminate bottlenecks found with current external storage solutions.
SATA Port Disable	Enables individual SATA ports to be enabled or disabled as needed. This feature provides added protection of data by preventing malicious removal or insertion of data through SATA ports. Especially targeted for eSATA ports.
PCI Express* 3.0 Interface	Offers up to 5 GT/s for fast access to peripheral devices and networking with up to 12 lanes and 6 ports. PCI Express ports can be configured as x1, x2 and x4 depending on motherboard designs.
USB Port Disable	Enables individual USB ports to be enabled or disabled as needed. This feature provides added protection of data by preventing malicious removal or insertion of data through USB ports.
Intel® Integrated 10/100/1000 MAC	Support for the Intel® I219LM and Intel® I219V Gigabit Network Connection.

U-series processors have integrated platform input/output. The following table summarizes the two configurations supported.

U-SERIES PROCESS PLATFORM INPUT/OUTPUT CONFIGURATION	
FEATURE	PREMIUM (U-SERIES)
Independent Displays Supported	3
Intel® Rapid Storage Technology	RAID, AHCI support
Intel® Smart Response Technology	Yes
Intel® High Definition Audio	Yes
Intel® Smart Sound Technology	Yes
USB 3.0 Ports	Up to 6
USB 2.0 Ports	10
PCIe Express*	Up to 12 Gen 3 lanes
SATA Ports	Up to 4 SATA 6 Gbps
I2C	6
UART	3
SDXC	1

For more information, visit **www.intel.com/core**.