



INTRODUCING INTEL'S FIRST-EVER CORE™ I9 MOBILE PROCESSOR.

THE PERFORMANCE POWERHOUSE FOR WHAT THE MOST DEMANDING
MOBILE ENTHUSIASTS NEED TODAY AND FOR WHAT COMES NEXT.



Be ready for amazing experiences in gaming, VR, content creation, and entertainment wherever your computing takes you with the highest-performance mobile 8th Generation Intel® Core™ processor family. This latest addition to the 8th generation processor family extends all the capabilities users have come to love in our mobile H series platforms with advanced innovations that deliver exciting new features to immerse you in incredible experiences on a variety of form factors.

REDEFINE ENTHUSIAST MOBILE PC PERFORMANCE



ULTIMATE MOBILE PLATFORM PERFORMANCE

The newest 8th Generation Intel Core processors redefine enthusiast mobile PC performance now with up to six cores and 12 MB of cache memory for more processing power—that's two more cores than the previous generation Intel Core processor family—Intel® Turbo Boost 2.0 technology and new Intel® Thermal Velocity Boost to opportunistically and automatically increase core frequency whenever processor temperature and turbo budget allows.

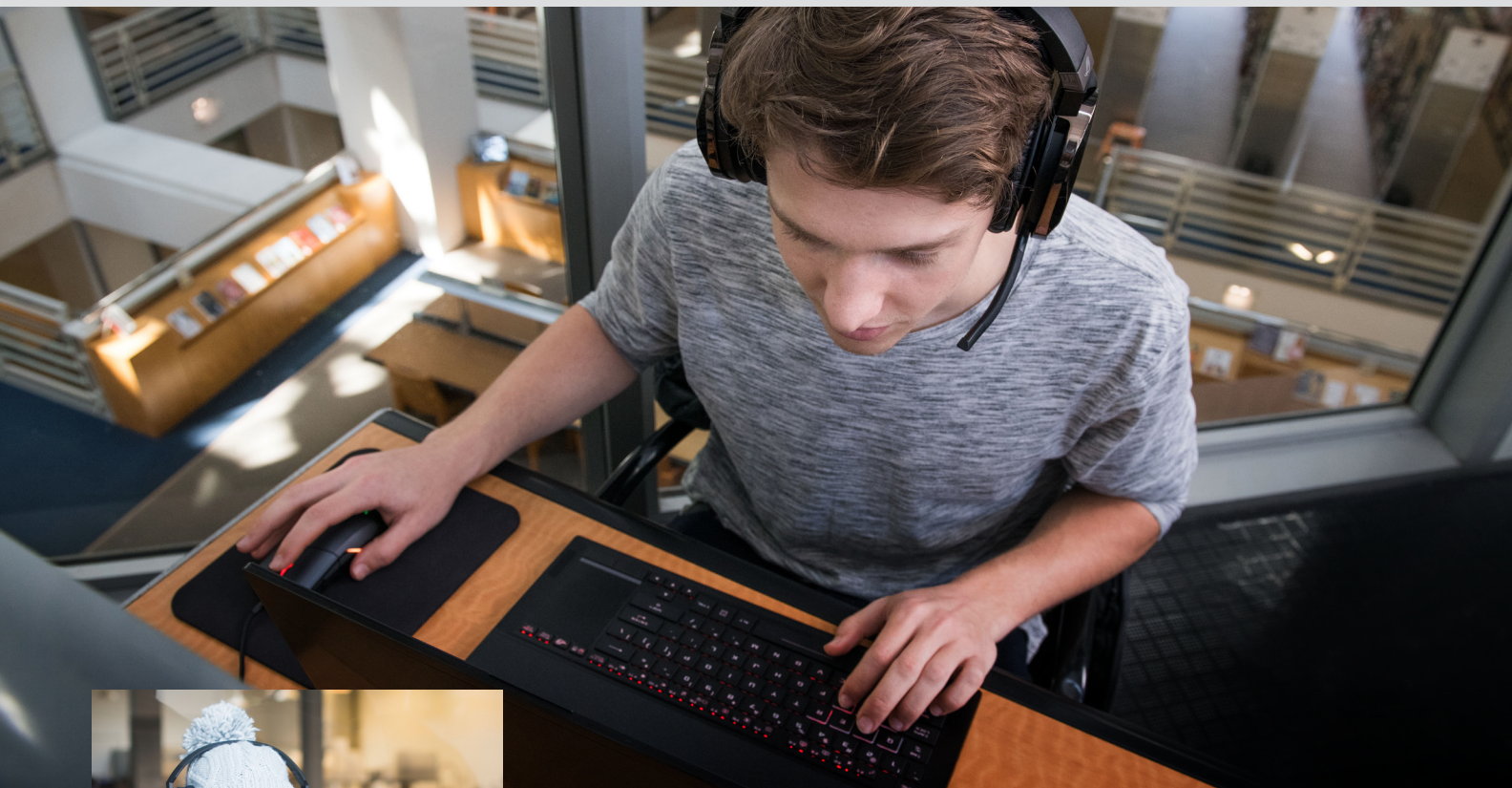
Intel® Hyper-Threading Technology delivers multitasking support in the latest generation of Intel Core processors. For the enthusiast, the fully-unlocked 8th Generation Intel® Core™ i9-8950HK processor provides the opportunity to tweak the platform performance to its fullest potential and enjoy hardcore mobile gaming and VR experiences.



**THE NEW MOBILE 8TH GENERATION
INTEL® CORE™ PROCESSOR FAMILY DELIVERS:**

- An impressive portfolio of standard and unlocked systems for a broad range of usages and performance levels.
- First mobile Intel® Core™ platform with support for Intel® Optane™ memory on board unleashing the power of your computer, enabling it to be more adaptable and responsive.
- Intel® Turbo Boost 2.0 technology to give you that extra burst of performance when you need it.
- Intel® Hyper-Threading technology, which allows each processor core to work on two tasks at the same time, improving multitasking, speeding up workflows, and accomplishing more in less time.
- Intel® Thermal Velocity Boost, supported on Intel® Core™ i9-8950HK and Intel® Xeon® E-2186M, to opportunistically and automatically increase core frequency whenever processor temperature and turbo budget allows.

**UNLEASHING
THE POWER
OF YOUR
COMPUTING**



- DDR4 RAM memory technology support, which allows systems to have up to 32 GB of DRAM and up to 2666 MT/s memory transfer speeds.
- Fully unlocked (Intel® Core™ i9-8950HK) and partially unlocked (Intel® Core™ i7-8850H) processors to provide more control and more granularity for overclocking¹.
- New Intel® Wireless-AC 2x2 160MHz to deliver WiFi throughput that smashes through the Gigabit barrier.

DESIGNED FOR TODAY AND WHAT COMES NEXT

8th Generation Intel® Core™ processor platforms deliver enthusiast performance and are loaded with new and enhanced features to deliver amazing experiences that five-year-old systems can't handle.

NO COMPROMISE MOBILE GAMING

Outstanding gaming experiences extend beyond your personal smooth gameplay to your entire gaming community. The newest 8th Generation Intel® Core™ processor family makes it easy to share those experiences by live-streaming or recording, editing, and posting your epic highlights. To perform at your best, get a great gaming PC powered by an 8th Generation Intel® Core™ i9 processor that lets you live—and share—the ultimate gaming experience.

LIVE THE
ULTIMATE
GAMING
EXPERIENCE



INCREDIBLE VR

Great VR experiences involve the entire platform, not just any one component. The ideal combination of processor, graphics, I/O connectivity, display, and audio are required. A high-performance processor is key to achieving a balanced platform to make your VR experiences great. Attach your premium head-mounted display (HMD) to an Intel® Core™ i9, i7, or i5 processor-based PC, and prepare to be amazed.



MOST POWERFUL MOBILE PLATFORM

NEXT-LEVEL CONTENT CREATION

Intel's most powerful mobile platform for creators enables fluid 4K video editing, accelerated media content loading from large HDD data drives with Intel® Optane memory, and with Thunderbolt™ 3 enables one thin, reversible USB-C port that delivers the fastest, most versatile connection to any dock, display, or data device. Creators can use Thunderbolt™ 3 to access fast external NVMe storage holding large media projects and edit photos and videos as well as to connect two 4K 60 Hz displays or one 5K display.

ULTRA-HIGH DEFINITION ENTERTAINMENT

To play premium movie streams in stunning 4K UHD, get an advanced platform that supports the latest media technologies enabling today's great entertainment. Notebook computers based on the 8th Generation Intel® Core™ processors integrate advanced media technologies that bring premium, high-quality content to your notebook, including:

- HEVC 10-bit encode/decode, VP9 10-bit decode:
 - Delivering smooth streaming of premium 4K UHD entertainment to your PC from leading online providers.
 - Providing full-size, screen-immersive viewing experiences with 4K video and 360-degree viewing.
 - Enabling incredible 4K video creation and sharing with ease.
- High Dynamic Range (HDR) and Rec. 2020 (Wide Color Gamut) for life-like luminesces to provide enhanced image and video viewing experiences.
- Intel® Quick Sync Video technology to accelerate most video capabilities, allowing users to create and share in real-time and multitask without interruption.





SECURITY BUILT RIGHT INTO THE SILICON²

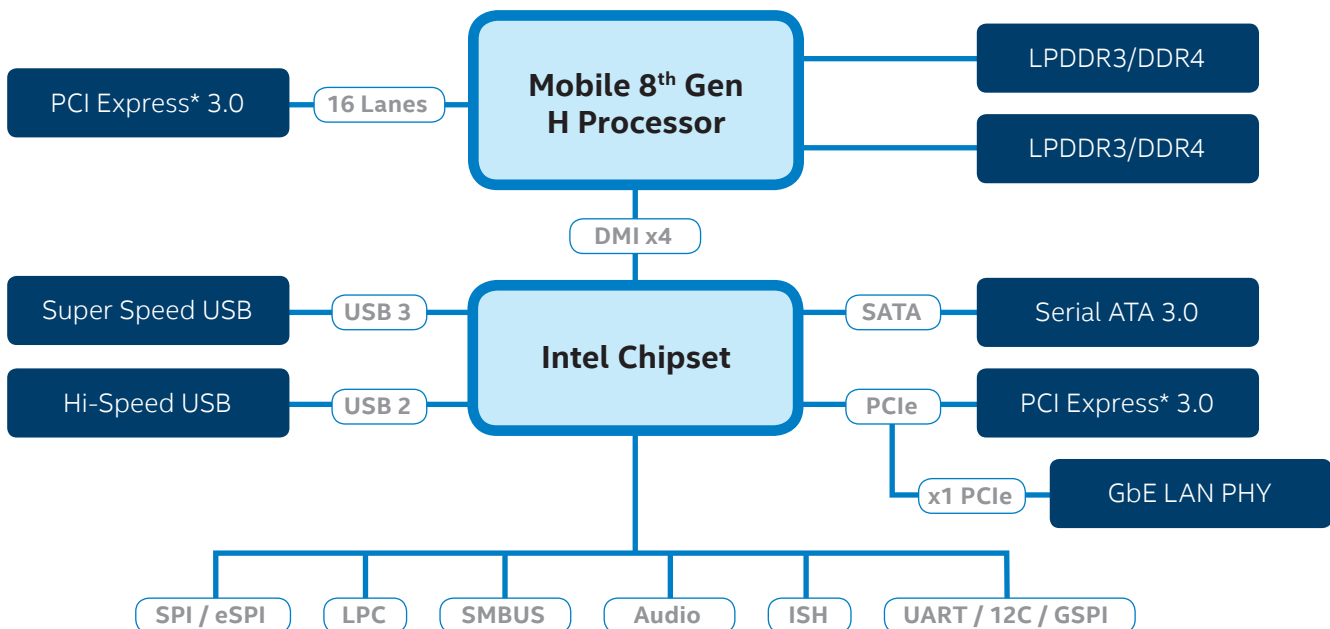
8th Generation Intel Core processors integrate hardware-level technologies that strengthen the protection of your enabled security² software. Hardware-based security helps you experience online and offline activities with peace of mind, enabled by features that include:

- Intel® Software Guard Extensions (Intel® SGX)² to help applications protect your system and your data.
- Intel® BIOS Guard and Intel® Boot Guard to help protect your system during startup.

FITS A WIDE RANGE OF BUDGETS AND NEEDS

SCALABLE PORTFOLIO OF PROCESSORS

The 8th Generation Intel® Core™ processor family is a great investment in your mobile experiences—whether for gaming, entertainment, or general-purpose computing wherever your life takes you. From the jaw-dropping performance of the 8th Generation Intel® Core™ i9-8950HK processor with six cores to the amazing capabilities of the 8th Generation Intel® Core™ i5-8300H processor, our latest generation of mobile processors fits a wide range of budgets and needs. Whether you're a performance-hungry professional, an exceptional enthusiast, or a first-time buyer, there is an 8th Generation Intel® Core™ processor that will enable the experiences you seek. If form factor is your priority, the 8th Generation Intel® Core™ processor family offers a range of processors designed for mobile PCs from high-performance gaming systems to slick and stylish premium notebooks.



PREPARE TO BE AMAZED WITH THE 8TH GENERATION INTEL® CORE™ NOTEBOOK PROCESSOR FAMILY

The highest-performance mobile 8th Generation Intel® Core™ processors power the ultimate laptops for enthusiast gamers and creators. 8th Gen Intel® Core™ is the performance powerhouse for what the most demanding PC enthusiasts need today and for what comes next.

8th Gen Intel® Core™ i9 is the best gaming laptop processor Intel has ever built. It delivers the highest frequencies ever on an Intel laptop processor and is optimized to get the most out of the latest discrete graphics cards for visually-impressive gameplay at consistently-high frame rates. It supports Intel® Optane™ technology for improved system responsiveness and new integrated Gigabit Wi-Fi for ultrafast connectivity for a no compromise gaming experience at home or on the go with the mega-tasking headroom to stream and record while maintaining a gaming experience previously unreachable on a laptop.

8th Gen Intel® Core™ i9 delivers the performance that content creators depend upon to unleash their creativity. With up to 6 cores, 12 threads, Intel® Thermal Velocity Boost, and fully unlocked K SKU, creators can edit 4K video with ease. Experience all the amazing things you and a new 8th Generation Intel® Core™ processor-powered PC can do.



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

FEATURES ²	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® Thermal Velocity Boost	Supported on Intel® Core™ i9-8950HK and Intel® Xeon® E-2186M, opportunistically and automatically increases core frequency whenever processor temperature and turbo budget allows.
Intel® UHD Graphics	Play 4K UHD videos with exceptional clarity, view and edit even the smallest details of photos, and play today's modern games. Intel® Quick Sync Video — Delivers excellent video conferencing capability, fast video conversion, online sharing, and fast video editing and authoring.
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 Instructions (Intel® AES)	A fast, secure AES engine for a variety of encryption apps, including whole disk encryption, file storage encryption, conditional access of 4K UHD content, Internet security, and VoIP. Consumers benefit from protected internet and email content, plus fast, responsive disk encryption. ²

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

FEATURES ²	BENEFITS
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.
CPU/Memory/ Graphics Overclocking*	On select products, when unlocked processors are paired with select chipset SKUs, processor core, graphics, and memory can be run at frequencies above the rated frequency of the part resulting in higher performance.
Intel® Secure Key	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® Transactional Synchronization Extensions (TSX)	A set of instructions focused on enterprise-level multi-threaded performance scaling, making parallel operations more efficient via improved control of software threads and locks. This offers performance benefits for enterprise-level big data analytics/business intelligence and visualization apps, which involve multi-user collaboration.
Intel® Advanced Vector Extensions 2.0 ⁴ (Intel® AVX2)	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 256bit 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.
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 protects 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® OS Guard	A hardware-based security feature that protects the OS (operating system) kernel. OS Guard helps prevent use of malicious data or attack code located in areas of memory marked as user mode pages from taking over or compromising the OS kernel. OS Guard is not application-specific and protects the kernel from any application.
Intel® Platform Trust Technology	A trusted element of the platform execution that provides enhanced security by verifying the boot portion of the boot sequence.
VMCS shadowing	VMCS shadowing allows a Virtual Machine Manager (VMM) running in a guest (nested virtualization) to access a shadow VMCS memory area using the normal VMRead/VMWrite instructions. This technology reduces overhead for a more natural and responsive user experience. It also allows users to take control of their personal and professional data and apps while being protected by game-changing security.
Intel® Identity Protection Technology	Protect your one-time-password (OTP) credentials and public key infrastructure (PKI) certificates and add a layer of encrypted second factor authentication for online transactions.
Intel® Optane Memory Support	Provides performance improvements as well as fast app response times for system acceleration and responsiveness when paired with an Intel® Optane™ memory module.
PCI Express* 3.0 Interface	Offers up to 8 GT/s for fast access to peripheral devices and networking with up to 16 lanes. The lanes can be configured as 1x16, 2x8 or 1x8 and 2x4 depending on motherboard designs.
Intel® Software Guard Extensions (Intel® SGX)	A collection of instructions, APIs, libraries, and tools to help protect select code and data from disclosure or modification through the use of enclaves, which are protected areas of execution in memory.

8TH GEN INTEL® CORE™ PROCESSOR COMPARISON

	8 TH GEN INTEL® CORE™ i9 PROCESSORS	8 TH GEN INTEL® CORE™ i7 PROCESSORS	8 TH GEN INTEL® CORE™ i5 PROCESSORS
Maximum Processor Frequency (GHz)	Up to 4.8 ³	Up to 4.3	Up to 4.2
Number of Processor Cores/Threads	6/12	6/12	4/8
Cache Size (MB)	12	9	8
Intel® Turbo Boost Technology 2.0	Yes	Yes	Yes
Intel® Thermal Velocity Boost	Yes	No	No
Number of Memory Channels	2	2	2
Memory Type support	Up to DDR4-2666	Up to DDR4-2666	Up to DDR4-2666
Intel® Hyper-Threading Technology	Yes	Yes	Yes
Intel® Smart Cache	Yes	Yes	Yes
Intel® AES-New Instructions (AES-NI)	Yes	Yes	Yes
Intel® Advanced Vector Extensions (AVX) 2.0 ⁴	Yes	Yes	Yes
CPU/Graphics/Memory Overclocking	Yes	Partial (Intel® Core™ i7-8850H)	No
Intel® Optane™ Memory Support	Yes	Yes	Yes
Intel® UHD Graphics	630	630	630
Graphics Dynamic Frequency (MHZ)	Up to 1200	Up to 1150	Up to 1100
Intel® Quick Sync Video	Yes	Yes	Yes
Intel® vPro™ Technology	Yes	Yes	Yes
Processor Core/Graphics & System Memory Overclocking ¹	Yes	Partial (Intel® Core™ i7-8850H)	No
Intel® Virtualization Technology (Intel® VT)	Yes	Yes	Yes
Intel® TSX	Yes	Yes	Yes
Intel® Identity Protection Technology	Yes	Yes	Yes
Intel® Software Guard Extension (Intel® SGX)	Yes	Yes	Yes
Intel® Boot Guard	Yes	Yes	Yes
Intel® OS Guard	Yes	Yes	Yes
Intel® BIOS Guard	Yes	Yes	Yes

MOBILE 300 SERIES CHIPSET INPUT/OUTPUT CONFIGURATION

	HM370	QM370	CM246
Independent Displays supported	3	3	3
Intel® Rapid Storage Technology	Yes	Yes	Yes
Intel® High Definition Audio	Yes	Yes	Yes
Intel® Boot Guard	Yes	Yes	Yes
USB 3.1 Gen2 Ports	Up to 4	Up to 4	Up to 4
USB 3.0 Ports	Up to 8	Up to 8	Up to 8
PCI Express	16	16	16
SATA 3.0 Ports	4	4	4

For more information on the new 8th Gen Intel® Core™ processors, visit www.intel.com/core.

- 1 **WARNING:** Altering clock frequency and/or voltage may: (i) reduce system stability and useful life of the system and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel has not tested, and does not warranty, the operation of the processor beyond its specifications. Intel assumes no responsibility that the processor, including if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. For more information, visit: <http://www.intel.com/consumer/game/gaming-power.htm>
- 2 Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at intel.com.
- 3 Includes the effect of Intel® Thermal Velocity Boost feature which opportunistically and automatically increases clock frequency by up to 200 MHz if the processor is at a temperature of 50°C or lower and turbo power budget is available. The frequency gain and duration is dependent on the workload (best for bursty workloads), capabilities of the individual processor, and the processor cooling solution. Frequencies may reduce over time and longer workloads may start at the max frequency but drop as processor temperature increases.
- 4 Intel® Advanced Vector Extensions (Intel® AVX)* are designed to achieve higher throughput to certain integer and floating point operations. Due to varying processor power characteristics, utilizing AVX instructions may cause a) some parts to operate at less than the rated frequency and b) some parts with Intel® Turbo Boost Technology 2.0 to not achieve any or maximum turbo frequencies. Performance varies depending on hardware, software, and system configuration and you should consult your system manufacturer for more information. *Intel® Advanced Vector Extensions refers to Intel® AVX, Intel® AVX2 or Intel® AVX-512. For more information on Intel® Turbo Boost Technology 2.0, visit <http://www.intel.com/go/turbo>

The benchmark results reported above may need to be revised as additional testing is conducted. The results depend on the specific platform configurations and workloads utilized in the testing, and may not be applicable to any particular user's components, computer system or workloads. The results are not necessarily representative of other benchmarks and other benchmark results may show greater or lesser impact from mitigations.

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 information about benchmarks and performance test results, go to www.intel.com/benchmarks.

Not all features available on all processors or chipsets. For more information on which processors support the capability, see ark.intel.com.

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