Product Brief

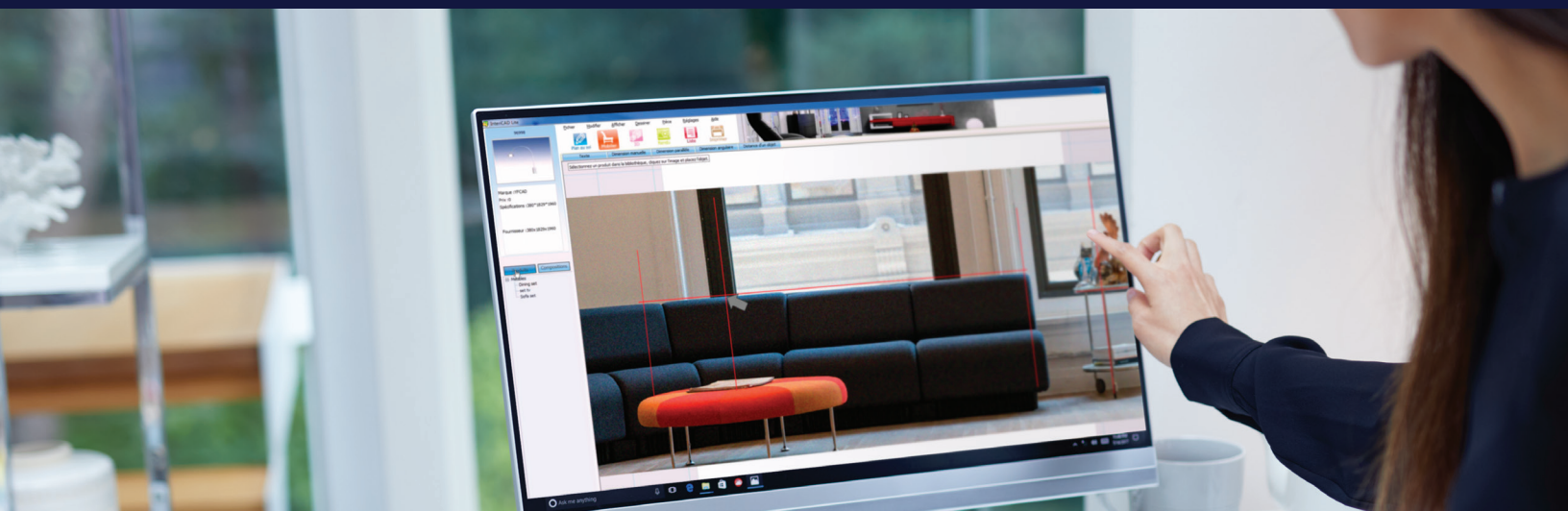
POWER YOUR CREATIVITY WITH THE INTEL® CORE™ X-SERIES PROCESSOR FAMILY

The Ultimate Creator PC Platform

Made to create, the latest Intel® Core™ X-series processor family is powered by up to 18 cores and 36 threads to address the simultaneous, compute-intensive demands of Creators. All skus enable system configuration flexibility for specific creator usages with access to 44 PCIe lanes, quad channel memory, plus support for Thunderbolt™ technology and high-speed storage like Intel® Optane SSDs. Finally, these new processors are fully unlocked[3] and feature solder thermal interface material (STIM) for extreme overclocking.[2] Get the power and convenience of a full studio in your PC, helping accelerate your creative work flow from beginning to end.

INTEL® CORE™ X-SERIES PROCESSOR FAMILY

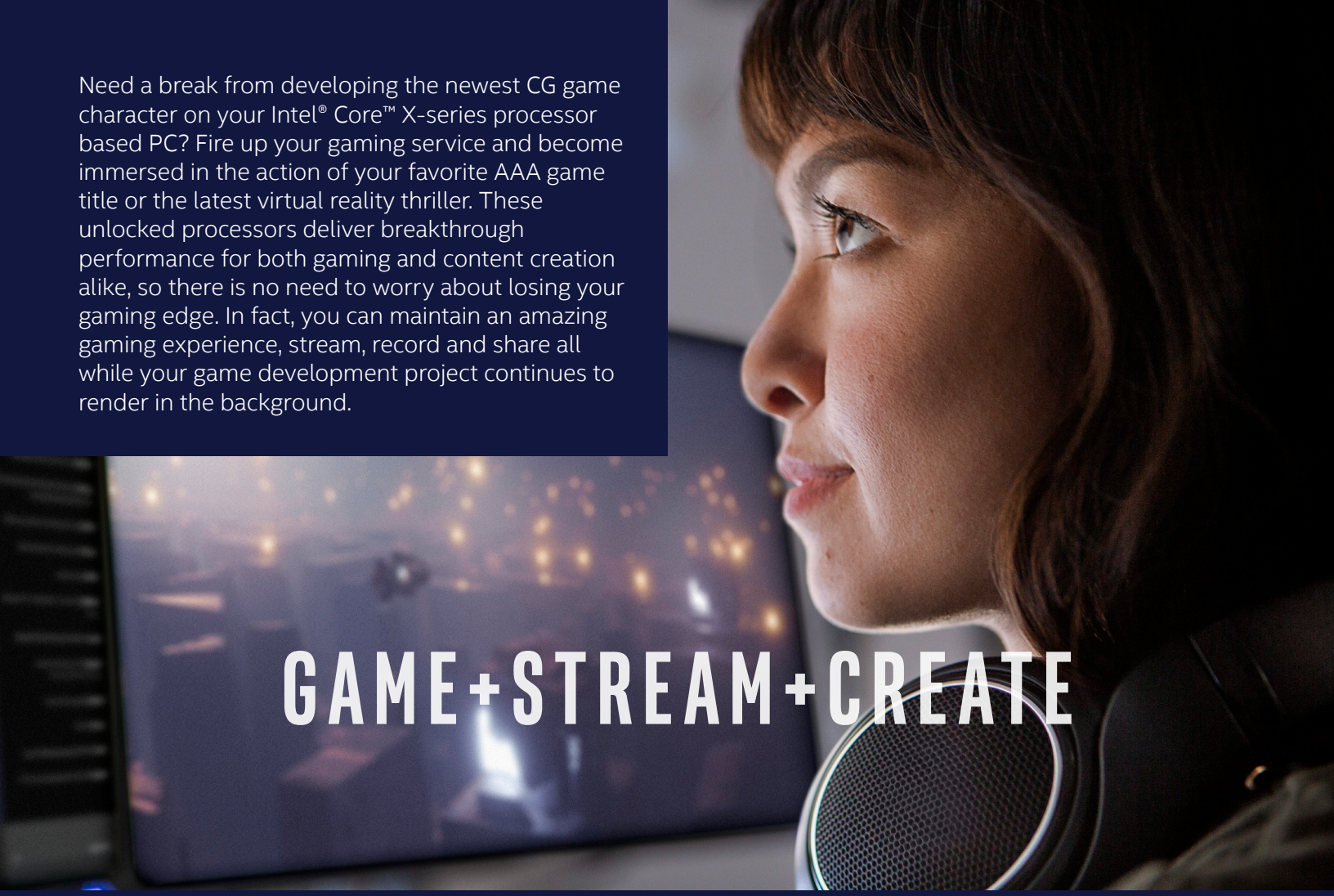
The X-series processor family is designed to scale to your performance needs by delivering options ranging from 8 to 18 cores for extreme performance, the latest technological advancements from Intel and headroom for the future. This platform comes with Intel® Turbo Boost Max Technology 3.0, which optimizes lightly-threaded performance by identifying your processor's fastest two cores and directing your most critical workloads to them.[1] It also comes ready to install Intel® Optane™ Memory and Intel® Optane™ SSDs for amazing system responsiveness. Support for immersive 4K visuals, four channel DDR4 2666 memory, Intel® AVX-512, Thunderbolt* 3 delivering a 40Gb/s bi-directional port for almost any peripheral you want to connect and up to 8 SATA ports for a RAID storage array makes this the ultimate desktop platform.



YOUR FASTEST PATH FROM CREATIVITY TO PRODUCTIVITY

Your creativity is limitless and once you are in the flow of ideas, you need a system that will keep up. The uncompromising performance in a PC powered by the Intel® Core™ X-series processor helps you to find your fastest path from creativity to productivity. The Intel® Core™ X-series processor family with core count options, including 10, 14 or even 18 cores, delivers amazing performance when multiple real-time workloads are stacked. Spend more time creating while your Intel Core X-series processor powered system simultaneously handles uploading massive 4K files, rendering effects and other compute intensive workloads in the background. And with the updated Intel® Turbo Boost Max Technology 3.0, you have the control to give priority to the apps that need the power of the two fastest cores.[1] Quad channel memory also helps deliver improved responsiveness, decreased start up time and allows you to move fluidly between content creation applications when working with large files. With an Intel® Core™ X-series processor you can take on more work and focus on creating with the confidence that your results will be as remarkable as you imagined.

Need a break from developing the newest CG game character on your Intel® Core™ X-series processor based PC? Fire up your gaming service and become immersed in the action of your favorite AAA game title or the latest virtual reality thriller. These unlocked processors deliver breakthrough performance for both gaming and content creation alike, so there is no need to worry about losing your gaming edge. In fact, you can maintain an amazing gaming experience, stream, record and share all while your game development project continues to render in the background.



Intel® X299 Chipset and Intel® Core™ X-series processor family for the ultimate creator platform

The Intel® X299 chipset paired with the Intel® Core™ X-series processors provide a world class platform for content creation, gaming and over-clocking[2]. Whether it is responsiveness, expandability or performance you crave, this platform has you covered. Integrated USB 3.0 makes moving files to your tablet and smartphone blazing fast. The platform also provides RAID support on PCI Express* and Serial ATA storage devices, fast data transfers with support for PCIe 3.0 storage devices and finally, Intel® Optane™ Memory support. Want to push the envelope with overclocking? The Intel® X299 chipset and Intel® Core™ X-series processor family bring new unlocked base clock capabilities[2]. Unlock your individual cores and memory frequencies to amazing levels while having the flexibility to keep other areas within specification. With support for Intel® Extreme Memory Profiles (XMP), Intel® Extreme Tuning Utility (XTU), and the Intel® Performance Tuning Protection Package Plan the capabilities of the Intel® X299 chipset and the Intel® Core™ X-series processor family will challenge every overclocking world record.[1,2]

NEW INTEL® CORE™ X-SERIES FAMILY

PROCESSOR COMPARISONS

	i9 Intel® Core™ i9-9980XE Extreme Edition Processor	i9 Intel® Core™ i9-9960X Processor	i9 Intel® Core™ i9-9940X Processor	i9 Intel® Core™ i9-9920X Processor
Base Clock Speed (GHz)	3.0	3.1	3.3	3.5
Number of Processor Cores/Threads	18/36	16/32	14/28	12/24
Intel® Turbo Boost Max Technology 3.0 (GHz)	4.5	4.5	4.5	4.5
Intel® Turbo Boost Technology 2.0	Yes	Yes	Yes	Yes
Intel® Turbo Frequency (GHz)	4.4	4.4	4.4	4.4
Memory Support (MHz)	4 channels DDR4-2666	4 channels DDR4-2666	4 channels DDR4-2666	4 channels DDR4-2666
PCI Express Lanes	44	44	44	44
PCI Express 3.0	Yes	Yes	Yes	Yes
Unlocked Core Multiplier	Yes	Yes	Yes	Yes
Intel® Hyper-Threading Technology	Yes	Yes	Yes	Yes
Intel® Smart Cache	24.75MB	22MB	19.25MB	19.25MB
AES New Instructions (AES-NI)	Yes	Yes	Yes	Yes
Intel® Virtualization Technology	Yes	Yes	Yes	Yes
Overclocking Enabled	Yes	Yes	Yes	Yes
Recommended Intel® Chipset	X299	X299	X299	X299
TDP	165W	165W	165W	165W
Socket (LGA)	2066	2066	2066	2066

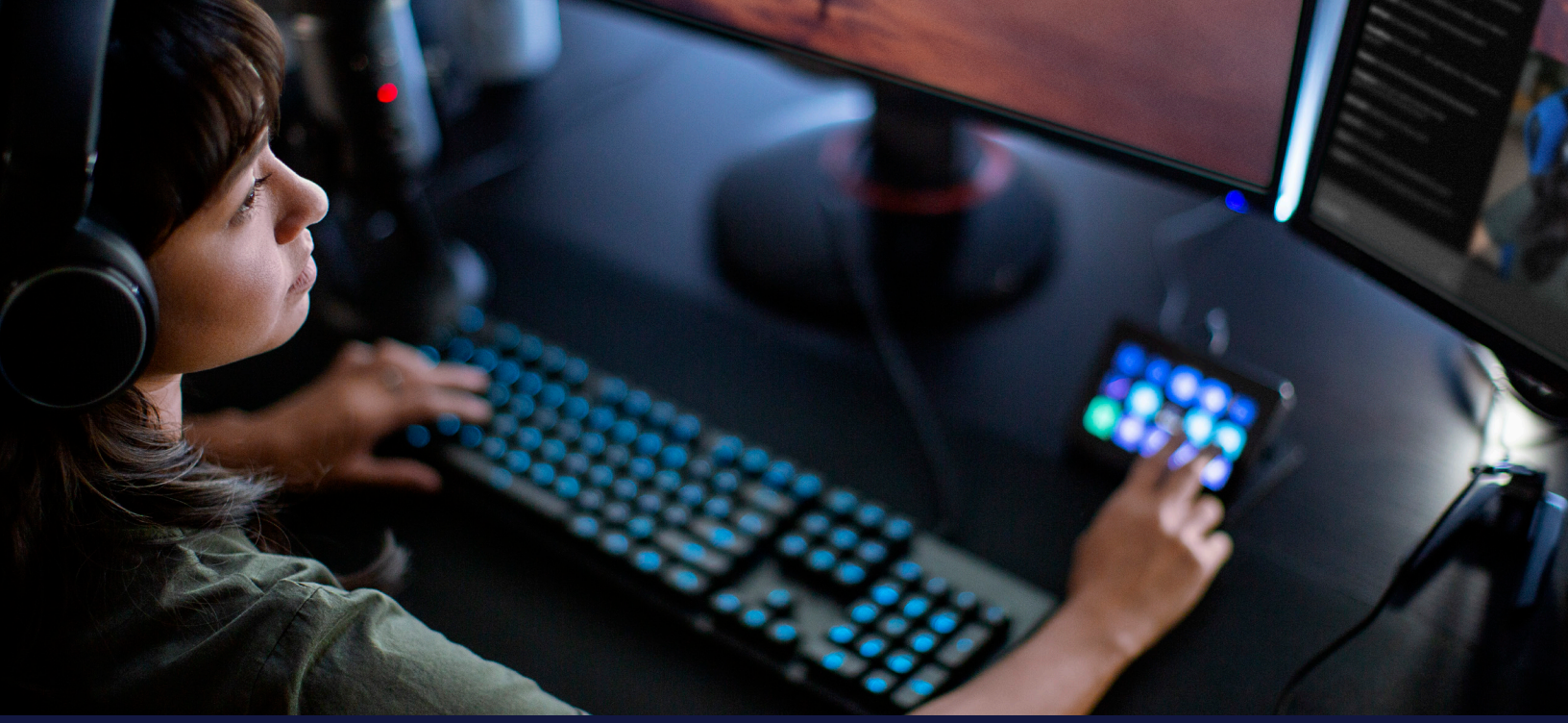
NEW INTEL® CORE™ X-SERIES FAMILY

PROCESSOR COMPARISONS

	i9 Intel® Core™ i9-9900X Processor	i9 Intel® Core™ i9-9820X Processor	i7 Intel® Core™ i7-9800X Processor
Base Clock Speed (GHz)	3.5	3.3	3.8
Number of Processor Cores/Threads	10/20	10/20	8/16
Intel® Turbo Boost Max Technology 3.0 (GHz)	4.5	4.2	4.5
Intel® Turbo Boost Technology 2.0	Yes	Yes	Yes
Intel® Turbo Frequency (GHz)	4.4	4.1	4.4
Memory Support (MHz)	4 channels DDR4-2666	4 channels DDR4-2666	4 channels DDR4-2666
PCI Express Lanes	44	44	44
PCI Express 3.0	Yes	Yes	Yes
Unlocked Core Multiplier	Yes	Yes	Yes
Intel® Hyper-Threading Technology	Yes	Yes	Yes
Intel® Smart Cache	19.25MB	16.5MB	16.5MB
AES New Instructions (AES-NI)	Yes	Yes	Yes
Intel® Virtualization Technology	Yes	Yes	Yes
Overclocking Enabled	Yes	Yes	Yes
Recommended Intel® Chipset	X299	X299	X299
TDP	165W	165W	165W
Socket (LGA)	2066	2066	2066

NEW INTEL® CORE™ X-SERIES PROCESSOR FAMILY
FEATURES AT A GLANCE

FEATURES	BENEFITS
Intel® Turbo Boost Max Technology 3.0	With Intel® Turbo Boost Max Technology 3.0, lightly-threaded performance is optimized by identifying the processor's fastest cores and directing the most critical workloads to them. The driver provided along with the feature allows end users to direct workloads to the fastest core by setting priority to preferred applications[1].
Intel® Turbo Boost Technology 2.0 [1, 5]	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[1]	Delivers two processing threads per physical core. Highly threaded applications can get more work done in parallel, completing tasks sooner
Integrated Memory Controller	Supports up to 4 channels of DDR4-2666 memory with 1 DIMM per channel. Support for the Intel® Extreme Memory Profile (Intel® XMP) specification, revision 2.0 for DDR4.
Intel Optane™ Memory	Provides fast app response times for system acceleration and responsiveness.
Intel® Smart Cache	Up to 24.75MB of shared cached allows fast access to your data by enabling dynamic and efficient allocation of the cache to match the needs of each core significantly reducing latency to frequently used data and improving performance.
Overclocking Enabled[2,3]	Fully unlocked core multipliers, power, base clock and DDR4 memory ratios for amazing flexibility with overclocking
Chipset/Motherboard Compatibility	Supported by the Intel® X299 Chipset
Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)[1]	A fast 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 enabled security features that help protect internet and email content, plus fast, responsive disk encryption.
Intel® Virtualization Technology[1]	Allows one hardware platform to function as multiple "virtual" platforms. Offers improved manageability by limiting downtime and helping maintain productivity by isolating computing activities into separate partitions.
Intel® Advanced Vector Extensions 512 (Intel® AVX-512)	A set of new instructions that can accelerate performance for workloads and usages such as scientific simulations, financial analytics, artificial intelligence (AI)/deep learning, 3D modeling and analysis, image and audio/video processing, cryptography and data compression.
PCI Express* 3.0 Interface[4]	Offers up to 8GT/S for fast access to peripheral devices and networking up to 44 lanes.
Green Technology	Manufactured with lead-free and halogen-free component packages



For more information, visit www.intel.com/content

1 Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. Check with your system manufacturer or retailer or learn more at www.intel.com.

2 Altering clock frequency or voltage may damage or reduce the useful life of the processor and other system components, and may reduce system stability and performance. Product warranties may not apply if the processor is operated beyond its specifications. Check with the manufacturers of system and components for additional details.

3 Intel® Core™ i9 processors designated by and "X" in the processor number are unlocked for performance tuning.

4 Actual number of ports available may vary by processor number and system configuration. Please refer to the specifications corresponding to the processor number of interest or consult your system vendor for more information.

5 Intel® Turbo Boost Technology: Requires a system with Intel® Turbo Boost Technology. Intel Turbo Boost Technology and Intel Turbo Boost Technology 2.0 are only available on select Intel® processors. Consult your PC manufacturer. Performance varies depending on hardware, software, and system configuration. For more information, visit http://www.intel.com/go/turbo

6 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 about performance and benchmark results, visit http://www.intel.com/benchmarks.

Performance results are based on testing as of October 2018 and may not reflect all publicly available security updates. See configuration disclosure for details. No product can be absolutely secure.

* Other names and brands may be claimed as the property of others.