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Intel Unveils 12th Gen Intel Core, Launches World's Best Gaming Processor, i9-12900K

**12th Gen Intel Core Family will include 60 processors and more than 500 designs,
leading with enthusiast desktop.**

NEWS HIGHLIGHTS

- Intel launches the first products in the 12th Gen Intel® Core™ family, including Intel Core i9-12900K, the world's best gaming processor¹; preorders start today with availability starting Nov. 4.
- New performance hybrid architecture delivers leaps in multi-threaded performance, enabling up to 2 times faster content creation compared to prior generation².
- Six desktop processors launched today lead the industry with the transition to DDR5 memory and PCIe 5.0 connectivity to enhance gaming and creator experiences.
- The 12th Gen Intel Core processor family is the first on Intel 7 process, delivering superior performance for every computing segment.

SAN FRANCISCO--(BUSINESS WIRE)-- Today at [Intel Innovation](#), Intel unveiled the [12th Gen Intel® Core™ processor family](#) with the launch of six new unlocked desktop processors, including the world's best gaming processor, the 12th Gen Intel Core i9-12900K. With a max turbo boost of up to 5.2 GHz and as many as 16 cores and 24 threads, the new desktop processors reach new heights of multi-threaded performance for enthusiast gamers and professional creators.

This press release features multimedia. View the full release here:

<https://www.businesswire.com/news/home/20211027005165/en/>

The full 12th Gen Intel Core family will include 60 processors, set to power more than 500 designs from a broad set of partners. As detailed during [Intel Architecture Day 2021](#), the new performance hybrid architecture, the first built on Intel 7 process, delivers scalable performance from 9 to 125 watts to enable every PC segment from ultra-thin-and-light laptops to enthusiast desktops and out to the edge.

Press Kits: [Intel Innovation](#) | [12th Gen Intel Core Processors](#)

"The performance hybrid architecture of 12th Gen Intel Core processors is an architectural shift made possible by close co-engineering of software and hardware that will deliver new levels of leadership performance for generations," said Gregory Bryant, executive vice president and general manager of the Client Computing Group at Intel. "This begins with the arrival of our flagship Core i9-12900K – the world's best gaming processor – and you will see even more incredible experiences as we ship the rest of the 12th Gen family and



Intel unveils the 12th Gen Intel Core processor family with the launch of six new unlocked desktop processors, based on Intel's performance hybrid architecture. The new six unlocked desktop processors were introduced Oct. 27, 2021. (Credit: Intel Corporation)

scalable multi-threaded workload performance.

[Intel® Thread Director](#) enables the two new core microarchitectures to work seamlessly together by guiding the operating system (OS) to place the right thread on the right core at the right time. Intel has worked with the ecosystem on extensive testing to optimize performance and compatibility, and as part of the [company's reinforced investments in the developer community](#), has published white papers for developers with guidance on how independent software vendors can optimize applications for performance hybrid platforms.

"We're at the beginning of a new era for the PC led by the introduction of Windows 11," said Panos Panay, executive vice president and chief product officer at Microsoft. "With Windows 11 and Intel's new Thread Director technology, users will see their PC performance reach new heights on the new 12th Gen Intel Core family of processors."

The combination of Intel's new performance hybrid architecture and new Intel 7 process technology delivers improved single-threaded and multi-threaded performance to enable:

- **The World's Best Gaming Processor:** Available with up to 16 cores and 24 threads, the new 12th Gen Intel Core processor family includes the world's best gaming processor, the Core i9-12900K, unleashing gaming experiences across top titles. The Core i9-12900K provides amazing gen-over-gen performance increases, including up to 25% more FPS on Troy: A Total War Saga, up to 28% more FPS on Hitman 3, and up to 23% more FPS on Far Cry 6³. Enhanced by Intel® Killer™ Wi-Fi 6E for up to 75% less latency while gaming when multitasking⁴, high-frequency P-cores paired with E-cores for offloading parallel tasks enable up to 84% more frames per second for simultaneous gaming, streaming, and recording⁵.
- **A Leap in Content Creation Performance:** Advancements in multi-threaded performance, the responsive performance of the P-cores and the ability to move data

beyond."

Game, Create and Overclock with Unlocked 12th Gen Desktop Processors

The six unlocked desktop processors launched today are the first based on Intel's performance hybrid architecture featuring a combination of Performance-cores (P-cores), the highest performing CPU core Intel has built, and Efficient-cores (E-cores), designed for

at incredible speeds with DDR5 enable leadership across all types of content creation experiences, including:

- Up to 36% faster photo editing performance⁶
- Up to 32% faster video editing performance⁷
- Up to 37% faster 3D modeling performance⁸
- Up to 100% faster multi-frame rendering⁹
- **The Best Overclocking Experience¹⁰:** The new processors offer industry-leading overclocking tools for the ultimate performance customization, including the ability to overclock Efficient-cores and DDR5 memory. Enthusiasts and gamers can try these new platform overclocking features as part of the latest [Intel® Extreme Tuning Utility \(XTU\) 7.5](#). Starting with the Core i9-12900K, XTU will also support one-click overclocking with Intel Speed Optimizer for unlocked 12th Gen processors. Further, Intel introduced the latest [Intel® Extreme Memory Profile \(XMP\) 3.0](#) with support for DDR5, offering additional profiles, including new rewriteable custom profiles and flexible tuning for memory overclocking.

Enabling Desktop Platforms with Industry-Leading Features

12th Gen Intel Core desktop processors empower people with the performance and industry-leading features for exceptional experiences across gaming, content, and play for today and tomorrow.

Key platform advancements include:

- The first processors in the industry to offer DDR5 memory for up to 4800MT/s.
- The first processors in the industry to offer PCIe 5.0 (up to 16 lanes), which offers up to 2X I/O throughput over PCIe 4.0, with up to an additional four lanes of PCIe 4.0 support.
- Up to 30MB Intel® Smart Cache (L3) and 14MB L2 cache for increased memory capacity with reduced latency.
- Integrated high-speed wireless with Intel Killer Wi-Fi 6E, which combines industry-leading Wi-Fi 6E connectivity with powerful gaming network technology to minimize lag, latency, and packet loss¹⁰.
- Discrete Thunderbolt 4 universal cable connectivity for external device expansion.

All-New Intel 600 Series Chipset

Alongside the 12th Gen Intel Core desktop processors, Intel is launching the new Intel® 600 Series Chipset with advanced features for increased reliability and performance. New PCIe Gen 4.0 lanes make for 28 total lanes off the chipset, integrated USB 3.2 Gen 2x2 provides up to double the bandwidth, DMI Gen 4.0 increases the chipset to CPU throughput for fast access to peripheral devices and networking.

For the first time, Intel is bringing [Intel® Volume Management Device](#) (VMD) to PC chipsets to simplify storage control by allowing direct control and management of NVMe-based SSDs from the PCIe bus without additional RAID controllers or other hardware adaptors.

Availability

Unlocked 12th Gen Intel Core desktop processors are available now for pre-order from participating OEMs, channel partners, and retailers. Broad availability will start Nov. 4 with more than 140 customers in more than 30 countries expected to add the new processors to their lineups by the end of the year. Pricing starts at \$264 to \$589 for the unlocked desktop processors.

Intel expects to ship hundreds of thousands of 12th Gen Intel Core desktop “K” processors by end of year and more than 2 million by the end of March 2022. To enable the expanded offerings for desktop, mobile and commercial segments expected in early 2022, Intel is also shipping 28 of the processor SKUs in the 12th Gen Intel Core processor family to OEM partners.

Unlocked 12th Gen Intel Core Desktop Processor SKUs

Processor Number	Processor Cores (P+E)	Processor Threads	Intel® Smart Cache (L3)	Total L2 Cache	Processor Turbo Frequency			Processor E Frequency	
					Intel® Turbo Boost Max Technology 3.0 Frequency (GHz)	P-core Max Turbo Frequency (GHz)	E-core Max Turbo Frequency (GHz)	P-core Base Frequency (GHz)	E-core Base Frequency (GHz)
i9-12900K	16 (8P + 8E)	24	30MB	14MB	Up to 5.2	Up to 5.1	Up to 3.9	3.2	
i9-12900KF	16 (8P + 8E)	24	30MB	14MB	Up to 5.2	Up to 5.1	Up to 3.9	3.2	
i7-12700K	12 (8P + 4E)	20	25MB	12MB	Up to 5.0	Up to 4.9	Up to 3.8	3.6	
i7-12700KF	12 (8P + 4E)	20	25MB	12MB	Up to 5.0	Up to 4.9	Up to 3.8	3.6	

i5-12600K	10 (6P + 4E)	16	20MB	9.5MB	n/a	Up to 4.9	Up to 3.6	3.7	
i5-12600KF	10 (6P + 4E)	16	20MB	9.5MB	n/a	Up to 4.9	Up to 3.6	3.7	

About Intel

Intel (Nasdaq: INTC) is an industry leader, creating world-changing technology that enables global progress and enriches lives. Inspired by Moore's Law, we continuously work to advance the design and manufacturing of semiconductors to help address our customers' greatest challenges. By embedding intelligence in the cloud, network, edge and every kind of computing device, we unleash the potential of data to transform business and society for the better. To learn more about Intel's innovations, go to newsroom.intel.com and intel.com.

Performance hybrid architecture is not available on certain 12th Gen Intel Core processors. Intel® Thread Director is available on select SKUs only; requires OS enablement. Performance varies by use, configuration and other factors. More details at www.intel.com/PerformanceIndex.

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See www.intel.com/12thgen for configuration details. No product or component can be absolutely secure.

Your costs and results may vary.

Intel technologies may require enabled hardware, software or service activation.

1. As measured by unique features and superior in-game benchmark mode performance (score or frames per second) on majority of the 31 game titles tested (as of Oct 1, 2021), including in comparison to AMD Ryzen 5950X. See www.intel.com/PerformanceIndex for additional details. Results may vary.
2. As measured by Multitasking Content Creation workflow on 12th Gen Intel® Core™ i9-12900K vs. 11th Gen Intel® Core™ i9-11900K. See www.intel.com/PerformanceIndex for additional details. Results may vary.
3. As measured by in-game benchmark mode performance (score or frames per second) where available, or frames per second where benchmark mode is unavailable on 12th Gen Intel® Core™ i9-12900K vs. 11th Gen Intel® Core™ i9-11900K.
4. Performance varies by use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex. Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. Comparing 12th Gen Intel® Core™ i9-12900K vs. 11th Gen Intel® Core™ i9-11900K.

More details at [www.Intel.com/PerformanceIndex](https://www.intel.com/performance/index).

5. Up to 84% more FPS on Mount and Blade II: Bannerlord while Gaming, Streaming and Recording using OBS.
6. As measured by PugetBench Lightroom classic benchmark – Overall score.
7. As measured by PugetBench Premier Pro benchmark – Overall score.
8. As measured by Autodesk - Revit 2021-Model creation benchmark.
9. As measured by Adobe After Effects Pulse benchmark.
10. Based on enhanced overclocking ability enabled by Intel's comprehensive tools and unique architectural tuning capabilities. Overclocking may void warranty or affect system health. Learn more at intel.com/overclocking. Results may vary.

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