Introducing the New 11th Gen Intel® Core™ Desktop Processors

The 11th Gen Intel® Core™ desktop processor family puts you in control of your compute experience. It features an innovative new architecture for reimagined performance, immersive display and graphics for incredible visuals, and a range of options and technologies for enhanced tuning. When these advances come together, you have everything you need for fast-paced professional work, elite gaming, inspired creativity, and extreme tuning. The 11th Gen Intel® Core™ desktop processor family gives you the power to perform, compete, excel, and power your greatest contributions.

PERFORMANCE

Reimagined Performance

11th Gen Intel® Core™ desktop processors are intelligently engineered to push the boundaries of performance. The new processor core architecture transforms hardware and software efficiency and takes advantage of Intel® Deep Learning Boost to accelerate AI performance. Key platform improvements include memory support up to DDR4-3200, up to 20 CPU PCIe 4.0 lanes,[1] integrated USB 3.2 Gen 2x2 (20G), and Intel® Optane™ memory H20 with SSD support.[2] Together, these technologies bring the power and the intelligence you need to supercharge productivity, stay in the creative flow, and game at the highest level.

Product Brief 11th Gen Intel® Core™ Desktop Processors

Experience rich, stunning, seamless visuals with the high-performance graphics on 11th Gen Intel® Core™ desktop processors. Enhanced Intel® UHD Graphics featuring Intel® Xe graphics architecture offer powerful media and graphics capabilities to bring your virtual world to life. Key platform advances enable complete immersion —with integrated HDMI 2.0 and HBR3 for up to three simultaneous 4K HDR displays at 60Hz; 12bit HEVC/VP9 decode and E2E compression for efficient, enhanced quality of media; and 10bit AV1 Codec decode support that provides true fixed-function-based decoding for fast, energy-efficient performance with video calling and screenshare. Just sit down and dive in—to uncompromised in-game performance while streaming and recording, seamless multi-tasking across multiple screens, or fast creating and editing for even the most demanding tasks.

CREATIVITY

Immersive Display & Graphics

11th Gen Intel® Core™ desktop processors offer you the flexibility and control to power your greatest contributions. Unlocked 11th Gen Intel® Core™ desktop processors enable you to over-clock confidently with enhanced features[3] like Intel® Performance Maximizer,[4] Intel® Extreme Tuning Utility[4] (Intel® XTU), Solder Thermal Interface Material (STIM), and improved over-clocking customizations. Now you can push your CPU to the limits, open new performance horizons, or re-imagine streaming and recording. 11th Gen processors also simplify connectivity through Intel® Thunderbolt 4 (discrete USB4 compliant),[5] enhance expandability through high-speed PCIe lanes and USB 3.2 Gen 2x2 (20G), and advance wireless connectivity through discrete Wi-Fi 6E.[6] Take control and push ahead with the processors that maximize whatever matters most to you.

TUNING

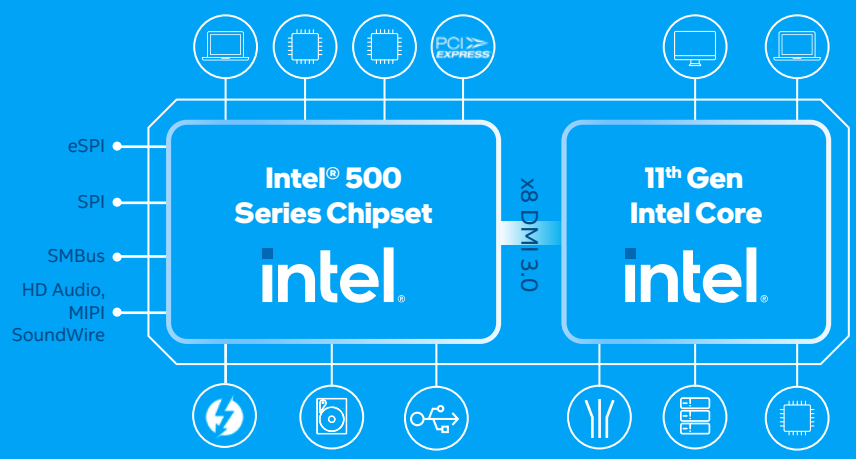
Enhanced Tuning & Control

intel. CORE™

11TH GEN INTEL® CORE DESKTOP PROCESSORS: FEATURES AT A GLANCE

FEATURE	BENEFIT
New processor core architecture	IPC improvements transform hardware and software efficiency and increase real-world performance for smooth gameplay, immersive productivity, and fast creation.
Intel® Deep Learning Boost (VNNI)	Accelerates AI inference—vastly improving performance for deep learning workloads.[7]
Gaussian Neural Accelerator 2.0 (GNA 2.0)	Runs AI workloads on accelerator to more efficiently blur video background and suppress background noise.
Intel® UHD Graphics featuring Intel® Xe graphics architecture	Rich media and intelligent graphics capabilities enable amplified visual complexity, enhanced 3D performance, and faster image processing.
Enhanced Display (Integrated HDMI 2.0, HBR3)	Immerse in up to three simultaneous 4K displays at 60Hz or a pair of 5K displays at 60Hz[8] with increased connectivity to enhance display support.
Enhanced Media (12bit HEVC, 10bit AV1 decode, E2E compression)	Greater system-wide performance and support for enhanced quality of media encode and decode, efficiently.[8]
New Overclocking Features and Capabilities	A range of enhanced overclocking capabilities, including Intel Performance Maximizer,[4] Intel® Extreme Tuning Utility,[4] Intel Extreme Memory Profile—and, on unlocked processors, per-core hyperthreading, enhanced voltage frequency control, and PCIe overclocking.[3]
Discrete Wi-Fi 6E (GIG+)	Wi-Fi connection that is 3 times faster[6] and with 40% higher peak data rates[9] compared to the standard 802.22ac 2x2 and dual spatial stream 802.11ac, respectively.
Increased DDR4 speeds	Smooth media editing, fast multitasking, and enhanced productivity with memory support up to DDR4-3200.
20 CPU PCIe 4.0 lanes	Additional lanes (compared to previous generations) increase PCIe throughput and flexibility for fast connection of next gen PCIe devices.[1]
Intel® Optane™ Memory H20	Performance improvements and power reduction over Intel® Optane™ memory H10 with SSD.[10]
Integrated USB 3.2 Gen 2x2 (20G)	Up to twice the USB bandwidth (vs USB 3.2 Gen 2x1 (10G)) for fast data transfers.
USB Audio Offload	Deep sleep states are possible with the USB Audio Offload.
Discrete Intel® Thunderbolt™ 4 (USB4 compliant)[5]	Universal cable connectivity for a simple, reliable connection that provides incredible performance.

- PCIe 3.0
  Intel LAN 2.5GbE
- Intel® Wireless-AX
  CNVio/PCIe
- Intel® Optane™ Memory
  PCIe 3.0 x4
- PCIe 3.0
- DP 1.4a , HDMI 2.0b
  3 DDI
- Embedded
  DisplayPort 1.4b
- Discrete Intel
  Thunderbolt 4
- SATA 3.0
- USB3.2
  (5,10, 20G)
- x20PCIe
  (s/b x20 PCIe 4.0)
- Storage
- DDR4 2Ch/2DPC



11TH GEN INTEL® CORE DESKTOP PROCESSORS COMPARISONS

	CORE i9	CORE i7	CORE i5
Maximum Base Frequency (GHz)	3.5	3.6	3.9
Intel® Thermal Velocity Boost Technology Single/All Core Turbo Frequency (GHz)	Up to 5.3/4.8	n/a	n/a
Intel® Turbo Boost Max Technology 3.0	Up to 5.2	Up to 5.0	n/a
Intel® Single Core Turbo Frequency	Up to 5.1	Up to 4.9	Up to 4.9
Max Number of Cores/Threads	8/16	8/16	6/12
Intel® Hyper-Threading Technology	Yes	Yes	Yes
Intel® Smart Cache Size (MB)	16	16	12
Memory Type Support	Up to DDR4-3200	Up to DDR4-3200	Up to DDR4-3200
Number of Memory Channels	2	2	2
Intel® UHD Graphics featuring Intel® Xe graphics architecture	750	750	Up to 750
Graphics Dynamic Frequency (MHz)	Up to 1300	Up to 1300	Up to 1300
Intel® Quick Sync Video	Yes	Yes	Yes
Processor Core/Graphics/Memory Overclocking	Yes (with select SKUs)	Yes (with select SKUs)	Yes (with select SKUs)
Intel® Deep Learning Boost (Intel® DL Boost)	Yes	Yes	Yes
Intel® Virtualization Technology	Yes	Yes	Yes
Intel® AES New Instructions (Intel® AES-NI)	Yes	Yes	Yes
Intel® AVX2	Yes	Yes	Yes
Intel® BIOS Guard	Yes	Yes	Yes
Intel® Boot Guard	Yes	Yes	Yes
Intel® OS Guard	Yes	Yes	Yes
Intel® Identity Protection Technology (Intel® IPT)	Yes	Yes	Yes

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. See backup for configuration details. No product or component can be absolutely secure.

Altering clock frequency or voltage may void any product warranties and reduce stability, security, performance, and life of the processor and other components. Check with system and component manufacturers for details.

Your costs and results may vary.

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

[1]CPU PCIe lanes are only validated for discrete graphics (x16) and PCIe storage.

[2]Intel® Hybrid Storage devices such as Pyramid Glacier (H20) can't attach to CPU PCIe due to PCIe 2x2 requirement.

[3]Unlocked features are present with select chipsets and processor combinations.

[4]Users must download this app from Intel.com.

[5]Discrete Intel® Thunderbolt™ 4 (Maple Ridge) is only validated and supported from Intel® 500 Series Chipset PCIe lanes.

[6]Intel® WiFi 6 AX201 support using Intel® Integrated Connectivity (CNVi) requires specific hardware configurations. Discrete Intel® Wi-Fi 6 AX200 available for chipsets not supporting connectivity integration.

[7]Results have been estimated or simulated based on internal Intel® analysis and are provided for informational purposes only. Any difference in system hardware or software design or configuration may affect actual performance. All dates and plans are subject to change without notice. For more complete information about performance and benchmark results, visit intel.com/benchmarks. Performance results are based on testing as of the date set forth in the configurations and may not reflect all publicly available updates.

[8]Available only on 11th Gen Intel® Core™ processors featuring integrated graphics.

[9]802.11ax 2x2 160MHz enables 2402Mbps maximum theoretical data rates, ~3X (2.8X) faster than standard 802.11ac 2x2 80MHz (867Mbps) as documented in IEEE 802.11 wireless standard specifications, and require the use of similarly configured 802.11ax wireless network routers.

[10]Intel® Optane™ Memory H20 Test Configurations.