



Product Brief

Intel® Core™ Ultra 200S series processors for the edge

Bring accelerated AI and graphics capabilities to the edge



Deliver significant performance enhancements alongside expanded memory capacity and broad I/O connectivity. With up to double the GPU X^e-cores—increasing from two to four X^e-cores—and the inclusion of Intel® AI Boost featuring an integrated neural processing unit (NPU), these processors have the potential to displace entry-level discrete GPUs, which can reduce solution cost and streamline designs. These advancements empower organizations to efficiently handle complex AI tasks, optimally support emerging applications, and stay competitive in the era of AI.



Expand edge possibilities through AI-ready performance

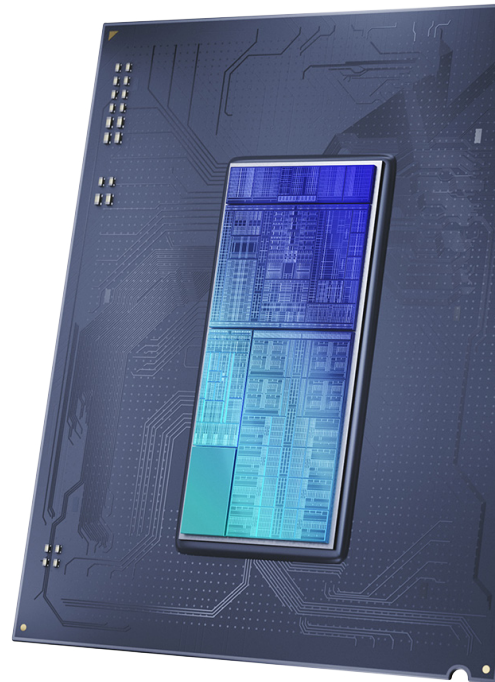
Bring more efficiency to edge AI workloads. Intel® Core™ Ultra processors combine multiple compute engines—including an integrated GPU and Intel® AI Boost featuring a built-in neural processing unit—with integrated hardware acceleration to support more AI workloads without a discrete GPU. With these capabilities, businesses can take advantage of emerging use cases such as AI and automation through fast computer vision inference to help stay competitive.

- Up to 36 total platform TOPS helps enable AI applications cost-effectively.
- Multiple built-in AI accelerators: P-cores, Intel® Graphics, and Intel® AI Boost—a built-in neural processing unit (NPU)—enable increased edge AI capabilities at low power.
- Intel® Deep Learning Boost (Intel® DL Boost) with VNNI and DP4A provides integrated hardware acceleration for AI.
- OpenVINO™ toolkit support enables cross-architectural programming capabilities, automatic compute engine detection, and optimizations for popular AI frameworks, including TensorFlow, PyTorch, and ONNX. OpenVINO™ helps enable efficient AI inference runtime to improve AI performance on your device of choice.

Deploy advanced graphics with optimized efficiency

Take advantage of 2x more X^e-cores than the previous generation to power demanding graphics at the edge. With lower power consumption, potentially lower the bill-of-materials costs, and small form factor designs. Robust media, display, and virtualization capabilities empower businesses to deliver engaging, complete video walls or multiple kiosks per processor.

- Integrated Intel® Graphics with up to four integrated X^e-cores help reduce power consumption and can lower bill-of-materials (BOM) costs in small form factor designs.
- Hardware-accelerated AV1 encoding and integrated HDMI 2.1 are designed to enable enhanced video processing and content delivery.
- Support for 4x 4K displays or one 8K display with Genlock, Pipelock, EDID, and bezel compensation allow for impressive and smooth multiscreen displays.
- SR-IOV GPU virtualization enables platform consolidation with multiple concurrent displays per CPU.



Deploy edge AI at scale with expanded I/O options

Extend platform capabilities by pairing built-in acceleration with support for more sensors, accelerators, and peripherals that can make it easier to scale up deployments. Help ensure success for advanced edge applications with expansive I/O options, including PCIe 5.0 and extended memory support.

- LGA packaging allows for single-board design across the entire SKU stack with fewer parts, accelerating time to market.
- Up to 20 lanes of PCIe 5.0 and 4 lanes of PCIe 4.0 on the CPU, plus up to 24 lanes of PCIe 4.0 from the PCH allows for more accelerators, peripherals, and sensors.
- Up to 192 GB DDR5 6400 memory maximizes throughput and performance on fewer nodes.
- Leverage the Intel® Tiber™ Edge Platform to build, deploy, run, manage, and scale edge and AI solutions on standard hardware with cloudlike simplicity.

Intel® Core™ Ultra 200S series processors for the edge (versus Intel® Core™ i9-14900 processor)

Up to 2.97x faster graphic performance	Up to 1.29x (est.) faster multi-threaded performance	More than 2x faster integrated GPU performance in Procyon AI Computer Vision
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Performance varies by use, configuration, and other factors. Learn more at [intel.com/processorclaims](https://www.intel.com/processorclaims): Intel® Core™ Ultra processors, Edge.

1. See complete performance information at [intel.com/processorclaims](https://www.intel.com/processorclaims): Intel® Core™ Ultra processors. Results may vary.

2. As estimated SPECrate® 2017_fp_base (n-copy) on Intel® Core™ Ultra 9 285 vs. Intel® Core™ i9-14900. See complete performance information at [intel.com/processorclaims](https://www.intel.com/processorclaims): Intel® Core™ Ultra processors. Results may vary.

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Key features

Performance

- Up to 24 cores
- Up to four GPU X^e-cores
- Processor base power between 35W and 65W

Accelerated AI

- Three AI accelerators built-in: P-cores, Intel® Graphics, and Intel® AI Boost—a built-in neural processing unit (NPU) for increased edge AI capabilities at low power
- Hardware acceleration with Intel® DL Boost with VNNI and DP4A
- Fully supported by the Intel® Distribution of OpenVINO™ toolkit

Memory and I/O

- Up to 192 GB DDR5 6400
- Up to 20 lanes PCIe 5.0 and up to 4 lanes PCIe 4.0 on the CPU
- Up to 24 lanes PCIe 4.0 on the PCH

Graphics

- Intel® Graphics with up to four X^e-cores (up to 64 graphics execution units (EUs))
- Hardware-accelerated AV1 encode
- Integrated DisplayPort 2.1 (USB-C) and HDMI 2.1
- Genlock and Pipelock video synchronization for Windows with bezel correction and EDID management/lock display
- Up to four concurrent 4K 60 HDR displays or one 8K display
- Integrated Intel® Image Processing Unit
- SR-IOV for GPU virtualization
- DirectX 12 Ultimate support

Flexible deployments

- LGA socket with discrete PCH
- Up to 5 years availability¹

Security and manageability

- Support for the Intel vPro® platform on select SKUs

Connectivity

- Integrated Intel® Wi-Fi 6E with support for discrete Wi-Fi⁷
- Integrated Bluetooth 5.3
- Integrated USB4/Thunderbolt™⁴ with support for discrete Thunderbolt™⁵

Software and OS support

- Intel® Tiber™ Edge Platform
- OpenVINO™ toolkit
- Intel® oneAPI Tools
- Support for Windows 11 IoT Enterprise LTSC 2024 and long-term support (LTS) for Linux kernels
- Ubuntu, Red Hat Enterprise, Wind River
- Microsoft Hyper-V, KVM hypervisor (community support)
- Intel® Slim Bootloader, UEFI BIOS

1. Intel does not commit or guarantee product availability or software support by way of road map guidance. Intel reserves the right to change road maps or discontinue products, software, and software support services through standard EOL/PDN processes. Contact your Intel account rep for additional information.

Use cases



Education and Retail

Deliver exceptional performance and responsiveness for AI at the edge. Including remote classrooms and retail in-store analytics applications. Take advantage of improved performance¹, high-bandwidth DDR5 memory, and integrated graphics to deploy numerous edge devices while reducing the need for a discrete accelerator.

Applications: Remote classroom, in-store analytics

- Deliver high-quality visuals with support for four concurrent 4K 60 HDR displays or one 8K display.
- Take advantage of three integrated compute engines for AI including new Performance-cores, Intel® AI boost, and Intel® Graphics featuring up to four Xe^e-cores (up to 64 graphics execution units).
- Support more sensors or cameras per device using extensive I/O with up to 24 PCIe lanes on the CPU and up to an additional 24 PCIe lanes on the PCH.

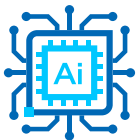


Federal and Industrial

Support Industry 4.0 use cases such as AI automation as well as rich displays for HMIs and precise control on the factory or warehouse floor. Businesses can benefit from cost-efficient platform consolidation, a high number of video streams per device, and detail-rich interfaces that can boost worker and equipment productivity.

Applications: AI-based industrial PCs, robotics, industrial process control, human-machine interfaces (HMIs)

- Support more peripherals and sensors per device with expanded I/O including up to 24 PCIe lanes on the CPU and up to an additional 24 PCIe lanes on the PCH.
- Accelerate AI inference with multiple integrated compute engines including new Performance-cores, Intel® AI Boost, and up to four Xe^e-cores.
- Potentially reduce weight, R&D testing, power consumption, and bill-of-materials (BOM) costs with integrated Intel® Graphics.



Cities and Critical Infrastructure

Efficiently analyze high numbers of video streams in smart city use cases. Integrated Intel® Graphics and Intel® AI Boost—a neural processing unit (NPU)—help enable AI-based computer vision in hard-to-reach places while helping to simplify solution designs and costs.

Applications: Network video recorder (NVR), AI Box, roadside units (RSUs), digital twins for fleet management

- Help scale edge inferencing capabilities cost-effectively with AI-ready performance that leverages multiple compute engines: new Performance-cores, Intel® AI Boost, and integrated Intel® Graphics.
- Help simplify AI computer vision deployments and consolidate edge hardware with the ability to support multiple cameras per device and process multiple streams per socket.
- Potentially reduce the need for a discrete graphics accelerator to reduce weight, R&D testing, power consumption, and bill-of-materials (BOM) costs.



Healthcare and Life Sciences

Deliver powerful edge graphics capabilities to assist medical imaging tasks with AI inferencing capabilities built in. Improved performance¹, high-bandwidth DDR5 memory, and integrated graphics help process graphics-intensive and AI workloads, while reducing the need for a discrete accelerator.

Applications: Lab diagnostics and genomic sequencings

- Deliver high-quality visuals and help specialists see more details with support for four concurrent 4K 60 HDR displays or one 8K display.
- Take advantage of multiple integrated compute engines for AI including new Performance-cores, Intel® AI boost, and Intel® Graphics featuring up to four Xe^e-cores (up to 64 graphics execution units).
- Help support more medical peripherals or add-in cards per device using extensive I/O with up to 24 PCIe lanes on the CPU and up to an additional 24 PCIe lanes on the PCH.

1. See [TBD] at intel.com/processor claims: Intel® Core™ Ultra processors (Series 2). Results may vary.

Intel® Core™ Ultra processors SKU Stack

CPU Part Number*	CPU Use Condition	Validated Chipset	Processor Cores (P+E)	Threads	Intel® Smart Cache (L3)	Processor base power	Single P-core Turbo Freq ²	Single E-core Turbo Freq ²	P-core Base Freq ²	E-core Base Freq ²	GFX EUs	ECC	Intel vPro® Platform	PEG Bifurcation	Premium IO
Intel® Core™ Ultra 9 285	PC Client 5Y @ 30%	W880	24 (8+16)	24	36MB	65W	Up to 5.6 GHz	Up to 4.6 GHz	2.5 GHz	1.9 GHz	64EU	Yes	Yes	Yes	Yes
		Q870										No	Yes	Yes	Yes
		H810										No	No	No	No
Intel® Core™ Ultra 9 285T	PC Client 5Y @ 30%	W880	24 (8+16)	24	36MB	35W	Up to 5.4 GHz	Up to 4.6 GHz	1.4 GHz	1.2 GHz	64EU	Yes	Yes	Yes	Yes
		Q870										No	Yes	Yes	Yes
		H810										No	No	No	No
Intel® Core™ Ultra 7 265	PC Client 5Y @ 30%	Q870	20 (8+12)	20	30MB	65W	Up to 5.3 GHz	Up to 4.6 GHz	2.4 GHz	1.8 GHz	64EU	Yes	Yes	Yes	Yes
		H810										No	Yes	Yes	Yes
		W880										No	No	No	No
Intel® Core™ Ultra 7 265T	PC Client 5Y @ 30%	Q870	20 (8+12)	20	30MB	35W	Up to 5.3 GHz	Up to 4.6 GHz	1.5 GHz	1.2 GHz	64EU	Yes	Yes	Yes	Yes
		H810										No	Yes	Yes	Yes
		W880										No	No	No	No

CPU Part Number*	CPU Use Condition	Validated Chipset	Processor Cores (P+E)	Threads	Intel® Smart Cache (L3)	Processor base power	Single P-core Turbo Freq ²	Single E-core Turbo Freq ²	P-core Base Freq ²	E-core Base Freq ²	GFX EUs	ECC	Intel vPro® Platform	PEG Bifurcation	Premium IO
Intel® Core™ Ultra 5 245	PC Client 5Y @ 30%	W880	14 (6+8)	14	24MB	65W	Up to 5.1 GHz	Up to 4.5 GHz	3.5 GHz	3.0 GHz	48EU	Yes	Yes	Yes	Yes
		Q870										No	Yes	Yes	Yes
		H810										No	No	No	No
Intel® Core™ Ultra 5 245T	PC Client 5Y @ 30%	W880	14 (6+8)	14	24MB	35W	Up to 5.1 GHz	Up to 4.5 GHz	2.2 GHz	1.7 GHz	48EU	Yes	Yes	Yes	Yes
		Q870										No	Yes	Yes	Yes
		H810										No	No	No	No
Intel® Core™ Ultra 5 225	PC Client 5Y @ 30%	W880	10 (6+4)	10	20MB	65W	Up to 4.9 GHz	Up to 4.4 GHz	3.3 GHz	2.7 GHz	32EU	No	No	Yes	Yes
		Q870										No	No	Yes	Yes
		H810										No	No	No	No
Intel® Core™ Ultra 5 225T	PC Client 5Y @ 30%	W880	10 (6+4)	10	20MB	35W	Up to 4.9 GHz	Up to 4.4 GHz	2.5 GHz	1.9 GHz	32EU	No	No	Yes	Yes
		Q870										No	No	Yes	Yes
		H810										No	No	No	No

Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. Processor cores listed first are the total number of cores in the processor followed by the number of Performance-cores and number of Efficient-cores in parentheses (P+E). Efficient-core frequencies are lower to optimize power usage. The frequency of cores and core types varies by workload, power consumption and other factors. Visit <https://www.intel.com/content/www/us/en/architecture-and-technology/turbo-boost/turbo-boost-technology.html> for more information.



Unlock higher efficiency and throughput
in edge AI tasks

**Learn more about the Intel® Core™ Ultra
Processors (Series 2) at intel.com/coreultra**



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Intel® processors of the same SKU may vary in frequency or power because of natural variability in the production process.

All product plans and road maps are subject to change without notice.

Not all features are available on all SKUs.

Not all features are supported in every operating system.

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