12th Gen Intel® Core™: Alder Lake

A cutting-edge System-on-Chip architecture for the next generation of PCs. Designed to provide a flexible balance of performance and efficiency that scales across multiple form factors, from powerful desktops to ultra-slim devices.

Performance hybrid architecture
Combines two types of cores working in concert: one built for speed and the other for efficiency. Desktop versions feature up to eight of each for a total of 16 cores managed by intelligent scheduling.

Performance-cores
Built for raw speed.

Efficient-cores
Built for maximum efficiency.

Intel® Thread Director
Analyzes workloads in real time to ensure the right thread pairs to the right core at the right time. Maximizes multitasking across Performance-cores and Efficient cores.

Optimized for Windows 11

DDR5 memory
Supports a wide range of memory up to the latest DDR5. Alder Lake works with multiple generations of DDR4 and SO-DIMM modules, along with Low-Power variants.

Interconnect
Separate compute, memory, and I/O fabrics scale dynamically to optimize performance and efficiency across the SoC.

PCI Express Gen 5
Future-proofed with 2x the bandwidth of the last generation up to 64GB/s of PCIe Gen 5, plus separate PCIe Gen 4 lanes direct to the CPU.

Platform Controller Hub
Up to 400GB/s of bandwidth for docking stations, multiple display, and external GPUs, plus 10W of power for laptops and other devices. Connects even more with USB4 compatibility.

Thunderbolt 4
Up to 40GB/s of bandwidth for docking stations, multiple display, and external GPUs, plus 10W of power for laptops and other devices. Connects even more with USB4 compatibility.

Wi-Fi 6E
Takes any 6GHz band with more spectrum and less congestion. Smarter traffic management for busy networks.

Xe-LP graphics
Integrated graphics that accelerate decoding AV1 content, drive as many as four 4K displays, and support HDR10, Dolby Vision, and 12-bit color.