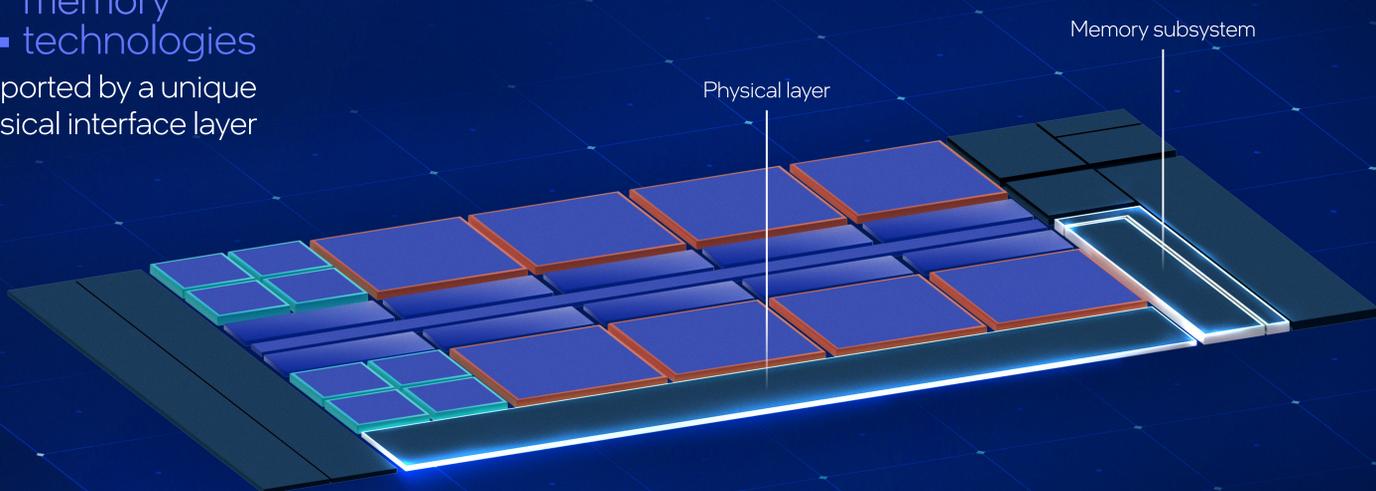


12th Gen Intel® Core™: DDR5 memory

Alder Lake introduces support for the latest DDR5 standard. The flexible System-on-Chip architecture also works with a wide range of memory tailored for different form factors.

4 memory technologies supported by a unique physical interface layer



DDR5-4800
DDR4-3200

Desktop and Mobile

Standard RAM is used in most desktops and laptops. It typically comes in removable DIMM or SO-DIMM modules that are easy to replace.

LP5-5200
LP4x-4266



Thin and Light

LP memory is a low-power variant designed for ultra-slim devices. It's usually soldered to the motherboard to optimize for thinness and footprint.



Supports up to
DDR5-4800
DDR4-3200

A more efficient module

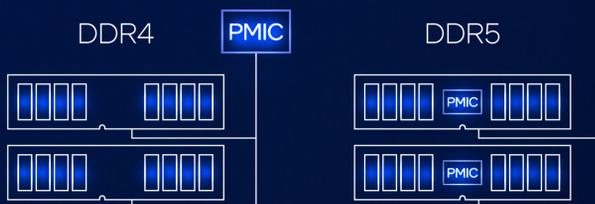
DDR5 power management moves from the motherboard to the module, where it can be tuned for individual DIMMs instead of accounting for all the different modules on the market. This optimization enables better voltage tolerance and power efficiency.

DDR5 spec compared to previous generation:

Up to
2x
maximum data rate

Up to
2x
bank count and burst length

1.1v
Down from 1.2v



DDR4

One Channel per DIMM



DDR5

Two Channels per DIMM

Double the channels per DIMM

DDR5 modules split memory chips between two sub-channels: one for the left side and another for the right. These sub-channels have the same combined capacity as a single DDR4 channel, but they're fully independent, so they can handle separate requests simultaneously.

An SoC designed to get the most out of memory



Enhanced overclocking features support even higher performance with the right DIMMs.



Memory frequency and voltage can scale dynamically based on bandwidth and workload demands.



Supports up to
LP5-5200
LP4x-4266

LP5 spec compared to previous generation:

Up to
2x
banks per channel

Dynamic
voltage and frequency scaling
for the memory core and I/O

New commands reduce power consumption



Data Copy automatically replicates data transmitting on one pin to all the others, without transmitting to them individually.



Write X writes all ones or zeros to a specific address without transmitting any data from the SoC.