

# OpenMP

**OpenMP** (Open Multi-Processing) is an application programming interface (API) that supports multi-platform shared memory multiprocessing programming in **C**, **C++**, and **Fortran**. It consists of a set of **compiler directives**, **library routines**, and **environment variables** that influence the code's run-time behavior.

OpenMP uses a portable, scalable model that gives programmers a simple and flexible interface for developing parallel applications for platforms ranging from the standard desktop computer to the **supercomputer**.

An application built with the hybrid model of parallel programming can run on a computer cluster using both **OpenMP** and **Message Passing Interface (MPI)**, such that OpenMP is used for parallelism within a (multi-core) node while MPI is used for parallelism between nodes.

## History

OpenMP is managed by the nonprofit technology consortium OpenMP Architecture Review Board (or OpenMP ARB), jointly defined by a group of major computer hardware and software vendors. They published its first API specifications in October 1997. The latest version specification (4.5) released in 2015 adds/ improves supports for **accelerators**, **atomics**, **error handling**, **thread affinity**, **tasking extensions**, **user defined reduction**, **SIMD support**, and so on.

## Getting the OpenMP

All the latest OpenMP versions are integrated with the recent GNU compilers (**4.9** and above), no need to install them separately!

