

OpenACC

Directives for Accelerators

Overview

OpenACC is a nonprofit organization helping create and foster a cross-platform application programming interface (API) to make it easier for scientific and technical programmers to take advantage of parallel computing.

Founded by Cray, NVIDIA, the Portland Group and CAPS enterprise, this joint effort has developed the OpenACC™ parallel programming standard – a simple, directives-based approach enabling the acceleration of applications on many-core and multicore processors.



OpenACC Application Programming Interface

The OpenACC parallel programming standard is designed to enable programmers to modify or adapt the underlying code itself. By exposing parallelism to the compiler, directives allow the compiler to do the detailed work of mapping the computation onto the accelerator.

Based on a common set of directives for C, C++ and Fortran languages, OpenACC enables programmers to capitalize on the processing power of many-core and multicore architectures. Its multi-platform, multi-vendor compatible model offers a way to preserve investment in applications by enabling an easy migration path to accelerated computing.

OpenACC represents a major development for the scientific community. Programming models for open science by definition need to be flexible, open and portable across multiple platforms. OpenACC is well-designed to fill this need.

– Jeffrey Vetter, Joint Professor
Georgia Institute of Technology

Innovations & Benefits

Simplified programming. Provides simple hints or “directives” to the compiler, identifying which areas of code to accelerate without requiring the modification or adaptation of the underlying code.

Flexible and standards-compliant. Works with or without an accelerator – it defines a unified set of directives for programming accelerators in portable, standards-compliant C, C++ or Fortran.

Wide application. Permits a common code based for accelerator and non-accelerator-enabled systems, allows for implementation on different types

and brands of accelerators (e.g., CPU, GPU) and provides an incremental path for moving legacy applications to accelerators.

For more information on OpenACC, please visit www.openacc.org.

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