

Preface

OpenMP is a widely accepted, standard application programming interface (API) for high-level shared-memory parallel programming in Fortran, C, and C++. Since its introduction in 1997, OpenMP has gained support from most high-performance compiler and hardware vendors. Under the direction of the OpenMP Architecture Review Board (ARB), the OpenMP specification has evolved up to the release of version 4.0. This version includes several new features like accelerator support for heterogeneous hardware environments, an enhanced tasking model, user-defined reductions, and thread affinity to support binding for performance improvements on non-uniform memory architectures. As indicated in its recently released comment draft, version 4.1 will refine the support for accelerators and expand the constructs to express irregular parallelism and data dependencies.

The evolution of the standard would be impossible without active research in OpenMP compilers, runtime systems, tools, and environments. OpenMP is important both as a programming model for single multicore processors and as part of a hybrid programming model for massively parallel, distributed memory systems built from multicore or manycore processors. Since most of the growth in parallelism in exascale systems is expected to arise within a node, these systems will increase the significance of OpenMP, which offers important features to exploit that capability.

The community of OpenMP researchers and developers in academia and industry is united under cOMPunity (www.compunity.org). This organization has held workshops on OpenMP around the world since 1999: the European Workshop on OpenMP (EWOMP), the North American Workshop on OpenMP Applications and Tools (WOMPAT), and the Asian Workshop on OpenMP Experiences and Implementation (WOMPEI) attracted annual audiences from academia and industry. The International Workshop on OpenMP (IWOMP) consolidated these three workshop series into a single annual international event that rotates across Asia, Europe, and the Americas. The first IWOMP workshop was organized under the auspices of cOMPunity. Since that workshop, the IWOMP Steering Committee has organized these events and guided development of the series. The first IWOMP meeting was held in 2005, in Eugene, Oregon, USA. Since then, meetings have been held each year, in Reims, France, Beijing, China, West Lafayette, USA, Dresden, Germany, Tsukuba, Japan, Chicago, USA, Rome, Italy, Canberra, Australia, and Salvador, Brazil. Each workshop has drawn participants from research and industry throughout the world. IWOMP 2015 continued the series with technical papers, tutorials, and OpenMP status reports. The IWOMP meetings have been successful in large part due to the generous support from numerous sponsors.

The cOMPunity website (www.compunity.org) provides access to the talks given at the meetings and to the photos of the activities. The IWOMP website (www.iwomp.org) provides information on the latest event. This book contains the proceedings of IWOMP 2015.

The workshop program included 19 technical papers, two keynote talks, and advanced tutorials on OpenMP. All technical papers were peer reviewed by at least three different members of the Program Committee.

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OpenMP: Heterogenous Execution and Data
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