absoft®

High Performance Computing Software Development Kit™ For Mac OS X

In Depth Product Information

absoft®

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Product Overview

The Absoft High Performance Computing Software Development Kit (HPC SDK) for Apple OS X is the premier software development kit for building and running high performance computing applications on Mac OS X. Absoft's HPC SDK consists of preconfigured tools that help you to immediately compile, debug, run, and optimize high performance computing applications.

The Absoft HPC SDK for Mac OS X includes the following:

— Absoft Pro Fortran 95 Compiler v9.2 (new)
— Absoft FxP MPI Debugging Solution (new)
— LAM/MPI and MPICH2- for parallel MPI execution
— VAST Auto-vectorization, Auto-parallelization, and OpenMP
— ScaLAPACK, LAPACK95, ATLAS, and other open source components included and preconfigured
— IMSL Fortran Numerical Libraries
— Absoft Modules Environment (AME) with new Dashboard support
— Absoft Common License Manager (CLM)
— Absoft Common Installer (ACI)
— Absoft Examples and HPC Benchmarks

The HPC SDK software development environment creates a cohesive, complete HPC software development solution that allows developers to focus on the debug, run, optimize, development cycle. The HPC SDK makes cluster development pleasant and productive for both beginning and advanced developers.

Beginning users will benefit by accessing the included Absoft examples (a comprehensive set of example HPC programs, associated Makefiles, and Readme files) to quickly learn how to take full advantage of HPC SDK features.

Experienced users will appreciate the HPC SDK's ability to customize their development environment. Switching between compilers, modifying development environments, adding additional tools, and changing the configuration is simple and easy using the Absoft Modules Environment.

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Features

- Includes compilers, debuggers, and other developer tools from Absoft and open sources.
- Absoft compilers support all popular extensions and are link/debug compatible with GNU and IBM compilers.
- Absoft's Fortran 95 includes pre-configured libraries for linear algebra (BLAS, LAPACK95, ATLAS, HDF), VAX/Unix-compatibility and 2D/3D graphics are all included on the distribution CD at no additional charge.
- Includes Absoft Fortran 95 compiler which has source compatible versions on Mac OS X, Windows and Linux. Multi-platform discounts available.
- Support for OpenMP, MPI, Automatic vectorization and parallelization all included in a single bundle; a complete HPC solution.
- Exclusive Absoft Modules Environment including a Graphical Dashboard Widget for quick and easy switching between 32-bit and 64-bit environments, libraries, and other HPC tools, allows you to save your environment settings "on the fly".
- Each HPC SDK includes 12 months of technical support, maintenance and updates at no additional charge.
- New concurrent user pricing for floating network license options.
- Includes automatic migration tools for both little-endian and big-endian files, ideal for supporting multiple platforms.

Benefits

- The SDK installs instantly and effortlessly Just insert the CD and type one command, then start using it right away It just works!
- Included compiler and debugger software tools from Absoft help improve developer productivity and drive higher levels of utility from the cluster.
- Speeds time-to-productivity and yields affordable solutions that can be incrementally expanded as workloads grow.
- Overcomes common barriers of HPC software development, making it possible to extend the benefits of clustered computing to individuals and small departments.
- Comes with many choices based on the number and type of server, offering an ideal solution for small or large organizations.
- Consolidated licensing and management tools eliminate component maintenance headaches.
- Absoft's Fortran 95 compiler has extensive legacy and cross platform support for making your code "Just Work".
- Premier support and product maintenance by Absoft (along with free service packs and quick fixes) gives you peace of mind that any questions or problems you have will be handled in a quick and prompt manner.

Component Descriptions

Software is what turns a collection of interconnected servers into a powerful yet manageable cluster for high performance and scalable computing. The collection of software included in the Absoft HPC SDK helps derive maximum performance and utility from the cluster as well as ease systems management and enable rapid time-to-productivity.

The following describes the components included in the HPC SDK:

Absoft Pro Fortran 95 Compiler v9.2
Absoft's Pro Fortran v9.2 provides full support for Apple's 64-bit OS X Tiger operating system allowing Fortran developers to fully exploit the entire addressable memory space of the G5 processor. Running on Tiger, Pro Fortran v9.2 is capable of producing programs optimized for 64-bit Mac OS X systems, and also for 32-bit systems. Pro Fortran v9.2 is fully backwards-compatible with Mac OS X v10.3 Panther.

Pro Fortran v9.2 includes the popular Absoft Integrated Development Environment with programmer's editor, graphical debugger, graphical libraries and other tools. Further v9.2 improvements include: Absoft's application framework; the Macintosh Runtime Window Environment (MRWE) completely rewritten in Fortran 95 (with full source code included), new single and dual processor versions of the high performance ATLAS math libraries; Unix/VAX compatibility libraries now provided as libraries and modules for better interfacing with Fortran 95.

Absoft FxP MPI Debugging Solution
FxP builds support for cluster debugging on top of Fx2™, a powerful, fully-featured source-level debugging solution. The standard Fx2™ debugging solution is configured as a scalar (single process) debugger and is compatible with 32-bit, 64-bit Linux distributions, Windows and Macintosh OS X. FxP enhances this by adding MPI support to the market leading Fx2 Debugging solution. Its intuitive graphical interface is designed to meet the requirements of novice and experienced programmers. There is no better tool to help developers quickly identify and repair program trouble spots in the shortest time possible.

LAM/MPI and MPICH2- for parallel MPI execution

LAM/MPI and MPICH2 are high quality implementations of the Message Passing Interface (MPI) Standard, including all of MPI-1.2 and much of MPI-2. LAM/MPI provides high performance on a variety of platforms, from small off-the-shelf single CPU clusters to large SMP machines with high speed networks, even in heterogeneous environments. It includes a persistent runtime environment for parallel programs, SMP-aware collectives, one-way communication, C++ bindings, MPI-IO and an extensible component architecture.

The LAM/MPI and MPICH2 distributions included with the HPC SDK are fully configured for the included compilers and optimized for use with Mac OS X. In addition to high performance, LAM/MPI provides a number of usability features key to developing large scale MPI applications. Intended for production as well as research use, LAM/MPI and MPICH2 include a rich set of features for system administrators, parallel programmers, application users, and parallel computing researchers.

VAST Auto-vectorization, Auto-parallelization, and OpenMP

VAST is a family of powerful software tools which can convert serial code into code designed for dual processors, or vectorize your code for AltiVec. All code restructuring can be done automatically at the click of a mouse. The original source files are retained in unmodified form. VAST also performs superscalar optimizations and provides full support for OpenMP.

VAST products are developed by Crescent Bay Software, an Absoft partner and the leading developer of superscalar, auto-parallelization and auto vectorization tools for workstations and super-computers.

ScaLAPACK, LAPACK95, ATLAS

Included with the HPC SDK are ScaLAPACK, LAPACK95, ATLAS libraries. These libraries free the developer from programming common routines and allow efficient and portable code development.

IMSL Fortran Numerical Libraries

The IMSL Fortran Numerical Library saves development time by eliminating the need to write code from scratch. The time saved by using only two or three IMSL Library mathematical or statistical routines will greatly increase the return on investment. The complete mainframe implementation of the IMSL Fortran Library Mathematical and Statistical special functions are available to developers using the HPC SDK for OS X.

Absoft Common License Manager (CLM)

The Absoft Common License Manager (CLM) provides a customizable framework for software license management. It consists of a client library, a license server, and several management tools. A CLM server running on any supported platform can serve licenses to software running on any other supported platform. This allows one license server to manage licenses for an entire network. CLM licensing can achieve many different license types, including (but not limited to) one license per application, a number of licenses per application, one application for one operating system, one application for multiple operating systems, or one license for multiple applications.

Absoft Modules Environment (AME)

The Absoft Modules Environment (AME) lets you easily switch and customize your development environment. For example, you can switch between 32-bit and 64-bit environments, debugging and optimizing environments, as well as pick and choose different tools, MPI implementations, libraries and versions.

Included are exclusive Absoft enhancements including AME auto-complete, AME savemodules support to save your settings across the cluster, AME Dashboard widget to graphically customize your environment, as well as a full suite of AME modules for all components in the HPC SDK.

Absoft's Graphical Dashboard Widget allows for quick and easy switching between 32-bit and 64-bit environments, libraries, and other HPC tools. You can save your environment settings "on the fly".

Absoft Common Installer (ACI)

The Absoft Common Installer (ACI) installs all components on the HPC SDK in three easy clicks. The ACI creates a fully functional HPC development environment within minutes. The ACI performs all necessary installation, customization, and startup tasks for all included components automatically.

Absoft Examples and HPC Benchmarks

Included with the HPC SDK are a comprehensive set of example HPC programs, associated Makefiles, and Readme files. You can view and modify these examples to quickly learn how to take advantage of HPC SDK features. Also, the most popular HPC benchmarks are included and preconfigured to allow you to quickly benchmark your system.

Absoft Technical Support

Technical phone and email support is included for twelve months. Absoft is the single point of technical support for all included products simplifying and consolidating your tech support needs.

Availability

The Absoft HPC SDK is available as a preconfigured software package based on the number of processors and the number of simultaneous users on the HPC system. Prices start at $5,000 for commercial versions. Product and ordering information are available by calling Absoft directly at 248-853-0050, by visiting http://www.absoft.com, or by emailing sales@absoft.com.

About Absoft

Based in Rochester Hills, Michigan, Absoft Corporation is a world leader in software development tools. Since 1980, Absoft has led the scientific and engineering software community by introducing the first commercial 32-bit Fortran compilers for Macintosh, Windows-NT, Linux and HPC environments.

Absoft is the sole provider of source-compatible Fortran and debugging solutions for all of today's leading computing platforms. Major educational institutions, research laboratories, and Fortune 2000 companies use Absoft tools worldwide.