

# Linux® Development Environment for the SGI® Altix® Family

Development Environment for  
Compute- and Data-intensive  
64-bit Linux Applications

## Features

- Tuned for the SGI® Altix®, SGI® Altix® XE and SGI® Altix® ICE server family; Take advantage of the world's most scalable platforms
- Designed to provide the best compute, storage and visualization solutions on the planet...to help solve our customers' most challenging problems...by delivering performance and reducing complexity
- Industry-standards support: Develop robust, portable solutions

With its focus on high-productivity computing environments, SGI has contributed to Linux scalability, scheduling, memory usage, I/O, and other efforts critical to high demand application performance. Now, with the SGI® Altix® family of servers and superclusters, Linux supports performance and scalability levels previously only attainable with proprietary UNIX® operating systems. Development tools for SGI platforms are designed to make sure you get the most out of these capabilities. They give you access to the SGI Altix family's high performance and flexibility. With SGI Altix, servers you can choose from a large collection of debuggers, performance analysis tools, and other development aids available from SGI third-party software suppliers, and the open-source community.

## Industry Standards

The Linux community offers a broad selection of applications and tools to solve all kinds of business, technical, and systems administration problems, as well as a rich set of development tools and features. Linux software for SGI systems is designed and configured to ensure compliance with industry standards, so that you can run commercial Linux applications, open-source software, and your own standards-compatible codes on your SGI Altix system.

## Compilers and Debuggers

These tools from SGI, Intel®, other third parties, and the open-source community are designed to help you create and run high-performance applications efficiently.

- Intel® compilers for Linux: Intel Debugger included and supports C and C++ with Eclipse IDE integration
- Intel® Fortran Compiler for Linux, Intel Debugger included with Fortran 2003 support
- **Intel® Compiler Suite Professional Edition** is a bundle of Intel's C++ and Fortran compilers. It includes support for Debian and Ubuntu – an oft-requested feature. It adds OpenMP® support for Microsoft® and GNU OpenMP implementation compatibility and some tuning for Intel's latest processors.
- GNU Compilers are included with the commercial Linux® distributions
- TotalView® Debugger by TotalView Technologies for advanced source-code debugging and supports all major compilers
- MemoryScape Memory Debugger by TotalView Technologies for debugging tough memory-related problems
- Distributed Debugging Tool (DDT) by Allinea for parallel application debugging



## Performance-enhancing Libraries and Tools

- **SGI ProPack™**: Designed to improve application performance, software development, and support for SGI's large scalable systems and storage.
  - Linkless Flexible File Input/Output (FFIO) for accelerating I/O calls and improve overall application performance
  - Message Passing Toolkit (MPT) with Array Services, Perfcatcher MPI profiling tool
  - Performance Co-Pilot™ for monitoring and managing system performance by collecting performance data and filtering to detect bottlenecks, cpu activity, and resource utilization metrics
  - SGI REACT™ for Linux®, library and tools for real-time application development with maximum 30us interrupt response time for applications scaling up to 64 sockets
  - SGI Histx application profiling tool for SGI Altix systems
  - ... and more
- **MPI Libraries**
  - SGI Message Passing Toolkit (MPT) with Array Services, Secure Array Services, Perfcatcher MPI profiling tool included in SGI ProPack™; fully performance-optimized for applications running on SGI Altix, SGI Altix ICE, and SGI Altix XE systems.
  - Open Source MPIS, MVAPICH-2 and OpenMPI, available via SGI Supportfolio software download for use on SGI Altix ICE and SGI Altix XE systems
  - Intel® MPI Library based on MPI-2, supports multi-fabrics, and specially performance-optimized for SGI NUMALink™ interconnect
  - Scali MPI Connect™, an MPI Library from Scali
- **Intel® Math Kernel Library** with optimized and threaded math library supporting BLAS, LAPACK, ScaLAPACK, FFT, Sparse Solvers...
- **Intel® Integrated Performance Primitives** is a library of many multi-core-ready, highly optimized software functions for multimedia and data processing applications
- **Intel® Cluster Toolkit** is a multi-component software toolkit that contains the core libraries and tools to efficiently develop, optimize, run, and distribute parallel applications for clusters with Intel processors.
  - Intel® MPI Library
  - Intel® Math Kernel Library
  - Intel® Trace Analyzer and Collector for performance analysis and optimization of parallel applications running on clustered systems
  - Intel® MPI Benchmarks formerly known as the Pallas MPI Benchmarks for measuring intra-cluster and inter-cluster performance

## Intel® Threading Analysis Tools

- Intel® Thread Checker, a debugger for multi-threaded applications
- Intel® Threading Building Blocks, a C++ runtime library that abstracts the low-level threading details necessary for optimal multi-core performance
- Intel® Vtune™ Performance Analyzer is a performance analysis and profiling tool for applications which enables developers to find and fix bottlenecks and includes an Eclipse IDE to ease data analysis

## Developer Program

The SGI Global Developer Program helps developers create the best possible solutions on SGI platforms. It provides you with a vital connection to SGI and comes with access to the members-only site, the DeveloperFlash e-newsletter, webcasts, software downloads, discounts, increased marketing opportunities, and an account on the Developer Program systems. There are two membership levels: Developer Plus and Developer Online.

The Developer Plus membership is extended only to vendors of commercially-available applications that target SGI servers. Developer Online is intended for companies that do not develop commercially available software or do not need application porting support.

Developer Plus membership also includes Developer Online Consulting which gives developers access to an e-mail channel for technical guidance and resolution to issues involving software application development, porting, and tuning related to SGI Linux computer systems.

To learn more about the SGI Global Developer Program, go to [www.sgi.com/developers/program/](http://www.sgi.com/developers/program/).

## Support and Services

With SGI, you get a fully supported solution focused on high performance computing. SGI supports all of the software shipped standard with its servers and superclusters based on Linux. Intel and other third parties support their own development tools, and SGI works closely with them and with the open source community to help create and maintain a rich and robust set of development tools. SGI also offers services to implement and integrate Linux applications in your environment.

For more information on available services, please see [www.sgi.com/support/](http://www.sgi.com/support/). For a list of additional Linux software, please see [www.sgi.com/products/software/linux/tools.htm](http://www.sgi.com/products/software/linux/tools.htm).



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