

ORACLE SOLARIS STUDIO 12.3

DEVELOP SCALABLE AND RELIABLE
ENTERPRISE APPLICATIONS

KEY FEATURES

- Integrated environment for Oracle Solaris and Linux application development
- High-performance parallelizing C, C++ and Fortran compilers optimized for SPARC and x86 platforms
- Advanced profiling, memory and thread analysis tools for single and multinode applications

BENEFITS

- Maximize application performance
- Increase application observability
- Improve software quality
- Enhance development productivity

Oracle Solaris Studio is the #1 development toolsuite for building C, C++ and Fortran applications for Oracle Solaris and Linux operating systems. Oracle Solaris Studio is optimized for Oracle Sun Systems (SPARC and x86) and offers an advanced integrated toolset that leverages system features, enabling developers to build high-performance scalable and reliable applications faster.

Overview

Oracle Solaris Studio delivers tools that are optimized for the underlying operating system and hardware to help you create high-performance, scalable and reliable applications. Oracle Solaris Studio contains two major suites of tools, a Compiler Suite and an Analysis Suite. The tools within each of the suites are designed to work together to provide an optimized development environment for the development of single, multithreaded, and distributed applications. Oracle Solaris Studio also comes with an integrated development environment (IDE) tailored for use with the compilers and tools from both suites.

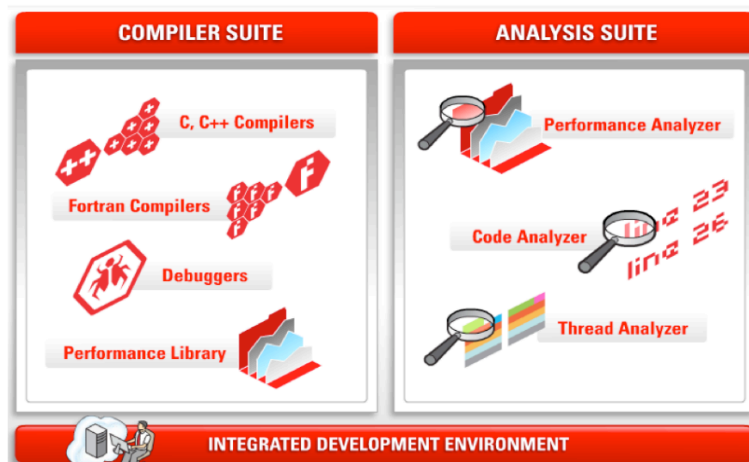


Figure 1: Oracle Solaris Studio Overview

Compiler Suite

Helps customers create faster applications in less time. The Compiler Suite includes the following components: C & C++ Compilers, Fortran Compiler, Debugger, and Performance Library.

C, C++ Compilers

Oracle Solaris Studio delivers compilers that produce record-setting application performance—consistently exceeding open source alternatives. The C and C++ compilers

provide a solid foundation for building robust, high-performance parallel code for the newest SPARC server-based systems from Oracle as well as Intel x86 processor-based systems. In addition to supporting the latest language standards, Oracle Solaris Studio software includes GNU C/C++ compatibility features and is compatible with prior releases.

To take advantage of hardware concurrency in multicore systems, the compilers simplify the creation of parallel applications with autoparallelization features. These features allow the compiler to identify safe and profitable parallelization opportunities in single-threaded code and automatically convert those segments into multithreaded code. The compilers support the OpenMP 3.1 specification that introduces task-based parallelism.

The compilers in Oracle Solaris Studio include an array of optimization options for increasing application performance. For generating everything from microarchitecture-specific instructions and profile feedback to whole-program optimizations, the compilers provide both a wide selection of individual options and easy-to-use metaoptions for aggressively optimizing application performance.

Fortran Compiler

Oracle Solaris Studio delivers a Fortran compiler that produces record-setting runtime performance. The compiler provides compatibility options for the Fortran77, Fortran90, and Fortran95 standards to support the existing base of codes in the technical market. Support for the OpenMP 3.1 specification is included. It uses the same high-performance code generation technology as the C and C++ compilers, ensuring that the resulting application generates the highest-performance parallel code for the newest SPARC and x86-based Oracle systems.

Debugger

The dbx debugger is an interactive, source-level, postmortem and real-time debugging tool available through both a command line and graphical interface. It is also integrated into the Oracle Solaris Studio IDE. Ensuring application reliability, the dbx debugger is scriptable and multithread-aware.

Performance Library

The Oracle Solaris Performance Library is a set of optimized mathematical subroutines for solving linear algebra and other numerically intensive problems. It provides a performance boost to high-performance computing, financial, and other compute-intensive applications. The Oracle Solaris Performance Library contains enhanced and newly added standard routines such as BLAS1/2/3, CBLAS, LAPACK, Sparse BLAS, SPSOLVE, SuperLU, FFTPACK, and VFFTPACK.

Analysis Suite

Includes an advanced suite of tools to help developers gain increased observability into their applications. The Analysis Suite includes: Performance, Code, and Thread Analyzers.

Performance Analyzer

Identifies application performance bottlenecks by specifying which functions, code segments, and source lines are having an impact on performance and providing the tools necessary to tune for optimal performance. From annotated listings showing what optimizations the compiler performed to optimization status and runtime thread performance, users can easily visualize performance hotspots. The Performance Analyzer can profile single-threaded as well as multithreaded applications. The Performance Analyzer also handles multiple concurrent processes to collect system-wide performance data, providing application insights down to the OS kernel, presenting a graphical identification of bottlenecks and helping improve application performance by orders of magnitude. In addition to supporting C, C++

and Fortran applications, the Performance Analyzer also includes support for Java code.

The Performance Analyzer provides the ability for developers to visualize the performance of distributed MPI-based applications via intuitive graphs to reveal performance hotspots in a clustered environment. Basic application profiling data is available, as are various MPI message statistics such as message length, internode message count, and message latency.

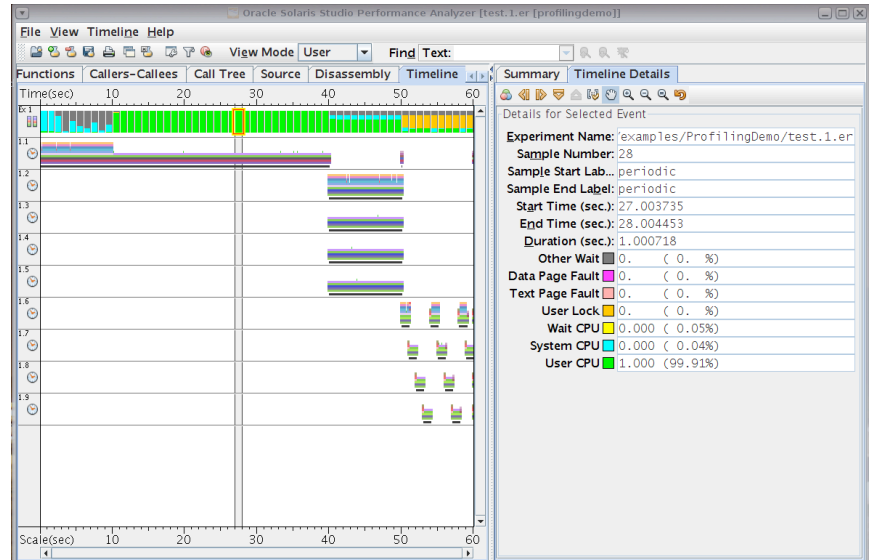


Figure 2: Performance Analyzer Timeline View

Code Analyzer

Helps ensure application reliability by utilizing dynamic, static and code coverage analysis to detect 45+ common coding errors, including memory leaks and memory access violations faster than competitive alternatives. The Code Analyzer utilizes static analysis at compilation and dynamic analysis from application runtime to identify code quality issues. In addition, the tool incorporates code coverage data to provide information about functions that are not covered by your test suite and guidance on the type of benefit you could achieve by covering those functions. The Code Analyzer provides a comprehensive view of application vulnerabilities by synthesizing the data collected from these three types of analysis, enabling you to improve application correctness and reliability. It also provides advanced error filtering and sorting capabilities, enabling you to track, detect, and fix issues faster.

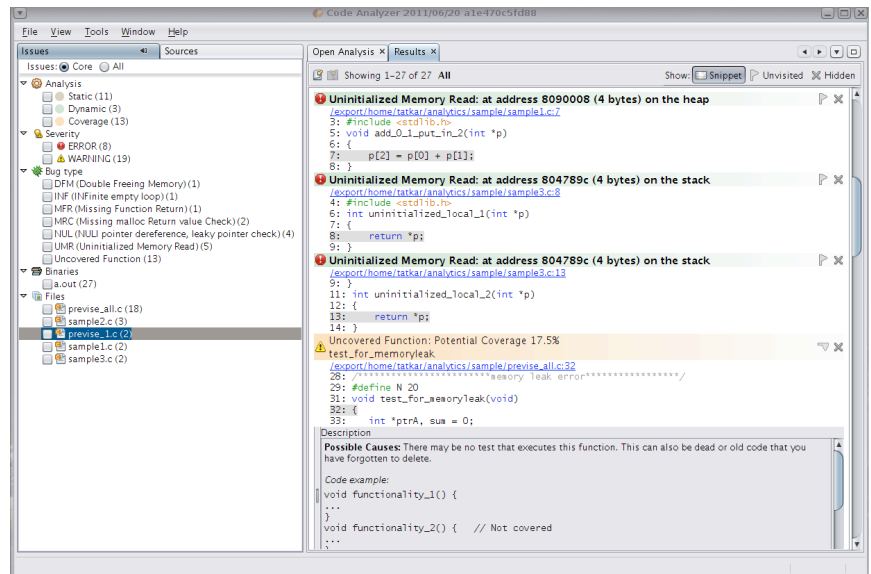


Figure 3: Code Analyzer

Thread Analyzer

Improving developer productivity and software robustness, the thread analyzer tool identifies hard-to-detect threading errors before they occur. It can detect potential race and deadlock conditions at runtime, map them to source lines in the application, and then enable the user to view the results by using command-line or graphical user interface (GUI) options.

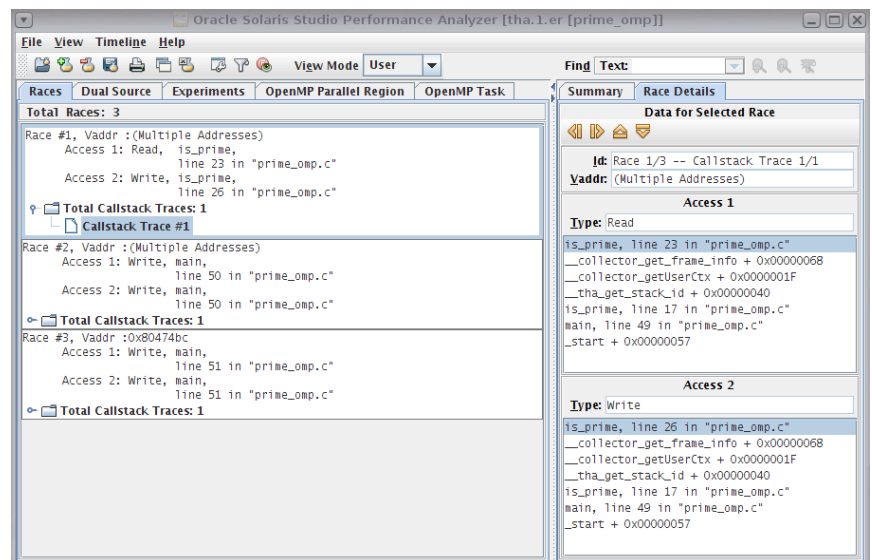


Figure 4: Thread Analyzer Race Detection

Integrated Development Environment

In addition to the Compiler Suite and the Analysis Suite, Oracle Solaris Studio also offers an integrated development environment (IDE) tailored for C, C++ developers that helps increase developer productivity.

The Oracle Solaris Studio IDE is built on the NetBeans platform and has a variety of advanced features that help increase developer productivity including an intelligent language aware code editor, code completion, code folding, syntax highlighting and much more. It has

a dynamic class browser, a wizard for creating make files and is highly configurable.

It also includes remote development features that enable the creation of Oracle Solaris applications from Microsoft Windows, Apple Mac or other Unix desktops, allowing you to leverage award-winning IDE features to remotely build, debug, run and analyze your applications.

In addition, the Oracle Solaris Studio IDE supports Oracle Database application development on Oracle Solaris with Oracle Database connection management, database browsing, and Pro*C support.

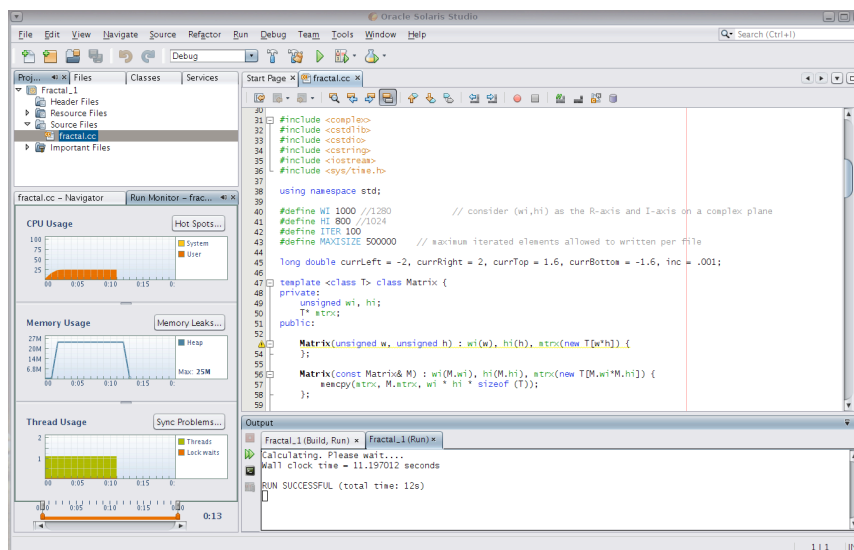


Figure 5: Oracle Solaris Studio IDE

System Requirements

Oracle Solaris Studio 12.3 is available for the following platforms:

- Oracle Solaris 10 & 11 (SPARC and x86)
- Oracle Enterprise Linux 5 & 6 (x86)
- Red Hat Enterprise Linux 5 & 6 (x86)

Licensing and Support

Oracle Solaris Studio software is available for download via a no-fee license from the [Oracle Technology Network \(OTN\)](#). There you will find Oracle Solaris Studio software in a variety of formats, including SVR4 and RPM, including instructions for acquiring Oracle Solaris Studio via the Oracle Solaris 11 Image Packaging System (IPS) model.

Support for Oracle Solaris Studio is available with the [Oracle Solaris Development Tools Support offering](#) available through the [Oracle Store](#) to ensure high developer and team productivity.

Contact Us

For more information about Oracle Solaris Studio, visit oracle.com/goto/solarisstudio or call +1.800.ORACLE1 to speak to an Oracle representative.



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