

ENTERPRISE DEVELOPER TOOLS

Gain Insight Into Multithreaded Applications with Oracle Solaris Studio DLight

Multithreaded applications deliver the speed and power of parallel processing, but require greater skill and effort to analyze. Enterprise developers can take advantage of Oracle Solaris Studio DLight, a powerful tool for visualizing and observing the behavior of complex, parallelized software programs.

DLight Highlights

- Ships with the Oracle Solaris Studio suite of programmer tools
- Available as a standalone tool
- Provides a visual interface for observing multithreaded programs
- Can run in remote environments for greater ease in observing application behavior
- Runs on Oracle Solaris 10 1/06 and subsequent updates, including Oracle Solaris 11 Express
- Compatible with SPARC®, Intel®, and AMD™ platforms that run Oracle Solaris

Analyzing application behavior is a time-consuming task that requires a great deal of effort. Transitory problems such as performance bottlenecks can be particularly difficult to pinpoint. Typical analysis tools are not designed to understand system and application behavior dynamically. In addition, methods that require program instrumentation can significantly impact system performance. Real-time analysis tools provide better insight into application behavior, shedding light on transient problems without compromising system or application performance.

Introducing Oracle Solaris Studio DLight

Oracle Solaris Studio DLight is a standalone interactive, graphical observability tool for developers. Based on award-winning Oracle Solaris Dynamic Tracing (DTrace) technology, Oracle Solaris Studio DLight also is available as a component of the Oracle Solaris Studio suite of tools for application developers.

Unifying application and system profiling on Oracle Solaris platforms, Oracle Solaris Studio DLight analyzes data from multiple sources in a synchronized fashion to trace and pinpoint application runtime problems. Incorporating the power of DTrace technology, Oracle Solaris Studio DLight enables developers to explore the system, understand how it works, and track down performance problems across many software layers. More importantly, remote capabilities make it possible for users to work at one system while monitoring services on another server running Oracle Solaris.

Oracle Solaris Studio DLight provides new levels of insight from the kernel to the application level that can help to dramatically reduce development timelines. An easy-to-use graphical interface provides application information, including thread microstates and data on CPU, memory, thread, and I/O usage for the duration of program execution.

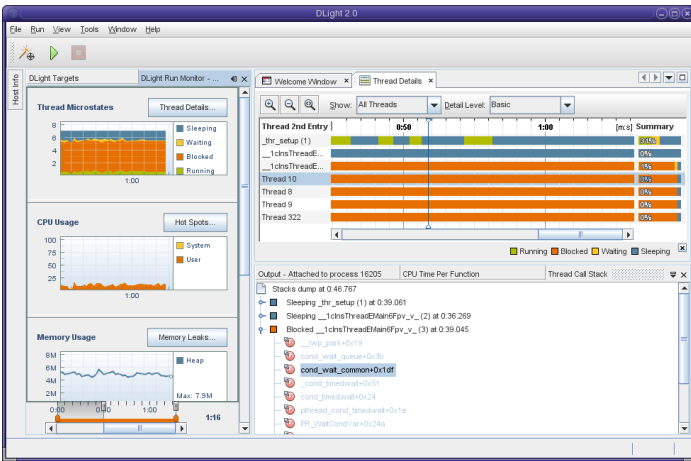


Figure 1. Oracle Solaris Studio DLight offers powerful visualization tools for better insight into multithreaded applications.

Obtain Fine-Grained Information

Application developers need to be able to get as much information as possible about what is happening within a program in order to understand its behavior. The Oracle Solaris microstate accounting feature uses DTrace technology to provide fine-grained information about the state of each thread as it enters and exits various execution states during program runtime. Oracle Solaris Studio DLight provides a graph that shows the threads and the points at which they enter various execution states.

Find Memory Leaks

Applications can cause memory leaks if not programmed properly. Memory leaks are points in a program where memory that is no longer needed fails to be released, leading to increased memory consumption by the program. Left unchecked, memory leaks can cause a program to run out of usable memory. Oracle Solaris Studio DLight contains a memory usage tool that identifies which functions in a program are producing memory leaks. Users can click on a button while the application is running to see a list of leaks that exist at that moment. Since more leaks can occur as the application continues to run, a refresh function enables users to update the list.

Determine If Multithreaded Applications are Properly Synchronized

Multithreaded programs can stop executing if a thread requires a resource that is locked by another thread. The Thread Usage graph in Oracle Solaris Studio DLight shows the number of threads in use by a program and indicates whenever a thread has to wait to

get a lock in order to proceed with its task. This data can help developers modify programs and avoid expensive wait times caused by multithreaded applications performing thread synchronization improperly.

Explore a Program's Read and Write Activity

Oracle Solaris Studio DLight shows an overview of read and write activity during a program run, including temporary files the program reads from and writes to, as well as standard input and output. The interface indicates files that are still open for read and write activity. Users also can determine which functions opened and closed a particular file.

Profile Processes in the AMP Stack

Oracle Solaris Studio DLight contains profiling tools for processes in the Apache, MySQL, and PHP (AMP) stack. Monitors help developers visualize and understand what is happening within the stack — from Apache HTTP requests and invoked PHP pages, to SQL queries executed in the MySQL database.

Complete Tasks in Less Time

Developers can pinpoint application trouble spots in real time without the overhead caused by program instrumentation. With the ability to utilize and visualize the power of DTrace technology, developers gain insight into complex multithreaded applications and are better able to deliver high-quality enterprise applications in less time.

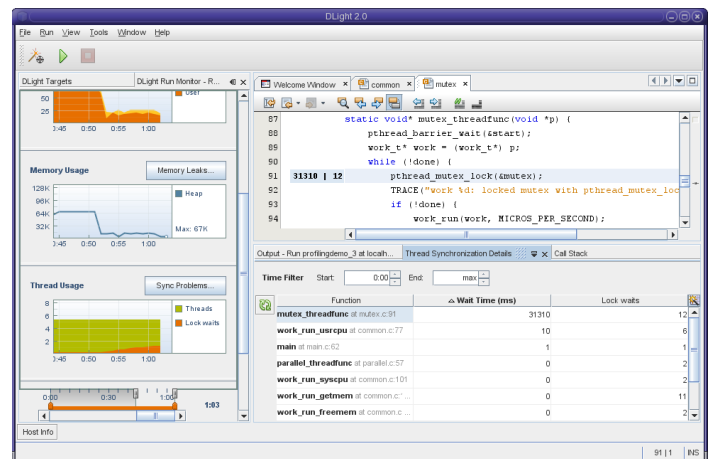


Figure 2. Oracle Solaris Studio DLight provides thread synchronization details.

Oracle Solaris Studio DLight provides a unique interface that helps developers easily see where to focus efforts when analyzing multithreaded programs.

Create New Oracle Solaris Studio DLight Tools

Oracle Solaris Studio DLight supports the creation of additional instruments, or dtracelets, for further observation of applications or systems. Dtracelets are XML files that are used to collect information and display specific data in particular ways. The XML file includes the name, icon, and description to be displayed for the dtracelet along with the D script source, data description, and data visualization attributes. New dtracelets can be saved and displayed in the Oracle Solaris Studio DLight list of instruments and made available system-wide or used locally by individual developers.

Oracle Provides the Tools Developers Need

Application developers need a variety of tools to aid in debugging programs. Oracle offers Oracle Solaris Studio, a comprehensive suite of developer tools for analyzing and understanding applications. Available as a standalone solution or part of Oracle Solaris Studio, Oracle Solaris Studio DLight lets developers visualize and observe complex, multithreaded applications in a unique and powerful way. With Oracle Solaris Studio DLight, developers can expedite the application development process, reduce time to deployment, lower costs, and maximize ROI. Providing observability without adversely affecting system performance, Oracle Solaris Studio DLight is a vital tool for developing applications.

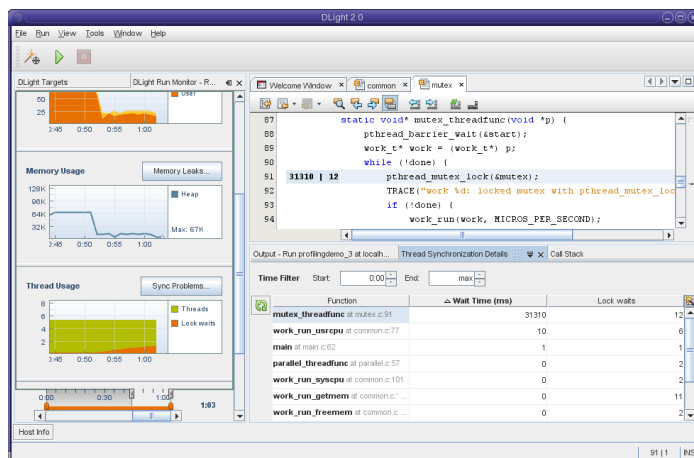


Figure 3. Oracle Solaris Studio DLight lets users view details on CPU usage.

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