

# Coverity® Dynamic Analysis

Coverity Dynamic Analysis helps developers, QA, and test engineers quickly identify hard to diagnose defects in multi-threaded Java applications. With minimal impact to your team or test environment, Coverity Dynamic Analysis automatically instruments Java programs and provides reliable, accurate, and reproducible detection of concurrency errors that could result in performance degradation, system crashes, or security vulnerabilities.

The screenshot shows the Coverity Integrity Manager interface. On the left, a list of defects is shown, including '21393: Resource leak', '21392: Resource leak', '21391: Explicit null dereferenced', '21390: Explicit null dereferenced', '21389: Explicit null dereferenced', '21388: Explicit null dereferenced', '21387: Uwf: Unwritten field', and '21386: DL.S: Dead local store'. The main area displays the source code for 'philosophers/Philosopher.java:76'. A defect is highlighted in the code, showing a 'Thread deadlock' where two threads acquire locks in different orders, potentially causing a deadlock (CWE-557). The right-hand pane provides details for this defect, including its classification as a 'Bug', severity as 'Moderate', and an action of 'Fix Required'. It also shows the owner as 'admin' and a last comment on 11/28/11.

## Types of Concurrency Defects Identified

**Race Conditions** that can cause incorrect application behavior and introduce security vulnerabilities in multi-threaded applications

**Deadlocks** that typically result when two Java threads wait for each other to release a lock, or more than two Java threads wait for locks in a circular chain

**Resource Leaks** that can result in unnecessary failures and bad performance

Increase accuracy of analysis with a tightly-coupled integration of Dynamic Analysis with Static Analysis for your Java applications.

## Key Features

### Best of Breed Analysis

Coverity Dynamic Analysis analyzes your Java program while it runs to find concurrency defects such as race conditions, deadlocks, and resource leaks. These kinds of defects are difficult to find and time-consuming to reproduce using manual debugging.

### Integration with Coverity Static Analysis

By combining static analysis and dynamic analysis techniques, and providing the developers with an integrated view, increase the accuracy and speed of defect detection to achieve the most thorough analysis of race conditions, deadlocks, and resource leaks.

### Business Impact Mapping

Industry's first capability to automatically map the impact of a defect across the entire codebase, alerting you of the presence of a single defect in all projects and products that share code.

Developers can quickly identify the impact of a defect from one part of the code on the entire product portfolio. Development managers and executives have actionable information to make better fix/no fix decisions based upon impact to a single project, across all projects, across the product portfolio, and to the business, reducing the risk of schedule slips and quality issues across products.

### Defect Understanding

An easy-to-understand defect description, a mapping to the Common Weakness Enumeration (CWE), intuitive and precise navigation and inline expansion of function calls for every defect allows improved developer efficiency when understanding the root issue of the error.

### Prioritization

Checker classification helps you easily prioritize defects by combining checkers into categories based upon how a defect manifests into issues. With information on the priority and type of error, developer efficiency is improved by spending less time on researching the defects and instead on fixing the critical priority defects first.

**Key Features** *continued*

**Code Components Mapping**

Break up large codebases into logical parts according to directories, libraries, developers and groups which allows automatic defect assignment and prioritization of code areas with high defect density.

**Defect Reporting**

Evaluating and measuring defect history and resolution status at the branch level, the project level, and across projects is critical to make better decisions and measure developer productivity and quality improvement over time. Reporting allows you to answer critical questions such as which defects have been fixed, have all critical defects been addressed and what is the trend in the software quality trend over time.

**Ease and Flexibility of Use**

Coverity Dynamic Analysis can be easily integrated into your existing development and testing environment, from a subset of code to the entire application, depending on usage. Developers can run ad hoc analysis on specific code changes and to debug concurrency issues. QA and Build Managers can run automated tests at the tail end of the build process to identify defects that may have gone undetected during development.

**Technical Specifications**

Coverity Dynamic Analysis			
Supported Platforms	System Requirements	Supported Java Environments	IDE Plug-In Support
<ul style="list-style-type: none"> <li>• Linux</li> <li>• Mac OS X</li> <li>• NetBSD</li> <li>• Solaris</li> <li>• Windows</li> </ul>	<ul style="list-style-type: none"> <li>• 1 GHz CPU</li> <li>• 1 GB of RAM minimum 2 GB recommended</li> <li>• 1 GB of free hard disk space</li> </ul>	<ul style="list-style-type: none"> <li>• V1.5 or v1.6 Sun/Oracle HotSpot JVM</li> <li>• Mac OS X: v1.6 Apple JVM</li> </ul>	<ul style="list-style-type: none"> <li>• Eclipse v3.5, v3.6, v3.7</li> </ul>
Coverity Integrity Manager Browser Support			
Browser	Minimum System Requirements		
<ul style="list-style-type: none"> <li>• Internet Explorer 7, 8 or 9</li> <li>• Firefox 5 or later</li> <li>• Google Chrome 7 or later</li> <li>• Safari 5 5 or later</li> </ul>	<ul style="list-style-type: none"> <li>• Dual core Intel® x86 or AMD 3.0GHz processor 64-bit 2 GB of free RAM</li> <li>• Additional deployment scenarios are supported</li> </ul>		

**For More Information:**  
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