

IBM Rational Application Analyzer

Highlights

- **Structural analysis tool designed for software architects and developers**
- **Assesses architectural integrity of Java applications**
- **Measures application stability**
- **Detects structural anti-patterns**
- **Provides dependency web browsing**
- **Performs what-if analysis**

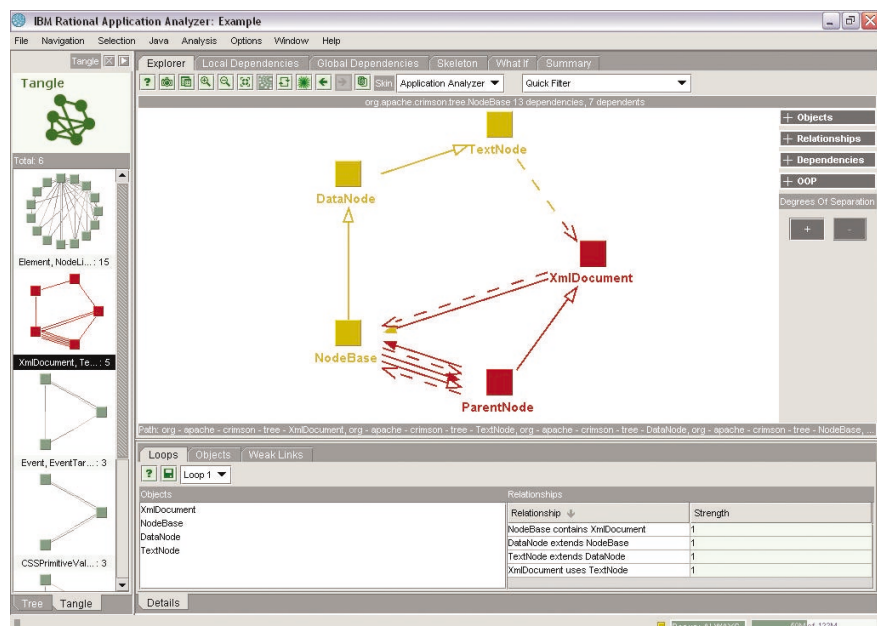
Today's computer systems are mission-critical. A software failure may bring entire business operations to a halt, leading to the loss of millions of dollars. Such catastrophic failures are often attributable to flaws in the software architecture. Large-scale software systems generally experience structural decay and other forms of quality degradation as they change over time.

IBM® Rational® Application Analyzer is a static analysis tool that helps architects and developers understand the structural design of their code. Such analysis can be performed before the code is executed to identify

component dependency issues that affect the stability and overall quality of the software. By gaining such knowledge, you can improve the software's architectural integrity before the system is deployed, resulting in an overall higher quality product.

Measure application stability

Large-scale applications often evolve into highly complex systems with many extraneous components and unnecessary dependencies. Any change to a component in such an application can have a ripple affect across the rest of the system. Rational Application Analyzer looks at these dependencies and measures the



Identifying cyclic dependencies is a major step toward improving architectural integrity.

application's susceptibility to change. Measuring application stability in this way allows the architect of the system to precisely determine if, where, and to what degree the software warrants redesign.

Detect structural anti-patterns

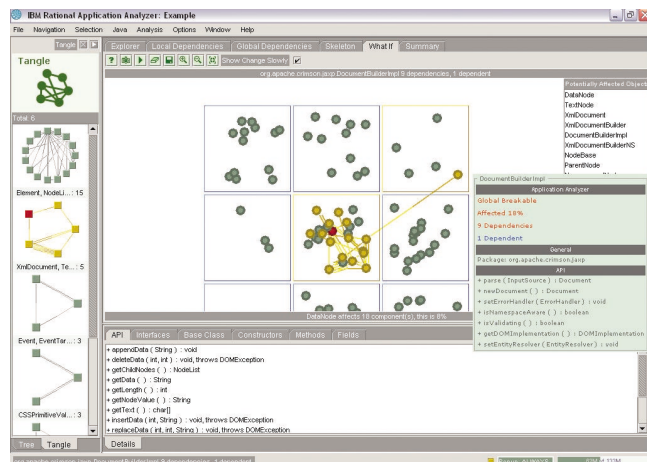
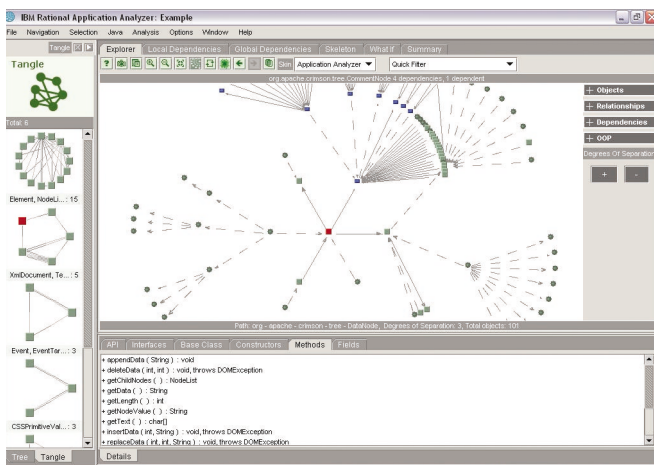
Much has been published in the industry on design patterns. Most of this work focuses on patterns of good structural design. But there also exist structural "anti-patterns"—known and recurring software design problems. Rational Application Analyzer detects such anti-patterns so that the architect can identify and resolve the design issues. In doing so, the stability of the application can be significantly improved, resulting in a higher quality design.

Visually explore dependency webs

Application component dependencies can be numerous and complicated. Textual presentation provides details, but can make it difficult to navigate around the architecture. Rational Application Analyzer allows the architect to visually explore such complex dependency webs. Local and global dependencies and dependents of every element in the dependency web are exposed, including structural anti-patterns. At any point in the journey, the user can dive into detailed information about packages, classes, and interfaces, ultimately leading to the root causes of stability problems.

Perform what-if analysis

Changing software is often what causes it to break. Problems may go undetected until conventional testing exposes the breakage. Testers then report defects, and the evolution cycle continues. What if there was a way to know where software might break before actually making the changes? Rational Application Analyzer enables the architect to perform a what-if analysis so the effects of a proposed change are better known up front. Such insight might suggest that some degree of re-architecting is needed. Proactively assessing the impact of change on the architecture of an application can dramatically reduce cycle time and result in higher-quality applications faster.



What-if analysis isolates where software might break before making actual changes to the code.

Visualizing application component dependencies provides crucial information for successful refactoring

Features & Benefits

Feature	Description	Benefits
Stability analysis	Measures quality of application architecture by evaluating the web of dependencies between packages, classes and interfaces of a Java application.	<ul style="list-style-type: none">• Quantitative and deterministic evaluation of the application architecture.• Clearly understandable reports assist both architectural experts and non-technical audience.• Provides degree of confidence that an application is a solid basis for future development
Anti-pattern detection	Detects examples of bad design elements and groups them into clearly defined categories.	<ul style="list-style-type: none">• Automatic detection of architectural problems in the analyzed application.• Presents common design issues facing architects and designers of any type of application.• Reducing number of detected anti-patterns will inherently increase the stability of an application.
Dependency web browsing	Provides detailed information about each anti-pattern in the package dependency web, including the dependencies on third party Java modules. Flexible choices in level of depth used for the analysis.	<ul style="list-style-type: none">• Provides a more detailed picture of relationships between components of the application.• Provides a detailed map for assisting in package re-factoring.
Package analysis	Provides a graphical view into the physical and logical organization of the application's packages.	<ul style="list-style-type: none">• Offers an easy to understand starting point in the analysis process.• Serves as a high-level guideline for re-factoring packages.
What if analysis	Visually pinpoints dependencies affected by the change in a selected component.	<ul style="list-style-type: none">• Ability to determine impact of the prospect in making a change without having to actually do it.• Warns of the pitfalls in making modifications destined to be riddled with side-effects.



System Requirements

Operating System	Software	Hardware
Linux, Solaris, Windows 2000, Windows NT, Windows XP	<p>Programming languages:</p> <ul style="list-style-type: none">• Java SDK 1.2.2 and higher <p>Localization:</p> <ul style="list-style-type: none">• English only• IBM Rational Application Analyzer cannot be installed into a path that includes double-byte or extended characters. <p>Supported Platforms:</p> <ul style="list-style-type: none">• IBM Rational Application Analyzer is supported as a stand-alone product. <p>Internet Browser:</p> <ul style="list-style-type: none">• Internet Explorer 5.5 with Service Packs 1 or 2• Internet Explorer 6 without any service pack or with SP1• Netscape 7.0 <p>Online Documentation Display and Printing:</p> <ul style="list-style-type: none">• IBM Rational Application Analyzer documentation includes a document in Adobe Acrobat PDF format, requiring Adobe Acrobat Reader.	<p>Processor:</p> <ul style="list-style-type: none">• Pentium III-class at 500 MHz; Pentium III-class at 1 GHz or higher recommended <p>Available RAM:</p> <ul style="list-style-type: none">• 256 MB; 512 MB recommended <p>Available Disk Space:</p> <ul style="list-style-type: none">• 100 MB for installation drive; 200 MB for workspace recommended <p>Video:</p> <ul style="list-style-type: none">• Minimum screen resolution: 800 x 600 pixels, 256 colors; 1024 x 768 pixels, 16-bit color or higher recommended <p>Mouse/Pointing Device:</p> <ul style="list-style-type: none">• Any pointing device with at least two buttons

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