



IBM Rational Software Architect

Highlights

■ **A complete design & development toolset**

- Incorporates all the capabilities in IBM Rational Application Developer for WebSphere Software for building scalable Web, Web services (including Web services that participate in SOA), Java, J2EE and portal applications
- Markerless visualization/editing of J2EE, Java, and C++ structure and behavior via UML diagrams

■ **Architectural modeling & specification**

- Supports the major UML 2 diagrams
- Supports patterns and transformations for automating refinement of models and transition between analysis, design, and implementation
- Supports OCL for specifying architectural constraints

■ **Java application structural review & control**

- Automatic detection of structural patterns & anti-patterns to facilitate the refactoring of Java applications
- Defines structural rules for architectural control of Java

■ **Ease of adoption and use**

- Simplified and responsive user interface
- Browse and explore models or code using diagrams
- Automatic & assisted diagram generation

■ **Open & extensible modeling platform**

- Powered by Eclipse technology, an open and extensible tools integration platform
- Based on the open standard Unified Modeling Language (UML 2)
- Leverages Eclipse open source APIs, including the Eclipse Modeling Framework (EMF) and the UML 2 meta-model
- Supports the development of custom meta-models

■ **Lifecycle and team integration**

- Integrates with IBM Rational RequisitePro, IBM Rational ClearCase LT, and IBM Rational ClearQuest
- Includes an IBM Rational Unified Process configuration for Software Architects
- Supports CVS for software configuration management
- Automates traceability from requirements to design and implementation

Software architects and senior developers within a development team are responsible for specifying and maintaining all aspects of an application's software architecture. They need powerful and configurable tools for managing the complexity found in today's applications. IBM® Rational® Software Architect is a design and development tool that leverages model-driven development with the UML for creating well-architected applications and services.

Rational Software Architect unifies all aspects of software design and development into one powerful and easy to use tool. It supports understanding, designing, managing, and evolving enterprise solutions and services. The product includes all the J2EE, Web, and Web services features found in Rational Application Developer for WebSphere Software. Rational Software Architect is built on top of the open and extensible Eclipse platform which leverages several open industry standards. This enables users to create applications optimized for IBM middleware, as well as those developed using middleware technology from other vendors.

Develop applications more productively than ever

It's hard to incorporate new technology into existing processes. So when a project brings in, say, a new development tool, productivity often initially takes a hit. The tool may be too hard to install, to configure, or to learn. This results in the perception that the new tool is simply too hard to adopt—that it slows development down.

Rational Software Architect includes new ease of adoption and use features that raise the bar for user productivity in both model-driven and code-centric workflows. A variety of diagram types aid in the design, discovery, and documentation activities. Web Diagram editors and the Page Designer help create rich web applications. You can visualize both the structure and the behavior of existing applications into design diagrams. And you can further improve productivity by automating patterns development and model transformations.

These advanced modeling features help you customize the tool to conform to your particular needs. Combined with seamless integrations between design and development capabilities, process guidance, and other facets of the lifecycle, Rational Software Architect simplifies analysis and design, furthering ease of use and development productivity.

Leverage an open and extensible modeling platform

Many software professionals see the value in modeling their software but are concerned about locking into a single vendor's proprietary modeling tool technology. They worry that a tool built on a proprietary platform will make it difficult to extend or otherwise customize the tool for their environment. Many organizations are also developing applications that span multiple development and deployment platforms. They worry that tools based on proprietary domain-specific modeling languages will limit interoperability.

Rational Software Architect is built on top of Eclipse, the award-winning, open source platform for constructing powerful software development tools and rich desktop applications. Having Eclipse as a foundation allows you to easily extend the features of Rational Software Architect to meet your specific project requirements. Eclipse also fosters an ecosystem of third-party plug-ins that further your choices in how to best construct applications. And because Eclipse is written in Java, you can outfit your team for model-driven development across both Windows and Linux development environments.

Powered by Eclipse technology, Rational Software Architect provides you with an open, highly extensible and customizable tool that supports development across your enterprise.

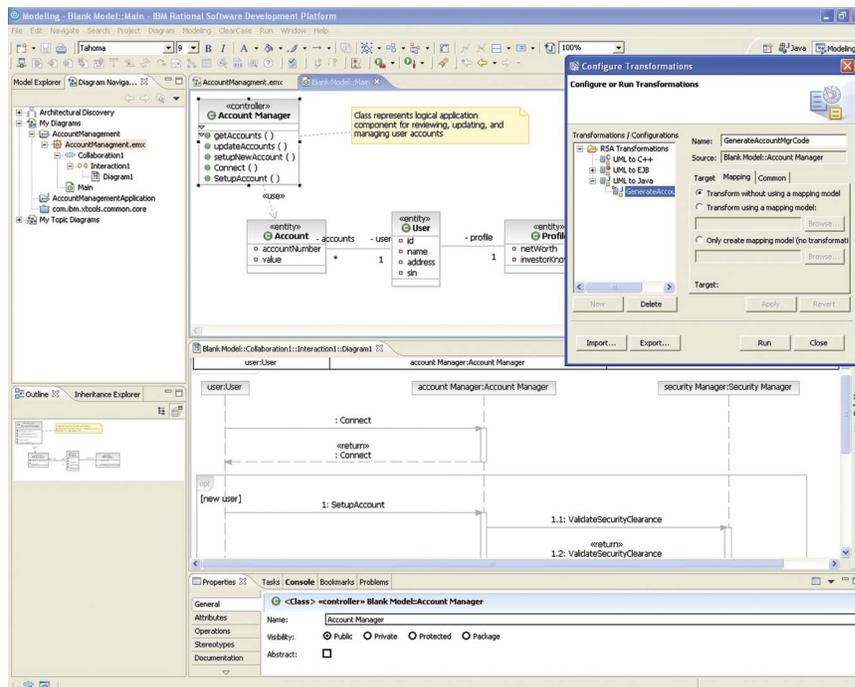


Figure 1. Rational Software Architect provides a number of usability features that make modeling and model-driven development more productive than ever.

Exploit the latest in modeling language technology

Modeling helps reduce the risk associated with developing software. It allows development organizations specify and communicate information about their applications from several perspectives to a variety of stakeholders. Model-driven development automates the repeatable activities and can improve the productivity and overall maturity of one's software development process. The Unified Modeling Language (UML) has been instrumental in these improvements by virtue of its standardization and applicability to a wide variety of application domains. Yet through experience, customers have found that the UML lacks sufficient expressiveness in certain areas, such as modeling complex system structure and behavior. And those most experienced with UML need better guidance for separating business and application logic from underlying implementation technology.

Rational Software Architect supports UML Version 2 (UML 2), including structured classes and improvements to sequence, activity, and state machine diagrams. These and other revisions to the standard allow users to express their architecture with more clarity and control than ever. The Object Management Group (OMG) has taken this expressiveness to the next level in process guidance with its Model Driven Architecture (MDA) initiative. Rational Software Architect supports MDA by allowing the user to define multiple levels of models coupled with user-defined transformations between those models and code, resulting in a clearer separation of concerns across the lifecycle.

Review and control the structure of your Java applications

Good application modeling helps lead to well-architected code. But architects and developers often begin their work with existing code. Here they need to quickly review the application's structure and behavior before proceeding with new development. Inherited applications often demonstrate execution

found in software that can make software difficult to maintain and update.

The code review and structural control features in Rational Software Architect allow you to quickly detect and correct potential problems in functionality, scalability and maintainability due to unwanted dependencies introduced during implementation.

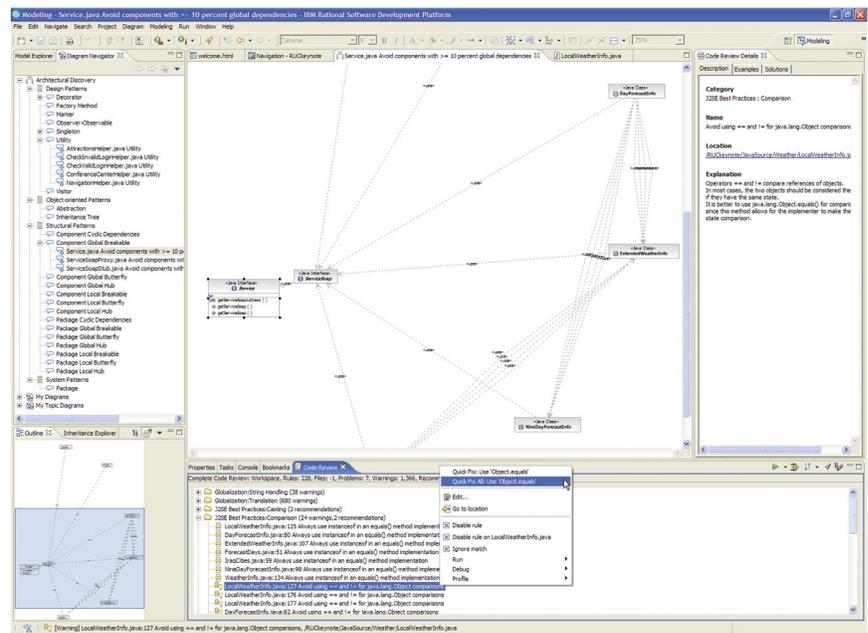


Figure 2. Structural review & control features in Rational Software Architect allow you to quickly detect unwanted dependencies introduced during implementation.

performance problems or produce undesired side-effects upon modification to the source. These problems are often the result of developers unknowingly introducing unwanted dependencies during implementation, resulting in architectural decay.

Rational Software Architect introduces application structural review and control features that directly address these issues for Java code. Design patterns implemented in the code can be visualized, even if developers didn't know such patterns existed, thus presenting opportunities for component reuse. Rational Software Architect also automatically detects structural "anti-patterns," which are undesired yet common problems

Simplify your design and development tool solution

Every software organization needs development tools. The minimum investment for most modern software projects is with an Integrated Development Environment (IDE). Some IDEs come with tools beyond the usual editor, compiler, and debugger—tools such as profilers and diagramming assistants. But full-scale modeling and model-driven development support are generally purchased and installed outside of the IDE, making for a complex design and development environment to configure. And then you don't know if the tools will work together in an integrated fashion.

Rational Software Architect simplifies your design and development tool solution. By including all the capabilities of Rational Application Developer for WebSphere Software, our comprehensive enterprise-class IDE, you get a fully integrated design and development environment in one package and one installation process. This gives you a single tool for both design and development, making it simpler to assess, purchase, and integrate these parts of your software development environment. And if you have multi-platform requirements, Rational Software Architect installs on both Windows and Linux platforms, further simplifying your tooling across both environments.

Integrate with other facets of the lifecycle

Integrated design and development improves traceability between code and its most immediately related artifacts. But complex software projects need traceability throughout the lifecycle. When requirements change, architects need to know what part of the architecture is affected. Such projects also need to manage the change as it impacts both model and code files. This all becomes quite complex and challenges even the best managed software processes. Failing to address these issues introduces increased risk to overall project success.

Rational Software Architect helps you integrate with other facets of the lifecycle. Requirements stored and managed in Rational RequisitePro can be accessed, associated to corresponding modeling elements, and synchronized with user-selectable rules. Users can generate reports highlighting traceability from

requirements to design. Modeling files can be managed by Rational ClearCase LT, our robust software configuration management product, that ships with Rational Software Architect. Alternatively, the product integrates with Concurrent Versions System (CVS) for customers already committed to that tool. And the integration with the IBM Rational Unified Process (RUP) gives teams the ability to work through all of this with common, online, and integrated process guidance.

Rational Software Architect integrates with these and other aspects of the IBM Rational team unifying platform, providing requirements management, traceability, source code control, and other team management functions throughout the lifecycle. These integrations reduce the risk associated with software development and make application development more predictable.

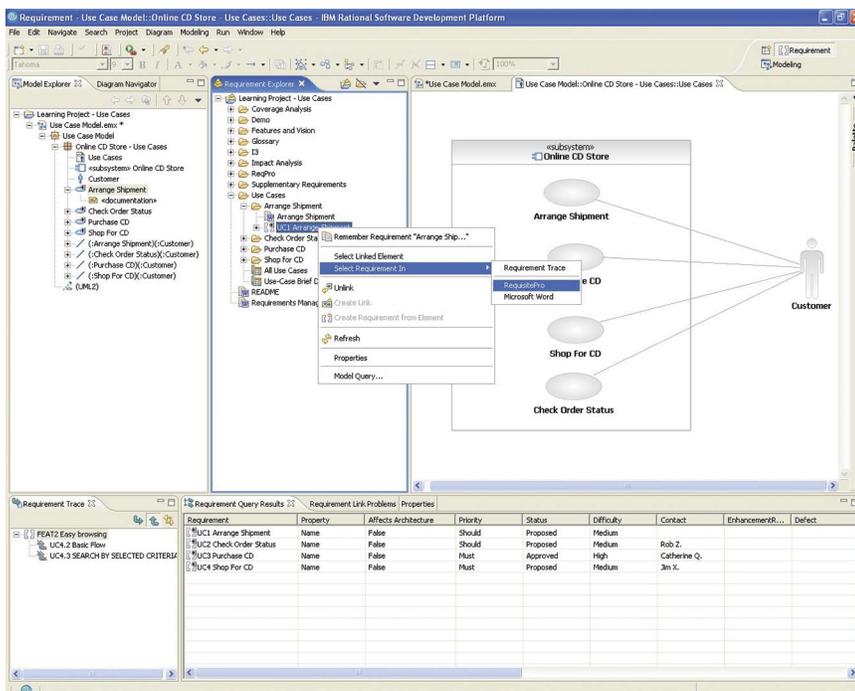


Figure 3. Rational Software Architect integrates with the IBM Rational team unifying platform, providing requirements management, traceability, source code control, and other team management functions throughout the lifecycle.

Component of the IBM Rational Professional Bundle

Rational Software Architect is a component of the IBM Rational Professional Bundle. This bundle includes all of the desktop tools your enterprise needs to design, construct and test J2EE/Portal/Service-oriented applications on both Windows and Linux and to test .NET applications. The bundle provides a single purchase vehicle with just one maintenance contract to manage.

About Rational software

Rational® software from IBM helps organizations automate and integrate the core business process of software development. Rational products, services and best practices power the IBM Software Development Platform, the premier platform for teams who discover, develop, and deploy software assets in business applications, embedded systems, and

software products. This modular and complete solution enables teams to adopt a business-driven development approach based on open standards, including the Eclipse open source framework. The result is differentiated business performance. Additional information is available at ibm.com/rational and ibm.com/developerworks/rational/rationaleedge, the monthly e-zine for the Rational community.

Feature	Benefit
UML 2.0 modeling support for analysis and design using Use Case, Class, Sequence, Activity, Composite Structure, State Machine, Communication, Component, and Deployment diagrams	UML 2.0 allows you to capture and communicate all aspects of an application architecture using a standard notation that is recognized by many different stakeholders.
Simplified diagramming using free-form diagrams, topic diagrams, and browse diagrams.	Simplifies the usage of UML notation for design, documentation, communication, and understanding design elements captured in UML models and application artifacts in the development workspace.
Visual modeling with content-assist.	Action bars, connection handles, context-sensitive content suggestions (invoked with CTRL-SPACE), task-specific modeling "Cheat Sheets," extensive online help, samples, and tutorials guide you through the activities of creating well-formed models.
Apply and author patterns and transforms	Allows organizations to capture and promote "recipes" that can be used to increase the predictability and repeatability of software development. The authoring and apply capabilities support teams in "developing for reuse" and "developing with reuse"
UML Class diagram editing for Java, Enterprise Java Beans, and Database objects	Uses stylized UML notation to provide abstract views of Java, EJB, and database objects to simplify the development and understanding of new and existing applications.
IE and IDEF diagram editor for Database objects (ER Modeling)	Use IE and IDEF notations to simplify the development and understanding of database applications.
UML Sequence diagram editing for Java	Model application behavioral interactions using UML 2.0 sequence diagrams.
Java method body visualization using UML 2.0 Sequence diagrams	Use UML 2.0 sequence diagram constructs to understand the flow of a Java method.
UML Class diagram editing for C++	Use UML class diagrams to provide abstract views of C++ classes to simplify the development and understanding of new and existing applications.
Uses transformations to generate Java, C++, or EJB code	Automate the repeatable task of generating code from design models. Transformations can be customized to tailor code generation patterns to an organization's needs.
Asset Browser for accessing reusable assets	Supports OMG Reusable Asset Specification and supports users in browsing repositories containing reusable assets. Repositories can be structured so that assets can be found easily.
Establish traceability links from requirements through implementation	Assist users in querying design models for traceability relationships from requirements (in RequisitePro) to analysis/design elements found in models, and to Java code.
Automatically detect patterns and anti-patterns (ex.: design, OO, structural, and system) in Java code	Automatically mine application code to identify and graphically render application patterns to assist with understanding or refactoring an existing application.
Template based rules for monitoring and enforcing application structure	An application is ultimately reflected in its running code. Facilitate enforcing and monitoring an application's architecture as it evolves.
Enterprise class IDE powered by Eclipse technology	Adapt and extend your development environment with Eclipse-based plug-ins that match your needs
WS-I compliant Web services and service oriented architectures	Integrates your business applications
Rapid application development tools and wizards	Accelerate portals, SOA and J2EE development
Drag-and-drop UI components, point-and-click database connectivity	Leverages existing skills and shortens Java learning curve
Automated tools for coding standards enforcement; component testing of Java, EJB, Web services; and multi-tier runtime analysis	Improves code quality
Built-in Crystal Reports tools	Quickly build powerful and interactive data reports for the Web
C/C++ development environment with syntax highlighting editor and customizable build and debugger framework	Users can develop their C++ applications in the same environment that is used for developing with other languages like Java and XML.
Requirements perspective for browsing requirements in RequisitePro and creating links to model elements	Simplify the creation of traceability links from requirements through to design
RUP configuration for Software Architects with context-sensitive and dynamic process guidance	Process guidance and user assistance is provided dynamically as the user works with the tool.
Open API to support customizing and extending the modeling environment. UML profile creation and editing to customize the properties stored in UML models	Organizations can develop plug-ins customize the analysis and design tools for their environment and process. Supports the creation of an ecosystem allowing vendors to develop integrations.
Generate HTML, PDF, and XML reports from UML designs	Create reports and documentation that can be reviewed by team members or other stakeholders.
Generate Javadoc with detailed design diagrams	Augment Javadoc reporting capabilities with the ability to integrate UML detailed design diagrams into a Javadoc. Diagrams can be automatically generated and integrated into Javadoc, or the user has the option of creating custom diagrams and using Javadoc tags to insert them in Javadoc output.
Scripting support with Java	Create lightweight utilities/extensions to customize a user's development environment.
Team support with multi-model support, compare merge, and SCM integrations	Provides all the capabilities required to teams and distributed teams in designing and developing applications.

IBM Rational Software Architect Specifications

Hardware Requirements

- Processor - Minimum: Pentium™ 3, 800 Mhz; Recommended: Pentium™ 4, 1.4 GHz or higher
- Minimum memory: 768 MB; 1 GB RAM recommended; more memory generally improves responsiveness.
- Video: XGA 1024 x 768 x 256-color video resolution, XGA 1280 x 1024 recommended; high color or true color recommended.
- Microsoft mouse or compatible pointing device.
- Required disk space: 3 GB; 6 GB is required when installing from a download

Software Requirements

- Microsoft™ Windows XP Professional, Service Pack 1, 2
- Microsoft Windows 2000 Professional, Service Pack 3, 4
- Microsoft Windows 2000 Server, Service Pack 3, 4
- Microsoft Windows 2000 Advanced Server, Service Pack 3, 4
- Microsoft Windows 2003 Standard Edition
- Microsoft Windows 2003 Enterprise Edition
- Linux: Red Hat Enterprise Linux WS 3.0
- Linux: SuSE Linux Enterprise Server 9.0

Software Integrations

- IBM Rational RequisitePro v2004 SR3
- IBM Rational ClearCase LT (actual product is included)
 - On Windows: v2002, v2003 SR3
 - On Linux: v2004 SR3
- IBM Rational ClearQuest v2004 SR3
- Concurrent Versions System (CVS) v1.11.1p1
- IBM Rational Unified Process (RUP) v2004 SR3



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