

Rational software

## IBM Rational Application Developer for WebSphere Software Version 6.0

### Highlights

- **Accelerate portal, SOA and J2EE development using RAD tools and wizards**
- **Collaborate and share assets across the team using built-in Rational ClearCase LT version control**
- **Leverage existing skills and shorten the Java learning curve with drag-and-drop UI components and point-and-click database connectivity**
- **Improve code quality with automated tools for applying coding standard reviews, component testing of Java, EJB, Web services and multi-tier runtime analysis**
- **Improve code-level design and share designs with distributed teams using UML visual editing tools**
- **Quickly build powerful and interactive data reports for the Web using built-in Crystal Reports tools**
- **Integrate your business applications with WS-I compliant Web services and service-oriented architectures**
- **Adapt and extend your development environment with Eclipse-based plug-ins to match your needs**

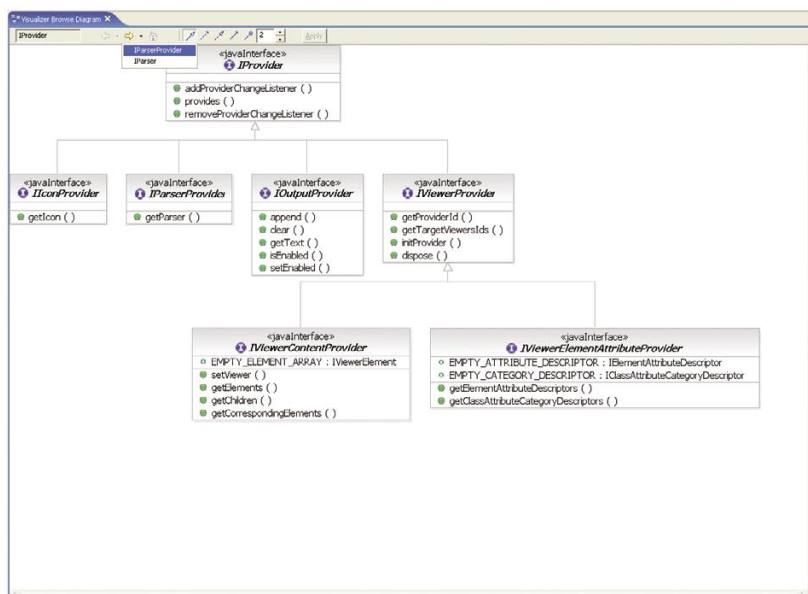


Figure 1. The UML Visual Editor for Java and EJB provides graphical editors as an alternative way to visualize and modify existing code and to better understand and manage complex code using standard UML diagrams.

### Deliver high-quality applications quickly

An on demand business environment requires developers to respond to rapidly changing requirements. To meet these demands, you need a development environment that increases productivity, minimizes your learning curve and shortens the development and test cycle so you can deploy high-quality applications quickly.

Award-winning IBM® Rational® Application Developer for WebSphere® Software is a comprehensive integrated development environment, with full support for the J2EE programming model including Web, Java, Web services and EJB development, that accelerates application development. With integrated Portal development, UML visual editing, code analysis, and automated test and deployment tools, Application Developer includes everything developers need to be productive and to help ensure their code is well designed, scalable and ready for production. Built-in version control and team tools enable developers working on complex projects or within large teams to coordinate versioning and to protect team assets.

IBM Rational Application Developer for WebSphere Software is optimized for WebSphere software and provides capabilities for development on other technology platforms. Rational software helps organizations become more responsive, resilient, and focused by improving their software development capability.

WebSphere software

### **Comprehensive support for the full J2EE programming model**

Provides concurrent support for J2EE, Version 1.2, 1.3 and 1.4 projects, including full support for: Enterprise JavaBeans™, message-driven beans, EJB Query Language (EJB QL), Container-Managed Persistence (CMP), Web archive (WAR) and enterprise archive (EAR) deployment. Includes unit test environments for multiple configurations of IBM WebSphere Application Server to support projects with different unit test environments.

### **Extend Java technology-based programming capabilities**

Application Developer includes robust tools for building Java applications and supports Java Development Kit Version 1.4.2. The Visual Editor for Java enables you to create Java GUIs with drag and drop ease using either AbstractWindow Toolkit (AWT), SWT or Swing components and allows you to visually bind data to UI widgets and see GUI design changes immediately with dynamic updates between the source code and the visual design.

The Unified Modeling Language (UML) Visual Editor provides graphical editors as an alternative way to visualize and edit Java code and data tables using standard UML diagrams, and helps you better understand and manage complex code.

### **Integrate applications using Web services and service-oriented architectures**

Application Developer provides the tools you need to discover, create, build, test, deploy and publish Web services. Build new Web services from scratch or enable existing applications for WS-I compliant Web services to ease integration and reuse.

- *Automatically generate from your existing assets the WSDL and WSIL files needed to describe your Web services and prepare them for inspection, or design a WSDL file and generate the Java code*
- *Easily create, validate and detect WS-I compliant, interoperable Web services using the WSDL editor and Web services explorer*
- *Encode input and output messages with SOAP*
- *Create a Java proxy to interface with client applications*
- *Generate Web services test clients without coding*
- *Deploy to the UDDI, Version 2 registry*

### **Simplify XML development**

The comprehensive XML functions within Application Developer help developers create, edit and transform XML documents.

- *Visual tools for creating and viewing XML files and for automatic validation against document type definitions (DTD)*
  - *Visual tools for mapping XML elements to relational database tables*
  - *Tight IBM DB2 integration for composing XML documents from existing DB2 data or for deconstructing XML documents into DB2 data*
- *Time-saving tools for building and debugging Extensible Stylesheet Language (XSL) transformation scripts and for transforming XML documents to other markup formats such as HTML*

### **Build database-driven applications**

Application Developer provides integrated tools to create database-driven applications from queries, beans and EJBs.

The database connection wizard makes it easy to establish a Java Database Connectivity (JDBC™) connection to a database—like IBM DB2 Universal Database™, IBM Informix®, Oracle or Microsoft® SQL Server®.

The SQL query wizard and SQL query builder provide a visual interface for creating and executing SQL statements. You can create a simple query using the SQL query wizard, or you can use the SQL query builder that supports a wider range of statements. A built-in SQL-to-XML wizard helps you create XML and XSL documents, DTD specifications, Extensible Stylesheet Definition (XSD) schemas, HTML files, and related artifacts.

SQL for Java (SQLJ) support enables you to rapidly create and debug applications using SQLJ and DB2 SQLJ stored procedures and improves data access performance for static SQL connections.

### Simplify object-to-relational mapping

Object-to-relational mapping is easy with top-down, meet-in-the-middle and bottom-up support. You can create and test EJB components simply with wizards. You can build applications that target, extract and display the data you want to present, formatted to your customized design. Rational Application Developer supports many-to-many mappings to help you generate multiple persistence implementations.

### Simplify Web development and Web site management

Easy-to-use wizards and tools bring virtually all aspects of Web development (HTML, JSP, JSF and servlets) into a common interface and enable developers with diverse technical backgrounds, and even those unfamiliar with Java, to build rich, data-driven applications.

- *Visually map and construct Web applications using Model-View-Controller design and Struts 1.1*
- *Quickly build rich Web user interfaces and Web forms with reusable, drag-and-drop JavaServer Faces components that generate code for event handling, user input validation and data binding for Web applications*
- *Connect your Web applications to relational databases, EJB components and Web services using simple point-and-click tools that support Service Data Objects, an emerging industry standard for accessing heterogeneous data*
- *Build interactive Web user interfaces with the performance and maintenance characteristics of thin clients using Faces client components that extend the JSF specification*
- *Rapidly develop visual data reports using built-in Crystal Reports tools. Design and deploy custom reports or use predefined report templates. A JSF Report viewing component lets you incorporate reports into Web applications and render them dynamically on the Web.*
- *Easily build rich-function Web pages in a visual or source editing mode using the advanced-function HTML and JSP editor*
- *Rapidly import an entire Web site, change styles and apply them globally, and visually add or delete pages from a tree-structure view using the Web Site Designer*
- *Create and animate original art with drag-and-drop ease using WebArt Designer and Animated GIF Designer components.<sup>1</sup>*

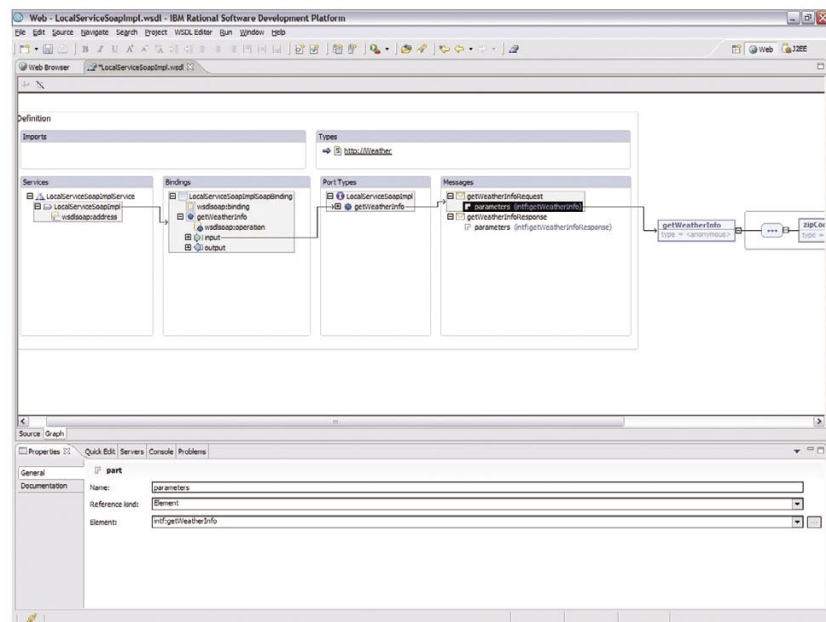


Figure 2. The Web services creation wizard makes it easy to generate new Web services from existing assets, such as JavaBeans and EJB components. IBM Rational Application Developer for WebSphere Software automatically generates the WSDL files describing the Web service, a SOAP deployment descriptor and a test client that can be used to test the Web service.

### **Code in a 4GL and generate to Java**

Enterprise Generation Language (EGL) is a fourth generation language that enables procedural developers to rapidly develop and debug data-driven Web applications and business logic using familiar programming constructs and without coding in Java. EGL incorporates constructs and functionality from Informix 4GL to make Application Developer a perfect development environment for Informix developers. EGL is tightly integrated with JavaServer Faces so you can build highly interactive, data driven Web applications using JSF components.

### **Visually develop portlets and portal applications**

Application Developer includes a set of visual portal development tools and a WebSphere Portal unit test environment so you can build and test individual portlets and entire portal applications. New portlets are created using wizards which generate a portlet project structure that conforms to J2EE, and also creates a complete portlet for you. The wizards can create portlets that comply with the IBM Portlet API, and those that comply with JSR 168, the industry standard specification for portlet aggregation, personalization, presentation, and security. You can layout the interface for portlets using Page Designer and JavaServer Faces, and visualize the structure and event flows

using the Web Diagram Editor and the Struts framework to make applications easier to maintain. In addition, you can combine portlets with Java Server Faces to develop your portlets visually, using the Faces components. Using the Portal Designer, you can visually create and edit portal applications, and visually edit the themes and skins that control their appearance.

### **Automate application assembly**

With earlier generations of tools, developers had to manually assemble Java archive (JAR) and WAR files into an EAR file for deployment. Application Developer automates EAR assembly and generates deployment descriptors for new applications to save you time.

### **Improve Code Quality**

The earlier defects are captured, the simpler they are to correct, so Application Developer includes tools to help developers improve code quality. First, an automated code review feature applies over 200 J2EE coding standards and best practices to application code, flagging violations and suggesting repairs - including rapid, one-click Quick Fixes. Existing rule categories include J2SE/J2EE best practices, globalization and accessibility; new rules can be created with an interactive Rules Editor.

Second, unit testing of Java components and Web services automates the creation of test stubs, harnesses and input data based on code or WSDL file analysis. Test creation and execution is prioritized based on various supplied complexity metrics; dynamically generated input and output data can be modified in a flexible data editor that supports complex object creation and custom code insertion. Both local and remote test execution is supported.

### **Accelerate Debugging**

To help you speed up the debugging process, Application Developer offers many runtime analysis tools for J2EE applications running on both local and remote machines. Execution flow visualization is presented in an interactive UML-based sequence diagram that is correlated with thread information to detect and diagnose deadlock and race conditions. Graphical performance analysis call graphs expose bottlenecks at the method level and color-coded code coverage reports capture and display unexecuted code paths at the line level. An advanced memory leak detection utility uses technology from IBM Research to narrow tens of thousands of leak candidates to just a few leak candidate regions. And custom analysis probes can be inserted into running code, enabling the execution of user-defined code upon the entry, exit and try/catch execution of specified classes and methods.

## Streamline unit and system testing

Integrated unit test environments support testing and debugging local and server-side code on IBM WebSphere Application Server, WebSphere Application Server—Express, WebSphere Portal and Apache Tomcat. You can create and configure server instances using wizards, step through applications and set breakpoints and even modify code while debugging without restarting the unit test server. Create, test and deploy J2EE applications to BEA WebLogic Server, Version 6.1, 7.0 and 8.1 using the IBM Rational Deployment Toolkit for WebLogic Server.

## Improve team productivity with effective change management

Application Developer is tightly integrated with IBM Rational® ClearCase® and IBM Rational ClearQuest® software configuration management solutions. This deep integration enables a wide range of change management operations to be performed directly from within Application Developer, and allows an integrated view of projects that helps to increase both collaboration and team productivity. Application Developer includes IBM Rational ClearCase LT for reliable, entry-level version control and out-of-the-box team support and supports Concurrent Versions System and third-party software configuration management systems through vendor plug-ins.

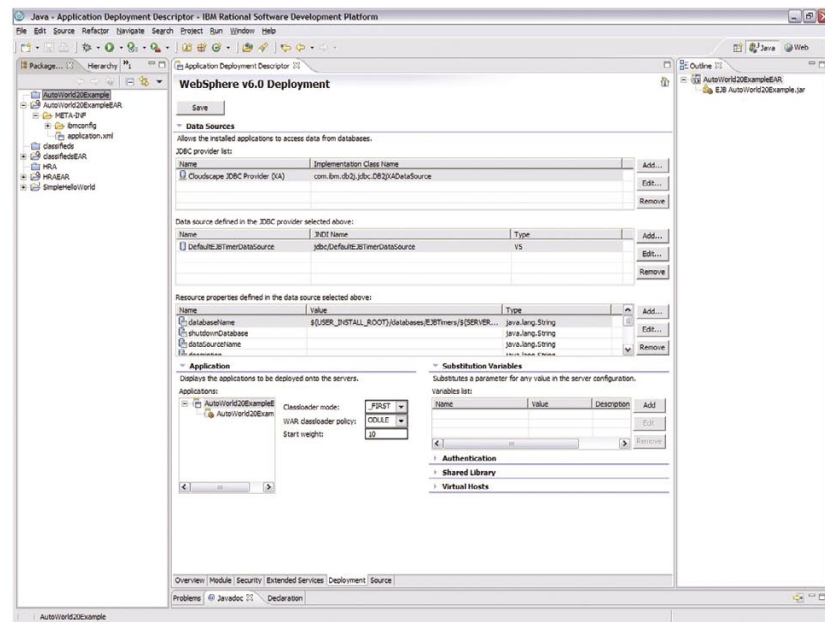


Figure 3. IBM Rational Application Developer for WebSphere Software includes J2EE tools to help create and customize session and entity EJB components.

## Visualize and graphically edit code

The Unified Modeling Language (UML) Visual Editor enables you to graphically visualize and edit J2EE code and data objects using industry-standard UML notation helps developers, even those unfamiliar with UML better understand and manage complex code. The UML Visual Editor also provides powerful graphical editors so you can add UML class diagrams directly into a Java or EJB project that automatically generate the corresponding code. You can subsequently edit that code directly or from within the UML class diagrams. And since the visualization is derived dynamically, it is always synchronized with the underlying code and you can re-factor code by moving objects in the class diagram.

For creating new code, Application Developer enables you to add UML class diagrams directly into a Java or EJB project, automatically generate corresponding code and edit that code either directly from UML class diagrams or from the Java or EJB project.

The class diagram editor can be used to visualize data objects, create new beans, create and edit relationships between beans or explore and discover existing relationships involving beans, classes and interfaces. The diagrams can help you identify and highlight relationships within code and data objects that are not easily gleaned using the other editors and help you communicate with software architects and other members of the development team.

### **The Rational Advantage**

Application Developer is built on the Eclipse open source platform so you can adapt and extend your development environment with Eclipse plug-ins from IBM, IBM Business Partners and the Eclipse community to match your specific needs. And when Rational Application Developer is used with the IBM Software Development Platform, you can access a broad range of requirements and change management functions directly from Rational Application Developer and enjoy an unprecedented level of integration across the development lifecycle.

### **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](http://ibm.com/rational)** and **[www.ibm.com/developerworks/rational/rationaledge](http://www.ibm.com/developerworks/rational/rationaledge)**, the monthly e-zine for the Rational community.

### **For more information**

To learn more about IBM Rational Application Developer for WebSphere Software, or to download a trial version, visit: **[ibm.com/software/awdtools/developer/application/index.html](http://ibm.com/software/awdtools/developer/application/index.html)**

### **Eclipse**

Eclipse is an award-winning, open source platform for the construction of powerful software development tools and rich desktop applications. Leveraging the Eclipse plug-in framework to integrate technology on the desktop saves technology providers time and money by enabling them to focus their efforts on delivering differentiation and value for their offerings. Full details on Eclipse are available at **[www.eclipse.org](http://www.eclipse.org)**.

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## **IBM Rational Application Developer for WebSphere Software, Version 6.0 at a glance**

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### **Hardware requirements**

- Intel® Pentium® III 800 MHz or higher recommended
- Display, minimum requirements: 1024 x 768
- 768MB RAM minimum; 1GB RAM recommended
- Disk space requirements: 3.5GB minimum for installing Application Developer and additional disk space for development resources (minimum disk space can be reduced if optional features and run times are not installed).

### **Software requirements**

- Windows 2000 Professional (SP3 or 4), Windows 2000 Server (SP3 or 4), Windows 2000 Advanced Server (SP3 or 4), Windows XP (SP1 or 2), Windows Server 2003 Standard, Windows Server 2003 Enterprise
- Red Hat Enterprise Linux Workstation, Version 3.0 (all service packs), or SUSE LINUX Enterprise Server, Version 9 (all service packs)
- Browsers:
  - For Windows: You will need a Web browser to view the readme files and the installation Guide. To view certain tours and tutorials that are included with the online help you will require the Flash Player, Version 6.0r65 or later.
  - For Linux: You will need a Web browser to view the readme files and the installation Guide. If you are working on Linux, you must have Mozilla 1.4 installed before you can run Application Developer. To view certain tours and tutorials that are included with the online help you will require the Flash Player, Version 6.0r69 or later.
- TCP/IP installed and configured

Note: Java Runtime Environment (JRE) Version 1.3 must be installed to profile your applications.

### **Run-time environment support**

- WebSphere Application Server - Express (Version 5.0, 5.1 or 6.0) installed locally or remotely
- WebSphere Application Server (Version 4.0, 5.1 or 6.0) installed locally or remotely
- Apache Tomcat (Web application support only)



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<sup>1</sup> WebArt Designer and AnimatedGIF Designer are not supported by Linux.