Rational. software

IBM Rational Rose Technical Developer

Highlights

- ***Model-Driven Development with the Unified Modeling Language (UML)***
- ***Targeted for commercial software products and systems, including real-time and embedded applications***
- ***Industry's most robust model-driven development solution.***
- ***Fully-automated design-to-code translation for Java, C and C++***
- ***Runtime model execution and visualization***
- ***Automated test harness generation***
- ***Optimized for event-driven, concurrent, and distributed applications.***
- ***Ensures meeting stringent requirements for latency, throughput, and dependability.***
- ***Supports the most advanced modeling constructs, including model execution and fully executable code generation.***

Software development teams all face the same software development paradox: how to develop applications faster without compromising quality. Developers of real-time, embedded, and other complex types of software systems face additional challenges. Such software is highly event driven, concurrent, and often distributed. Stringent requirements must be met for latency, throughput, and dependability. Capturing and effectively communicating designs for such systems is a daunting task. Keeping the implementation in sync with the design is even harder.

IBM® Rational Rose® Technical Developer is a robust Model-Driven Development (MDD) solution expressly created to meet these and other challenges of complex systems development. Based on the industry standard Unified Modeling Language (UML), Rational Rose Technical Developer provides a highly automated and reliable solution to the unique problems of concurrency and distribution. It unifies the project team by providing an extensive set of tool integrations to meet the needs of the entire team, from requirements capture through to high-performance code generation, testing, and debugging for real-time operating system targets.

Generate fully executable applications from models

Rational Rose Technical Developer defines the standard for the industry's most robust MDD support. A UML model compiler generates complete C, C++, and Java applications for UNIX, Windows NT/2000, and real-time operating system targets. This automated code generation eliminates the need for manual translation and avoids costly design interpretation errors. Model specifications are so complete that subsequent development takes place in the model elements themselves. Such robust support for MDD results in the highest levels of productivity and reliability.

Integrate modeling, implementation, & debugging

Rational Rose Technical Developer integrates development activities to a new level. The code generators have an associated visual UML model debugger that enables observation and validation of host and target applications. Model execution encourages early design refinement. A complete UML-based testing facility lets the user graphically define system behavior, then automatically generate and execute test cases and test suites for complete or partial models. It supports continuous verification of quality right from the beginning of

- ***Designed for the most technologically challenging applications.***
- ***Includes IBM Rational Rose RealTime for full-scale model-driven development with Java, C and C++***
- ***Includes IBM Rational Rose Developer for UNIX for design-level integration with Java, C++, and Ada***

system implementation. Such compact integration cycles results in unprecedented turn-around times for mission-critical changes.

Leverage the latest UML constructs

The UML is approaching revision 2.0. Many of the new elements found in the proposed standard trace to features included in Rational Rose Technical Developer. Most notable is the notion of capsules, which encapsulate active objects containing their own threads of control. Capsules in Rational Rose Technical Developer will directly translate to structured classes in UML 2.0. Practicing model-driven development with Rational Rose Technical Developer today ensures you of having a clean migration path to UML 2.0 when it becomes adopted as the new standard.

Extend model-driven development to testing

Rational QualityArchitect RealTime is an extension to the visual modeling capability of Rational Rose Technical Developer. It enables users to perform model-based component testing by generating code automatically from within the UML model. You can automatically build stubs and drivers to use in testing components and classes. And when integrated with IBM Rational Test RealTime, these generated tests can be executed automatically as well. Rational Rose Technical Developer supports a wide range of testing activities from developer scenario-based debugging to full system regression testing.

Make developing on a team easier

Software development is a team sport. As a member of a software team, you have to deal with documentation, communication, requirements, version control, defect tracking, reporting, and overall process management. Rational Rose Technical Developer is included in IBM Rational Suite for Technical Developers where solutions for these types of team activities are found. Now you can not only develop with the best MDD solution, but you can manage large products in the most integrated fashion.

Features and benefits

Feature	Description	Benefits
Source of UML 2.0 structure Concepts	Applies to everything from structural code generation to stubbing in test automation	• Define reusable, fully encapsulated architectures • Gives scalability and reusability proven on multi-million line fielded applications
Generation of structural code	Generate code that manages relationships between classes	• Makes structure visible and maintainable; increases quality and percentage of generated code • Faster development, better quality of generated Code
Porting Wizard	Lets customer develop for virtually any 8-bit or larger platform	Supports customer's chosen platform
State machines on both capsule and simple classes	Use state machines to define behaviors of non-active classes	• Requires no run-time library or use of operating system facilities • Allows MDD on very small targets, with or without RTOS (Real-Time Operating System)
Rational QualityArchitect—RealTime	Automatic generation, execution and reporting of test results from UML Sequence Diagrams. Stub any object.	• Minimizes test effort, allows testing from very beginning • No "big bang" integration phase, easy continuous developer testing
Connexis	Middleware simplifies distribution of model-generated applications	• Concentrate on application, not Middleware • Faster time to market and easier evolution of distributed applications
Full threading control	Allows assignment of any set of active objects	• Put scarce RTOS thread resources where they're needed and optimize performance • Build scalable, evolvable, efficient architectures
Activity Diagrams	Ability to create and edit Activity Diagrams	Useful for analysis
Rose cross-edition model data compatibility	Ability to read and write all diagrams of models created in Rose Enterprise and Rose RealTime; also, code reference usage for code managed by Rose and used in Rose RealTime	• Ability to move forward from a Rose analysis, or export partial information back to Rose for documentation
Enhanced Code Generation Target Support	Parameterized and Instantiated class code generation, API for integrating with non-Rose applications, additional targets, easier code generation of no-capsule, no-RTS executables	• Ability to generate wider range and of code with less effort • Ability to build minimal-footprint applications; (simplified) ability to run in no-RTOS environments
Configuration Management	Background synchronize with CM, merging and merge avoidance, Controlled sequence diagram units, view ClearCase version tree from Rose RealTime	Team development support
Environment	Finer requirements traceability with ReqPro, host on Solaris 9, simplified install (one CD, one install, no companion disk)	Traceability between requirements and virtually any model element

Supported Hosts

Operating System	Software
Windows NT	Windows NT 4.0, build 1381, with service pack 6a Minimum Pentium 150 MHz; we recommend 500 MHz or faster CPU Minimum 128 MB of RAM; we recommend 256 MB of RAM Minimum 552 MB of disk space for the Rose RealTime installation Minimum display 1024 X 768; we recommend 1280 X 1024 or better Postscript printer for printing Browser requirement - Internet Explorer 5.01 or later or Netscape Navigator 4.7 or 6.0. We recommend Internet Explorer 5.01 or later.
Windows 2000	Windows 2000 Professional, RC2, Build number 2128. Disk, RAM and display requirements same as for Windows NT.
Windows XP	Windows XP Professional, Build number 2600. Disk, RAM and display requirements same as for Windows NT
Sun Solaris	Solaris 2.6, 7, 8, or 9 Minimum workstation is an UltraSparc 10 with 500 MB of RAM Recommend an UltraSparc 60 with 600 MB of RAM.

Supported Targets

Host Platform(s)	Target RTOS	Compiler	Debugger	Hardware	Language
Solaris 2.6 Solaris 7 Solaris 8 Solaris 9	Same	Gnu 2.95.1 Gnu 2.8.1 Gnu 2.7.2.3 Sun C++ 5.0	xxgdb 1.11 xxgdb 1.11 xxgdb 1.11 xxgdb 1.11	sparc sparc sparc sparc	C++ C & C++ C++ C++
Windows (1)	Same	Visual C++ 6.0 Visual C++ 7.0	Visual Studio 6.0 Visual Studio 7.0	x86 x86	C & C++ C & C++
Solaris 2.6/7/8/9 Windows	pSOS 2.5	Diab 4.2b	SDS 7.4	ppc(2)	C++
Solaris 2.6/7/8/9	VRTX 4.AB	Microtec 1.3C	n/a	ppc	C++
Windows	VRTX 4.Baa	Microtec 1.4	n/a	ppc	C++
Solaris 2.6/7/8/9, Windows	OSE 4.1.1	Diab 4.3f GreenHills 1.8.9 GreenHills 2.0	SDS 7.1.1 Multi 3.4 (3) Multi 3.4 (3)	ppc ppc ppc	C & C++ C C
Solaris 2.6/7/8/9, Windows	Tornado 2.0 (VxWorks 5.4)	Cygnus 2.7.2.960126 Cygnus 2.7.2.960126 Cygnus 2.7.2.960126 GreenHills 1.8.9 GreenHills 2.0	CrossWinds CrossWinds CrossWinds Multi 3.4 Multi 3.4	M68040 ppc x86 ppc ppc	C & C++ C & C++ C & C++ C & C++ C & C++
Solaris 2.6/7/8/9, Windows	Tornado 2.2	Cygnus 2.7.2.960126 Diab 5.0.1	CrossWinds CrossWinds	ppc ppc	C & C++ C & C++
Solaris 2.6/7/8/9	Tornado 2.0 Sim Tornad0 2.2 Sim	Cygnus 2.7.2.960126	CrossWinds	Sparc	C++
Windows	Tornado 2.0 Sim Tornado 2.2 Sim	egcs-2.90.29	CrossWinds	x86	C++
Solaris 2.6/7/8/9 Windows	LYNX 3.1.0a	gnupro-2.9-98r2	gdb 4.17- gnupro-98r2	ppc	C++
Solaris 2.6/7/8/9	LYNX 3.0.1	Cygnus 2.7.97r1		X86 ppc	C++ C++
Solaris 2.6/7/8/9	Chorus Classix 4.0	egcs-2.91.66	n/a	ppc	C++
Windows	Windows CE 3.0	eMbedded Visual C++ 3.0	eMbedded Visual Tools 3.0	Sh3	C++
Solaris 2.6/7/8/9 Windows	Nucleus 1.1	Diab 4.2b Visual C++ 6.0/7.0	n/a	Ppc	C++
Windows	eCos uITRON 3	Gnu 2.95.3	n/a	x86	C
Windows Solaris 2.6/7/8/9	No RTOS	Visual C++ 6.0 Gnu 2.8.1	n/a	x86 sparc	C & C++ C & C++

Native Compilation Ports					
N/C – native compilation only	AIX 4.2.1	gnu 2.8.1	n/a	ppc	C++
N/C – native compilation only	Red Hat Linux 6.1	egcs 2.91.66	n/a	x86	C++
N/C – native compilation only	QNX 4.2.2 (Single-threaded)	Watcom C++ 10.6	n/a	x86	C++
N/C – native compilation only	UnixWare 7.0.1	SDK 3.0	n/a	x86	C++

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