Drools

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Developer(s)	Red Hat
Stable release	5.4.0 / May 14, 2012
Written in	Java
Operating system	Cross-platform
Type	Rules engine
License	ASL 2
Website	http://www.jboss.org/drools/

Drools is a business rule management system (BRMS) with a forward chaining inference based rules engine, more correctly known as a production rule system, using an enhanced implementation of the Rete algorithm.

Drools supports the JSR-94 standard for its business rule engine and enterprise framework for the construction, maintenance, and enforcement of business policies in an organization, application, or service.

History

The Drools Project was started by Bob McWhirter in 2001 and registered at SourceForge. Drools 1.0 was never released as the limitations of a brute force linear search approach were soon realised and work started on Drools 2.0, which was loosely based on the Rete algorithm, and the project was moved to Codehaus. During the 2.0 development cycle at Codehaus Nobi Y became the project lead and moved the project to a final 2.0 release. At this point the project had become the leading Java open source rule engine with a strong community and demand had started for commercial services. In October 2005 Drools was federated into JBoss as part of their JEMS offering and rebranded *JBoss Rules*. In 2006 JBoss itself was acquired by Red Hat. With financial backing from JBoss the JBoss Rules rewrite was possible with a full and enhanced Rete implementation with GUI tooling. Mid 2007 the Drools name was reclaimed since after two years people were still predominantly calling it Drools and having to refer to it as "Drools aka JBoss Rules", or "Drools (JBoss Rules)" was confusing. Drools version 5.0 was released on May 19, 2009. The main goals of this version are to address complex event processing (in a module called Fusion) and workflow capabilities (in a module called Flow).[1]

Technology

Drools is a rules engine implementation based on Charles Forgy's Rete algorithm tailored for the Java language. Adapting Rete to an object-oriented interface allows for more natural expression of business rules with regard to business objects. Drools is written in Java, but able to run on Java and .NET.

Drools is designed to allow pluggable language implementations. Currently, rules can be written in Java, MVEL, Python, and Groovy. Drools also provides for declarative programming and is flexible enough to match the semantics of the problem domain with domain specific languages (DSL) via XML using a schema defined for the problem domain. DSLs consist of XML elements and attributes that represent the problem domain.

JBoss Rules

JBoss Rules is a reasoning engine that includes a forward chaining rule engine based on Drools. **JBoss Rules** is the productised version of **Drools**; this means it comes with support that will last several years for that particular branch, with bug and essential feature back ports. For a time the Drools name was dropped in an attempt to fully establish the JBoss Rules brand as both the project and the product; however, two years later, the community was mostly still calling it Drools, so the name was reclaimed by the community for the project. The product name remains **JBoss Rules**.

JBoss Enterprise BRMS

JBoss Enterprise BRMS is a business rule management system and reasoning engine for business policy and rules development, access, and change management.[2] JBoss Enterprise BRMS is a productized version of **Drools** with enterprise-level support available. **JBoss Rules** is also a productized version of Drools, but JBoss Enterprise BRMS is the flagship product.[3]

Components of the enterprise version:[4]

- JBoss Enterprise Web Platform – the software infrastructure, supported to run the BRMS components only
- JBoss Enterprise Application Platform or JBoss Enterprise SOA Platform – the software infrastructure, supported to run the BRMS components only
- Business Rules Engine – Drools Expert using the Rete algorithm and the Drools Rule Language (DRL)[5]
- Business Rules Manager – Drools Guvnor - Guvnor is a centralised repository for Drools Knowledge Bases, with rich web based GUIs, editors, and tools to aid in the management of large numbers of rules.[6]
- Business Rules Repository – Drools Guvnor

Drools and **Guvnor** are JBoss Community open source projects. As they are mature, they are brought into the enterprise-ready product JBoss Enterprise BRMS.

Components of the JBoss Community version:[7]

- Drools Guvnor (Business Rules Manager) – a centralized repository for Drools Knowledge Bases
- Drools Expert (rule engine) – uses the rules to perform reasoning
- Drools Flow (process/workflow), or jBPM 5 – provides for workflow and business processes
- Drools Fusion (event processing/temporal reasoning) – provides for complex event processing
- Drools Planner (automated planning) – optimizes automated planning, including NP-hard planning problems

Example

This example[8] illustrates a simple rule to print out information about a holiday in July. It checks a condition on an instance of the Holiday class, and executes Java code if that condition is true.

```
rule "validate holiday"
dialect "mvel"
when
    h1 : Holiday( when == "july" )
then
    System.out.println(h1.name + ":" + h1.when);
end
```

Related systems

- CLIPS: public domain software tool for building expert systems.
- JESS: a rule engine for the Java platform - it is a superset of CLIPS programming language.
- Prolog: a general purpose logic programming language.
- OpenL Tablets: business centric rules and BRMS.
- DTRules: a Decision Table based, open-sourced rule engine for Java.
- Oracle Policy Automation: a suite of software products for modeling and deploying business rules within enterprise applications

References

[1] "What is new in Drools 5.0" (http://downloads.jboss.org/drools/docs/5.0.1.26597.FINAL/drools-introduction/html_single/index.html#d0e26). JBoss Community. .
[2] "JBoss Enterprise BRMS" (http://www.jboss.com/products/platforms/brms/). Red Hat. .
[3] "JBoss Enterprise BRMS: Answers to frequently asked questions" (http://www.jboss.com/pdf/brms-faq.pdf). JBoss Community. .
[4] "JBoss Enterprise BRMS Platform 5.1" (http://www.jboss.com/products/platforms/brms/components/). Red Hat. .
[5] "JBoss Enterprise BRMS datasheet" (http://www.jboss.com/pdf/JBossBRMSFactSheetWebPDF.pdf). Red Hat. p. 4. .
[6] http://www.jboss.org/drools/drools-guvnor
[7] "Drools 5 - The Business Logic integration Platform" (http://www.jboss.org/drools). JBoss Community. .
[8] http://downloads.jboss.com/drools/docs/5.1.1.34858.FINAL/drools-expert/html_single/index.html#d0e2676

External links

- Drools (http://www.jboss.org/drools/)
- Drools 2.0 Codehaus site (http://legacy.drools.codehaus.org/)
- Drools Sourceforge site (http://sourceforge.net/projects/drools/)
- Drools Blog (http://blog.athico.com)
- JBoss Rules (http://www.jboss.com/products/rules)
- Drools.Net (http://droolsdotnet.codehaus.org)
- Bob McWhirter (http://fnokd.com/)
- Mark Proctor (http://www.markproctor.com/)
- JBoss Drools vs JBoss Rules (http://blog.athico.com/2007/07/jboss-drools-vs-jboss-rules.html)
- Implementing business logic with Drools (http://www-128.ibm.com/developerworks/java/library/j-drools/)
- Give your business logic a framework with Drools (http://www.onjava.com/pub/a/onjava/2005/08/03/drools.html)
- Drools wiki (http://hydrogen.informatik.tu-cottbus.de/wiki/index.php/Drools)
- Article on Seam security with JBoss Rules (http://chiralsoftware.com/seam-security-rules/jboss-rules.seam)
- Other open source projects based on Drools 5 (http://www.plugtree.com/)
- Realtime intelligence using Drools Fusion (http://www.redhat.com/f/pdf/jbw/amollenkopf_430_applying_drools.pdf)
- Drools State of the Union presentation at JBossWorld 2009 (http://www.redhat.com/f/pdf/jbw/etirelli_210_drools.pdf)
- Drools Rule editor in Flex (http://code.google.com/p/drools-flex-editor/)
- Drools and Predictive Analytics on the Amazon Cloud (http://www.zementis.com/on-the-cloud.htm)
- Drools with Spring Tutorial using the JSR-standard (http://docs.codehaus.org/display/DROOLS/Drools+Spring+Tutorial)

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