An Oracle White Paper
May 2010

Comparing Oracle GlassFish Server and JBoss: Which Application Server Is Right for You?

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Introduction

If applications are crucial to your business, then the selection of an application server is a strategic business decision. And from a business perspective, Oracle GlassFish Server is a superior alternative to Red Hat's JBoss for a range of organizations and development teams.

Oracle recognizes that personal preferences, legacy investments, and even corporate mandates can play a role in the selection of an application server. However, based on the comprehensive capabilities offered by Oracle GlassFish Server and feedback received from both the GlassFish and JBoss development communities, Oracle believes that Oracle GlassFish Server offers compelling advantages for Java applications and Web services.

Oracle GlassFish Server is based on GlassFish Server Open Source Edition—the only open source application server that combines Java Platform, Enterprise Edition 6 (Java EE 6) certification; exhaustive and accessible documentation; intuitive administration and configuration features; five-nines availability; interoperability with Microsoft Windows; feature-rich integration with NetBeans and Eclipse; and alignment with the Oracle Solaris operating system (OS), OpenSolaris, and MySQL—along with highly responsive technical support at an affordable price.

The choice of an application server depends on many variables—from price, performance, features, and ease of use to the quality of documentation and support. No single offering can claim to be the optimal choice for every project or every development team. However, the majority of developers building Java applications will find that Oracle GlassFish Server offers distinct advantages as compared to JBoss. This white paper summarizes the features and capabilities that make Oracle GlassFish Server a superior choice for building, deploying, and managing Java applications and Web services.

Overview: Oracle GlassFish Server and JBoss Application Server

Originally launched in the community in 2005 by Sun Microsystems, GlassFish Server Open Source Edition has notched more than 24 million downloads so far, with more than 10 million downloads and 250,000 product registrations last year.

GlassFish Server Open Source Edition 3 features an architecture that is modular by default; allows for rapid, iterative Java Web and enterprise development; and supports dynamic languages. It is an excellent platform for deploying rich internet applications with superior integration with integrated development environments (IDEs) such as NetBeans and Eclipse.

Oracle GlassFish Server is the commercially supported Java EE 6–compatible offering for GlassFish Server Open Source Edition. The commercial version provides support from Oracle's world-class services organization and provides product updates and additional tools that improve monitoring and boost performance in a production environment.

The JBoss application server is a certified Java EE 5–based platform for developing and deploying enterprise applications. It supports both traditional APIs and Java EE APIs and includes improved performance and availability through buddy replication. It integrates Apache Tomcat as its *Web container* (the part of an application server that manages servlets, JavaServer Pages, and other Web-tier components) and includes capabilities for data caching, clustering, messaging, transactions, and an integrated Web services stack.

Oracle GlassFish Server Advantages Versus JBoss

Highlighting the differences between GlassFish and JBoss is not in any way meant to impugn the quality of JBoss or the JBoss community. However, it is important for developers to be aware of the trade-offs that may be implicit in the choices they make. Below are a few examples of specific capabilities and features where Oracle GlassFish Server holds an advantage; developers who are building, deploying, and managing Java applications and Web services should consider these advantages.

Java EE Certification

Oracle GlassFish Server was the first Java EE 5–certified application server and holds a three-year lead over JBoss in delivering a Java EE 5–certified commercial product. Simply put, Oracle GlassFish Server delivers a mature, fully compliant Java EE 5 implementation. Oracle GlassFish Server ships the community and supported versions simultaneously—no need to wait, no need to migrate. Moreover, after two fully supported architectural cycles (v1 and v2) of Oracle GlassFish Server, Oracle was committed to supporting and delivered version 3, providing a level of support experience that JBoss cannot claim.

Oracle GlassFish Server 3 is based on the Java EE 6 Reference Implementation and is the first application server to support the full Java EE 6 platform and the new Java EE 6 Web Profile, which is designed specifically for Web applications. The Java EE 6 platform is backward compatible, so existing

Java EE applications will continue to run on the newer platform. Because Oracle GlassFish Server 3 is based on open source, it enjoys a strong community, offers transparency, is innovative, and is strengthened by external contributions and innovation. This open source approach provides a range of benefits, including a large talent pool of developer expertise, a strong partner ecosystem, and the ability to align customer initiatives with the product releases. In addition, because Oracle GlassFish Server 3 uses a modular architecture based on OSGi, developers can begin with the Java EE 6 Web Profile and use the Update Center to dynamically upgrade to the full Java EE 6 platform. No timetable for Java EE 6 certification has been publicly announced by JBoss.

Performance and Price

Oracle GlassFish Server is the only open source application server proven to outperform its competitors as evidenced by SPECjAppServer2004 benchmark results, making it the fastest open source application server available. For example, on identical Sun Fire X2000 server configurations, Oracle GlassFish Server 2 outperformed WebSphere by 43 percent. JBoss has never submitted SPECjAppServer2004 benchmark results, leaving its overall performance in question.

The Startup Performance Time (SPT) measured by Oracle for Oracle GlassFish Server 3 is 7.56 seconds, and the SPT for Oracle GlassFish Server 2.1 is 22.1 seconds. By comparison, the SPT for JBoss was 73.6 seconds.

The performance of Oracle GlassFish Server continues to improve as new features are introduced. For example:

- The high-performance, highly scalable Grizzly connector in both Oracle GlassFish Server 2 and Oracle GlassFish Server 3 improves request/response throughput.

- Oracle GlassFish Server works well with Java Specification Request (JSR) 199, the Java Compiler API, for JavaServer Pages (JSP) compilations. Performance measurements show an order of magnitude improvement in raw Java compilation speed, and a 3.5x improvement in overall execution when running JSP Technology Compatibility Kit (TCK) tests.

Ease of Use and Administration

Oracle GlassFish Server is consistently rated highly by developers for its ease of use and administration features. Oracle GlassFish Server 2 and Oracle GlassFish Server 3 both provide a task-oriented administration console and configuration wizards that simplify routine administrative chores. With JBoss, administrative tasks are performed via JMX Beans. Even with Embedded Jopr in JBoss 5, the feature richness and out-of-the-box functionality does not approach that of Oracle GlassFish Server.

While both Oracle GlassFish Server 3 and JBoss provide a standards-based monitoring API, only Oracle GlassFish Server 3 supports lightweight and nonintrusive monitoring, superb integration with DTrace on the Oracle Solaris and OpenSolaris OSs, and client-side scripting binding for monitoring on all platforms. The update center feature (available in Oracle GlassFish Server 2 and Oracle GlassFish Server 3) offers point-and-click access to additional features that can extend the application servers' capabilities. Examples include Jersey for building RESTful Web Services, and dynamic languages such

as JRuby, Jython, and Groovy. The ability to retain sessions across application redeployments (available in Oracle GlassFish Server 3) is a time-saver for developers creating Java Web applications.

The administrative graphic user interface (GUI) and command-line interface (CLI) of GlassFish are often viewed as superior to JBoss for getting developers up to speed quickly. With Oracle GlassFish Server 3, everything that can be done with the GUI can be done with the CLI, and the CLI is useful for automating configuration and management using provisioning tools. By contrast, some JBoss users—particularly newcomers—have cited ease of use as an issue.

Oracle GlassFish Server provides full Simple Network Management Protocol (SNMP) support by implementing the entire J2EE Management Information Base (MIB) defined by JSR 77.
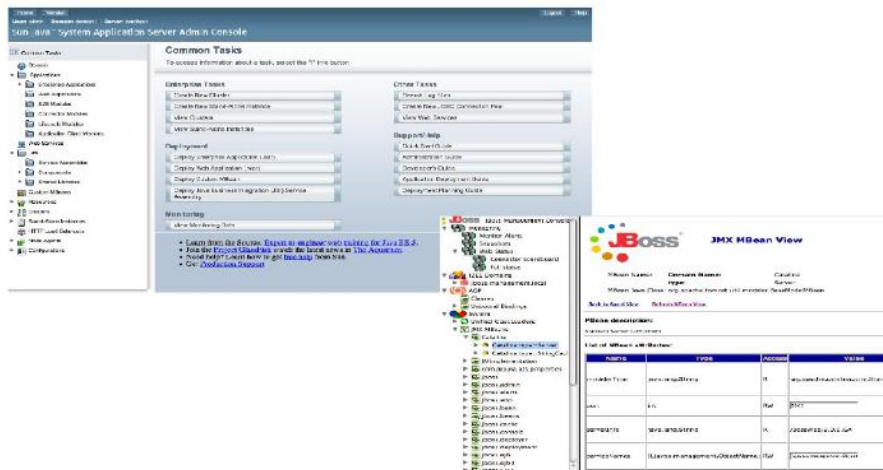

Figure 2: The Oracle GlassFish Server features an intuitive administration console that saves time on routine administrative tasks. For many developers, the JBoss interface is more difficult to navigate.

High Availability and Clustering

Oracle GlassFish Server provides integrated clustering support and sophisticated high availability (HA) capabilities that enable Java applications to meet stringent, enterprise-class service-level agreements. Oracle GlassFish Server HA supports both in-memory replication for small/midsize HA deployments and HADB-based replication for mission-critical deployments. While JBoss supports clustering services, it does not currently support HADB-based replication, consistent hashing-based replication, or Session Initiation Protocol replication. Oracle GlassFish Server remains the only open source application server capable of supporting five-nines availability requirements.

GlassFish Clustering also supports automated delegated transaction recovery by a surviving instance when a failure occurs, timer migration on failure or stoppage of an instance, in-memory and IIOP failover under dynamic shape change of the cluster, and load balancing with Apache and mod_jk— features JBoss does not currently offer.

Oracle GlassFish Server 2 also provides the ability to centrally manage an HA cluster and load balancer agent configuration out-of-the-box, a feature currently not offered by JBoss.

Scripting and Dynamic Frameworks

The Oracle GlassFish Server strategy is to support many scripting and dynamic frameworks and to focus on high-performance runtime and easy deployment, without requiring Web application archive (WAR) packaging. This enables developers to leverage the ease of use, maturity, and performance of Oracle GlassFish Server runtime, and provides a consolidated runtime for production deployments.

Oracle GlassFish Server 3 allows JRuby and Python applications to be deployed "as is" without a servlet container; no additional packaging is required. Popular Web frameworks such as Django, Rails, and Grails all run on Oracle GlassFish Server. For JRuby, Oracle GlassFish Server supports native deployment and DTrace monitoring in version 3; JBoss does not provide these capabilities. For Jython/Django, GlassFish provides WSGI support, native deployment, and DTrace monitoring in version 3; JBoss does not provide these capabilities.

Tooling is available on Oracle GlassFish Server for Ruby on Rails (development, deployment, and debugging), but not with the current version of JBoss.

Web Services and .NET Interoperability

Oracle GlassFish Server 2 and Oracle GlassFish Server 3 provide the Metro stack consisting of JAX-WS, JAXB, and WSIT, enabling developers to create and deploy secure, reliable, transactional, interoperable Web services and clients.

There are regular meetings between Oracle and Microsoft personnel to deliver the most secure and high-performing Web services stack for interoperating between .NET and Java EE with GlassFish, making Oracle GlassFish Server the best choice for interoperating with Microsoft .NET.

Integrated Development Environment Support/Tooling

Unlike JBoss, Oracle GlassFish Server provides preconfigured NetBeans and Eclipse IDEs, which deliver an integrated experience for both. For example, NetBeans 6.7 supports Oracle GlassFish Server 2.x and Oracle GlassFish Server 3 promoted builds, with complete Java EE 5 API support via easy-to-use wizards for a great out-of-the-box experience with NetBeans. NetBeans 6.8 and Oracle GlassFish Server 3 provide an out-of-the-box, integrated Java EE 6 development experience. A standalone GlassFish plug-in for the Eclipse IDE is available via the update center, and a GlassFish Tools Bundle for Eclipse 1.1 is also available. IntelliJ IDEA 7 and later also includes a GlassFish plug-in.

Oracle GlassFish Server supports remote deployment, per-project resource configuration, and JAX-WS support. JBoss does not provide these capabilities.

Integration and Connectivity

The integration of Oracle GlassFish Server, Java EE 5, NetBeans/Eclipse, EJB3, and the JPA enables applications to simply run better and keeps them easier to maintain. Oracle GlassFish Server aligns and/or integrates with industry-leading products based on open source such as Oracle Solaris and OpenSolaris operating systems and the MySQL database, further streamlining development efforts. For example, Oracle GlassFish Server already includes integration with the Service Management

Facility, and Oracle GlassFish Server 3 includes DTrace probes. Oracle GlassFish Server 3 ships with the MySQL Java Database Connectivity (JDBC) driver; in fact, Oracle GlassFish Server also ships with and supports the Java Developer Kit (JDK). The net result: with Oracle GlassFish Server, there is no finger-pointing among multiple vendors.

Oracle GlassFish Server provides default integration with Open Message Queue (MQ) but can also work with other JMS providers through the GenericJMSRA, a Java EE Connector Architecture-compliant, feature-rich, open source resource adapter to connect to Message-Oriented Middleware (MOM). JBoss does not provide third-party JMS integration.

Oracle GlassFish Server provides out-of-the-box GlassFish/MQ cluster setup, support for in-process brokers, shared AS/MQ HA configuration, three modes of MQ lifecycle management, and a single configuration file for AS and MQ. JBoss does not provide any of these capabilities.

Oracle GlassFish Server provides extensive configuration support (CLI/GUI/MBeans), highly configurable parameters to tune connection pools for optimal resource utilization, and extensive monitoring support for connection pools. JBoss provides only partial support for these capabilities.

Technical Support and Documentation

Oracle provides a wide range of technical support options for Oracle GlassFish Server, including

- Support available from Oracle's world-class services organization

- Service plans, training programs, developer assistance, and consulting services to help you architect, implement, and manage an Oracle GlassFish Server–based solution, and managed service offerings as an additional option.

- Extensive documentation exists for both Oracle GlassFish Server and JBoss; however, Oracle GlassFish Server provides online searches within a document, online searches in a document set, and deep cross-document links—features that are not currently available for JBoss documentation.

- More than 20 technical documents are available online detailing the functionality of various Oracle GlassFish Server features and capabilities, offering advice about performance tuning, and providing best practices—all written by the Oracle documentation team. Much of the available JBoss documenttation is written by community members and varies in its level of detail, tone, and overall usefulness.

Upgrade and Update Tools

Both GUI-based and CLI-based upgrade tools are available for Oracle GlassFish Server with full documentation. JBoss does not provide comparable tools. The industry-strength, IPS-based Update Center for Oracle GlassFish Server provides an easy way to download and install additional features. Product distribution is repository-based, which allows for third-party contributions and leverages the open source community. JBoss does not allow for such contributions.

GlassFish Community and Product Roadmaps

Dynamic, thriving communities of developers drive both Oracle GlassFish Server and JBoss. For the GlassFish community, however, code adoption by the larger development community is a specific and fundamental objective. The GlassFish community is committed to making it easier for other development teams to deliver compliant implementations, thereby accelerating the adoption of Java standards—which is good for the Java Platform and for everyone who is creating and delivering products for that platform.

Another distinct advantage of the GlassFish community is its openness about product roadmaps. Exact, specific delivery dates are publicly posted, allowing others to plan their product roadmaps accordingly. Independent software vendors (ISVs) can confidently align their final release plans with those of Oracle GlassFish Server. JBoss does not advertise its roadmaps with dates, nor has it historically delivered on its roadmaps.

Conclusion

Oracle GlassFish Server combines enterprise-class capabilities with the affordability and flexibility of the open source model. It is the only open source application server that combines Java EE 6 certification, exhaustive and accessible documentation, intuitive administration and configuration features, five-nines availability, feature-rich integration with NetBeans and Eclipse, and alignment with Oracle Solaris, OpenSolaris, and MySQL—along with responsive support at an affordable price.

The choice of an application server is highly strategic for businesses, and Oracle GlassFish Server has proven to be a superior strategic option for developers of next-generation Java applications.

For More Information

For additional details about Oracle GlassFish Server, visit http://www.oracle.com/goto/glassfish. Click "Downloads" to download Oracle GlassFish Server. To learn more about Java EE 6, visit http://java.sun.com/javaee. To join the GlassFish community, visit glassfish.dev.java.net/public/devindex.html.

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