COMPETITIVE BRIEF

# JBOSS ENTERPRISE APPLICATION PLATFORM AND IBM WEBSPHERE APPLICATION SERVER NETWORK DEPLOYMENT EDITION

## INTRODUCTION

The application platform provides foundational technology for both JBoss® Enterprise Middleware from Red Hat® and IBM's middleware offerings. Red Hat and IBM offer their application platforms—JBoss Enterprise Application Platform from Red Hat and IBM WebSphere, both as standalone technology, and as the basis of other enterprise technologies for business rules, enterprise service bus, business process management, mobile devices, and more.

Both Red Hat and IBM base their latest application platform capabilities on the Java Enterprise Edition (JEE) specification v6, which results in their offerings sharing more than 40 major technologies and features in common. Leveraging the JEE specification is a primary use case for using an application platform. With such a large amount of common functionality, some wonder where customers will find appreciable differences between the competing application platforms.

The differences lie in the economics of the competing application platforms, the implementation of the JEE specification, open standards support, and other non-JEE specification features. These items make each application platform unique. Companies evaluating application platforms should weigh the value of each when deciding which application platform to select. Examining use cases may lead you to conclude that one application platform fits most of your needs and another has extra or special capabilities useful to a small number of your use cases. Can you use two application platforms or are you looking to select a company-wide standard? Ultimately, there are many factors that influence your selection of an application platform.

## ECONOMICS

There is a significant difference in total cost of acquisition between JBoss Enterprise Middleware and IBM WebSphere. With an IBM WebSphere purchase under the Passport Advantage program, there is one charge in the first year that combines license with subscription and support costs.[1] However, after that first anniversary year, IBM subscription and support charges are based on your Passport Advantage RSVP level[2] and your subscription and support costs will change as your Passport Advantage RSVP level changes.

With JBoss Enterprise Middleware, you simply pay an annual subscription fee and are never charged software licensing fees. Getting started with a Red Hat subscription may be very economical, when compared to IBM WebSphere. For example, compare the two-year list price acquisition costs of IBM WebSphere Application Server Network Deployment Edition[3] to JBoss Enterprise Application Platform[4] deployed on 16 cores of Intel-based servers:

1. CDW software licensing center—**http://www.cdw.com/content/software-licensing/ibm.aspx**
2. IBM International Passport Advantage Agreement—**http://public.dhe.ibm.com/software/passportadvantage/PA_Agreements/PA_Agreement_International_English.pdf**
3. IBM Software online catalog—**http://www-01.ibm.com/software/info/app/ecatalog/atoz.html using USA pricing**
4. JBoss NA Channel SKUs—**http://www.redhat.com/f/html/jboss_channel_skus.html**

## TWO-YEAR SOFTWARE COSTS

| WebSphere Application Server Network Deployment Edition (D55WJLL) | JBoss Enterprise Application Platform with Management, 16-core Premium |
|---|---|
| $304,000—first year | $11,250 annually |
| $60,800—second year S&S (20% license) | **6.17% the cost of IBM** |
| **$364,800—Total** | |

For IBM pricing, the Intel cores are rated at 100 PVU[5] per core and the US price list in effect October 2012 is used. First-year IBM costs are calculated by multiplying 16 (cores) X 100 (PVU per core) X [product price]. Second-year IBM subscription and support is calculated at 20% of the license cost[6].

As shown in the table, JBoss Enterprise Application Platform acquisition costs are significantly lower. Want to run your own total cost of acquisition comparison using metrics appropriate to your company? Take advantage of the online JBoss Enterprise Application Platform comparison calculator[7]. The calculator lets you set values for various parameters that influence a three-year comparative JBoss Enterprise Application Platform versus IBM WebSphere Application Server Network Edition cost calculation.

What about the total cost of ownership and return on investment (ROI) associated with an application platform selection? In December 2010, Red Hat sponsored IDC to study the business value of adopting JBoss Enterprise Application Platform. IDC interviewed six large, United States-based companies that developed custom applications using JBoss Enterprise Application Platform and have been running those applications for at least 12 months. IDC reported that, "on average, the companies in the study gained more than $6 million per year in financial benefits by moving from traditional proprietary application servers to JBoss Enterprise Application Platform."[8]

The IDC report also said that, "over a three-year period, companies deploying JBoss Enterprise Application Platform generated an ROI of 569% and paid back their initial investments in less than six months after the platform was fully deployed." In another study, Virtuant concluded that, "over a three-year period, JBoss Enterprise Application Platform would be 50.91% less expensive than IBM WebSphere Application Server Network Deployment Edition".[9]

What are the opportunity costs of choosing IBM WebSphere Application Server Network Edition? Consider the Red Hat cost advantages already presented. With the dramatically lower cost of acquiring and using JBoss Enterprise Middleware, how many more projects could you start? How much more focus could you give to innovation? Can you find enough technical advantages in IBM WebSphere Application Server Network Deployment Edition to justify the added expense of that application platform?

*What are the opportunity costs of choosing IBM WebSphere Application Server Network Deployment Edition?*

5. IBM Processor Value Unit [PVU] licensing for Distributed Software—**http://www-01.ibm.com/software/lotus/passportadvantage/pvu_licensing_for_customers.html**
6. See page 25 of the IBM whitepaper Comparing IBM WebSphere and Oracle WebLogic' for 20% reference—**ftp://public.dhe.ibm.com/common/ssi/ecm/en/wsw14127usen/WSW14127USEN.PDF**
7. JBoss Enterprise Application Platform comparison calculator—**http://www.redhat.com/promo/eap_calculator/**
8. IDC study: The Business Value of JBoss Enterprise Application Plaform—**http://engage.jboss.com/forms/jboss-eap-business-value**

## IMPLEMENTATION OF THE JEE SPECIFICATION

As mentioned earlier, compliance with the JEE v6 specification means there is tremendous common functionality between the application platforms. The source of this duality is the JEE specification:

> "Java EE product be implemented by a single program, a single server, or even a single machine. In general, this specification doesn't describe the partitioning of services or functions between machines, servers, or processes. As long as the requirements in this specification are met, Java EE Product Providers can partition the functionality however they see fit."[10]

Put simply, implementation of the JEE specification will vary between vendors that don't share the same code line. JBoss Enterprise Application Platform is implemented using more than 45 different open source projects[11] that anyone can download, examine, and even potentially contribute to. IBM, in comparison, makes extensive use of proprietary code that is unavailable for inspection. IBM also makes limited use of modified open source[12] code in WebSphere Application Server Network Deployment Edition.

The Red Hat and IBM code lines are completely different, which has an impact on how you interact with the platform to leverage the JEE specification. For example, how do you configure and manage technologies in the JEE specification using the application platforms? There can be large differences in this area, even for such mundane tasks as deploying applications or making database connections.

Both application platforms provide multiple ways to access management task functionality such as using monitored directories, command-line tools, an integrated development environment for developers[13], and a graphical management console. Managed JBoss Enterprise Application Platform subscriptions include the JBoss Operations Network component. JBoss Operations Network provides built-in graphical management and monitoring capabilities to effectively administer all of your JBoss application environments, helping you improve operational efficiency, reduce costs, and ensure a positive experience for your end users.

IBM includes a graphical console for management and monitoring with WebSphere Application Server Network Deployment Edition. However, IBM's console lacks many of the capabilities found in JBoss Operations Network. For example, only JBoss Operations Network offers the ability to graphically manage servers that span domains from a single login. To manage a similar deployment using IBM WebSphere Application Server Network Deployment Edition in cells, you need to log into each administrative console separately. This adds unneeded complexity and time to administrative duties.

JBoss Operations Network also lets you manage configuration drift. Production, staging, development, and recovery configurations are designed to have identical or near-identical configuration to maintain consistency. As the configurations within different environments change, a configuration gap emerges that can lead to disaster recovery failures or high availability failures, because the configuration of the production system and the backup system are too different. Unlike IBM WebSphere Application Server Network Deployment Edition, JBoss Operations Network provides drift management capabilities that help prevent failures in disaster recovery and high availability.

## SUPPORT FOR OPEN STANDARDS

There are other technical differences between the application platforms, including non-JEE features such as support for open standards that are important to meet application needs and business goals. Both application platforms support a wide variety of open standards, including

9. Vituant Study: JBoss EAP vs. WebSphere: A TCO Analysis, October 2011—**http://www.redhat.com/jboss/getunstuck/proof.html**

10. See section EE.2.9 of the Java Platform, Enterprise Edition (JEE) Specification, v6—**http://jcp.org/aboutJava/communityprocess/final/jsr316/index.html**

11. See complete open source project list—**https://access.redhat.com/knowledge/articles/112673**

12. It should be noted that in many cases where IBM uses open source projects, they add proprietary extensions to those projects. e.g. "The IBM implementation of JAX-RS is an extension of the base Wink 1.1 runtime environment." See **http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/topic/com.ibm.websphere.express.doc/ae/cwbs_jaxrs_overview.html**

13. JBoss EAP adds the additional ability to deploy using Maven (missing from WebSphere Application Server Network Deployment Edition) which is popular with developers.

SOAP, WSDL, WS-Security, WS-Addressing, SAML, and others. JBoss Enterprise Application Platform supports more than 30 different open standards, including OpenID.[14] The popular OpenID standard enables site users to use just one ID to identify themselves.[15] To add OpenID support to IBM WebSphere Application Server Network Deployment Edition, you have to use IBM Tivoli Federated Identity Manager, which adds more license and support fees to the total cost.

## OPERATIONAL FUNCTIONALITY

While both application platforms provide load balancing, clustering, high availability, and server weight management, there are notable differences.

### 1. Load balancing

Load balancing is commonly used as a strategy to spread application load over multiple application platform servers to help maximize performance and minimize response times. IBM WebSphere Application Server Network Deployment Edition leverages proprietary load balancing that balances HTTP traffic purely by measuring request and response times.[16] JBoss Enterprise Application Platform provides more intelligent, flexible load balancing. You can choose which server metrics and associated weights are appropriate for your environment. With JBoss Enterprise Application Platform, load balancing is based on nine server-side load metrics that you define the importance of.[17]

### 2. High availability

To support high availability, application data has to be replicated inside a collection of servers known as a cluster. This ensures that the crash of one server does not result in the loss of data. Both application platforms provide this operational functionality using caching and reliable communications. However, rather than taking advantage of its successful WebSphere eXtreme Scale data caching product, IBM leverages a proprietary cache specifically for WebSphere Application Server Network Deployment Edition.

JBoss Enterprise Application Platform, by comparison, uses the same core caching technology that is used within the Red Hat JBoss Data Grid platform. The performance, scalability, and reliability of JBoss Data Grid platform are therefore leveraged. JBoss Data Grid platform subscriptions can also be used with JBoss Enterprise Application Platform to add user-defined data caches to deployed applications.

### 3. Start-up times

Java application platforms have a reputation for being extensive users of memory with slow start-up times. Both JBoss Enterprise Application Platform and IBM WebSphere Application Server Network Deployment Edition offer configuration options to reduce both of these concerns. JBoss Enterprise Application Platform 6 offers significant improvements over previous releases with out-of-the-box start-up times that are measured in seconds—even when using the full JEE 6 profile.

14. JBoss Enterprise Application Platform Supported Standards—**https://access.redhat.com/knowledge/articles/113373**

15. Read more about the benefits of using OpenID for authorization at **http://www.openid.net**

16. See HTTP and HTTPS documentation in List Of Advisors: **http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/topic/com.ibm.websphere.edge.doc/lb/rprf_advlist.html**

17. JBoss EAP Administration and Configuration Guide—**http://docs.redhat.com/docs/en-US/JBoss_Enterprise_Application_Platform/6/html/Administration_and_Configuration_Guide/Configure_the_Modcluster_Subsystem.html**

IBM WebSphere Application Server Network Deployment Edition also boasts rapid start-up times, measured in seconds. These times, however, are within the context of the Liberty profile, which only supports a subset of IBM WebSphere Application Server Network Deployment Edition functionality and has less capabilities than JBoss Enterprise Application Platform.[18]

18. See Liberty profile documentation at **http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/topic/com.ibm.websphere.wlp.nd.doc/topics/cwlp_about.html**

With JBoss Enterprise Application Platform, you have one type of application platform to work with. With IBM WebSphere Application Server Network Deployment Edition, you must choose to either use the full capabilities of the application server or the subset of functionality found in the Liberty profile.

### 4. Modularity, grouping, and dependency management

JBoss Enterprise Application Platform and IBM WebSphere Application Server Network Deployment Edition also take different approaches to modularity, logically grouping classes used for class loading, and dependency management. JBoss Enterprise Application Platform uses a concept of modules that group classes that are only loaded when required. There are also global modules that can be a dependency for every application. This promotes the re-use of code and corporate standard libraries. The JBoss Enterprise Application Platform administrator has tremendous control over what classes are available to a given application on an as-needed basis.

IBM WebSphere Application Server Network Deployment Edition takes a different approach to modularity using OSGi. OSGi is provided in JBoss Enterprise Application Platform 6 as a technical preview. There are more than 300 pages in the OSGi specification covering a large range of functionality. There is no debate that OSGi offers more functionality than is contained in JBoss Enterprise Application Platform modules.

However, is that extra OSGi functionality required to meet your needs? If your needs center around application isolation, code modularity, mixed-use of class versions, and rapid application platform start up, then the functional scope of JBoss Enterprise Application Platform technologies can be sufficient. If you need capabilities that are specific to OSGi, then you can consider leveraging the JBoss Enterprise Application Platform 6 technical preview capabilities.

## CONCLUSION

This competitive brief has presented a mix of strong similarities and significant differences between JBoss Enterprise Application Platform and IBM WebSphere Application Server Network Deployment Edition. It can reasonably be concluded that neither application platform will distinguish itself purely by the number of check marks found on exhaustive lists of technical features and capabilities that are based on the JEE v6 specification. That functionality will be found in both application platforms.

Instead, an application platform distinguishes itself by providing certified, reliable, and scalable implementations of the JEE specification, and commonly required open standards. The application platform is further distinguished by configuration and management capabilities, along with non-JEE technology that is also included. However, the latter should be approached with caution as it can lead to vendor lock in by virtue of not being associated with open standards that can be supported by multiple vendors.

JBoss Enterprise Application Platform is a formidable competitor to IBM WebSphere Application Server Network Deployment Edition. JBoss Enterprise Application Platform implements the JEE 6 specification, and achieves both full and web profile certification. Multiple open standards are supported and rich configuration and management capabilities are offered via JBoss Operations Network.[19]

19. JBoss Operations Network is included with a managed JBoss Enterprise Application Platform subscription.

Red Hat offers the full functionality of JBoss Enterprise Application Platform, including all clustering software, without any associated software license fees. Red Hat customers simply purchase subscriptions for support of the Red Hat technologies they use. JBoss Enterprise Application Platform is available in 16- and 64-core entitlement increments, as annual or discounted three-year subscriptions. When compared to IBM WebSphere Application Server Network Deployment Edition license fees and subscription and support fees, the Red Hat subscription model offers clear value.

Contact your Red Hat sales professional for more information, including how you can get started with a JBoss Enterprise Application Platform subscription.

## ABOUT RED HAT

Red Hat was founded in 1993 and is headquartered in Raleigh, NC. Today, with more than 70 offices around the world, Red Hat is the largest publicly traded technology company fully committed to open source. That commitment has paid off over time, for us and our customers, proving the value of open source software and establishing a viable business model built around the open source way.

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