Application Server Cost of Ownership
Oracle WebLogic Suite versus JBoss Enterprise Application Platform

November 2013

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# Contents

Executive Summary ........................................................................................................... 3
Introduction: Complexity and the Application Server Life Cycle ......................................... 4
A Five-Year Cost of Ownership Comparison ........................................................................ 6

Research Methodology ...................................................................................................... 6
Comparing the Cost of the “Core” Application Server Deployment ...................................... 7
Initial Cost: The Tip of the Iceberg ..................................................................................... 9

**Hardware and Software** ................................................................................................. 9
**Installation and Configuration** ...................................................................................... 10
**Initial Application Deployment** ..................................................................................... 10

Ongoing Costs: The Real Driver of Cost of Ownership ...................................................... 11

**Vendor Support** ........................................................................................................... 12
**Ongoing Application Deployment** ................................................................................ 12
**Administration and Management** ............................................................................... 12
**Monitoring, Diagnostics and Tuning** ............................................................................ 13

**Responding to Downtime** ............................................................................................ 13
**The Major Upgrade** ...................................................................................................... 14

Increasing Complexity: The Cost Impact of Data-Intensive and Cloud Scenarios ............ 15

**Database Scenario** ...................................................................................................... 15
**Virtualization and Cloud** ............................................................................................. 16

Conclusion and Key Takeaways ........................................................................................ 17

Appendix A: Estimating “People Cost”—a Skill-Adjusted Effort ...................................... 18

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Executive Summary

Open source application server and middleware vendors perceive software licensing and acquisition cost as the “root of all evil” in the ownership experience. While their cost of ownership calculators accurately account for software and subscription cost, these partial analyses address only roughly 20% of the long-term cost of ownership. Labor, or “people cost,” comprises the largest portion of cost of ownership through the application server life cycle. This cost is highly dependent on the quality of the engineering of the hardware and software solution, the depth of integration of the components and the maturity of the tools to manage ongoing operations. Cost of ownership has never been more important as application server deployments become more complex, requiring in-memory data grids, database-intensive scenarios, virtualization and elastic cloud deployments.

Pique Solutions studied both the Oracle WebLogic Suite and JBoss Enterprise Application Platform (EAP) to identify the differences in long-term cost of ownership, with particular focus on the long-term application server life cycle. The study involved detailed, activity-based data collection and in-depth interviews with IT managers, directors and VPs experienced in buying, implementing, managing and upgrading application server platforms. As illustrated in Figure 1, the study results show that:

- Over five years, JBoss application server deployments with capabilities including an in-memory data grid are 38% more costly than those of WebLogic. While WebLogic is more costly initially, the JBoss deployment becomes more costly in the second year and each of the subsequent years. The top reasons for the significant difference in cost are the higher skill levels required, the deeper need for integration effort and the greater effort required throughout each stage of the five-year application server life cycle. Study participants using JBoss cited a less complete platform and less mature tooling as those for Oracle WebLogic.

- As the application server environments increase in complexity, the JBoss costs grow disproportionately, as compared to WebLogic. For a scenario with intensive use of Oracle databases, the JBoss “cost premium” goes up to 49%. For a larger cloud deployment with virtualization and clustering, the cost premium jumps to 72%.

- The time and effort for a major release upgrade with JBoss was 48% more than that of WebLogic because Oracle does a thorough job of engineering backward compatibility and there is less cost associated with porting or recoding applications from version to version of the application server.

“Up-front costs are one thing, but the bulk of costs are management labor, administration and downtime. People think open source is free, but you need to look at total cost of ownership.”

Principal, Operations and Resource Management Technology Provider

Figure 1. The Cost Impact of Increasing Application Server Deployment Complexity
**Introduction: Complexity and the Application Server Life Cycle**

A significant portion of cost of ownership is driven by labor costs experienced and accrued through the application server life cycle after the initial acquisition of the software. Therefore, it is important to understand the key stages of the longer-term application server life cycle, as illustrated in Figure 2. Each of these stages represents labor, in the form of both time and skill, by numerous teams and individuals in an organization. In an enterprise deployment, this would include developers, system administrators and operations people.

![Figure 2. The Application Server Life Cycle](image)

In the past, when application server requirements were more basic, the activities through the life cycle focused primarily on the basic application server itself. For example, the life-cycle activities for serving a packaged application or a basic Java application were straightforward, with few dependencies and interactions with other enterprise infrastructure.

Application server platforms have evolved over the last several releases to incorporate capabilities that were once considered add-ons for more advanced deployments. This is certainly true for the current releases of the Oracle WebLogic Suite and JBoss Enterprise Application Platform. These capabilities figure largely in the changing nature of application server deployments, wherein there is deeper interaction among all elements of the application-to-disk technology stack.

As both product capabilities and application server deployments advance, the level of complexity inherently increases. In terms of the nature of application server deployments, three relevant scenarios for the cost of ownership discussion are illustrated in Figure 3:

- The “core” application server deployment, which now commonly includes the application server and an in-memory data grid for data-intensive applications
- The database layer, which refers to the fact that since most applications require a database to keep persistent data, the ability to take advantage of the native capabilities of the database in an application server is critical
Larger private and public cloud deployments, which rely heavily on clustering and virtualization and are highly elastic so that they can scale up or down as needed.

Figure 3. Application Server Deployment Scenarios

While both Oracle and JBoss support those scenarios in customer deployments, the question is how well they support them and whether the differences in platform architecture, product capability, and management and development tooling result in substantive cost differences throughout the complete application server life cycle.

It is important to understand the cost of ownership implications as deployments become increasingly complex. At the end of the day, the cost profile in the core application server scenario is magnified as more advanced capabilities are introduced. Even small differences in skill or effort can result in significant differences in cost as deployments become larger and more complex.
A Five-Year Cost of Ownership Comparison

Pique Solutions’ approach to cost of ownership highlights major cost areas, focusing on areas where there are substantive differences between application server platforms. For cost of ownership comparisons, Pique uses a proven framework based on numerous studies in this area. The framework includes key cost categories that are relevant over the life cycle of an application server platform deployment and that should be considered by executives and IT managers. These categories are presented in Figure 4. While initial cost is important, it is really just the “tip of the iceberg”: ongoing costs over the long term are what drive 80% of cost of ownership.

![Figure 4. Cost of Ownership Analysis Elements](image)

**Initial Cost**
- Hardware and Software
- Installation and Configuration
- Integration and Platform Testing
- Initial Deployment

**Ongoing Cost**
- Vendor support
- Deployment and Testing
- Management and Administration
- Monitoring, Diagnostics and Tuning
- Downtime
- Major Upgrade

Research Methodology

The primary research phase consisted of an in-depth, data-collection and multiphase interview process, which resulted in 10 complete customer data collections. The roles of the interviewees included IT VPs, IT directors, development managers and operations managers. The research process involved an initial screening to ascertain the interviewees’ usage of the relevant Oracle and JBoss products and ability to respond fully to cost and business value questions. For companies that passed the screening, an initial interview took place to capture the following data:

- Company type
- Application server workloads
- Size of application server deployments (servers, CPUs, application server instances)
- Type(s) of development projects
- Number of developers and administrators
Following the interview, each company was given a detailed data-collection instrument, which contained 70 unique, quantitative data elements along with a provision for qualitative descriptions of the responses. The questions and entries spanned the life cycle of the deployment from purchase to major upgrade cycle.

The companies that were interviewed represented a range of industries, including health care, business services, financial services, technology providers, education services, media and telecommunications. The composite profile used for the cost of ownership analysis, based on all of the companies interviewed in the study, is provided in Table 1.

### Table 1. Composite Profile for Cost of Ownership Analysis (average of all study participants)

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 physical application servers (hosts)</td>
<td></td>
</tr>
<tr>
<td>4 CPUs/servers</td>
<td></td>
</tr>
<tr>
<td>3 application server instances per host</td>
<td></td>
</tr>
<tr>
<td>20 unique application(s) modules served (custom, packaged, etc.)</td>
<td></td>
</tr>
<tr>
<td>6,086 total end users of applications</td>
<td></td>
</tr>
<tr>
<td>9 full-time developers/architects (72% employee vs. contractor)</td>
<td></td>
</tr>
<tr>
<td>6 full-time administrators (81% employee vs. contractor)</td>
<td></td>
</tr>
</tbody>
</table>

### Comparing the Cost of the “Core” Application Server Deployment

This section defines the baseline comparison of cost for the core deployment, including:

- Application servers
- Java SE support
- Management tools
- In-memory data grid
- Real-time environment

This section analyzes the cost of ownership over five years of two modest-size deployments of five physical application servers, with apples-to-apples hardware and software configuration. The servers have two multicore processors and host an average of four virtual application server instances. Table 2 outlines the *pro forma* costs for the deployment scenario for the core application server configurations. The acquisition and ongoing support costs reflect current list prices, less an average discount of 25%, while the people costs for implementation, deployment, testing, administration and management are based on the primary research data collected. All costs are listed in US dollars.

As illustrated in Table 2, Pique research shows that while JBoss initial costs are 22% lower than those of WebLogic, the overall JBoss cost is 38% higher over five years, driven by the higher cost of ongoing administration and management, response to downtime and the major upgrade cycle. In fact, JBoss costs are 56% higher for the overall ongoing cost, which comprises 80% of the five-year cost.

### Table 2. Five-Year Cost Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>WebLogic Suite</th>
<th>JBoss EAP</th>
<th>Difference as % of WebLogic Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial cost</td>
<td>$656,247</td>
<td>$511,116</td>
<td>22% lower</td>
</tr>
<tr>
<td>Ongoing five-year cost</td>
<td>$2,151,560</td>
<td>$3,336,912</td>
<td>56% higher</td>
</tr>
<tr>
<td>Cost over five years</td>
<td>$2,807,807</td>
<td>$3,878,028</td>
<td>JBoss is 38% higher over five years</td>
</tr>
</tbody>
</table>
Figures 5a and 5b show the five-year cost comparison for WebLogic Suite versus JBoss EAP, both in terms of the five-year summary and the initial and ongoing costs on an annual basis. While WebLogic is more costly initially, in the second year the JBoss cumulative cost curve intersects the WebLogic cost curve, and JBoss becomes more costly in each of the subsequent years.

Figure 5a. WebLogic Suite vs. JBoss EAP Five-Year Cost Summary

While WebLogic is more costly initially, in the second year the JBoss cumulative cost curve intersects the WebLogic cost curve, and JBoss becomes more costly in each of the subsequent years.

Figure 5b. Five-Year Cumulative Cost Comparison

While WebLogic is more costly initially, in the second year the JBoss cumulative cost curve intersects the WebLogic cost curve, and JBoss becomes more costly in each of the subsequent years.
Initial Cost: The Tip of the Iceberg

Performing an accurate comparison of the initial costs of an application server platform can be a challenging task, but it is crucial to understanding the foundation of total cost. IT professionals choosing an application server platform must do their due diligence, gaining a thorough understanding of what is included in each offering and what needs to be added or developed separately to provide similar performance and functionality. In turn, they also must understand the cost associated with making the purchased components work together in the initial implementation.

As detailed in Figure 6, the initial costs considered in this white paper are:

- Hardware and software
- Installation and configuration: the people cost of installing hardware and configuring the software to fit business needs
- Integration and infrastructure testing: the people cost of integrating the solution with the existing systems and architecture
- Initial application deployment

People costs include both internal resources and consultants.

![Figure 6. Initial Cost Comparison](image)

Hardware and Software

**WebLogic cost is $362,500 vs. $40,000 for JBoss; JBoss is 89% lower.**

The difference in the cost of hardware and software is based on the fundamental difference in vendor approach to pricing. WebLogic Suite is most often licensed via a perpetual licensing model based on the number of cores. JBoss, on the other hand, does not charge for license fees but rather offers a subscription pricing model based on the number of cores packaged in 16 and 64 core increments. The initial cost for the JBoss application server platform is the hardware required. The subscription fees are included in vendor support fees. Also included is the license fee for Java SE support as this is generally required to support business-critical applications.
Installation and Configuration

WebLogic cost is $9,215 vs. $14,255 for JBoss; JBoss is 55% higher.

For basic installation of the application server, management tools and back-end database connection, study participants found that the cost of JBoss was 26% lower than WebLogic in terms of skill-adjusted effort. That said, study participants cited a significant difference in the installation of the in-memory data grid software, with Oracle Coherence taking 51% less time than JBoss Data Grid. In terms of configuration activities, WebLogic required on average 54% to 68% less effort for cluster configuration, cluster domain configuration, policy conformance and virtual instance creation. Scripting/automation tool development was another area that resulted in additional cost for JBoss; administrators spent triple the time as their WebLogic counterparts on this activity. Lastly, configuration of the in-memory data grid was also a significant factor in the cost difference, with 55% less effort required for Oracle Coherence than for JBoss Data Grid. When an organization runs a data grid on several hundred servers, management is no longer a “nice to have” feature; it becomes critical. Participants cited the Coherence GUI for significant ease of configuring the clusters and the distributed data grid.

Integration and Infrastructure Testing

WebLogic cost is $186,221 vs. $340,185 for JBoss; JBoss is 83% higher.

Integration and infrastructure testing were areas that study participants cited as a significant difference in terms of effort and cost when comparing WebLogic to JBoss. While the effort required for infrastructure testing was pretty even, there was a very large difference in the level of effort and skill required for integration activities. WebLogic participants required 28% less time on average for integration with other middleware components and 58% less time for integration with existing infrastructure and applications. They pointed out that because Oracle provides an already integrated platform and management, less time is required for provisioning and integration, whereas JBoss relies on many open source and other third-party components. The average skill level for these activities was 0.9 for WebLogic and 1.17 for JBoss. Overall, the result was over 49% less cost for WebLogic. An IT manager for a telecommunications company related, “Unless we are talking about light workloads where there is integration to other open source tools, we find JBoss very challenging to integrate with our core infrastructure and applications, most of which are not open source.”

Initial Application Deployment

WebLogic cost is $98,312 vs. $116,676 for JBoss; JBoss is 19% higher.

The cost of application deployment includes both developer and administrator time for deploying applications to production environments. While deployment is a straightforward activity with just development and production environments, the activity becomes more complex as environments for testing and staging are added. Also, the tiers of the deployment, including the applications, databases, data grids and web servers, also add complexity. A lot of automation is possible in Oracle deployment because of tools and prebuilt virtual machine templates, which contain certified installations for the automatic building of application assemblies. Study participants indicated fairly similar effort and cost.
for developers deploying applications on the two platforms but identified significant time savings for administrators in deploying applications. On average, study participants cited a savings of over 30% because of the WebLogic tools, which they found easy to use and which offer a high degree of automation. According to a director of IT for a health care company, “WebLogic allows us to simplify and automate pretty much everything we need to do, specifically application deployment.”

**Ongoing Costs: The Real Driver of Cost of Ownership**

Ongoing costs are the recurring costs associated with the application server platform, including the annual support fees paid to the vendor and the people cost over each of the five years considered in the cost of ownership analysis. In other words, ongoing costs include all of the costs after the initial purchase and implementation through the fifth year. Ongoing costs are less obvious because they are not explicit cost items in the capital expense (CAPEX) statement. However, they constitute the bulk of the total cost of ownership. These costs, listed in Table 3, include:

- Vendor support fees
- Application deployment
- Administration and management
- Performance monitoring, diagnostics and tuning
- Responding to downtime
- Major upgrade

<table>
<thead>
<tr>
<th>Table 3. Ongoing Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>Vendor support fees</td>
</tr>
<tr>
<td>Application deployment</td>
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</tr>
<tr>
<td>Responding to downtime</td>
</tr>
<tr>
<td>Major upgrade</td>
</tr>
<tr>
<td>Cost over five years</td>
</tr>
</tbody>
</table>

As Table 3 shows, JBoss costs are lower for the vendor support fees but are significantly higher in each of the other ongoing cost categories. That is primarily due to JBoss’s lack of comprehensive and automated management tools for configuration, patch automation, monitoring, diagnostics, and tuning. The result is a 56% higher ongoing cost for JBoss over five years, or over $1.2 million, based on this deployment of application servers and in-memory data grid.
Vendor Support

**WebLogic cost is $495,000 vs. $276,750 for JBoss; JBoss is 44% lower over five years.**

These costs for Oracle WebLogic are calculated based on the software license, with Oracle charging an annual support fee of 22% of software list price to provide product updates/upgrades, vendor support and premium access to support content. JBoss vendor support fees are the annual subscription fees for the right to use the software and support from Red Hat. These fees are based on the number of cores in the deployment and include both the JBoss Enterprise Application Platform and JBoss Data Grid. In addition, the cost of support for JBoss also included the ongoing support cost for Java SE. Based on the size of the deployment, JBoss vendor support fees are 44% lower than WebLogic over five years.

Ongoing Application Deployment

**WebLogic cost is $393,246 vs. $466,704 for JBoss; JBoss is 19% higher over five years.**

Similar to the initial cost analysis, there is an ongoing cost component for deploying applications including both developers and administrators. The cost savings delta is the same with JBoss 19% higher in years 2 through 5 due primarily to the difference in effort and cost for administrator involvement in application deployment. JBoss study participants cited the need to develop and manage scripts over time versus the more automated nature of activities for their WebLogic counterparts. Further, the average skill factor for administrators’ role in application deployment was 0.9 for WebLogic vs. 1.1 for JBoss.

Administration and Management

**WebLogic cost is $460,462 vs. $1,194,199 for JBoss; JBoss is 159% higher over five years.**

This was an area of significant depth in the study and also an area where there was a considerable difference between WebLogic and JBoss. Study participants provided time and effort data for 20 activities related to the application servers and in-memory data grid servers. There was a considerable advantage for WebLogic, with a 44% lower cost for the application server and a 63% lower cost for in-memory data grid management. The common factor was a fundamental difference in the tooling between environments: Oracle provides a much more complete management capability, including cross-tier management, through Oracle Enterprise Manager. In contrast, JBoss management requires more extensive manual work, resulting in significant human capital and time costs.

An IT manager for a telecommunications firm said, “The management and administration are significantly higher for JBoss due to less maturity of the platform and the tooling.” Finally, study participants cited a big difference in the skill level required in the JBoss environment. They found it much easier overall to do activities in WebLogic, without having to develop scripts to perform administration. In rating the overall skill factor required for application server activities, participants gave WebLogic an average of 0.71 on a scale of 0.5 to 1.5, compared to a rating of 1.23 for JBoss. Minor upgrades and patching were two activities noted as being very easy to do in WebLogic, each with a skill index rating of 0.6. An IT director for a health care provider said, “Enterprise Manager is a single product that manages the database, middleware and apps all in one place. Each of our administrators is able to manage all aspects of the deployment versus having specialized skills for different pieces of our infrastructure.”
Monitoring, Diagnostics and Tuning

WebLogic cost is $545,407 vs. $980,758 for JBoss; JBoss is 80% higher over five years.

This was another area of extensive data collection; between the application server and the in-memory data grid, 12 activities were evaluated. Again, the data from the respondents suggested a significant advantage for WebLogic versus JBoss, particularly when it comes to the in-memory data grid. While WebLogic required on average 20% less effort for the application server, that difference grows to 61% for monitoring, diagnostics and tuning for the in-memory data grid. The single largest area of difference was in the area of diagnosing performance problems and determining where the performance bottleneck lies. JBoss respondents indicated they spent on average 18 hours per month on this activity while their WebLogic counterparts spent only 4.4 hours. For the WebLogic participants, this savings was attributed largely to advanced tooling such as Oracle JRockit Mission Control system, Java Virtual Machine Diagnostics (JVM Diagnostics), WebLogic Operations Control, and the Oracle Process Manager and Notification server (OPMN), which enabled them to automate diagnostics, memory leak detection and notification. They liked that Oracle JVM Diagnostics can detect and diagnose Java-related problems and bottlenecks without any instrumentation, while JBoss’s Java Diagnostics requires elaborate byte code instrumentation (BCI), resulting in significant effort to resolve problems and adding the risk of additional downtime due to inserting diagnostics code into user applications in production.

Responding to Downtime

WebLogic cost is $47,980 vs. $138,376 for JBoss; JBoss is 188% higher over five years.

In addition to routine administration activities, the Pique study also explored the impact of unplanned downtime. Considering that the deployments in the study were relatively advanced—nearly all involved clustering and failover—downtime rarely caused prolonged end-user outages. Rather, the cost of ownership impact involved the response required by administrators to resolve major and minor downtime-related incidents in the application server deployments. As shown in Figure 7, the results indicate that WebLogic has fewer major and minor incidents and the effort required to resolve any incidents is lower. In the JBoss environment, the higher frequency of incidents plus the greater amount of time required to resolve them, multiplied by the number of administrators involved in resolution, results in a cost impact for JBoss that is nearly three times higher than that of WebLogic. A vice president of engineering, global operations and infrastructure for an education services provider told us, “When downtime-related issues arise in our JBoss deployment, it takes our admin team longer to identify the root cause and reach resolution. In many cases, the lack of comprehensive tooling is a barrier.”

Figure 7. Responding to Downtime
The Major Upgrade

Pique Solutions also investigated as part of this study the cost and time associated with a major platform upgrade. This event typically takes place sometime between the third and fifth year of the application server deployment. While a major platform upgrade is a costly proposition in any environment, JBoss study participants found it took longer and resulted in a considerable amount of labor cost in comparison to the same event on WebLogic. In particular, data was collected on two particular activities in the major upgrade cycle: (1) **the porting and recoding of existing applications**, and (2) **integrating new or additional components** during the upgrade cycle. For both activities, participants found there was greater effort involved for JBoss environments, with 56% and 33% more time and effort, respectively, than for WebLogic. Overall, this equates to a 48% time and cost differential. With JBoss, participants cited several challenges in the EAP 5.x to EAP 6 upgrade, including resolving application version conflicts, required changes in configuration files, and assimilating significant changes to key components such as JMS, Data Grid and the Management Console.

With Oracle, study participants found greater consistency between major releases, easing the burden of cost and time. Study participants also noted that Oracle does a good job maintaining interoperability among different versions of application server platform components in a given environment. In fact, running multiple versions of the platform or individual components was a very common practice among study participants. A vice president of operations for a business services company told Pique, “Oracle does a very good job of versioning its products. We can still run efficiently with different versions working together and we aren’t necessarily forced to upgrade. But when we choose to, it is very straightforward.”

“Oracle does a very good job of versioning its products. We can still run efficiently with different versions working together and we aren’t necessarily forced to upgrade. But when we choose to, it is very straightforward.”

**VP of Operations**

**Business Services**
Increasing Complexity: The Cost Impact of Data-Intensive and Cloud Scenarios

The study participants cited significant cost savings for a deployment of a core application server platform based on WebLogic, including an in-memory data grid. However, the research indicates that greater savings exist in other deployment scenarios, including database-intensive deployments and larger, cloud-based deployments. In fact, for those more complex deployments, the analysis found that the difference in cost increased in a nonlinear fashion.

Database Scenario

Not surprisingly, all of the study participants using WebLogic in conjunction with a database were using Oracle as the back end. In fact, Oracle databases were commonly being used in the JBoss participants’ environments. Clearly, there is an advantage in deploying a unified application server and database environment, particularly so on the Oracle side. It proved easier for study participants to install, configure, administer and manage both the application server and database from a centralized administration console. Survey participants stated that Oracle Enterprise Manager enabled them to simplify cross-tier diagnostics and business transactions management and significantly lower the cost of life cycle management for both the application server and database. Oracle WebLogic Active GridLink for Oracle Real Application Clusters (RAC) also enabled them to maximize database connection performance, availability and scalability. With JBoss, customers have to depend on numerous vendors and their point solutions to manage their environments. An IT director for a health care firm confirmed this, saying, “Our business runs on Oracle ERP and we use Oracle databases. Choosing WebLogic as our application server was a huge advantage in terms of integration and manageability with a single tool.”

Cost analysis using Pique’s pro forma model for the core application server, and then accounting for the additional complexity of a database deployment of the same size as the core application server, indicates that the cost premium for JBoss over WebLogic jumps from 38% to 49%. The cost premium increase is illustrated in Figure 8. The increase is due largely to the additional people cost associated with using separate tools to independently manage different elements of the stack.

“Increasing Complexity: The Cost Impact of Data-Intensive and Cloud Scenarios”

“Our business runs on Oracle ERP and we use Oracle databases. Choosing WebLogic as our application server was a huge advantage in terms of integration and manageability with a single tool.”

Director, IT

Health Care Company

Figure 8. Adding Complexity: JBoss Cost Premium over WebLogic for Database Scenario
Virtualization and Cloud

The third deployment scenario common in Pique Solutions’ research was a cloud deployment. When compared to the previous two, these deployments were larger and more complex in nature and had more physical servers and a much greater density of virtual application servers. In addition, the clustering deployments were more advanced, with a higher degree of clustering and the addition of “geo-,” or multisite, clustering to provide support for disaster recovery. These deployments exacted a premium for manageability and scalability.

In addition, participants cited Oracle VM Templates for Oracle OS, Middleware, Database and Applications, with software components already preinstalled and patched, to be highly valuable in reducing the time and cost required to deploy applications. Customers of Oracle WebLogic highlighted how Oracle Enterprise Manager and Oracle Virtual Assembly Builder (OVAB) enabled their administrators to use these virtual machine templates to quickly configure and provision entire multitier applications onto virtualized and cloud environments. With JBoss, such applications have to be provisioned manually, requiring significant effort and resulting in delays and errors. Survey participants said they also had to deal with management tools from multiple vendors, resulting in added costs of integration and testing. The lack of these native features in JBoss, combined with a less than complete management capability, magnified the costs associated with the core deployment and database scenarios.

Using the Pique Solutions cost of ownership model to analyze a larger-scale deployment with a higher density of virtualization and additional complexity, the cost of ownership “premium” for JBoss as compared to WebLogic jumps from 49% to 72%, as illustrated in Figure 9.

Figure 9. Adding Complexity: JBoss Cost Premium over WebLogic for Cloud Scenario

![Figure 9. Adding Complexity: JBoss Cost Premium over WebLogic for Cloud Scenario](image-url)
Conclusion and Key Takeaways

It is not at all surprising that open source vendors like Red Hat continue to pitch the notion that their solutions have a lower initial cost. It is an area where JBoss has a cost advantage, as further evidenced by this study. The limitation of that positioning lies in the fact that software licensing and support subscription, the areas Red Hat promotes as providing cost savings, account for only 20% of long-term cost of ownership.

Fundamental differences in product philosophy, overall architecture and tooling create serious cost implications for enterprise customers. Realistic cost of ownership assessments consider what it takes, from a people-cost perspective, to “get to production,” manage and maintain a healthy application server deployment and ultimately upgrade to the next major release of the platform. Summarized best by a vice president of engineering, global operations and infrastructure, “Management and virtualization of the JBoss environment have proven more difficult and very costly. Open source is trickier because even though it may be easier to implement, versioning becomes difficult to always stay on top of, and the admin learning curve gets steeper.”

The following points summarize the key findings from the study.

**Despite a higher initial cost, WebLogic requires far less effort and skill to fully implement, manage, maintain and upgrade throughout the life cycle of the application server.** According to a full, five-year analysis, a core application server deployment of JBoss is 38% more costly than a similar deployment on WebLogic. Because of the significant difference in operations cost between WebLogic and JBoss, JBoss becomes more costly in the second year of the application server life cycle.

**JBoss customers suffer from challenges in a major platform upgrade.** Study participants cited a longer and more expensive process for conducting a platform upgrade on JBoss, particularly from earlier versions. Supporting different versions of platform components and applications also presents management issues.

**The WebLogic cost of ownership advantage increases with increasing complexity.** The JBoss cost premium of 38% for the core application server deployment grows significantly as additional complexity is added in terms of capability and scale. For a database scenario, the cost premium increases to 49%, and for a larger-scale cloud deployment, it jumps to 72%.
Appendix A: Estimating “People Cost”—a Skill-Adjusted Effort

The annual cost of managing an application server platform is the sum of the individual costs incurred for each activity. To estimate these individual costs, Pique collected the following information for each activity, including the frequency, the duration of effort and the skill factor.

1. Frequency (times per year)
2. Duration (hours)
3. Skill factor: administrator skill (high = 1.5, medium = 1.0, low = 0.5)

Using this information, Pique calculated the yearly cost of management for each activity:

- **Effort index** represents the total hours spent on an activity in one year.
- **Skill factor** normalizes these hours to correspond to a medium- or average-skilled administrator. For example, if a task requires 100 hours per year by a highly skilled administrator, that corresponds to 150 hours for a medium-skilled administrator.
- **Skill-adjusted effort** is the effort index, adjusted by the skill factor, to give the total number of hours required for the activity in one year by an average administrator.

\[
\text{Annual “People Cost”} = \text{Frequency} \times \text{Duration} \times \text{Skill Factor} \times \text{Average Resource Cost}
\]

Pique Solutions is a management consulting and market-analysis firm working primarily with Fortune-500 companies in the Information Technology and Entertainment sectors. Pique is based in San Francisco, California.

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