# The Business Value of Red Hat Integration Products

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## EXECUTIVE SUMMARY

For this white paper, IDC interviewed six organizations that report achieving significant business value by using Red Hat JBoss Fuse, in particular by making their application integration and development efforts more efficient and productive. IDC calculates that these six organizations are achieving a three-year average return on investment (ROI) of 488% and earning back their investments in JBoss Fuse in 8.2 months by:

> **Business Value Highlights**
>
> Red Hat JBoss Fuse delivers an average three-year ROI of 488% in a payback time of 8.2 months through the following business value benefits:
>
> - 51.5% more applications integrated per year
> - 40.8% fewer FTEs per application integration
> - 62.8% less application downtime related to integration
> - 18.1% improved middleware integration solution performance
> - 34.2% less costly than previous middleware integration solution

- Making application integration and development efforts more efficient and saving staff time

- Enabling integration and development of more business applications

- Driving higher application user productivity levels by giving users access to applications sooner and improving application performance

- Regaining productive time lost due to application downtime

- Cutting subscription and hardware costs of previous application integration solutions

## IN THIS WHITE PAPER

IDC analyzed the business value that six surveyed organizations are realizing through their use of Red Hat integration products based on interviews conducted from April to June 2014. Interviewees were from companies ranging in size from just hundreds of employees to several hundred thousand employees, with a mean employee base of just under 92,000. Companies interviewed included representatives from the telecommunications, IT, shipment and logistics, and document management industries. These organizations are headquartered in the United States, the United Kingdom, and Norway and several of them operate on a global scale. These organizations use JBoss Fuse for integration and development of business-critical internal and customer-facing applications (see Table 1).

## TABLE 1

### Demographics of Interviewed Organizations

| | |
|---|---|
| Average number of employees | 91,758 |
| Average number of IT staff | 1,705 |
| Average number of internal IT users | 8,684 |
| Industry | Telecommunications, IT, shipment and logistics, and document management |
| Region | Worldwide, the United States, the United Kingdom, and Norway |

Source: IDC, 2014

## SITUATION OVERVIEW

As enterprises develop new applications or adopt packaged ones, there's almost always a dependency on existing applications. Whether new automation initiatives are designed to deliver a mobile experience to customers, provide multichannel self-service, support ecommerce, improve a back-end process, or increase the efficiency of developing and delivering goods and services, there is a need for interoperability.

Application interoperability is executed using integration middleware.

It is relatively straightforward for developers to handcraft the necessary integration logic for interoperability when connecting one application to another. However, the effort can be lengthy when the new capabilities require interoperability between two or more applications. When any one of these sets of codependent applications or services change, integration can shift from increasingly problematic to impossibly cumbersome.

This problem of complexity runs counter to the current cycle of innovation where businesses are embracing a consumer-grade, intelligence-based, and agile digital future with fast and accessible backend services. To rebalance and design for speed, enterprises are changing their approach to integration. Beyond the need for speed, there are a variety of additional changes to application design and deployment that cause enterprises to change how they handle integration:

- Application design increasingly involves the development of simple microservices that are assembled into larger business services that connect to front ends. This assembly-based approach creates a need for architects or developers to easily model how microservices are assembled and how they connect to existing applications. In runtime, there's a need to ensure the services are available and able to support service-level agreements (SLAs). Building

applications in this way often reduces overall development time and especially the integration life cycle. But it also requires a more formalized focus on building reusable assets, a greater focus on well-architected integration, and a well-governed runtime. This leads businesses to purchase commercial integration middleware.

▪ Businesses are concerned with making sure their developers are spending as much time as possible on innovation projects, and they've identified interoperability as a development activity that can be optimized to reduce dependency on developers. This typically results in the purchase of commercial middleware.

▪ The cost of integration at runtime is associated with processing volumes, especially for commercial middleware. The greater the volume, the higher the total cost of hardware and software. Continuing on a linear progression of cost for greater volume becomes increasingly unacceptable and forces integration teams to look for alternatives.

▪ The location of applications and services varies widely with the adoption of cloud and intelligent devices. There is a corresponding need to lighten up and embed integration logic with the application logic, wherever it is located.

▪ As integration moves outside datacenters, especially to the cloud, reliability issues crop up and there is a corresponding need to ensure nothing is lost in transmission. This is particularly true as data synchronization between applications switches from daily batch transfers to include more real-time cross-cloud and cloud-to-datacenter synchronization of business transactions.

## Red Hat Integration Products Overview

Red Hat JBoss middleware is a family of products designed to help enterprises innovate and optimize business process environments. Red Hat JBoss middleware includes products that enable organizations to support application development, application and data integration, and automation of business processes.

JBoss integration products include capabilities to connect applications, data, and devices with the goal of creating efficient and agile information systems. The integration products are "enterprise ready" distributions of several open source projects that form a robust integration middleware tier used for application interoperability.

JBoss integration products are as follows:

▪ **JBoss A-MQ** is a messaging platform based on Apache ActiveMQ. It provides a messaging layer designed to connect application, data, and devices using multiple protocols. JBoss A-MQ is designed for highly distributed and embedded applications.

▪ **JBoss Fuse** is a lightweight enterprise service bus (ESB) that establishes APIs for all endpoints, handles routing between endpoints, and performs integration-related operations, including transformations, validation, and mediation. JBoss Fuse includes core ESB capabilities based on Apache ActiveMQ, Apache Camel, and Apache CXF. Apache Camel is an implementation of the commonly used Enterprise Integration Patterns (EIP) framework.

▪ **JBoss Data Virtualization** is a platform that unifies data from disparate sources into a single source and exposes the data as a reusable service.

## Reasons for Customer Adoption of JBoss Fuse

Many customers cited cost savings as a primary reason for switching to JBoss Fuse. Beyond cost savings, customers interviewed in this study chose JBoss Fuse for the following reasons:

- Red Hat packages capabilities as separate but easy-to-consume offerings so that customers can buy any of the components they need without requiring the purchase of the entire offering. Customers chose JBoss because they could buy exactly what they needed and not more than what they needed. Customers cited this as a differentiator compared with purchasing from other integration suite vendors.

- JBoss Fuse allows developers to program in Java, which becomes more of an extension to the application rather than a separate development experience. This resulted in making JBoss Fuse easier to adopt. As one customer explained, "One of the biggest advantages that we see with this product is that the integration tool is provided as a domain language. So it's like a natural extension of the Java language. You write integrations as if you're writing Java code. That means that all of the skills you need to debug in Java are the same skills required when you write integrations in this language. You don't have to go to another IDE or another toolset to understand how to write it. It's just Java code."

- One customer cited lower hourly rates for contractors because it could use a Java programmer rather than an XML specialist or someone certified for a competing, standards-based but proprietary integration product.

- Customers were able to improve integration ease of use. In particular, one customer cited the desire to switch from its current product to JBoss Fuse for its flow control capabilities.

- Customers were able to improve integration performance. A telecommunications company cited a 30-40% performance improvement through the adoption of JBoss Fuse. Another customer performed a benchmark comparing JBoss Fuse with its existing hardware-based solution and clocked a 15% performance improvement.

- One customer cited the need to modernize by replacing the datacenter-centric style of integration with something that is entirely software based and embeddable in devices, in the cloud, on highly distributed locations, and in the datacenter.

- Another customer cited the team's desire to actually know and understand what the code is as a reason for adoption: "Before, we had a problem with the software, and actually being able to prove to the vendor that there was a problem before they would get around to fixing it is a lot harder if you can't actually see any of the code. And this is not a small issue … In order to lodge a request, we would often have to prove to them by writing a sample program and prove that they are the cause of the issue — in a way that it's reproducible in their environment."

## BUSINESS VALUE OF RED HAT JBOSS FUSE

IDC calculates that the six organizations participating in this study are achieving a three-year average return on investment of 488% and earning back their investments in JBoss Fuse in 8.2 months by:

- Making application integration and development efforts more efficient and saving staff time
- Enabling integration and development of more business applications

- Driving higher user productivity levels by giving users access to applications sooner and improving application performance

- Regaining productive time lost due to application downtime

- Cutting subscription and hardware costs of previous application integration solutions

In addition, customers praised the combination of value and performance that they see JBoss Fuse providing them, which drives business value, as depicted in Figure 1.

## FIGURE 1

**Performance and Cost: JBoss Fuse**
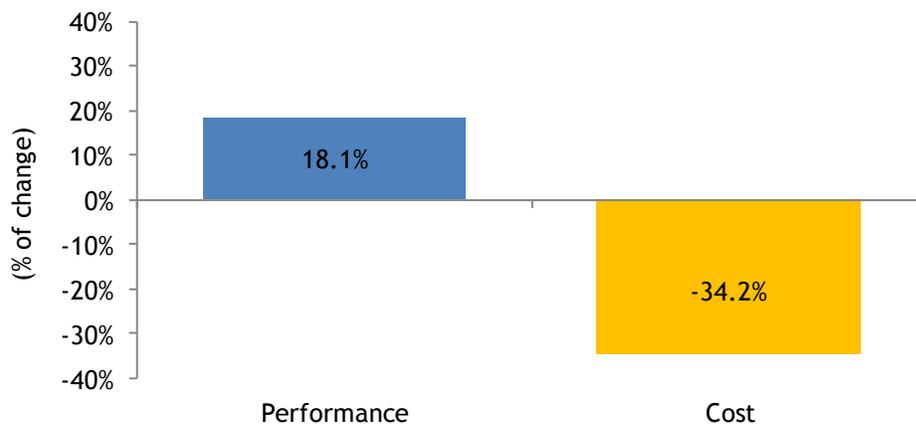


Source: IDC, 2014

IDC calculates that the organizations interviewed for this study are generating average benefits worth $1.42 million per year over three years by using Red Hat JBoss Fuse (see Figure 2). This translates to $206,926 in benefits per year for a company with 10,000 internal IT users. These benefits are being achieved in the following four main categories:

- **IT staff time savings and productivity gains:** Organizations integrate and develop more applications, speed up integration and development cycles, and need fewer staff resources to complete each integration and development. They can reinvest time saved to integrate and develop even more applications or redeploy staff resources to other strategic business activities. IDC calculates that interviewed companies are achieving average benefits worth $838,800 per year over three years.

- **Business benefits including revenue:** Organizations drive higher business productivity by integrating and deploying more business-critical applications faster and capture more revenue from these applications and increased application reliability. IDC projects that these organizations are realizing average benefits of $279,900 per year over three years.

- **Infrastructure and solution cost savings:** Organizations save on subscription costs for application integration middleware and datacenter-related costs for supporting their solutions. IDC predicts that these organizations will save an average of $175,500 per year over three years.

- **Risk mitigation:** Organizations benefits from improved reliability of applications integrated through JBoss Fuse, which results in less user-impacting downtime. IDC calculates that these organizations are saving an average of $127,000 per year in lost productive time over three years.

## FIGURE 2

**Average Annual Benefits**
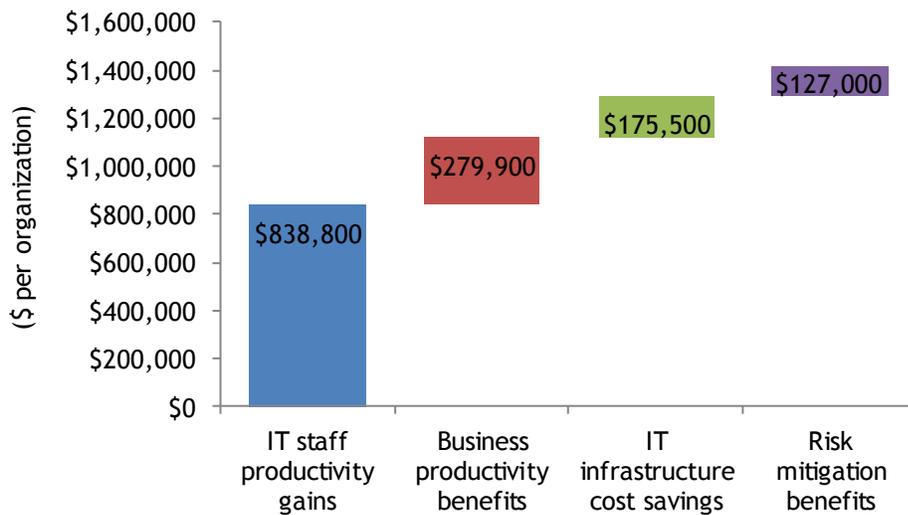


**Total: $1.42M per organization**

Source: IDC, 2014

## Driving Efficiencies in Application Integration and Development

Organizations interviewed for this study report leveraging JBoss Fuse to realize significant efficiencies in their application integration efforts as well as efficiencies in application development and deployment. All customers interviewed said they benefited from some combination of increasing the number of applications they can integrate and develop and reducing the time needed per integration or development as well as limiting the staff burden of these activities. The results are substantial time savings and productivity benefits in application integration and development efforts and IT staff time saved in certain other areas. IDC calculates that these time savings and productivity benefits have an average annual value of $838,800 per organization over three years.

The efficiencies and productivity benefits of using JBoss Fuse for interviewed customers are described in Table 2. On average, these customers can integrate 51.5% more applications with JBoss Fuse than their previous solution and need 26.2% less time and 40.8% fewer staff members per application integrated. Organizations also report leveraging these advantages of JBoss Fuse to improve their application development and deployment efforts, although the benefits are less significant than on the integration side.

## TABLE 2

### Application Integration and Development KPIs

| | Before JBoss Fuse | With JBoss Fuse | Benefit | Advantage (%) |
|---|---|---|---|---|
| **Application integration** | | | | |
| Number of applications integrated per year | 13.3 | 20.2 | 6.9 | 51.5 |
| Weeks per application integrated | 9.1 | 6.8 | 2.3 | 26.2 |
| FTEs per application integrated | 3.6 | 2.1 | 1.5 | 40.8 |
| **Application development and deployment** | | | | |
| Number of applications developed per year | 11.3 | 15.0 | 3.7 | 33.3 |
| Weeks per application developed | 7.6 | 7.0 | 0.6 | 7.7 |
| FTEs per application developed | 2.9 | 2.7 | 0.2 | 7.8 |

Source: IDC, 2014

Interviewees reported that JBoss Fuse offers a number of features and capabilities that help them maximize the efficiency of their application integration and development efforts:

- A telecommunications company derives efficiencies in integration from application-to-application communication driven by JBoss Fuse: "The message queue function has allowed developers to create applications that talk to each other, which allows for easier integration because they have a common messaging bus where they can talk to each other."

- A shipment and logistics company's application integration and development efforts benefit from the flexibility of JBoss Fuse's use of Apache Camel: "JBoss gives us the opportunity to help the developers in ways that wouldn't necessarily be possible with a graphical user interface tool."

- Another customer eliminates inefficient manual point-to-point integration work: "Previously, we were doing a lot of manual point-to-point integrations. Now, we can configure them very easily. It's reduced our cost and time to build integrations. Per integration, it now takes maybe 6-8 weeks, while it was maybe 2.5 times that before JBoss Fuse."

In addition to time savings and productivity gains surrounding application integration and development efforts, organizations also report achieving more limited savings in the areas of administering their middleware solutions as well as their problem and server management efforts (see Figure 3).

## FIGURE 3

**IT Staff Time Savings and Productivity Benefits**
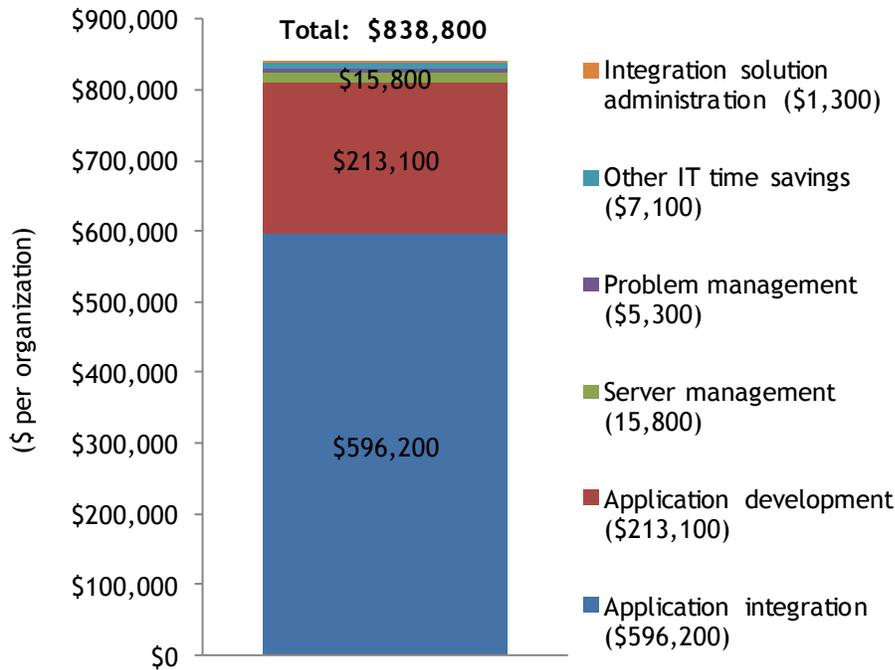


Source: IDC, 2014

## Business Benefits of JBoss Fuse

Interviewed companies report leveraging efficiencies enabled by JBoss Fuse in application integration and deployment, as well as its scalability as a middleware integration solution, more robust application performance, and less downtime, to capture value from increased business productivity and revenue. IDC calculates that, in total, these organizations will achieve business productivity and revenue gains worth an average of $279,900 per year for three years by using JBoss Fuse, as shown in Table 3.

Enhanced end-user productivity with JBoss Fuse stems from both the increased number of applications being integrated and developed faster, which provides users with additional tools to do their jobs better and more quickly, and better-performing applications. For example, a shipment and logistics company explained that end users save time because "JBoss provides the data that's needed for the front-end applications to be able to do things in an automated fashion. It keeps end users from

having to perform certain manual business processes." Another customer of JBoss Fuse cited the benefit to its users of faster application performance: "There's a fast response time for synchronizing branches, which results in a performance advantage of an hour per month in time savings for 2,000 employees." IDC projects that organizations are achieving increased user productivity benefits worth an average of $216,300 per year over three years.

Other customers praised the scalability of JBoss Fuse. A document management company explained that "we're more nimble with JBoss" as the company was able to "buy much more product as we were massively scaling our operation" because it did not need to put in a capital request for more software. For organizations that are increasingly reliant on business applications to drive their growth, having an integration solution that offers scalability to meet their evolving business needs is an important benefit.

This scalability, along with reduced downtime of customer-facing applications and higher end-user productivity levels, has also helped JBoss Fuse customers capture more revenue. A customer explained how scalability with JBoss Fuse helps it capture more revenue: "We are able to scale up very quickly with JBoss Fuse … This gives us an opportunity to be more flexible, which results in more revenue for us." IDC calculates that surveyed organizations are increasing their operating margins by an average of $63,600 per year over three years with JBoss Fuse.

## TABLE 3

**Business Productivity and Revenue Benefits**

|  | Average per Organization |
|---|---|
| **Improved business productivity** |  |
| Value of improved productivity | $216,300 |
| **Revenue enhancements** |  |
| Additional revenue from improved operations | $636,600 |
| Operating margin | 10% |
| Annual operating margin increase | $63,600 |
| Total business productivity and revenue gains | $279,900 |

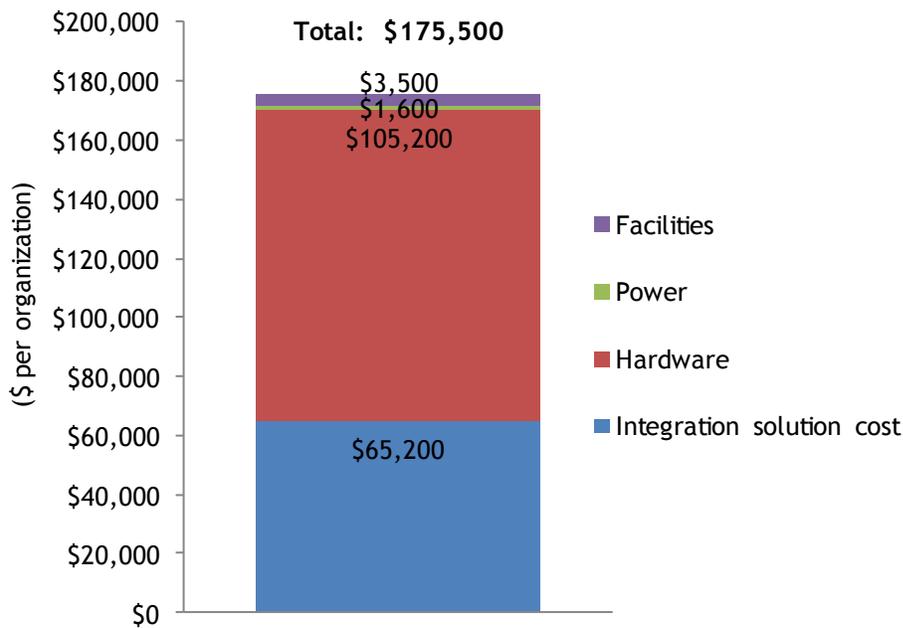Source: IDC, 2014

## Cost Savings with JBoss Fuse

A number of organizations cited cost as a contributing factor in their choice of JBoss Fuse. For these organizations, JBoss Fuse offered the right combination of price, support, and impact on operational efficiency. Companies that transitioned to JBoss Fuse from other integration solutions report reducing

their costs significantly, and all surveyed organizations benefit from the fact that JBoss Fuse can run on commodity hardware. IDC calculates that, in total, organizations are realizing cost savings worth an average of $175,500 per year over three years with JBoss Fuse. This is illustrated in Figure 4.

A document management company explained how it had benefited from moving to JBoss Fuse from a competing commercial solution: "It was pretty hard to run an internal business model when we didn't have a way of recovering those costs [of the previous solution]. The contrasting model from JBoss is in the commercial open source model, and we pay an annual subscription for support. But the original license cost is zero … It's all opex essentially with JBoss." In addition, JBoss Fuse customers report being able to migrate from more expensive servers to commodity servers, which saves money on both hardware and associated facilities and power costs.

## FIGURE 4

### IT Infrastructure Cost Savings



Source: IDC, 2014

## Limiting Downtime Risk for Business Applications with JBoss Fuse

Organizations using JBoss Fuse as their middleware integration solution also benefit from improved reliability of key business applications. Since beginning to use JBoss Fuse, organizations are experiencing 45.5% fewer unplanned outages and recovering from downtime in 31.7% less time. This is shown in Table 4.

Customers also said that they benefit from Red Hat's support and the ability to have access to and understand the code used for their applications. One customer praised Red Hat's support: "The customer service support from Red Hat has been exceptional. They gave us access directly to the developers who are writing the code, whereas it can be hard to actually get access to developers with other solutions."

IDC calculates that, in total, interviewed organizations are realizing an average of $127,000 per year over three years in increased end-user productivity by reducing the impact of unproductive application downtime.

## TABLE 4

### Unplanned Downtime KPIs Related to Integration Solution

| Average | Before JBoss Fuse | With JBoss Fuse | Benefit | Advantage (%) |
|---|---|---|---|---|
| Number of unplanned downtime instances per year | 1.8 | 1.0 | 0.8 | 45.5 |
| Hours to recover from unplanned downtime | 3.5 | 2.4 | 1.1 | 31.7 |
| Annual hours spent recovering lost files | 6.4 | 2.4 | 4.0 | 62.8 |

Source: IDC, 2014

## ROI ANALYSIS

IDC applied a discounted cash flow methodology to calculate the return on investment and payback period for organizations' use of Red Hat JBoss Fuse over a three-year period. ROI is the ratio of the net present value (NPV) and discounted investment. The payback period is the point at which *cumulative* benefits surpass the investment up to that time.

IDC assessed the cost, benefits, and value of the interviewed organizations' use of JBoss Fuse over three years (see Figure 5). Based on its analysis, IDC calculates that these organizations are spending an average of $218,200 per year per organization on JBoss Fuse, including initial costs. In return, these organizations are achieving benefits that average $1.42 million. IDC projects that these organizations are set to realize an average cumulative net gain of $3.61 million per organization over three years.

FIGURE 5

## Cost Benefit Analysis
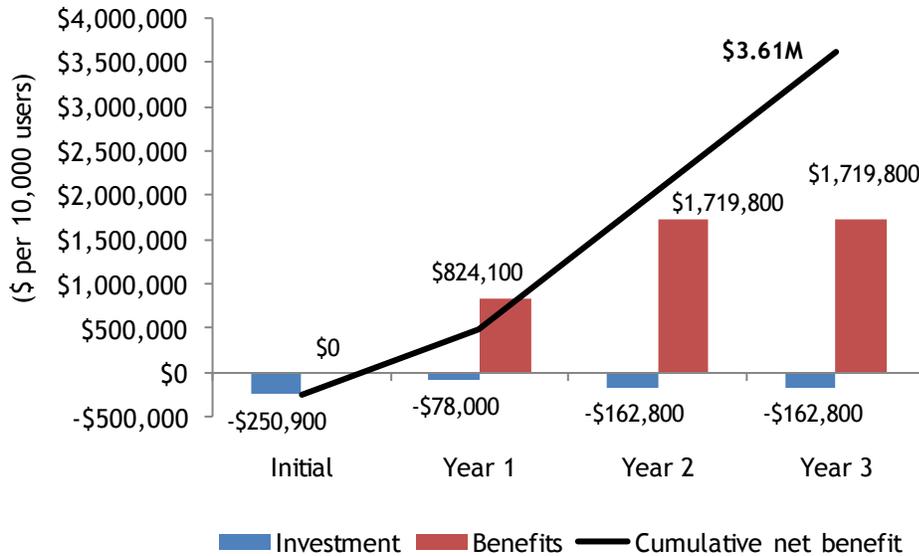


Source: IDC, 2014

IDC's three-year ROI analysis that the organizations interviewed for this white paper will spend an average of $566,200 on Red Hat JBoss Fuse and preparing to use it. IDC projects that, in return, the organizations will achieve an average of $3.331 million in benefits. This results in a net present value of $2.765 million over three years for their investment in JBoss Fuse. IDC calculates the organizations interviewed for this study will have an average three-year ROI of 488% and break even on their investment in JBoss Fuse in 8.2 months (see Table 5).

## TABLE 5

### Three-Year ROI Analysis

|  | Average per Organization |
|---|---|
| Benefit (discounted) | $3.331M |
| Investment (discounted) | $0.566M |
| Net present value (NPV) | $2.765M |
| Return on investment (ROI) | 488% |
| Payback period | 8.2 months |
| Discount rate | 12% |

Source: IDC, 2014

## CHALLENGES/OPPORTUNITIES

Integration is a long-running challenge for developers. As new applications are deployed in the cloud and on mobile devices, combining old integration approaches with new integration approaches requires adaptation. For example, ensuring the delivery of back-end services to a mobile application requires changes in how a service is delivered to the mobile device. Reliable integration between a cloud and a datacenter is another challenge, as is the ability to produce fine-grained services available as REST APIs.

Most of the customers we spoke with adopted JBoss Fuse for a variety of valid reasons. As these customers evolve to microservices, cloud-based business services, and other assembly-oriented approaches to application design, integration becomes far more important to the application's overall performance. We are beginning to see this trend in longer-running or more complex business processes that may be spread across different clouds and datacenters. In those circumstances, the end-to-end performance of the system will be critical to manage, and SLA adherence and visibility will need to be added for better control over the overall experience.

It is also difficult to envision complex integration, particularly where orchestration is required, without the use of model-driven integration development, and therefore, we expect to see adoption of SCA-based tooling accelerate over the next few years.

Red Hat has an opportunity to continue improving JBoss Fuse technology to provide more comprehensive support for emerging integration techniques, particularly as distributed application development becomes even more distributed with the adoption of cloud.

## CONCLUSION

Enterprises today face unyielding demand to deploy sophisticated and robust business applications efficiently and quickly. As they provide new business applications to users, enterprises must almost always contend with the dependency new applications have on existing applications. As a result, the success of their overall application development efforts depends on their ability to successfully integrate applications. Red Hat customers interviewed for this study are achieving substantial business value from using JBoss Fuse by easing the burden of application integration, which makes their application integration and development efforts more efficient. With JBoss Fuse, these organizations are able to integrate and develop more applications without a commensurate increase in the size of their application development teams while also improving their ability to support their businesses with timely and robust business applications. As organizations continue to add to their business application bases and deploy more applications in the cloud and on mobile devices, it will become even more important that they are able to achieve interoperability as efficiently as possible between distributed applications.

## APPENDIX: RESEARCH METHODOLOGY

IDC utilized its standard ROI methodology for this project. This methodology is based on gathering data from current users of the technology as the foundation for the model. Based on these interviews, IDC performs a three-step process to calculate the ROI and payback period:

- Measure the savings from reduced IT costs (staff, hardware, software, maintenance, and IT support), increased user productivity, and improved revenue over the term of the deployment.

- Ascertain the investment made in deploying the solution and the associated training and support costs.

- Project the costs and savings over a three-year period and calculate the ROI and payback for the deployed solution.

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:

- Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and manager productivity savings.

- Downtime values are a product of the number of hours of downtime multiplied by the number of users affected.

- The impact of unplanned downtime is quantified in terms of impaired end-user productivity and lost revenue.

- Lost productivity is a product of downtime multiplied by burdened salary.

- Lost revenue is a product of downtime multiplied by the average revenue generated per hour.

- The net present value of the three-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.

Because every hour of downtime does not equate to a lost hour of productivity or revenue generation, IDC attributes only a fraction of the result to savings. As part of our assessment, we asked each company what fraction of downtime hours to use in calculating productivity savings and the reduction in lost revenue. IDC then taxes the revenue at that rate.

Further, because IT solutions require a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

## About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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