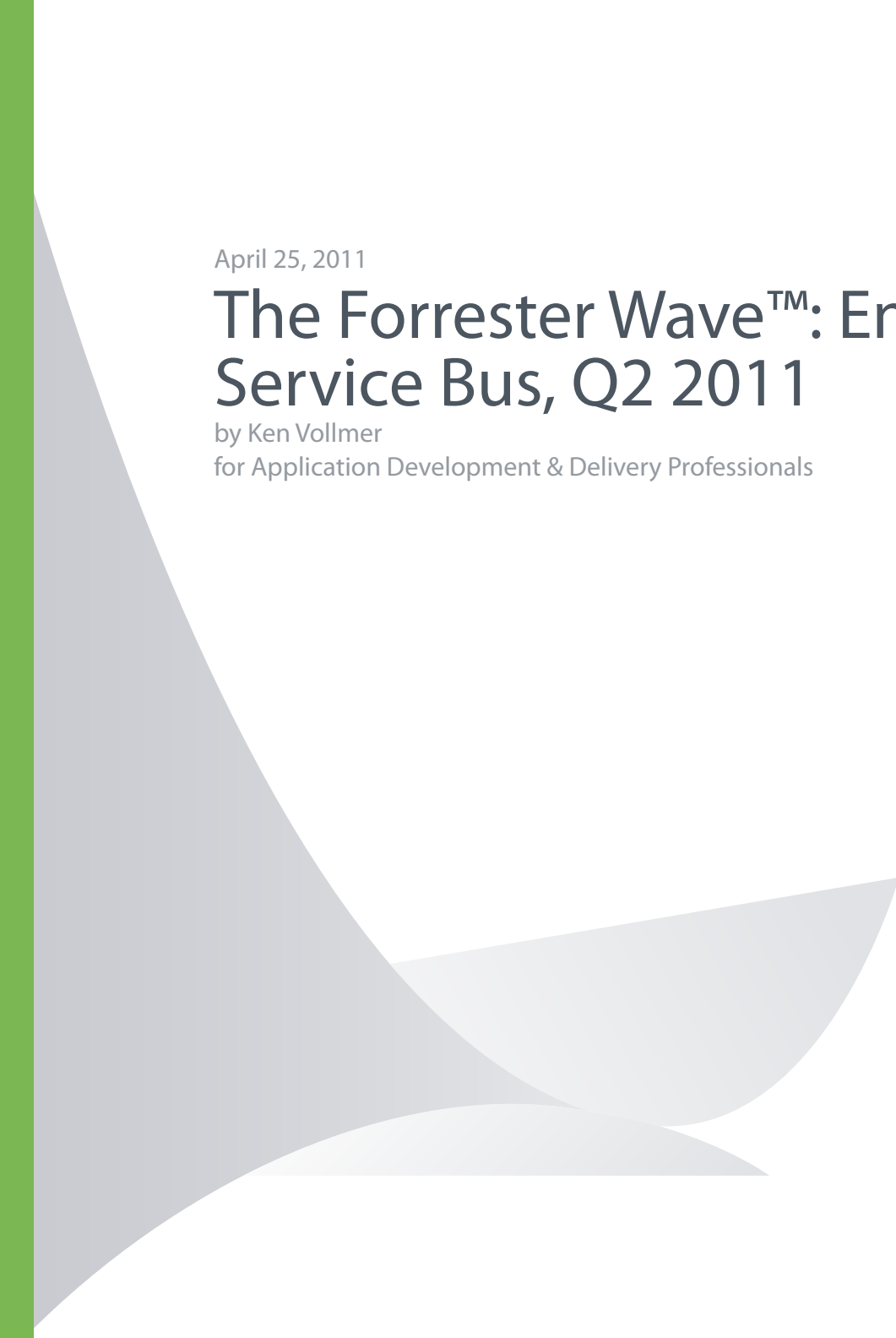




April 25, 2011

The Forrester Wave™: Enterprise Service Bus, Q2 2011

by Ken Vollmer

for Application Development & Delivery Professionals



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Software AG, Tibco Software, Oracle, And Progress Software Lead The Way

by **Ken Vollmer**

with Mike Gilpin and Sander Rose

EXECUTIVE SUMMARY

In Forrester's 109-criteria evaluation of both commercial and open source enterprise service bus (ESB) vendors, we found that Software AG, Tibco Software (Tibco), Oracle, and Progress Software are Leaders because of their broad functionality across the architecture, orchestration, mediation, connection, and change and control areas of this evaluation. Two open source ESBs from FuseSource and WSO2 also made the Leader category, as did two separate ESB products from IBM. In addition, two other open source products from MuleSoft and Red Hat scored as Strong Performers along with a third ESB product from IBM.

TABLE OF CONTENTS

2 **ESBs Provide A Lot Of Integration Capability In A Small Package**

ESBs Are In High Demand

ESBs Will Play An Increasingly Important Role In Supporting Integration And SOA

The ESB Market Landscape

6 **Enterprise Service Bus Evaluation Overview**

Buyers Focus On Core Integration Features And Support For SOA

The Evaluated Vendors Provide Foundational Integration Support

8 **The Forrester ESB Evaluation**

10 **Vendor Profiles**

Leaders Provide The Most-Comprehensive Support For ESB Features

Strong Performers: MuleSoft, IBM WESB, And Red Hat

12 **Supplemental Material**

NOTES & RESOURCES

During December 2010 and January 2011, Forrester conducted briefings and demonstration reviews with five commercial and four open source ESB product vendors: FuseSource, IBM, MuleSoft, Oracle, Progress Software, Red Hat, Software AG, Tibco Software, and WSO2. We also conducted interviews with more than twenty customers who are currently using the evaluated products. During the past 24 months, we have also spoken with hundreds of customers related to their ESB implementation activities.

Related Research Documents

["The Evolution Of Integration Alternatives"](#)

February 4, 2011

["The Forrester Wave™: Comprehensive Integration Solutions, Q4 2010"](#)

November 9, 2010

["The ESB Reference Architecture Model"](#)

March 26, 2010

ESBS PROVIDE A LOT OF INTEGRATION CAPABILITY IN A SMALL PACKAGE

At their core, ESBs are integration tools. They provide broad capabilities in several key functional areas such as connectivity, message transformation and routing, transaction mediation, basic process orchestration, and security that are critical to supporting effective integration capability. ESBs are also very well suited for supporting the implementation of a service-oriented architecture (SOA) due to their ability to support the creation and use of a wide range of technical and business services.

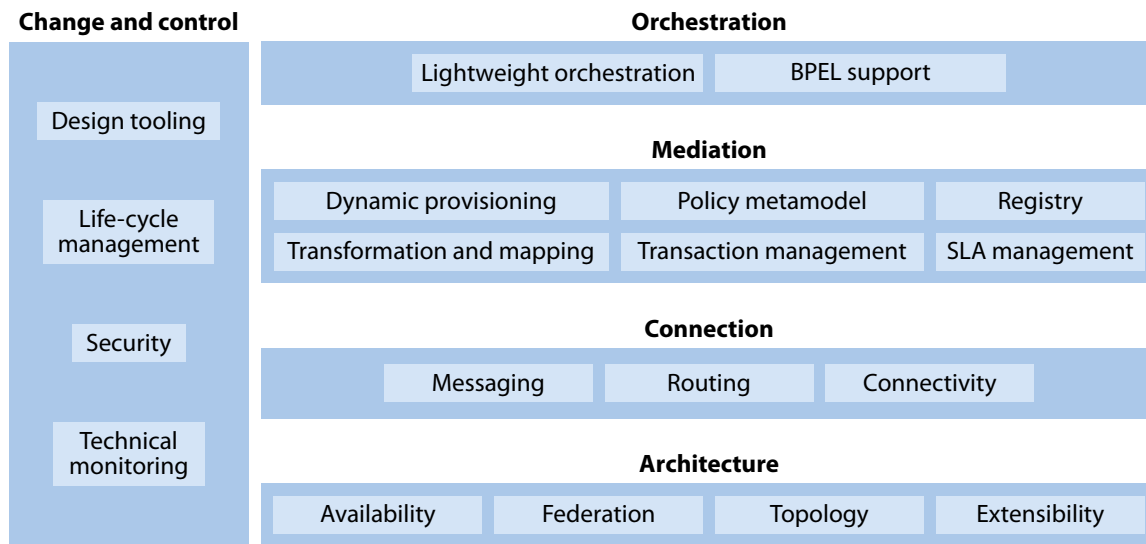
ESBs have evolved quickly over the past several years and currently provide a wide range of functionality that was previously restricted to only high-end integration tools.¹ However, the high-end integration tool providers have not been standing still either, so there is still a significant gap between the functionality an ESB provides and the functionality a comprehensive integration solution provides (see Figure 1).²

ESBs provide functionality that is bundled into five functional areas as follows:

- **Architecture.** The main issues covered in this area are support for fault tolerance, scalability and throughput, the ability to federate with other ESBs, the supported topologies, and features supporting extensibility.
- **Connection.** The key features in this group include support for a wide range of messaging standards, communications protocols, and connectivity alternatives.
- **Mediation.** This group deals with key requirements related to dynamic provisioning of resources, transformation and mapping support, transaction management, policy metamodel features, registry support, and service-level agreement coordination.
- **Orchestration.** This layer provides lightweight orchestration of services and more-robust business process execution language (BPEL) and/or business process modeling notation (BPMN) support.
- **Change and control.** The main components in this group are design tooling, life-cycle management, technical monitoring, and security.

The ESB Forrester Wave™ evaluation spreadsheet explores all of these functional areas in depth as well as scores evaluated vendors' capabilities within each.

Figure 1 The ESB Reference Architecture Model



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Source: Forrester Research, Inc.

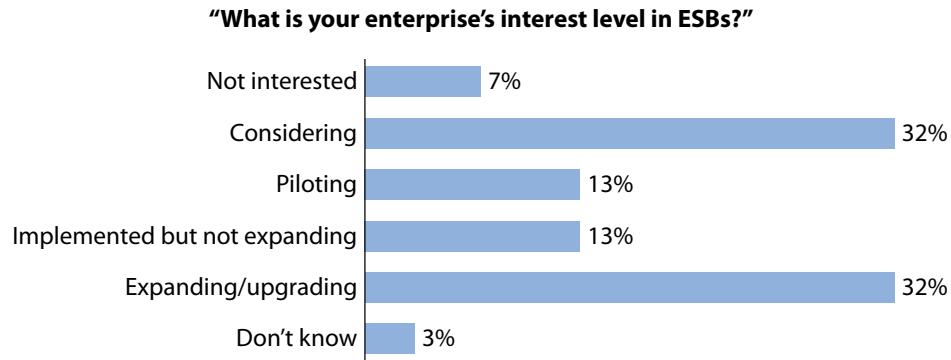
ESBs Are In High Demand

Respondents to Forrester's Q1 2011 Global Application/B2B Integration Online Survey, who represent a sampling of client enterprises, indicated a high level of interest in ESBs (see Figure 2). The survey included 167 application development and enterprise architecture personnel located in the North American, Europe, and Asia Pacific regions. The results show that 13% of the respective organizations were piloting an ESB, another 13% had already implemented an ESB (but were not expanding further), and an additional 32% were expanding their usage of an ESB. All together, 58% of the respondents were using an ESB, and another 32% were considering an ESB. Only 7% of the respondents indicated that they were not interested in this technology.

Forrester has also experienced a 20% year-over-year increase in the volume of client inquiries regarding ESBs. The most common questions we receive are: 1) "How do the leading commercial ESB products compare?"; 2) "What are the leading open source ESB products?"; and 3) "What should we consider before deciding to go with an open source ESB?"

The broad capabilities ESB products provide have made them a popular choice for meeting general integration needs and supporting efforts to implement a service-oriented architecture (see Figure 3).

Figure 2 Survey Respondents Reported High Interest Levels In ESB



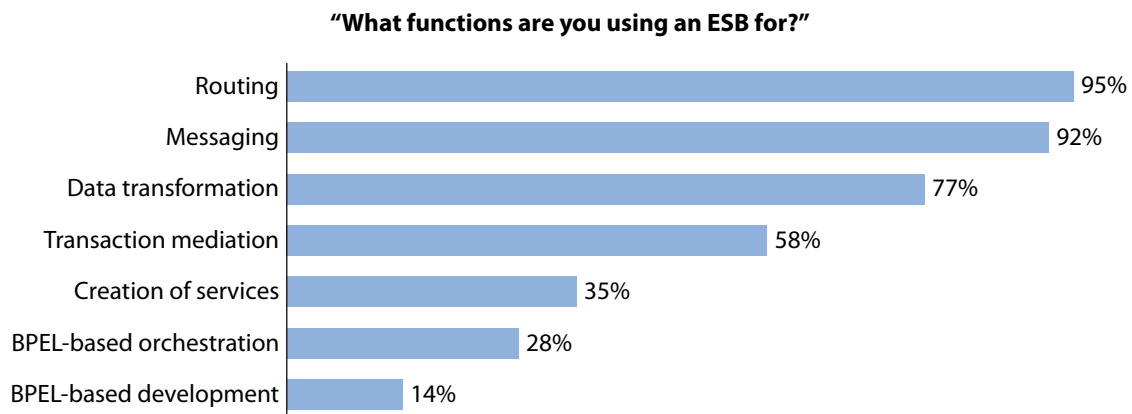
Base: 167 application development managers and enterprise architects

Source: Q1 2011 Global Application/B2B Integration Online Survey

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Source: Forrester Research, Inc.

Figure 3 Popular ESB Use Cases Include General Integration Needs And SOA Implementations



Base: 74 application development managers and enterprise architects who are using an ESB
(multiple responses accepted)

Source: Q1 2011 Global Application/B2B Integration Online Survey

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Source: Forrester Research, Inc.

The vast majority of respondents using an ESB are using it for messaging (92%) and routing (95%). In addition, a high percentage of ESB users are also using them for data transformation (77%). ESB use cases for data transformation are distinct from those typically ascribed to extract, transform, and load (ETL) middleware. ESBs are making rapid, inline transformations feasible when maintaining a near-real-time service level for information delivery; the ESB approach to transformations makes them inherently less complex and comprehensive than the transformations possible when taking a more batch-oriented ETL approach.

The balance of the use cases includes transaction mediation (58%), creation of services (35%), BPEL-based orchestration (28%), and BPEL-based development (14%). Creation of services and BPEL usage scenarios are frequently examples of composition — whereby the ESB delivers a larger-grained, aggregate service interface, which is composed through the ESB from multiple finer-grained services.

ESBs Will Play An Increasingly Important Role In Supporting Integration And SOA

The increasing capability of both commercial and open source ESBs and their lower price points compared with comprehensive integration solutions (CISes) will continue to drive high interest in these products from organizations that are modernizing their application development infrastructure. ESBs provide a lightweight option for increasing integration capability that enables firms to:

- **Begin with a lower-cost integration solution.** ESBs provide strong support for SOA and many other enterprise application integration challenges, and they are a logical first step in obtaining packaged integration technology.
- **Consider the potential of an open source ESB.** If price is an overriding concern and your organization has sufficient internal technical resources, an open source solution may be appropriate. Open source ESBs scored higher in this evaluation than in the last one because of generally increased functionality. Open source ESB vendors made significant progress in catching up with commercial ESB providers and now provide a viable option for a growing number of enterprises. However, open source ESB customer references cited somewhat higher levels of support concerns, so you must ensure that the necessary support skills are available internally or via a support contract with the specific open source ESB provider.
- **Upgrade to a more robust solution as the need arises.** Whether you start with a low-cost commercial ESB or an open source ESB, upgrading is feasible, as ESB functionality is at the foundation of all CIS alternatives, making the upgrade path less of an issue than it might otherwise be. Bottom line, if you are using an ESB, it does not require a major effort to move to the same vendor's CIS. However, moving from one vendor's ESB to another vendor's CIS would be more complex, as it would have an impact on program code and would necessitate re-authoring most configuration and policy metadata.

The ESB Market Landscape

The ESB market consists of a number of commercial ESB products from vendors including IBM, Oracle, Progress Software, Software AG, and Tibco along with a growing list of open source options from organizations such as FuseSource, MuleSoft, Red Hat, and WSO2. This market has changed significantly since the 2006 time frame: Some of the leading ESB providers from that day failed to gain a sure foothold in the market (i.e., Fiorano Software Technologies and PolarLake), while others have been acquired and consumed into the product lines of larger vendors (for example, Iona Technologies went to Progress Software, and Workday acquired Cape Clear).

The inability of many of the earlier vendors to make it in this space does not mean that the ESB market is losing steam. On the contrary, today's ESB market is more vibrant than ever, with many organizations planning to implement an ESB. Architects are now more cognizant of ESBs' value proposition than they were five years ago, and the market is growing accordingly. Indeed, the implementation of ESB technology is a high priority for many enterprises, and other vendors can be expected to enter this market and attempt to gain some of the market share. One example of this is the ESB that Talend plans to announce in the near future.

ENTERPRISE SERVICE BUS EVALUATION OVERVIEW

To assess the state of the enterprise service bus market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of top ESB vendors.

Buyers Focus On Core Integration Features And Support For SOA

After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria. We evaluated vendors against 109 criteria, which we grouped into three high-level buckets:

- **Current offering.** We looked at the breadth of each vendor's ESB offering across 79 criteria, including the major categories of architecture, orchestration, mediation, connection, and change and control.
- **Strategy.** We looked at the strength of each vendor's strategy across 15 criteria, including product strategy, solution cost, strategic alliances, and customer reference checks.
- **Market presence.** To evaluate each vendor's penetration in the ESB market, we evaluated 15 criteria, including installed base, new customers, annual ESB revenue, and delivery footprint.

The Evaluated Vendors Provide Foundational Integration Support

Forrester included nine vendors and 11 individual ESB products in its assessment: FuseSource, IBM (three products), MuleSoft, Oracle, Progress Software, Red Hat, Software AG, Tibco, and WSO2. Each of these vendors has (see Figure 4):

- **Foundational integration features.** All evaluated products offer features including integrated support for messaging, routing, data transformation, transaction mediation, and security.
- **Dynamic provisioning.** Each of these products has the ability to dynamically allocate additional resources to support processing needs.
- **Orchestration.** The evaluated vendors support creating and executing lightweight process flows or itineraries and more-robust orchestrations based on BPEL and/or BPMN.
- **An ESB product that was available in the marketplace as of October 1, 2010.** Each vendor also had to provide reference customers who are actively using the product.

Figure 4 Evaluated Vendors: Product Information And Selection Criteria

Vendor	Product evaluated	Product version evaluated	Version release date
FuseSource	Fuse ESB	4.0	October 2008
IBM	WebSphere Enterprise Service Bus (WESB)	7	December 2009
	WebSphere Enterprise Service Bus Registry Edition (WESBRE)	7	October 2010
	WebSphere Message Broker (WMB)	7	October 2009
MuleSoft	Mule ESB	3	September 2010
Oracle	Oracle Service Bus	11 g R1	April 2010
Progress Software	Sonic ESB	8	March 2010
Red Hat	JBoss ESB	5.0.2	July 2010
Software AG	webMethods ESB Platform	8.0	December 2009
Tibco Software	ActiveMatrix Service Bus	3.0.1	August 2010
WSO2	WSO2 ESB	3.0	May 2010

Vendor selection criteria

The vendor provides an enterprise service bus product that supports features to provide capabilities in the following areas: architecture (extensibility and federation), connection (messaging and routing), mediation (dynamic provisioning, transformation, and transaction management), orchestration, and security.

The vendor has been determined to be one of the leading commercial or open source providers of ESB technology.

The product version has been released and was in use in the marketplace as of October 1, 2010.

Source: Forrester Research, Inc.

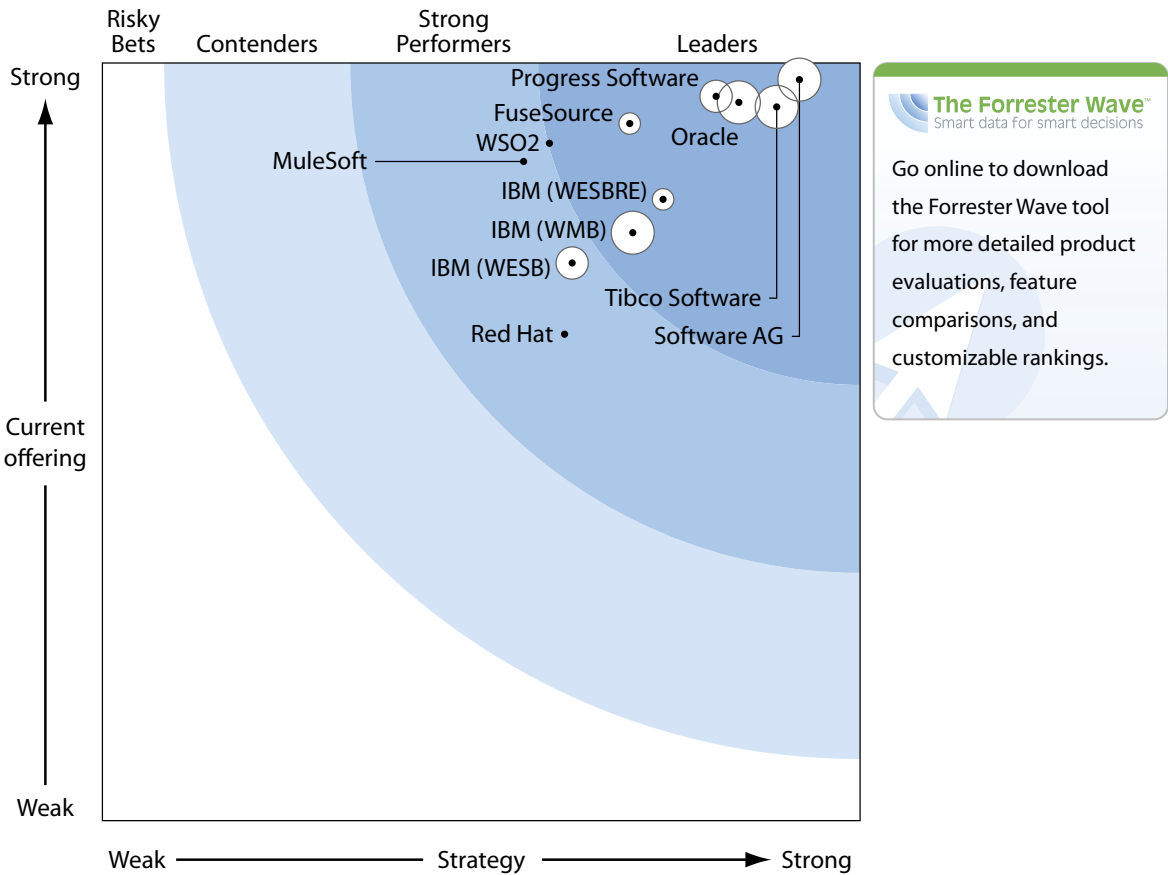
THE FORRESTER ESB EVALUATION

The evaluation uncovered a market in which many familiar faces continue to thrive (see Figure 5):

- **Software AG, Tibco, Oracle, Progress Software, and IBM are Leaders for ESB as well as CIS.** These five vendors achieved Leader status in the 2009 ESB Forrester Wave evaluation and in the 2010 CIS Forrester Wave evaluation, thus garnering the top position in the integration software provider market.
- **FuseSource and WSO2 also scored as Leaders.** FuseSource and WSO2 also scored highly in most of the evaluated areas; each of these vendors' products represents a solid ESB solution that would be a good choice for meeting many enterprise integration and service-oriented architecture requirements.
- **MuleSoft, IBM's WESB, and Red Hat products scored as Strong Performers.** Though MuleSoft, IBM's WebSphere ESB (WESB), and Red Hat products were missing some features, they still made the Strong Performer category. These products lack the same level of ESB support as the Leaders, but in most cases the differences were small. Consequently, each of these products may also be a very good fit in many enterprises, depending on the specifics of the situation.

This evaluation of the enterprise service bus market is intended to be a starting point only. We encourage readers to view detailed product evaluations and adapt the criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool.

Figure 5 Forrester Wave™: Enterprise Service Bus, Q2 '11



Source: Forrester Research, Inc.

Figure 5 Forrester Wave™: Enterprise Service Bus, Q2 '11 (Cont.)

	Forrester's Weighting	FuseSource	IBM (WESB)	IBM (WESBRE)	IBM (WMB)	MuleSoft	Oracle	Progress Software	Red Hat	Software AG	Tibco Software	WSO2
CURRENT OFFERING	50%	4.60	3.68	4.10	3.88	4.35	4.74	4.78	3.21	4.89	4.71	4.47
ESB product details	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Availability date	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architecture	40%	4.88	3.92	3.92	4.20	4.70	4.58	5.00	2.90	4.88	5.00	4.48
Orchestration	10%	5.00	3.00	3.00	4.00	2.50	5.00	5.00	2.50	5.00	4.00	4.00
Mediation	20%	3.89	3.77	4.73	2.98	4.14	4.76	4.27	3.98	4.69	4.63	4.75
Connection	10%	4.70	4.60	4.60	3.88	5.00	4.60	4.60	3.33	5.00	4.60	4.26
Change and control	20%	4.52	2.99	4.15	4.09	4.47	5.00	4.84	3.37	5.00	4.60	4.49
STRATEGY	50%	3.48	3.10	3.70	3.50	2.78	4.20	4.05	3.05	4.60	4.45	2.95
Product strategy	50%	4.20	3.60	4.00	4.40	3.20	5.00	4.70	3.70	5.00	4.70	4.50
Solution cost	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Strategic alliances	10%	1.80	5.00	5.00	5.00	3.80	5.00	5.00	4.00	5.00	5.00	3.00
Customer reference checks	40%	3.00	2.00	3.00	2.00	2.00	3.00	3.00	2.00	4.00	4.00	1.00
MARKET PRESENCE	0%	2.20	3.45	2.20	4.70	1.73	4.55	3.23	1.45	4.78	4.63	1.03
Installed base	40%	2.50	3.00	1.00	5.00	1.50	5.00	3.00	1.00	5.00	5.00	0.50
New customers	30%	2.00	2.50	1.00	4.00	2.00	4.00	3.00	1.00	5.00	5.00	1.00
Revenue	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivery footprint	30%	2.00	5.00	5.00	5.00	1.75	4.50	3.75	2.50	4.25	3.75	1.75

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc.

VENDOR PROFILES

Leaders Provide The Most-Comprehensive Support For ESB Features

- **Software AG delivers an easy-to-use ESB.** The webMethods ESB has a long track record of providing ease of implementation and delivering value to customers. The CentraSite registry/repository comes bundled with the ESB. Software AG has the largest number of ESB implementations of any of the vendors in this evaluation, and its ESB product integrates well with the larger webMethods Suite, including the Software AG Architecture of Integrated Information Systems (ARIS) business process management (BPM) product. Interviewed customers were pleased with the functionality that the product provides.

- **Tibco provides an enterprise-ready ESB.** The Tibco ActiveMatrix Service Bus scored very well in this evaluation, placing in the Leader category and receiving many strong scores. According to customer feedback, this product works well either in a standalone environment or as one of the key components of Tibco's comprehensive integration solution offering (BusinessWorks). The Tibco ActiveMatrix Service Bus is widely used; Tibco reported more than 3,000 active implementations.
- **Oracle provides an industrial-strength ESB product.** The Oracle Service Bus was already a strong product when it was first acquired from BEA Systems a couple of years ago, and Oracle has continued to add functionality to this product. It is one of the more widely used ESBs, with more than 2,600 implementations in use when counting both standalone deployments and those that take place in the larger Oracle SOA suite.
- **Progress Software provides an ESB with a long heritage.** Based on the early, market-leading capabilities of SonicMQ, the Sonic ESB first came on the scene in the mid-2000s and has garnered a strong position in this market since that time. This product received strong scores in all of the evaluated areas and has also been tightly integrated into the vendor's CIS and BPM solutions.
- **FuseSource scored well in its first ESB evaluation.** FuseSource was formed when Progress Software spun off this open source effort into a separate organization in mid-2010. Its core product is the Fuse ESB, which combines features from the Apache ServiceMix ESB, the Apache Camel integration framework, the Apache ActiveMQ message broker, and the Apache CXF web services framework. As is the case with each of the open source ESB vendors included in this evaluation, FuseSource reported significantly fewer production deployments compared with the commercial vendor ESB products' reported deployments.
- **WSO2 provides a strong, open source ESB.** This is also Forrester's first evaluation of WSO2's product, and the vendor scored well in most of the evaluated areas. While it does have some marquee customers, it reported significantly fewer deployments compared with the deployment levels of the commercial product vendors included in this evaluation.
- **IBM has two ESB products that made the Leader category.** Forrester's last ESB evaluation combined multiple IBM ESB products into a single scoring exercise, thus making it somewhat difficult for potential buyers to discern key differences between IBM's offerings. We have corrected that situation with this Forrester Wave, evaluating each of IBM's three ESB products separately. Two of them, the WebSphere ESB Registry Edition and the WebSphere Message Broker, made the Leader category based on their individual scores in this evaluation. While IBM would not divulge specific numbers, we believe the WebSphere Message Broker to have an implementation count that would rival those of Software AG, Tibco, and Oracle.

Strong Performers: MuleSoft, IBM WESB, And Red Hat

- **MuleSoft provides a solid, open source ESB.** The Mule ESB has a solid track record in organizations that have deployed it into production. MuleSoft also has the highest number of downloads of any open source ESB provider, though it is difficult to measure the real impact of this activity on production deployments. This product scored well in most areas of the current evaluation.
- **IBM provides core ESB features in the WebSphere ESB.** This is the last of the three IBM ESBs included in this evaluation, and it scored somewhat lower than the other two. Users can resolve most of this product's deficiencies by adding the functionality the WebSphere registry/repository product provides, and IBM has indicated that its sales efforts focus on moving customers to the more-capable WebSphere ESB Registry Edition product. However, for firms that have already implemented a registry/repository from another vendor, the lighter-weight IBM product may actually be a better fit.
- **Red Hat offers a comprehensive SOA solution.** Red Hat offers the JBoss ESB and also a more-robust SOA platform offering. In some cases, clients would benefit from the additional features of the SOA platform, though in other situations — for example, if they have already implemented those other capabilities in some other way — architects may prefer the smaller footprint of the JBoss ESB. Either way, Red Hat is a strong ESB provider with many satisfied customers. In March 2011, Red Hat announced version 5.1 of its SOA platform. This release provides significant new features that add to the overall functionality of the product.

SUPPLEMENTAL MATERIAL

Online Resource

The online version of Figure 5 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

Data Sources Used In This Forrester Wave

Forrester used a combination of three data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.
- **Product demos.** We asked vendors to conduct demonstrations of their product's functionality. We used findings from these product demos to validate details of each vendor's product capabilities.
- **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with at least two of each vendor's current customers.

The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave document — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and we encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

Survey Methodology

Forrester fielded its Q1 2011 Global Application/B2B Integration Online Survey to 167 application development managers and enterprise architects. Forrester fielded the survey from January to February 2011.

ENDNOTES

- ¹ Comprehensive integration solutions are the most capable integration tools in the market as measured by the total range of their functionality. For a detailed evaluation of the CIS category, see the November 9, 2010, "[The Forrester Wave™: Comprehensive Integration Solutions, Q4 2010](#)" report.
- ² For more details on the components of an ESB and the components of CIS solutions, respectively, see the March 26, 2010, "[The ESB Reference Architecture Model](#)" report, and see the April 19, 2010, "[The CIS Reference Architecture Model](#)" report.

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