Why Read This Report

In our 24-criteria evaluation of hybrid integration providers, we identified the 11 most significant ones — Dell Boomi, Fiorano, IBM, Informatica, Liaison Technologies, MuleSoft, Oracle, Red Hat, Software AG, TIBCO Software, and WSO2 — and researched, analyzed, and scored them. This report shows how each provider measures up and helps enterprise architecture (EA) professionals make the right choice.

Key Takeaways

**Informatica, Software AG, Dell Boomi, MuleSoft, And IBM Lead The Pack**

Forrester’s research uncovered a market in which Informatica, Software AG, Dell Boomi, MuleSoft, and IBM lead the pack. Liaison Technologies, WSO2, TIBCO Software, Red Hat, and Oracle offer competitive options. Fiorano lags behind.

**EA Pros Are Looking For Strategic Integration Platforms**

The hybrid integration market is growing because more EA professionals see the broad capabilities and use-case flexibility as a way to address key business challenges. This market growth is in large part due to firms rethinking their integration strategies.

**Breadth, Management, And Support For “Citizen Integrators” Are Key Differentiators**

Firms are seeing the opportunity for the convergence of application, data, and internet-of-things (IoT) integration, and vendors with strong capabilities will gain. Other areas of differentiation include support for non-integration specialists and business-focused dashboards.
The Forrester Wave™: Hybrid Integration For Enterprises, Q4 2016
The 11 Providers That Matter Most And How They Stack Up

by Henry Peyret
with Alex Cullen and Alex Kramer
November 18, 2016

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Related Research Documents

Brief: Architect For Digital Operational Excellence
Design Your Integration Architecture For The Internet Of Things
The Forrester Wave™: iPaaS For Dynamic Integration, Q3 2016
Cloud And Dynamic Integration Requirements Change The Landscape

Enterprise service bus (ESB), enterprise application integration (EAI), and service-oriented architecture (SOA) have been the main pillars of firms’ integration strategies. But the integration landscape has changed from solely on-premises, with integration points being slow-changing, to a much more varied landscape that includes cloud for systems of engagement and systems of insight — as well as the expectation that as these “systems of x” rapidly change, the integration interfaces will also rapidly change. EA pros are now rethinking their integration strategies, and more often they are seeking to replace the mainstays of ESB, EAI, and SOA with more complete tools to address this more complex landscape. They can choose from two options: 1) adding integration-platform-as-a-service (iPaaS) platforms to their existing integration tooling, mainly adding cloud connectivity; or 2) renewing their ESB strategic investments in hybrid integration platforms, which we define as:

Federated on-premises and cloud-based integration platforms with the improved interoperability of existing and new middleware silos of application, B2B, business process management, business events, business rules, and data integration.

Vendors Tackle Hybrid Integration From Four Starting Points

This product category has a wide variety of vendors. These vendors approach the requirements of hybrid integration from four backgrounds:

› **On-premises platform vendors build from an ESB heritage.** Vendors like IBM, Oracle, Software AG, and TIBCO Software are coming from the on-premises ESB market. They are migrating their products toward cloud deployment to complement their on-premises footprints. Most have not yet finished the journey toward the cloud — for example, they still provide non-web-native development tooling and their platform doesn’t yet fully benefit from containerized architecture.

› **Open source vendors leverage their subscription-based models in the move to cloud.** Vendors like Fiorano, MuleSoft, Red Hat, and WSO2 first developed brokers and messaging capabilities on-premises. Their subscription-based business model and the development of multiple integration standards (such as REST, SOAP, JSON, Kafka, Camel, AMQP, and MQTT) helped them to move to the cloud faster. They benefit from user communities and the help of large enterprises to deliver a reliable and scalable enterprise class of integration products. Their migration toward containers and other typical cloud deployment facilities are still a work-in-progress.

› **Data integration vendors turn to cloud and application integration.** Data is becoming a key asset for enterprises, and data integration converged with application integration is a key requirement to support agile systems of insight. So enterprises that have already invested in data integration are expanding their footprint to include application integration — vendors like Informatica leverage this shift to expand their markets.
The 11 Providers That Matter Most And How They Stack Up

B2B integration vendors take advantage of the shift to cloud to expand their markets. Vendors like Dell Boomi and Liaison Technologies have roots in integration for B2B and EDI. They are using the shift to the cloud to offer more general-purpose products suitable for a wider range of integration use cases.

Vendor Offerings Are Getting Better But Still Fall Short Of Where The Market Is Going

In our briefings and discussions with vendors as well as during the discovery activities for this Forrester Wave evaluation, we found that current offerings in the hybrid integration category fall short in five key areas:

- **The convergence between application and data integration is still in development.** This convergence is key to bringing the dynamic integration for systems of engagement and systems of insight, and it will become even more essential with the IoT and big data. Few vendors have begun to grapple with this convergence.

- **The management functions are the weakest aspect of current products.** Managing interfaces in a highly distributed environment has always been a challenge for integration solutions. Despite multiple improvements like remote debugging, the capabilities to rerun faulty exchanges, alerting, and dashboards remain weak points. The incorporation of machine learning and artificial intelligence should greatly enhance these capabilities.

- **Most platforms are still making progress toward a complete cloud architecture.** A complete cloud architecture 1) is entirely web-based for development, management, runtime, and monitoring; 2) is a microservice architecture; 3) offers container-based deployment; and 4) uses a single code base for public, private, on-premises and hybrid deployments, etc. For their next releases, every vendor is investing to continue to bring a better support of the cloud architecture on one point or another.

- **Vendors are not ready for citizen integrators.** One aspect of dynamic integration with systems of engagement and insight is that the business will want to change and expand what’s being integrated more often and with a faster turnaround. We see an increasing need to support technically savvy business users — AKA citizen integrators — as a way for technology teams to avoid being a bottleneck for simple integrations. Most hybrid integration solutions remain complex and require integration specialists.

- **Security certifications scores don’t guarantee security for integration.** Integration is definitely one of the weak points in a Zero Trust security strategy. For this criterion, Forrester counted the number of certifications as well as the number of third-party assessments each vendor received. We scored the vendors relative to each other, and those obtaining a 5 more than double the average of the other vendors’ security certifications. So a 1 score does not mean the vendor has a badly secured environment; rather, it has less of a chance to meet your certified security...
requirements. But each vertical has its own integration security risks. Take the score as an indication of an additional check (and perhaps additional work for your own vertical) rather than as an absolute score.

Hybrid Integration Evaluation Overview

To assess the state of the hybrid integration market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of 11 top hybrid integration vendors. After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of 24 evaluation criteria, which we grouped into three high-level buckets:

› **Current offering.** We evaluated each product against four primary capabilities: 1) integration scenarios supported, 2) management functions, 3) capabilities supporting citizen integrators, and 4) platform characteristics. The assessment takes customer reference surveys into account. All evaluated products were publicly available before December 15, 2015.

› **Strategy.** We analyzed vendors’ responses during their strategic briefings on our expectations for strategic long-term choice for a complete integration. Specifically, we assessed the product strategy, supporting services, and cost of products.

› **Market presence.** We assessed market presence in the integration market through three primary criteria: number of customers, geographical presence for the vendor, and geographical presence for the vendor's partners.

Evaluated Vendors And Inclusion Criteria

Forrester included 11 vendors in this assessment: Dell Boomi, Fiorano, IBM, Informatica, Liaison Technologies, MuleSoft, Oracle, Red Hat, Software AG, TIBCO Software, and WSO2. Each of these vendors (see Figure 1):

› **Offers cloud, on-premises, and mixed deployment capabilities.** The hybrid integration offering should provide the flexibility to integrate any cloud or on-premises application or data source and also allow any deployment model: on-premises only, cloud-only, and mixed on-premises and cloud.

› **Addresses a broad set of integration scenarios and requirements.** Existing offerings address requirements for API management, B2B integration, and the IoT as well as pure app and data integration, providing a single vendor integration offering with consistent development, deployment, and management.

› **Has customers using its products as a strategic enterprisewide platform.** Customers have selected the vendor’s product as their preferred strategic solution to cover numerous integration scenarios.

› **Is considered in companies’ short lists as a strategic solution.** This is based on Forrester’s customer inquiries when choosing or renewing their strategic integration solution.
### The 11 Providers That Matter Most And How They Stack Up

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Product evaluated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell Boomi</td>
<td>Dell Boomi AtomSphere</td>
</tr>
<tr>
<td>Fiorano</td>
<td>Fiorano Integration</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Application Integration Suite</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Information Server</td>
</tr>
<tr>
<td>Informatica</td>
<td>Informatica Cloud</td>
</tr>
<tr>
<td></td>
<td>PowerCenter v10.1</td>
</tr>
<tr>
<td></td>
<td>Big Data Management v10.1</td>
</tr>
<tr>
<td>Liaison Technologies</td>
<td>Liaison Alloy Platform</td>
</tr>
<tr>
<td>MuleSoft</td>
<td>Anypoint Platform</td>
</tr>
<tr>
<td>Oracle</td>
<td>Oracle Cloud Platform</td>
</tr>
<tr>
<td>Red Hat</td>
<td>Red Hat JBoss Fuse</td>
</tr>
<tr>
<td></td>
<td>Red Hat JBoss A-MQ</td>
</tr>
<tr>
<td></td>
<td>Red Hat JBoss Data Virtualization</td>
</tr>
<tr>
<td></td>
<td>3Scale API Management by Red Hat</td>
</tr>
<tr>
<td></td>
<td>Red Hat OpenShift Container Platform</td>
</tr>
<tr>
<td>Software AG</td>
<td>DBP Integration Platform</td>
</tr>
<tr>
<td>TIBCO Software</td>
<td>TIBCO Application Integration</td>
</tr>
<tr>
<td>WSO2</td>
<td>WSO2 Integration Platform</td>
</tr>
</tbody>
</table>

### Vendor inclusion criteria

- **The vendor provides cloud, on-premises, and mixed deployment capabilities.** The hybrid integration offering should provide the flexibility to integrate any cloud or on-premises application or data source and should also allow any deployment model: on-premises, hybrid, or fully in the cloud.

- **The vendor addresses a broad set of integration scenarios and requirements.** Existing offerings address requirements for API management, B2B integration, and the internet of things (IoT) as well as pure app and data integration, providing a single vendor integration offering with consistent development, deployment, and management.

- **The vendor has enterprises using its products as a strategic enterprisewide platform.** Customers have selected the vendor’s product as the preferred strategic solution for covering numerous integration scenarios.

- **The vendor is considered in companies’ shortlists as strategic solutions.** This is based on Forrester’s customer inquiries when choosing/renewing a strategic integration solution.
Vendor Profiles

This evaluation of the hybrid integration market is intended to be a starting point only. We encourage clients to view detailed product evaluations and adapt criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool (see Figure 2).

FIGURE 2 Forrester Wave™: Hybrid Integration For Enterprises, Q4 '16

Go to Forrester.com to download the Forrester Wave tool for more detailed product evaluations, feature comparisons, and customizable rankings.
### FIGURE 2 Forrester Wave™: Hybrid Integration For Enterprises, Q4 '16 (Cont.)

<table>
<thead>
<tr>
<th>Current offering</th>
<th>50%</th>
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<th>1.30</th>
<th>3.54</th>
<th>4.43</th>
<th>2.91</th>
<th>3.68</th>
<th>3.27</th>
<th>2.62</th>
<th>4.48</th>
<th>3.62</th>
<th>3.32</th>
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<td>Integration scenarios supported</td>
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<td>1.50</td>
<td>4.10</td>
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<td>3.40</td>
<td>4.00</td>
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<td>3.10</td>
<td>5.00</td>
<td>4.50</td>
<td>4.10</td>
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<tr>
<td>Management functions</td>
<td>25%</td>
<td>2.90</td>
<td>1.40</td>
<td>3.70</td>
<td>4.30</td>
<td>3.70</td>
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<td>4.30</td>
<td>3.60</td>
<td>3.60</td>
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<tr>
<td>Capabilities for nonintegration specialists</td>
<td>20%</td>
<td>5.00</td>
<td>0.00</td>
<td>3.00</td>
<td>3.00</td>
<td>1.00</td>
<td>3.00</td>
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<td>2.00</td>
<td>4.00</td>
<td>3.00</td>
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<tr>
<td>Platform characteristics</td>
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<td>1.90</td>
<td>3.30</td>
<td>5.00</td>
<td>3.10</td>
<td>5.00</td>
<td>3.90</td>
<td>2.90</td>
<td>4.50</td>
<td>3.30</td>
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<th>Strategy</th>
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<th>3.32</th>
<th>3.50</th>
<th>4.40</th>
<th>4.14</th>
<th>4.50</th>
<th>3.42</th>
<th>3.48</th>
<th>4.50</th>
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<td>3.00</td>
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<td>2.60</td>
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<td>5.00</td>
<td>3.80</td>
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<td>Supporting services</td>
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<td>3.00</td>
<td>3.00</td>
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<td>4.00</td>
<td>5.00</td>
<td>1.00</td>
<td>3.00</td>
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<tr>
<td>Cost</td>
<td>25%</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>3.00</td>
<td>3.00</td>
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<td>3.00</td>
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<table>
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<tr>
<th>Market presence</th>
<th>0%</th>
<th>4.10</th>
<th>0.90</th>
<th>3.90</th>
<th>4.70</th>
<th>3.00</th>
<th>4.10</th>
<th>5.00</th>
<th>3.60</th>
<th>3.60</th>
<th>3.60</th>
<th>1.90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of customers</td>
<td>40%</td>
<td>5.00</td>
<td>0.00</td>
<td>3.00</td>
<td>5.00</td>
<td>3.00</td>
<td>5.00</td>
<td>5.00</td>
<td>3.00</td>
<td>3.00</td>
<td>3.00</td>
<td>1.00</td>
</tr>
<tr>
<td>geographical presence: vendor</td>
<td>30%</td>
<td>3.00</td>
<td>2.00</td>
<td>5.00</td>
<td>5.00</td>
<td>3.00</td>
<td>3.00</td>
<td>5.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>2.00</td>
</tr>
<tr>
<td>geographical presence: delivery partners</td>
<td>30%</td>
<td>4.00</td>
<td>1.00</td>
<td>4.00</td>
<td>4.00</td>
<td>3.00</td>
<td>4.00</td>
<td>5.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>3.00</td>
</tr>
</tbody>
</table>

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

› **Software AG.** Software AG’s DBP Integration Platform provides typical integration capabilities, including orchestration, transformation, messaging, advanced routing, and wizard-based tooling. Its platform supports multiple integration patterns, including data integration and long-running transactions. It also supports a range of data formats and offers more than 100 transformer services to transform data into the format a user needs. Customers can extend these integration patterns through additional integration capabilities with API management, B2B integration, managed file transfer, human workflow, complex event processing, high-speed messaging, or in-memory caching. The platforms can run on any Cloud Foundry or cloud-supporting Docker environment. Planned enhancements include an API gateway in the cloud, a single Agile process platform, DevOps improvements for quickly developing applications, and recommendation-based mapping.

› **Informatica.** Informatica provides Informatica Cloud as a converged iPaaS for data, process, and application integration running on-premises, in the cloud, or in a hybrid deployment. The cloud offering, PowerCenter, and big data management products share the same metadata repository and transformation language. This enables Informatica to provide an integration platform ready to support dynamic integration of systems of engagement with systems of record as well as the future systems-of-insight integration and converged data and integration governance. Informatica Cloud, PowerCenter, and big data management run on any Docker-like environment, such as Amazon Web Services (AWS) or Azure. Informatica’s strategic product road map includes increased use of predictive analytics for alerting and recommendations for deployment optimization, API management, and further integration with API third parties.

› **Dell Boomi.** Dell Boomi was founded in 2000 as Boomi and purchased by Dell Software in 2010. Dell Boomi serves SMBs and large enterprises with a unified, multipurpose integration platform to address multiple integration use cases, master data management (MDM), EDI, and API management. The platform covers a wide range of integration capabilities in the cloud as well as on-premises or in hybrid mode, which opens up the strategic market of large enterprises. Dell Boomi allows users to expose endpoints for use by different customers through the creation and management of APIs. Its products run on Cloud Foundry and any JVM cloud-based services. Dell Boomi plans to improve its API management functionality and develop strategic connectors to support the IoT in the coming year.

› **MuleSoft.** MuleSoft’s Anypoint Platform provides API management, data, and application integration within a single platform. The event-driven architecture provides high performance under heavy workloads, and workloads can be scaled across hybrid public and private clouds. DevOps teams share a single environment for development and operations and maintenance on-premises, in the cloud, or in hybrid deployments. MuleSoft runs on any Cloud Foundry or Docker environment as well as AWS or Azure. The road map focuses on allowing users to manage API life cycles, enabling more users within the organization to use the platform, and providing a unified experience for delivering APIs.
IBM. Application Integration Suite is an assembly of App Connect, Integration Bus, and API Connect products, available to run on-premises but also in IBM Cloud, AWS, and Azure. For data integration, IBM recommends using a dedicated product, Information Server, which allows users to distribute job logic over one or more machines. This collection of solutions enables Application Integration Suite to support the skills of a range of users, from citizen integrators to skilled developers or data preparers. A project can start simply, using App Connect, and then move up to the Application Integration Suite, which includes the same transformation engine. This is particularly useful for large enterprises that have difficulty growing integration skills while maintaining the pace of delivery of dynamic integration. IBM’s products run on Cloud Foundry-based services and are deployable as prebuilt Docker images. It plans to increase its focus on the convergence of the user experience overall, including the citizen integrator, allowing business users to use the integration tooling without significant technical training.

Strong Performers

Liaison Technologies. The Liaison Alloy Platform is a microservices and big-data-technology-based integration and data management cloud platform that also supports client connectivity to a wide range of message queuing providers. Alloy supports B2B, data, and application integration and provides open APIs at the data and visibility layers. Liaison Technologies works on a continuous deployment model, using container technologies and Agile methodologies with a strong focus on compliance. Its platform provides adaptive scalability for real-time data insights and application performance monitoring. Its road map focuses on leveraging new and emerging data sources, providing a strong UI for data stewards, and growing its platform services.

TIBCO Software. TIBCO Application Integration supports all ESB capabilities and provides functionality to support building microservices for containerized environments. Its messaging technology supports standards messaging, cloud deployments, and mobile use cases. TIBCO Software also has connectors for specific integrations with applications. It runs on any Docker or Cloud Foundry platform, including AWS or Azure. Planned enhancements include web-native capabilities for design, lower footprints for IoT, and tighter integrations with its cloud partners.

Oracle. Under the umbrella Oracle Cloud Platform, Oracle offers a modular set of services to provide data or application integration: integration cloud, SOA Suite, service bus, API platform, API manager, GoldenGate, data integrator, messaging, and stream analytics. These services run on Oracle’s private or public cloud data centers. This modularity gives customers the freedom of adopting these services at their own pace, but it also creates buyer confusion and increases the overall price. Oracle plans to respond to the increased need for Agile integration backbones with an increased focus on mobile, the IoT, and machine learning.

WSO2. With the WSO2 Integration Platform, WSO2 provides one of three remaining open source solutions for hybrid integration. The platform includes the following components: WSO2 enterprise service bus, WSO2 data services server, WSO2 business process server, WSO2 message broker,
WSO2 business rules server, integration cloud, and app cloud. The company built its reputation in integration — thanks to an enterprise-class ESB that handles billions of transactions. The same code runs in any deployment mode: on-premises, cloud, or hybrid models. Currently it reuses the on-premises developer studio. The platform runs on AWS, Azure, OpenShift, or any Cloud Foundry platform. WSO2 plans to continue enhancing the architecture to become container-native in early 2017; it also plans to enhance its process, DevOps, and IoT capabilities.

› **Red Hat.** Red Hat provides application integration through two products: Red Hat JBoss Fuse and Red Hat JBoss A-MQ. With the recently acquired 3scale for API management, it forms a strategic single-vendor choice for the integration landscape while still remaining modular. Thanks to its OpenShift Container platform, Red Hat’s offerings can be installed on-premises or in the cloud with an identical architecture. The Red Hat JBoss Data Virtualization capabilities connect to big data sources through interfaces that business users are already accustomed to. Its next release will provide an easier UI for developers as well as messaging-as-a-service to allow for message sharing across processing nodes.

**Contenders**

› **Fiorano.** Fiorano provides a standards-based open source ESB for integration in peer-to-peer architectures, which will help enterprises reduce costs and scale. Its peer-to-peer architecture allows its end points to communicate directly with other end points, which is key to scalability. Its monitoring feature can be used for loop detection in its replicating database. Fiorano can be deployed on-premises and via public or private cloud platforms. Its road map includes improved support for provisioning, adopting big data stores for analytics, and support for multitenancy.
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Supplemental Material

**Online Resource**
The online version of Figure 2 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. We evaluated the vendors participating in this Forrester Wave, in part, using materials that they provided to us by November 1, 2016.

- **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 products’ functionality. We used findings from these product demos to validate details of each vendor’s product capabilities.

› **Customer reference surveys.** To validate product and vendor qualifications, Forrester also conducted reference surveys with three 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 evaluation — and then score the vendors based on a clearly defined scale. We intend these default weightings to serve only as a starting point and 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. For more information on the methodology that every Forrester Wave follows, go to [http://www.forrester.com/marketing/policies/forrester-wave-methodology.html](http://www.forrester.com/marketing/policies/forrester-wave-methodology.html).

**Integrity Policy**

We conduct all our research, including Forrester Wave evaluations, in accordance with our Integrity Policy. For more information, go to [http://www.forrester.com/marketing/policies/integrity-policy.html](http://www.forrester.com/marketing/policies/integrity-policy.html).

**Endnotes**

1. EDI: electronic data interchange.
2. DevOps: development plus operations.
3. SMBs: small and medium-sized businesses.
We work with business and technology leaders to develop customer-obsessed strategies that drive growth.

PRODUCTS AND SERVICES
› Core research and tools
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Technology Management Professionals
CIO
Application Development & Delivery
› Enterprise Architecture
Infrastructure & Operations
Security & Risk
Sourcing & Vendor Management

Technology Industry Professionals
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