Ovum Decision Matrix: Selecting a Middleware-as-a-Service Suite for Hybrid Integration, 2017–18

Hybrid integration suites for cloud service, API-led, B2B, and mobile application integration

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Summary

Catalyst

Integration is the lifeblood of today’s digital economy, and middleware is the software layer connecting different applications, services, devices, data sources, and business entities. This Ovum Decision Matrix (ODM) is a comprehensive evaluation to help enterprise IT leaders, including chief information officers (CIOs), enterprise/integration architects, integration competency center (ICC)/integration center of excellence (CoE) directors, and digital transformation leaders select a middleware-as-a-service (MWaaS) suite best suited to their specific hybrid integration requirements.

Ovum view

Middleware, the equivalent of plumbing in enterprise software, enables different applications and services to talk to each other. It has been used for decades to solve complex integration issues in enterprises. The rapid rise of cloud computing has had a major and transformational impact on every enterprise software market segment and the case of middleware is no different. The other facet is of course the need for agile integration to meet digital business requirements, with IT no longer having the luxury of several months and million-dollar budgets to deliver the desired integration capabilities.

IT leaders are focusing on revamping their enterprise integration strategy, which will invariably involve a hybrid combination of traditional middleware platforms (albeit with decreasing workloads) and cloud-based integration services. MWaaS has entered mainstream enterprise adoption and is significantly disrupting the old guard of legacy, heavyweight middleware platforms.

The success of integration PaaS (iPaaS) has led to the emergence of MWaaS, which is a cohesive suite of cloud-based integration services aimed at hybrid integration use cases, including cloud service integration, API-led integration and API management, B2B integration, mobile application/backend integration, and IoT application and data integration. An MWaaS suite can also be referred to as a set of well-integrated, cloud-based hybrid integration services. Process integration and orchestration is another use case for the broader MWaaS suite, but we have excluded BPM-centric products from this evaluation.

This ODM presents the results of a comprehensive evaluation of MWaaS offerings of key middleware vendors to answer the recurring questions of enterprise IT leaders tackling complex hybrid integration issues arising from fast-changing digital business requirements. While some vendors have evolved from their origins as iPaaS vendors, others are major middleware vendors that have developed dedicated MWaaS product lines based on years of product development and sustained investment.

Because MWaaS represents a rapidly evolving and highly competitive market with several hundred million dollars in venture capital being pumped into the development of specialized middleware vendors targeting hybrid integration opportunities, the competitive positioning of these vendors could easily change over the next 12 to 18 months. Enterprise IT leaders should consult this ODM to shortlist appropriate middleware vendors for a request for proposal (RFP) and subsequent proof-of-concept (PoC) evaluation.

IT leaders should, however, understand that MWaaS is not a “silver bullet” or an integration nirvana, and that traditional on-premise middleware (an enterprise service bus, for example) still has a role to
play in enterprise integration. APIs are of course changing the face of enterprise integration, and should be seen as the building blocks of the integration infrastructure required to support the digitalization of business processes and the externalization of enterprise data assets via new business models.

Key findings

- MWaaS adoption in enterprises is for strategic and tactical hybrid integration initiatives. IT leaders realize the significant benefits MWaaS suites bring to the table in terms of greater agility in responding to business requirements and cost savings.
- “Middleware-as-a-service” as a term is still not well understood and vendors would be well served by positioning an MWaaS suite as a middleware stack in the cloud as the cloud counterpart of the on-premises middleware stacks that enterprises have been using for years. In some cases, it would be better to use acronyms (iPaaS, apiPaaS, MBaaS) for individual MWaaS products, which could be mapped to corresponding integration use cases.
- The level of integration between the different components of an MWaaS suite varies from vendor to vendor. Integration at the product/component API level and uniformity in user experience (UX) are areas where vendors have undertaken dedicated product development.
- Major middleware and leading cloud-based integration platform vendors dominate this market, even though their routes to the development of an MWaaS suite can be quite different.
- API-led integration is a key requirement for digital business and a key characteristic for an MWaaS suite. Rapid API creation/composition is now as important as API management.
- The market shift that started with iPaaS has resulted in the birth of a broader middleware stack in the cloud. MWaaS is the natural evolution of iPaaS-style products, where developer productivity and faster time to integration at a lower cost of ownership are the key benefits.

Vendor solution selection

Inclusion criteria

Ovum has closely tracked the emerging MWaaS vendor landscape over the last two to three years and we have used these observations as the baseline for inclusion/exclusion in this ODM. The criteria for inclusion of an MWaaS suite and vendor in this ODM are as follows:

- The MWaaS suite should deliver significant capabilities across two of the three technology assessment criteria groups: “cloud integration”; “API platform”; and “B2B, mobile application, and IoT application integration”.
- There is substantial evidence that the vendor is interested in pursuing a progressive product strategy that helps ascertain product viability and applicability to a range of hybrid integration use cases.
- MWaaS products are not “cloud washed” and individual components demonstrate essential cloud services characteristics, such as multi-tenancy, resource sharing, and rapid scalability, as well as allowing usage tracking and metering and supporting the enforcement of service-level agreements (SLAs).
The MWaaS suite should have been generally available as of January 31, 2017. The vendor must have at least 30 enterprise (paid) customers using various components of its MWaaS suite as of March 31, 2017. We did not want to leave out any vendor because of limitations related to significant revenue realization from its MWaaS suite.

It should deliver enterprise-grade developer enablement and API-led integration capabilities, and an appropriate UX for less-skilled users (non-developers).

At least the core middleware product should be architecturally coherent and product/component APIs should be available to support internal integration between different components of the middleware stack.

Exclusion criteria

An MWaaS suite and vendor is not included in this ODM if:

- The core MWaaS component provided by the vendor is restricted to API management and the rest of the capabilities are delivered in partnership with other vendors. For this reason, specialized API management vendors that do not offer any substantial capabilities for other hybrid integration use cases were excluded from this ODM. This means that cloud-based application and data integration capabilities are absolutely critical for developing an MWaaS suite.

- The vendor is unable to commit required time and resources for the development of research to be included in this ODM. Some vendors, which otherwise would qualify for inclusion in this ODM, opted out of the evaluation exercise and were unable to submit the required level of information in response to the evaluation criteria spreadsheet by the cutoff date (March 31, 2017).

- There is not enough evidence that the vendor is interested in expanding the suite's features and capabilities to cater for the requirements of emerging use cases and exploiting new market trends.

- There are indications that the vendor is struggling to grow its business and has partnered with middleware vendors to defend its position in the market, or the customer base is confined to only specific regions.

- The vendor did not feature in any of the analyst enquiries from enterprise IT leaders and users, and there were other indicators for a lack of investment and a dedicated strategy for MWaaS products.

Ovum ratings

Market leader

This category represents a leading MWaaS suite that Ovum believes is worthy of a place on most technology selection shortlists. The vendor has established a commanding market position with its MWaaS suite, demonstrating relatively high maturity, cohesiveness, good innovation and enterprise fit, and the capability to effectively meet the requirements of a wider range of hybrid integration use cases, as well as executing an aggressive product roadmap and commercial strategy to drive enterprise adoption and business growth.
Market challenger

An MWaaS suite in this category has a good market position and offers competitive functionality and a good price/performance proposition, and should be considered as part of the technology selection. The vendor has established a significant customer base, with its MWaaS suite demonstrating substantial maturity, catering for the requirements of a range of hybrid integration use cases, as well as continuing to execute a progressive product and commercial strategy.

Some vendors included in this category are “strong performers” in terms of technology assessment but did not achieve consistently high or good scores for the “execution and market impact” dimension, which is an essential requirement for achieving a “market leader” rating.

Market follower

An MWaaS suite in this category is typically aimed at specific hybrid integration use cases and/or customer segment(s), and can be explored as part of the technology selection. It can deliver the requisite features and capabilities at reasonable charge for specific use cases/requirements. This ODM does not feature any vendor in this category.

Market and solution analysis

A major market shift to MWaaS has begun and will not slow down

While 2016 marked a surge in efforts from most middleware vendors to announce or add finishing touches to their MWaaS suites, 2017 will see a rapid rise in the adoption of MWaaS. This will mark the start of a new era in the global middleware market, and this evolution will have a more profound impact on the way middleware is used and consumed, as well as on its strategic role in digital business than what was the case when service-oriented architecture (SOA) was in the limelight.

In fact, MWaaS will significantly cannibalize the established on-premise middleware market, and by mid-2019, we expect at least 50% of the new spend (not including upgrades of on-premise middleware or renewal of similar licenses) on middleware to be accounted for by MWaaS or at least some form of cloud-based integration services. The center of gravity of integration infrastructure will rapidly shift to the cloud. This change is inevitable and will lead to a gradual decline in business for integration vendors that could not look beyond on-premise middleware.

A comprehensive MWaaS suite (see Figure 1) combines iPaaS, apiPaaS, mobile backend as a service (MBaaS), and other cloud-based integration services, such as data-centric PaaS and cloud-based B2B integration services, to offer a cohesive suite of integration capabilities required to support digital business. Key characteristics of MWaaS include:

- an API-centric, agile approach to application, data, and process integration, reducing development effort and costs.
- the flexibility to provision various combinations of cloud-based integration services based on specific requirements.
- uniformity in underlying infrastructure resources and enabling technologies.
- flexible integration between various components of the middleware suite.
- openness to federation with traditional, on-premise middleware platforms.
uniform UX across different integration scenarios/middleware components.
- support for embedding integration capabilities (via APIs) into a range of applications/solutions.
- an extension of developer productivity features/tools (for example, a "drag-and-drop" approach to integration flow development and pre-built connectors and templates) to a broader set of integration capabilities.

Multitenancy, rapid scalability, a user-friendly development interface, and a rich set of prebuilt connectors and integration templates are the basic features of any iPaaS solution. Only multitenant, scalable cloud-based integration platforms providing the necessary tools and dedicated resources for faster development of integration flows connecting different applications and data sources, as well as offering enterprise-grade data security and governance for these interactions, can be termed iPaaS solutions.

Merely delivering application and/or data integration capabilities via the cloud on a subscription basis does not amount to iPaaS provision. In addition, Ovum does not consider an integration service confined to B2B integration delivered via the cloud to be an iPaaS solution.

apiPaaS is a cloud-based API platform that enables users to develop, run, manage, and secure APIs and microservices. It is a unified approach for API providers to create new APIs and to design new interfaces for existing APIs, as well as meeting the requirements of end-to-end API management.

apiPaaS is not limited to the capability of generating APIs against a range of back ends. It is a holistic approach to the rapid composition of APIs and the subsequent management of their lifecycles and operations. API aggregation is a core enabler to business models of several disruptive players in the API economy, and apiPaaS offers the capability to compose, combine, and manage access and consumption of APIs via a unified platform.

Figure 1: MWaaS suite reference architecture

These individual, cloud-based integration services are offered on a subscription basis, with each component having essential cloud characteristics, such as multitenancy, resource sharing, and rapid scalability. We expect the overall MWaaS market to grow by more than 35% over the next couple of years, with iPaaS and apiPaaS major contributors to the market spend.
The success of iPaaS as an agile approach to hybrid integration has played a key role in the evolution of the MWaaS era. For enterprises, MWaaS represents a good opportunity to shift from legacy middleware platforms that require significant upgrades and investment to remain relevant in the current operating environment.

Several vendors tried "shortcuts" in the past but did not achieve any significant success. MWaaS focuses on delivering agile integration capabilities with developer productivity tools, lower operational overhead, and greater predictability of costs. Traditional middleware stacks badged as cloud-enabled (hosted) integration services will fail to compete with modern, lightweight MWaaS suites.

The need for a rapid transformation to compete in this evolving market will force traditional integration vendors to look out for opportunities to acquire smaller, specialized vendors that have a compelling MWaaS proposition. This will allow them to fill gaps in their existing product portfolios while reducing the time required for developing substantial MWaaS capabilities. For this reason, there have been number of acquisitions in this space over the last two years, particularly in the iPaaS, API management, and MBaaS sub-segments.

Cloud-based B2B integration services have matured greatly over the last three to four years and now offer much more than just flexible infrastructure provisions with costs benefits. There are two facets to the shift to an “integration-as-a-service” model. The first one relates to the value proposition of flexible infrastructure provisions along with high availability and disaster recovery, which help in meeting customer SLA requirements. The second relates to the economics of using B2B integration services delivered via the cloud, as well as the greater predictability of costs.

With the rapid rise of digitalization, API-led integration is gaining popularity as an effective means to extend B2B processes to external portals and applications. An "EDI+API" combination can be used to extend B2B processes to mobile channels, enabling mobile applications to participate in and support specific sub-processes, such as placing, receiving, and acknowledging orders via mobile devices, as well as access to and monitoring of data transfer-related information. One of the key benefits of cloud-based B2B integration services is the availability of platform/component APIs that expose key functions, such as data/message transformation, system status, and monitoring and reporting capabilities.

MBaaS enables developers to connect the front end of mobile applications with cloud-based back-end services. Because MBaaS provides cloud-based storage, applications can scale according to the requirements of higher traffic volumes. MBaaS enables developers to use the same back end for multiple (not necessarily disparate) applications because the associated data is stored and managed on a dedicated cloud in object form.

Ovum forecasts that the global spend on iPaaS solutions will grow at a cumulative annual growth rate (CAGR) of 42.2% over the period 2016 to 2021, translating to a market worth $2.2bn by 2021. As for API platforms, the global spend is expected to grow at a CAGR of 44.7% over the same period to hit $3bn by the end of 2021. Ovum forecasts that the global spend on cloud-based B2B integration services (including managed services) will grow at a CAGR of 18% between 2015 and 2020. This translates into a market size of more than $4bn by 2020. The MBaaS market will also grow at high double-digit rates over the same period.
The ODM chart in Figure 2 represents the results of a comprehensive evaluation of nine MWaaS suites meeting the inclusion criteria. The bubble size representing vendor positioning is determined by the product of the scores achieved for the “technology” and “execution and market impact” evaluation dimensions. The “market impact” criteria group under the “execution and market impact” evaluation dimension was assigned minimal weighting. Table 1 provides a list of market leaders and challengers in alphabetical order (not in terms of scores), and subsequent sections also follow this practice.

### Figure 2: Ovum Decision Matrix: Middleware-as-a-service suites, 2017–18

![Ovum Decision Matrix: Middleware-as-a-service suites, 2017–18](image)

Source: Ovum

### Table 1: Ovum Decision Matrix: Middleware-as-a-service suites, 2017–18

<table>
<thead>
<tr>
<th>Market leaders</th>
<th>Market challengers</th>
<th>Market followers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axway</td>
<td>Jitterbit</td>
<td>-</td>
</tr>
<tr>
<td>Dell Boomi</td>
<td>Seeburger</td>
<td>-</td>
</tr>
<tr>
<td>IBM</td>
<td>SnapLogic</td>
<td>-</td>
</tr>
<tr>
<td>MuleSoft</td>
<td>WSO2</td>
<td>-</td>
</tr>
<tr>
<td>Oracle</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TIBCO</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Ovum
Market leaders: Axway, Dell Boomi, IBM, MuleSoft, Oracle, and TIBCO

Axway is a middleware vendor with corporate headquarters in Phoenix, Arizona. It has made strategic changes to its product strategy, resulting in the introduction of the Axway AMPLIFY platform as a multi-purpose, MWaaS suite aimed at a range of hybrid integration capabilities. Axway continues to execute well against an aggressive roadmap for its platform, and over the next 12 to 18 months, we expect it to move up in terms of competitive positioning against leading MWaaS suite vendors.

Dell Boomi is based in Berwyn, Pennsylvania, and can no longer be termed as only a specialized iPaaS vendor. Dell Boomi API Management and Dell Boomi electronic data interchange (EDI) are good additions to its market-leading AtomSphere iPaaS offering. Given the optimum level of integration between different products and the uniformity of the UX, Dell Boomi’s middleware portfolio evaluated in this ODM resembles a platform rather than a suite of cloud-based integration services. Dell Boomi’s middleware business continues to grow at a rapid pace.

IBM is a major enterprise software (including middleware) vendor headquartered in Armonk, New York. IBM’s “Connect” series offerings (IBM App Connect and IBM API Connect) cater for cloud integration and API-led integration and API management requirements, and it has dedicated products for B2B, mobile applications, and IoT integration. IBM has undertaken significant new product development to develop a comprehensive MWaaS suite, and this business continues to grow at a good rate for IBM.

MuleSoft is an established middleware vendor headquartered in San Francisco, California. MuleSoft Anypoint Platform is a unified solution for all the hybrid integration use cases considered in this ODM. The Anypoint Platform is a good example of how API-led integration can be used to meet complex hybrid integration needs. MuleSoft’s initial public offering (IPO) on the New York Stock Exchange in March 2017 generated net proceeds of $232.7m and its revenue has grown at above market average rates for the last two years.

Oracle is a major enterprise software (including middleware) vendor headquartered in Redwood City, California. Oracle has progressed well over the last three-year period and has dedicated MWaaS products for each of the integration use cases covered in this ODM. It has had a good level of success in driving cross-sell and upsell of its integration-centric PaaS portfolio to existing customers and has added many net new customers for this set of PaaS products. With more time in the global MWaaS market, we expect Oracle to move further up in terms competitive positioning as it continues to execute a progressive product strategy.

TIBCO is a major middleware vendor headquartered in Palo Alto, California. TIBCO has got its mojo back as far as product innovation and sharp focus on execution is concerned. TIBCO has a compelling MWaaS offering and can compete with any middleware vendor for enterprise-scale hybrid integration opportunities. Over the next 12 to 18 months, we expect TIBCO improve further in terms of competitive positioning against its key competitors.

Market challengers: Jitterbit, Seeburger, SnapLogic, and WSO2

Jitterbit is an integration vendor based in Alameda, California. Jitterbit Harmony is an integration MWaaS offering with significant strengths in terms of cloud integration and a rapidly evolving proposition for API creation/composition and API management. Enterprises should consider Jitterbit
Harmony for cloud integration, rapid API creation and management, and API-led integration for mobile and IoT application integration delivered via a unified platform.

SnapLogic is a leading iPaaS vendor headquartered in San Mateo, California. It has partnered with Google (Apigee) and Red Hat (3scale) for rapid API creation and end-to-end API management capabilities. B2B/EDI integration requirements are met via partnerships with specialized vendors, such as DI Central. It should be considered for deals where enterprises are looking for an iPaaS vendor that can support other use cases, such as API management along with cloud integration or software-as-a-service (SaaS) applications/cloud data stores exposed via APIs to mobile applications.

Seeburger has more than 30 years' experience as an integration vendor and is headquartered in Bretten, Germany. Seeburger’s MWaaS proposition, based on Seeburger Business Integration Suite (BIS), supports an API-led approach to integration. As might be expected from a German vendor, Seeburger has a rich heritage in delivering value to its customers via a completely internally developed middleware stack.

WSO2 is an open source middleware vendor with offices in the US, UK, and Sri Lanka. It has an evolving MWaaS proposition and a reasonably priced offering. It can support a range of hybrid integration requirements with a combination of WSO2 Integration Cloud, WSO2 API Cloud, and WSO2 Device Cloud. Enterprises with the development prowess to experiment with and adopt open source middleware should consider WSO2’s MWaaS products.
Market leaders

Market leaders: technology

Table 2: Ovum Decision Matrix: MWaaS suites, 2017–18 market leaders: technology

<table>
<thead>
<tr>
<th>Criteria group</th>
<th>Vendor</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>Cloud integration</td>
<td>Dell Boomi</td>
<td>9.4</td>
</tr>
<tr>
<td></td>
<td>MuleSoft</td>
<td>9.2</td>
</tr>
<tr>
<td></td>
<td>IBM and SnapLogic</td>
<td>9.1</td>
</tr>
<tr>
<td></td>
<td>TIBCO and Jitterbit</td>
<td>9.0</td>
</tr>
<tr>
<td>API platform</td>
<td>IBM and TIBCO</td>
<td>9.2</td>
</tr>
<tr>
<td></td>
<td>MuleSoft</td>
<td>9.1</td>
</tr>
<tr>
<td></td>
<td>Axway</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>WSO2</td>
<td>8.6</td>
</tr>
<tr>
<td>B2B, mobile application, and IoT integration*</td>
<td>IBM</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>Dell Boomi and TIBCO</td>
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<td></td>
<td>Axway and Oracle</td>
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<tr>
<td></td>
<td>MuleSoft</td>
<td>8.6</td>
</tr>
</tbody>
</table>

*Note: This is limited to IoT application integration, which does not necessarily require a distinct product (an IoT platform, for example). Specific capabilities evaluated include mediation with IoT messaging protocols and API-enabled application integration and API management.

Source: Ovum

Table 2 shows the vendors with “top four” scores (on a scale of 1–10, including those with the same scores) for each criteria group under the technology assessment dimension. While the difference between highest and fourth highest scores for the “cloud integration” criteria group was 0.4, the corresponding difference for the “API platform” criteria group was 0.6. For the “B2B, mobile application, and IoT integration” criteria group, the difference between the highest and fourth highest scores was 0.4.

IBM, MuleSoft, and TIBCO are among the vendors achieving “top four” scores across each criteria group under the technology assessment dimension. Dell Boomi and Axway are among the vendors achieving “top four” scores for two criteria groups under the technology assessment dimension.

Dell Boomi achieved the highest score for cloud integration, followed by MuleSoft’s second highest score. With the third highest score, IBM and SnapLogic remain a leading iPaaS vendor. TIBCO and
Jitterbit’s iPaaS offerings continue to gain wider traction and both achieved the fourth highest score for the “cloud integration” criteria group.

IBM and TIBCO achieved the highest score for “API platform” criteria group, with MuleSoft in a close second position. Axway’s API management credentials are well established and it achieved the third highest score. WSO2 was at fourth position in terms of score for this criteria group.

IBM, Dell Boomi, and TIBCO achieved “top two” scores for the B2B, mobile application, and IoT integration criteria group. Axway and Oracle achieved the third highest score, followed by MuleSoft in fourth position.

Market leaders: execution and market impact

<table>
<thead>
<tr>
<th>Criteria group</th>
<th>Vendor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesiveness and innovation</td>
<td>Dell Boomi and MuleSoft</td>
<td>8.4</td>
</tr>
<tr>
<td></td>
<td>IBM, TIBCO, Axway, Jitterbit, WSO2, Oracle, and Seeburger</td>
<td>8.1</td>
</tr>
<tr>
<td></td>
<td>SnapLogic</td>
<td>7.8</td>
</tr>
<tr>
<td>Scalability and medium and large</td>
<td>IBM, Jitterbit, and WSO2</td>
<td>10.0</td>
</tr>
<tr>
<td>enterprise fit</td>
<td>Dell Boomi and Seeburger</td>
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<tr>
<td></td>
<td>TIBCO, Oracle, and Axway</td>
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<td></td>
<td>MuleSoft</td>
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<tr>
<td>Product strategy</td>
<td>IBM, MuleSoft, and TIBCO</td>
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<tr>
<td></td>
<td>Dell Boomi</td>
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<tr>
<td></td>
<td>Axway and Oracle</td>
<td>7.4</td>
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<tr>
<td></td>
<td>SnapLogic</td>
<td>7.1</td>
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</tbody>
</table>

Source: Ovum

Table 3 shows the vendors with “top four” scores (on a scale of 1–10, including those with the same scores) for three key criteria groups under the execution and market impact assessment dimension. As the weighting assigned to the market impact criteria group was minimal, scores for this group have not been included in Table 3. Dell Boomi and MuleSoft provide a well-integrated and home-grown middleware stack, and achieved the highest score for the “cohesiveness and innovation” criteria group. IBM, TIBCO, Axway, Jitterbit, WSO2, Oracle, and Seeburger achieved the second highest score for this group.
IBM, Jitterbit, and WSO2 achieved the highest score for the “scalability and medium and large enterprise fit” criteria group, which takes into account scalability in terms of the upfront investment needed for a range of use cases and the extent to which subscription charges align with the requirements of midsize enterprises. Dell Boomi and Seeburger achieved the second highest score for this criteria group. TIBCO, Oracle, and Axway achieved the third highest score, followed by MuleSoft with the fourth highest score.

IBM, MuleSoft, and TIBCO have well-defined and aggressive product strategies that have rapidly evolved over the last two years. IBM, MuleSoft, and TIBCO achieved the highest score for the “product strategy” criteria group, followed by Dell Boomi with the second highest score. The product strategy driving the progression of the Axway AMPLIFY platform resulted in Axway achieving the third highest score. Oracle achieved joint third highest score and SnapLogic was in fourth position in terms of scores for the “product strategy” criteria group.

Vendor analysis

Axway (Ovum recommendation: Leader)

<table>
<thead>
<tr>
<th>Table 4: Middleware-as-a-service suite components evaluated, Axway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud integration</td>
</tr>
<tr>
<td>API platform</td>
</tr>
<tr>
<td>B2B integration</td>
</tr>
<tr>
<td>Mobile application/backend integration</td>
</tr>
<tr>
<td>IoT application integration</td>
</tr>
</tbody>
</table>

Source: Ovum

Figure 3: Axway radar diagrams

Source: Ovum
Ovum SWOT assessment

**Strengths**

*Robust foundation for hybrid integration use cases, with API-led integration and developer productivity the key themes*

Axway has well-established credentials for API management and B2B integration use cases, and the acquisition and subsequent integration of Appcelerator has bolstered its credentials for mobile application development and back-end integration use cases. Axway achieved high scores for the “API platform” and “B2B, mobile application, and IoT integration” criteria groups under the technology assessment dimension. The Axway AMPLIFY platform is a multi-purpose, MWaaS suite providing a range of hybrid integration capabilities, including cloud integration, rapid API creation/composition and management (an API platform), mobile application/back-end, and IoT integration.

The Axway AMPLIFY platform offers an API-first approach that enables specific platform components/capabilities to be exposed via APIs. The platform allows developers to expose enterprise data assets via APIs that can be easily consumed, and if needed, appropriately monetized via digital channels, such as a data-as-a-service model. The proposition of API- and connector-enabled access to existing enterprise applications and data stores, and application/service and B2B integration infrastructure, delivers significant value for enterprises tackling hybrid integration issues.

**Major transformation in product strategy and focus on open innovation and customer-centric product development**

With the AMPLIFY platform, Axway has transformed its product strategy and directed investment to offer a unified platform enabling users to develop new digital business applications/services and to subsequently integrate them with other applications/services and data stores. It also enables users to rapidly connect and share data with trading partners, derive actionable insights to optimize corresponding engagements, and monetize enterprise data assets.

Axway is now more open to collaborative development and has introduced the AMPLIFY marketplace and developer portal, enabling customers and partners to exploit client SDKs, connectors, edge gateway policies, integration flows, and analytic dashboards. In addition, tools and resources supporting DevOps and API-led integration can foster developer productivity. Public references of customer wins and their success stories indicate good momentum for the Axway AMPLIFY Platform within the first nine months of its launch.

**Weaknesses**

*Some ground to cover in terms of positioning itself as a comprehensive middleware-as-a-service suite vendor*

Axway transformed its product strategy with the introduction of the AMPLIFY platform, but it has some ground to cover in terms of market positioning to effectively compete with its nearest competitors for hybrid integration opportunities. The Axway AMPLIFY platform expands Axway’s credentials beyond a suite of integration, security, and operational intelligence and analytics software products. However, only continued momentum and clear marketing and sales strategies will enable Axway to establish its credentials as a comprehensive MWaaS suite vendor. It has to keep delivering an aggressive product strategy/roadmap and effective execution on the ground. This of course includes the requirement for full-fledged, packaged iPaaS for cloud integration.
**Opportunities**

**Strategic digital business transformation initiatives**

Axway has clearly recognized that data is the core currency of digital business engagement models, and that the context in which data is processed, integrated, and subsequently analyzed to derive actionable insights is critical for ensuring close alignment with customer expectations. With the Axway AMPLIFY platform, Axway is well positioned to broaden its appeal to enterprises embarking on digital business transformation initiatives. Axway is fostering a customer-/user-centric approach to solution development via the introduction of the concept of “customer experience networks” where enterprises harness the combined prowess of ecosystems of developers, partners, suppliers, and employees to better serve users’ requirements.

With its AMPLIFY platform, Axway is promoting an API-led approach to combine and exploit interactions between internal and external parties (employees, suppliers, partners, and developers) and smart devices to deliver compelling customer experiences.

**Threats**

**Nearest competitors in the MWaaS suite market for hybrid integration**

Axway will face competition from its nearest competitors supporting hybrid integration use cases via an API-led approach to integration. This can be as simple as competing with specialized API management vendors or as complex as competing with major middleware vendors targeting customer-driven hybrid integration opportunities in large enterprises embarking on digital transformation initiatives, and for a mix of cloud, B2B, mobile, and IoT integration use cases.

**Dell Boomi (Ovum recommendation: Leader)**

<table>
<thead>
<tr>
<th>Table 5: Middleware-as-a-service suite components evaluated, Dell Boomi</th>
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<tbody>
<tr>
<td><strong>Cloud integration</strong></td>
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<td><strong>API management</strong></td>
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<td><strong>B2B integration</strong></td>
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<tr>
<td><strong>Mobile application/backend integration</strong></td>
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<tr>
<td><strong>IoT application integration</strong></td>
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</table>

Source: Ovum
Ovum SWOT assessment

**Strengths**

**Mature iPaaS offering and rapid expansion of API management and B2B integration capabilities**

Dell Boomi achieved the highest score for the evaluation criteria covered under the cloud integration/iPaaS dimension and has gradually expanded the API management and B2B/EDI integration capabilities of its MWaaS suite. Moreover, Dell Boomi achieved a high score (joint second highest) for “B2B, mobile application, and IoT integration” criteria group under the technology assessment dimension. Dell Boomi’s middleware-as-a-service suite is well integrated and home-grown (except for its ManyWho acquisition for low-code development and lightweight process orchestration, which is beyond the scope of this ODM). It has an evolving proposition in terms of other use cases, such as mobile application/back-end and IoT integration. The progression of Dell Boomi API management over the last 12 to 18 months is particularly noteworthy.

The spring 2017 release of Dell Boomi platform introduced a dozen new pre-built integration templates (part of Boomi Process Library) to help less skilled users develop integration flows on AtomSphere iPaaS. In addition, Dell Boomi introduced new connectors for integration with AWS, Microsoft Azure, and Google PaaS. In the context of B2B/EDI integration, Dell Boomi recently introduced a new user interface providing a single view of all trading partner relationships, and enabling Boomi customers to discover, configure, and deploy changes to partners connections. Dell Boomi has also added support for RosettaNet and Tradacoms EDI standards.

In a nutshell, Dell Boomi offers a unified platform ideal for small and midsize enterprises to meet their varied hybrid integration needs, and it has a leading offering for large enterprises interested in exploiting MWaaS for a range of hybrid integration needs. Dell Boomi is the only integration vendor in this ODM that started as a specialized iPaaS vendor and it has progressed at a rapid pace to develop a MWaaS proposition aimed at cloud integration, rapid API creation and management, B2B/EDI integration, and mobile and IoT application integration use cases.

**Developer productivity and a rapidly evolving middleware-as-a-service proposition at a good price point**

Developer productivity is a key theme for Dell Boomi’s MWaaS suites. While Dell Boomi AtomSphere iPaaS has offered resources and tools enabling faster development of integration flows for a long...
time, it has also added new capabilities to simplify API design and configuration and B2B integration. Based on Ovum’s conversations with enterprise customers, ease of use and simplicity of development of integration flows and API configuration are often cited as key benefits of Dell Boomi’s MWaaS offerings. All relevant MWaaS components, including Dell Boomi AtomSphere, Dell Boomi API Management, and Dell Boomi EDI are available at a good pricing point, which aligns well with the requirements of midsize and large enterprises embarking on agile integration initiatives, such as a shift from ESB-based application integration.

**Weaknesses**

**Marketing beyond AtomSphere iPaaS**

Marketing is more of an area for improvement than a weakness. Dell Boomi enjoys a strong customer retention rate for AtomSphere iPaaS and has achieved good success in upselling and cross-selling cloud-based API management and B2B integration capabilities to its existing customer base. However, in terms of enterprise mindshare, it is considered mainly to be an iPaaS vendor, and the awareness of cloud-based API management and B2B integration offerings is not at the same level as that for AtomSphere iPaaS.

Dell Boomi will benefit from strengthening its product marketing to develop its credentials as an MWaaS suite provider for key hybrid integration use cases. In this context, it would benefit from de-coupling its marketing messaging for relatively new offerings (Dell Boomi API management and Dell Boomi EDI) from that for AtomSphere iPaaS. With an ever-increasing geographical presence and reach, Dell Boomi should target more holistic opportunities beyond only API management offered with iPaaS.

**Opportunities**

**Opportunity to further strengthen footprint in the midsize enterprise segment**

Dell Boomi has a unique market positioning placing it as the go-to vendor for midsize enterprises interested in using cloud-based integration services for cloud integration, API management, B2B integration, and mobile application integration. This does not mean it has a lesser chance of success in the large enterprise segment, but rather a good opportunity to make the most of a low-hanging market opportunity presented by midsize enterprises. Line-of-business (LoB)-led adoption of cloud-based integration services in large enterprises is no different.

**Competing with major middleware vendors for tactical integration initiatives**

Tactical integration initiatives frequently led by LoBs call for simpler solutions, pricing, and sourcing mechanisms to meet pressing integration requirements. Dell Boomi is well placed to capitalize on agile integration market opportunities involving a mix of cloud integration, API management, lightweight B2B integration, and mobile application/backed integration use cases. Dell Boomi has achieved significant success in making inroads into several large enterprises interested in a shift from traditional on-premise middleware toward cloud-based agile hybrid integration capabilities.

**Threats**

**Major middleware vendors offering a comprehensive middleware-as-a-service suite**

Many major middleware vendors have expanded the capabilities of their MWaaS suite for use cases such as API management, mobile application, B2B, and IoT integration over the last 12 to 18 months, and others have used acquisitions and partnerships to develop their competitive positioning in this
market segment. Dell Boomi itself recently acquired ManyWho, a low-code development tool vendor that provides it with workflow automation expertise. Like other vendors in this market, Dell Boomi will face stiff competition for deals involving enterprises that have an existing relationship with a major middleware vendor offering a comprehensive MWaaS suite. This is less pertinent in the case of competing with iPaaS vendors that have an evolving MWaaS proposition, with API management and to a lesser extent mobile application and IoT application/data integration the other key use cases.

IBM (Ovum recommendation: Leader)

### Table 6: Middleware-as-a-service suite components evaluated, IBM

<table>
<thead>
<tr>
<th>Component</th>
<th>IBM Suite</th>
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<tbody>
<tr>
<td>Cloud integration</td>
<td>IBM App Connect</td>
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<tr>
<td>API management</td>
<td>IBM API Connect</td>
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<tr>
<td>B2B integration</td>
<td>IBM B2B Integration Services</td>
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<tr>
<td>Mobile application/backend integration</td>
<td>IBM Mobile Foundation</td>
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<tr>
<td>IoT application integration</td>
<td>IBM Watson IoT platform</td>
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</tbody>
</table>

Source: Ovum

**Figure 5: IBM radar diagrams**

**Ovum SWOT assessment**

**Strengths**

**Comprehensive hybrid integration capabilities**

IBM achieved the highest scores for the “technology” and “execution and market impact” evaluation dimensions. Ovum’s conversations with enterprise IT leaders reflected a significant level of satisfaction with IBM Application Integration Suite, comprising IBM Integration Bus, IBM API Connect, and IBM App Connect. IBM achieved high scores across all the criteria groups under the “technology” evaluation dimension and the highest score for the “B2B, mobile application, and IoT integration” criteria group.
IBM’s MWaaS suite (the components/solutions are listed in Table 6) is based on a sound architectural foundation, and updates and enhancements introduced over the last 12 to 18 months in terms of developer productivity tools or in terms of targeting different user personas (for example, less-skilled users or non-developers) have resonated well with its customer base. IBM has also introduced simplified pricing models for its “Connect” series offerings.

**Good execution against an aggressive product strategy and growth in adoption of middleware-as-a-service portfolio**

IBM was one of the early movers in terms of realizing the need for a comprehensive MWaaS portfolio. Its middleware product portfolio has undergone significant transformation from a mix of hybrid integration offerings (for example, IBM API Management 2.0 and IBM WebSphere Cast Iron Cloud Integration) to a better integrated set of “Connect” series offerings. IBM Application Integration Suite, along with IBM Mobile Foundation and the IBM Watson IoT platform, forms a rich set of products for all types of hybrid integration needs. IBM has also improved usability features to better target less skilled users. Ovum estimates that IBM has achieved above “market average” growth for its “Connect” series offering, which indicates the commercial success of its middleware product strategy.

**Weaknesses**

**Potential customers not always conversant with latest products and developments in IBM’s middleware portfolio**

Over the last two to three years, IBM has changed product positioning, names, and branding for some components in its middleware portfolio. While this has resulted in a more rationalized and relevant portfolio that aligns well with the requirements of enterprises tackling digital business integration challenges, there is still some confusion about the new features and capabilities offered by the latest products and the availability of their predecessors. While this is not unexpected, IBM would benefit from clearer communication with its target customer base to clarify changes in product names, the availability of cloud versions/counterparts and applicable use cases, and product discontinuations.

**Opportunities**

**Major integration infrastructure transformation initiatives undertaken by large enterprises**

While cross-sell and upsell to its existing customer base is a low-hanging opportunity for IBM, a more prominent market opportunity is associated with major integration infrastructure transformation (for example, the shift to cloud-based integration services and the integration of digital channels in existing business processes) undertaken by large enterprises that need to keep pace with changing customer requirements. IBM is well placed to compete with any major middleware vendor for these opportunities.

**Threats**

**Direct competition with major middleware vendors having a rapidly evolving middleware-as-a-service proposition**

Given its position in the global middleware market, IBM competes head on with all the major middleware vendors, both at the individual use-case level and the “MWaaS suite” level. Because almost all the major vendors included in this ODM have introduced new and/or enhanced MWaaS offerings (iPaaS solutions and API platforms, for example), IBM will continue to face significant competition for large enterprise deals where integration infrastructure modernization is a key component of digital transformation.
MuleSoft (Ovum recommendation: Leader)

<table>
<thead>
<tr>
<th>Table 7: Middleware-as-a-service suite components evaluated, MuleSoft</th>
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<tbody>
<tr>
<td>Cloud integration</td>
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<td>API platform</td>
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<td>B2B integration</td>
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<tr>
<td>Mobile application/backend integration</td>
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<tr>
<td>IoT application integration</td>
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</tbody>
</table>

Source: Ovum

Figure 6: MuleSoft radar diagrams

Source: Ovum

Ovum SWOT assessment

**Strengths**

A comprehensive middleware-as-a-service suite for hybrid integration use cases

If there were ever to be a debate on good examples of a cohesive MWaaS suite having a robust architectural foundation with uniformity in UX and tools fostering developer productivity, MuleSoft Anypoint Platform would feature strongly. MuleSoft achieved high scores across all criteria groups under the “technology” evaluation dimension. It also achieved high scores for three key criteria groups under the “execution and market impact” evaluation dimension.

Ovum’s conversations with enterprise IT leaders have revealed the extensive applicability of the Anypoint Platform to hybrid integration use cases, with the benefits of an API-led approach to integration and a good level of integration between different architectural components. While MuleSoft has well-established credentials in the API management and iPaaS markets, it has gradually expanded its features and capabilities in B2B integration space via Anypoint B2B. The Anypoint Platform extends API-led connectivity to IoT integration use cases involving the connectivity and orchestration of data across various IoT devices, as well as integration with back-end applications.

Solid revenue growth and sustained product development

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In March 2017, MuleSoft completed its IPO on the New York Stock Exchange with net proceeds of $232.7m. For the third quarter of FY2017, MuleSoft's revenue stood at $77.6m, an increase of 57% on a year-on-year (YoY) basis. Subscription and support revenue accounted for most of this growth. MuleSoft had achieved 91% growth in revenue for FY2015, and the corresponding figure for FY2016 was 70%. These figures clearly indicate strong momentum in terms of the growing adoption of the Anypoint Platform.

MuleSoft’s Anypoint B2B, introduced in October 2015, offers a lightweight, API-led approach to B2B/EDI integration use cases. Over the last 12 to 18 months, MuleSoft has undertaken significant product development to expand features and capabilities in areas such as B2B integration; collaboration capabilities enabling the creation, discovery, and reuse of APIs and other integration assets, and integration and other capabilities for composing application networks. On July 29, 2017, MuleSoft announced general availability of Crowd, the most recent major release of Anypoint Platform. The release introduced updates to Anypoint Exchange and the new Anypoint Design Center simplifying the discovery, promotion, and consumption of composable IT assets, such as APIs and best-practice templates.

**Weaknesses**

**Market positioning against major middleware vendors with a strong footprint in the large enterprise segment**

While MuleSoft enjoys good brand recognition as an ESB (based on the open source heritage of the Mule runtime), iPaaS, and API management vendor, there is significant scope for improvement in its market positioning against major vendors with established credentials as on-premises middleware (and to a lesser extent, MWaaS) providers for large enterprises. This is more of an area for improvement rather than a weakness. We expect, however, that MuleSoft's position will improve on the back of its recent IPO, continued geographic expansion, and solid revenue growth.

**Opportunities**

**Major deals aimed at digital transformation in the large enterprise segment**

MuleSoft has achieved critical mass in terms of revenue, geographical reach, and its MWaaS proposition to target major deals (more than $1m in annual contract value) involving hybrid integration use cases. Large enterprises embarking on digital transformation initiatives require agile hybrid integration capabilities, including API-led integration and API management, and cloud, mobile application, B2B, and IoT integration. MuleSoft’s Anypoint Platform fits the bill for these requirements.

**Threats**

**Specialized and major middleware vendors targeting hybrid integration opportunities**

MuleSoft will continue to face competition from its nearest competitors for tactical opportunities, particularly specialized API management and iPaaS vendors targeting smaller deals. In the large enterprise segment, for major deals involving more strategic digital business integration requirements, MuleSoft will face competition from major middleware vendors that already have an existing relationship (incumbent vendors) and an evolving MWaaS proposition.
Oracle (Ovum recommendation: Leader)

<table>
<thead>
<tr>
<th>Table 8: Middleware-as-a-service suite components evaluated, Oracle</th>
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<tbody>
<tr>
<td>Cloud integration</td>
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<tr>
<td>Oracle Integration Cloud Service</td>
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<td>API platform</td>
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<tr>
<td>Oracle API Platform Cloud Service</td>
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<td>B2B integration</td>
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<tr>
<td>Oracle SOA Cloud Service and Oracle Managed File Transfer Cloud Service</td>
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<tr>
<td>Mobile application/backend integration</td>
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<tr>
<td>Oracle Mobile Cloud Service</td>
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<tr>
<td>IoT application integration</td>
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<tr>
<td>Oracle Internet of Things Cloud Service</td>
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</tbody>
</table>

Source: Ovum

Figure 7: Oracle radar diagrams

Source: Ovum

Ovum SWOT assessment

**Strengths**

Rapidly evolving and well-balanced MWaaS portfolio catering to a range of hybrid integration needs

Oracle achieved balanced scores across the three criteria groups under the technology assessment dimension. Oracle has dedicated products for each of the hybrid integration use cases covered in this ODM and has invested significantly in product development to develop a compelling MWaaS proposition. Oracle’s integration PaaS (iPaaS) offering, Oracle Integration Cloud Service (ICS), has evolved rapidly over the last three years.

In early 2017, Oracle acquired Apiary to strengthen the API design, testing, and governance capabilities of Oracle API Platform Cloud Service (API CS). Oracle recently announced partnerships with API Fortress and APIMATIC to add and strengthen API testing and monitoring, and API description language (ADL) conversion capabilities. Oracle has also introduced new API monetization and native OAuth capabilities, and significantly enhanced its API performance and business insights.

With the addition of these new capabilities, API CS has further established its credentials as an API
platform (apiPaaS), enabling users to develop, run, manage, analyze, monetize, and secure APIs. Oracle MWaaS products for other use cases (B2B, mobile, and IoT application integration) offer a range of features and capabilities at a good price-performance proposition.

A key facet of Oracle’s middleware product strategy is to penetrate a different enterprise user base (non-technical users), which has special requirements in terms of ease of use and the ability to compose integrations. In this context, Oracle recently introduced Oracle Self-Service Integration Cloud Service (SSI CS) aimed at non-technical users that offers pre-built recipes, a visual editor for creating new recipes, and a drag-and-drop user interface to simplify integration with common SaaS applications and office productivity tools.

**Rapid growth in the adoption of MWaaS products**

For iPaaS, Oracle was arguably the fastest to reach the 1,000-customer mark and this is clear evidence of the success Oracle has had in driving the adoption of Oracle ICS within the existing Oracle middleware customer base and new customers. Oracle API CS is another PaaS product whose adoption has grown at a rapid rate over the last two years. Oracle has had good success in cross-selling and upselling MWaaS products to existing customers, as well as adding a significant number of new customers. Within a period of only three years, Oracle has achieved rapid business growth for this set of PaaS products and a critical market momentum that has resulted in several thousands of customers for individual, integration-centric PaaS products. It is noteworthy that the adoption of a few MWaaS products (for example, Oracle ICS and Oracle API CS) has grown well above the market average rate.

**Weaknesses**

**Oracle was slow in responding to the market demand for MWaaS products**

Oracle has developed its integration-centric PaaS portfolio over the last three years and entered this market when some of its competitors had already established a significant foothold in respective market segments (iPaaS market segment, for example). However, Oracle has achieved above market average growth for some of its integration-centric PaaS products to secure a significant market share in the global MWaaS market.

**Market messaging should emphasize non-Oracle application integration capabilities**

Oracle should focus on improving market messaging to highlight non-Oracle application integration capabilities for both on-premise and SaaS applications. While Oracle ICS can support non-Oracle application integration, Oracle’s position as a major software vendor having an extensive applications portfolio and a few gaps in market messaging have resulted in Oracle iPaaS being perceived as a solution only for “integration for Oracle cloud”.

**Opportunities**

**Hybrid integration opportunities beyond cross-sell and upsell**

While cross-sell and upsell to existing customers (not limited to existing middleware customers) is a low-hanging opportunity for Oracle and it has done very well in this regard, there are ample opportunities for Oracle to secure new customers for its integration-centric PaaS portfolio. These opportunities are not limited to deals involving several MWaaS products (for example, a combination of ICS, SOA CS, and API CS), but also include smaller deals for individual hybrid integration use cases (for example, only ICS and SSI CS).
Threats

Traditional competitors and specialized middleware vendors having a substantial MWaaS proposition

Oracle will continue to face significant competition from traditional competitors such as IBM and TIBCO that have developed a MWaaS suite, particularly because these vendors have a well-established foothold in the large enterprise segment for their on-premise middleware products. Specialized middleware vendors such as MuleSoft and Dell Boomi that have gradually evolved into MWaaS suite vendors will also compete with Oracle for hybrid integration opportunities, more so in the case of net new enterprise customers.

TIBCO (Ovum recommendation: Leader)

Table 9: Middleware-as-a-service suite components evaluated, TIBCO

<table>
<thead>
<tr>
<th>Component</th>
<th>TIBCOCloud Integration</th>
<th>TIBCO Mashery</th>
<th>TIBCO BusinessConnect</th>
<th>TIBCO Cloud Integration /TIBCO Mashery</th>
<th>Project Flogo</th>
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<td>Cloud integration</td>
<td>TIBCO Cloud Integration</td>
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<td>API platform</td>
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<td>B2B integration</td>
<td>TIBCO BusinessConnect</td>
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<td>Mobile application/backend</td>
<td>TIBCO Cloud Integration/TIBCO Mashery</td>
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<td>IoT application integration</td>
<td>Project Flogo</td>
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Source: Ovum

Figure 8: TIBCO radar diagrams

Source: Ovum

Ovum SWOT assessment

Strengths

Compelling middleware-as-a-service proposition for agile hybrid integration

TIBCO achieved high scores across all three criteria groups under the “technology” evaluation dimension. It achieved the joint highest score for the “API platform” criteria group that evaluated rapid API creation/composition and end-to-end API management capabilities. Moreover, TIBCO achieved
the joint highest score for the “B2B, mobile application, and IoT integration” criteria group. TIBCO’s MWaaS portfolio is based on a sound architectural foundation, with API-led integration a core feature. TIBCO offers rapid API modeling, mock-up, and composition capabilities, and developers can create lightweight, stateless integration flows via Node.js custom script capabilities. TIBCO recently introduced the “Web Integrator” feature for TIBCO Cloud Integration to enable completely browser-based modeling of integrations. TIBCO Cloud Live Apps is a low-code development platform enabling non-technical users (non-developers) to build applications by simply answering a series of questions, as well as offering a drag-and-drop approach and pre-built connectors to support integration with on-premises and SaaS applications.

Project Flogo and Project Mashling demonstrate TIBCO’s commitment to the open source community and its focus on supporting the requirements of microservices and edge computing use cases. Project Flogo is an open source, lightweight IoT integration framework for IoT edge applications and cloud-native microservices. TIBCO recently announced that Flogo flows can now be run as functions in AWS Lambda serverless compute. Project Mashling is an open source microgateway aimed at accelerating the development of event-driven microservices. The microgateway has a small footprint and no dependency on any TIBCO middleware product.

TIBCO Cloud Messaging integrates natively with TIBCO Cloud Integration and enables bi-directional data exchange between WebSocket-supported mobile and web apps, IoT devices, and backend systems. TIBCO has significantly beefed up the tools and resources driving developer productivity. It is among the very few middleware vendors that can cater to complex, agile hybrid integration requirements.

**Sound product strategy and execution**

Contrary to popular belief and expectations, TIBCO’s private equity buyout by Vista Equity Partners has resulted in a sharper focus on select priorities for product development and integration, and TIBCO now has highly effective execution capabilities. Over the last couple of years, TIBCO has developed a compelling MWaaS proposition, with significant federation between different components of the middleware stack.

Ovum’s conversations with enterprise IT leaders have revealed that TIBCO’s reinvigorated middleware product strategy is resonating well with its customer base, and it is now better positioned to effectively compete with major middleware vendors targeting agile hybrid integration opportunities in the large enterprise segment. The TIBCO Now 2017 event in San Diego provided a good opportunity to gauge the level of success TIBCO has had in driving adoption of its MWaaS products, and we expect TIBCO to gain significant market share over the next two to three years.

**Weaknesses**

**Slow in responding to a market shift toward middleware-as-a-service paradigms**

TIBCO’s initial foray into iPaaS market (via TIBCO Cloud Bus) was unsuccessful and it took a couple of years for the new middleware product strategy to deliver TIBCO Cloud Integration, its new iPaaS offering. In the second half of 2015, TIBCO acquired Mashery, which had strong competitive positioning in the "API management as-a-service" market. While TIBCO has made strides in terms of developing a compelling middleware-as-a-service proposition, it did lose momentum in this rapidly evolving market due to its slowness in responding to digital business integration requirements of
enterprises. However, over the last 12 months, TIBCO has gained significant ground against its major competitors.

**Opportunities**

**Large enterprises embarking on strategic and transformational integration initiatives**

TIBCO has a functionally rich MWaaS portfolio catering to a range of hybrid integration requirements. To meet the requirements of agile hybrid integration, TIBCO enables developers/integration practitioners to exploit an API-led approach to integration, with a combination of TIBCO Cloud Integration and TIBCO Mashery enabling rapid API creation/composition and end-to-end API management. Many large enterprises are hard-pressed to shift to cloud-based integration services to achieve greater agility in responding to digital business requirements, and MWaaS vendors have benefited from this trend.

TIBCO is well placed to support enterprises that want to invest in major integration infrastructure transformation/modernization initiatives, including the use of a mix of on-premise and cloud-based integration platforms to support digital business requirements.

**Threats**

**Major vendors with established “middleware-as-a-service” credentials**

TIBCO mainly competes with major middleware vendors that have established a large enterprise footprint, with an extensive customer base using both traditional, on-premise middleware and cloud-based integration platforms. Some of its key competitors have developed a comprehensive MWaaS portfolio, with several hundreds of customers using multiple MWaaS products. TIBCO will continue to face significant competition from these vendors for large enterprise deals, even if limited to cloud integration and API management use cases.

**Jitterbit (Ovum recommendation: Challenger)**

<table>
<thead>
<tr>
<th>Table 10: Middleware-as-a-service suite components evaluated, Jitterbit</th>
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<tbody>
<tr>
<td>Cloud integration</td>
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<tr>
<td>API platform</td>
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<tr>
<td>Mobile application/backend integration</td>
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<tr>
<td>IoT application integration</td>
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</tbody>
</table>

Source: Ovum
Figure 9: Jitterbit radar diagrams

Source: Ovum

Ovum SWOT assessment

Strengths

Jitterbit Harmony is a well-integrated and reasonably priced platform for hybrid integration

Jitterbit achieved a high score for the “cloud integration” criteria group and an about average score for “B2B, mobile application, and IoT integration” criteria group under technology assessment dimension. Jitterbit has established credentials as an iPaaS vendor and over the last couple of years, it has expanded features and capabilities to better support API-led integration, API creation, and API management needs.

Jitterbit Harmony is one of the reasonably priced (with a high score for the “scalability and medium and large enterprise fit” criteria group) MWaaS offering, and its adoption has grown at a rapid rate over the last couple of years. Jitterbit achieved a high score for the “cohesiveness and innovation” criteria group under the execution and market impact evaluation dimension.

The most recent release of Jitterbit Harmony (Winter 2017 release) introduced new capabilities to enable less skilled users to build integrations. Enterprises should consider Jitterbit Harmony for cloud integration, API creation and management, and API-led integration for mobile and IoT application integration delivered via a unified platform. B2B/EDI integration is supported via a partnership with Complete EDI.

Weaknesses

Product strategy should continue to focus on developing a full-fledged API platform

Jitterbit Harmony in its current state can meet a range of requirements for API creation and API management needs. This can be largely attributed to its product strategy that has coupled API-led integration capabilities to hybrid integration requirements of existing customers using Jitterbit Harmony as an iPaaS for cloud integration.

This is a good approach if Jitterbit Harmony is to remain an iPaaS for cloud integration that also supports API-led integration, but there are ample commercial opportunities for Jitterbit to direct investment into the development of Harmony as an MWaaS platform for holistic hybrid integration requirements. Jitterbit has recognized this market opportunity and development is under way to round out the existing API platform with enhancements to the rapid API creation/composition, lifecycle
management, security, and analytics capabilities. The addition of monetization tools would be a good step in this regard.

Opportunities

Hybrid integration use cases as an extension to iPaaS for cloud integration

A low-hanging opportunity for Jitterbit is to upsell Harmony (move existing customers to the Harmony enterprise tier) to customers using it primarily for cloud integration. Another opportunity is to target LoB-led adoption in enterprises where the existing setup for the delivery of integration capabilities (involvement of integration competency center and availability limited to on-premise middleware) is cumbersome and time-consuming.

Some customers might experiment with Harmony to see if it can meet other integration needs (for example, the extension of applications/data via APIs to mobile applications and lightweight EDI integration) and not just cloud integration.

Threats

iPaaS vendors offering API management and support for mobile application and IoT integration use cases

Given Jitterbit's market positioning, it will face significant competition from the leading iPaaS vendors that also offer API management, as well as supporting mobile and IoT integration use cases. This is irrespective of the size of deal or enterprise, and is more pertinent in the case of enterprises looking to use MWaaS to achieve greater agility.

Seeburger (Ovum recommendation: Challenger)

<table>
<thead>
<tr>
<th>Table 11: Middleware-as-a-service suite components evaluated, Seeburger</th>
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<tbody>
<tr>
<td><strong>Cloud integration</strong></td>
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<td><strong>API platform</strong></td>
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<tr>
<td><strong>B2B integration</strong></td>
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<tr>
<td><strong>Mobile application/backend integration</strong></td>
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<tr>
<td><strong>IoT application integration</strong></td>
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</table>

Source: Ovum
Ovum SWOT assessment

Strengths

Seeburger BIS offers a good foundation for hybrid integration use cases

Seeburger’s MWaaS offering exploits the features and capabilities of the underlying Seeburger BIS. The Seeburger BIS API solution comprises two key components enabling API-led integration and end-to-end API management, namely, BIS API manager (a web-based portal application) and BIS API gateway. It enables real-time application and data integration, including software-as-a-service (SaaS) applications or cloud-based data stores.

Seeburger’s middleware stack is well integrated and includes only home-grown solutions. Seeburger BIS promotes an API-led approach to integration, which aligns well with the requirements of digital business initiatives.

Seeburger has strong credentials in the B2B integration space and can support the extension of EDI integration capabilities via APIs. It achieved good scores for the “cohesiveness and innovation” and “scalability and medium and large enterprise fit” criteria groups under the execution and market impact dimension.

Weaknesses

Seeburger is a relatively new player in the middleware-as-a-service market

Compared to other vendors included in this ODM, Seeburger’s MWaaS offering is relatively new and the product strategy has so far focused on meeting the requirements of existing customers instead of developing general-purpose, standalone products (for example, fully-packaged iPaaS and API management solutions). As a result, market visibility and enterprise mindshare for the Seeburger BIS API solution is lower than that of competing offerings provided by major middleware vendors.

Aggressive marketing is required for increasing market visibility of new middleware products

As might be expected from a German vendor, Seeburger has a rich heritage in delivering value to its customers via a completely internally developed middleware stack. There is greater transparency in its pricing models, and customers receive what they subscribe to with minimal if any deviation.
However, in this rapidly growing market, too much reliance on positive word-of-mouth marketing and goodwill limits its reach to a broader potential customer base. This is an area where Seeburger needs to invest, particularly as it focuses on driving business growth beyond its home turf (Western Europe).

**Opportunities**

**Cross-sell and upsell to existing customers**

Seeburger’s current middleware product strategy means that cross-selling and upselling to existing customers represents a low-hanging opportunity. Seeburger enjoys a high satisfaction score and retention rate for its existing customer base, which simplifies cross-sell and upsell opportunities. This includes opportunities involving the extension of on-premises integration capabilities via APIs and a shift to cloud-based integration platforms.

**Threats**

**Major middleware vendors targeting strategic hybrid integration opportunities**

Seeburger has earned credibility from its dedicated focus on meeting customer requirements. One of the threats for Seeburger’s business, however, is direct competition with major middleware vendors for strategic hybrid integration opportunities in the large enterprise segment. Without appropriate marketing and packaging of its MWaaS offering, it would be difficult for Seeburger to win against leading middleware vendors that already have hundreds of customers using their products for cloud integration, API-led integration and API management, and mobile application/backend and IoT integration.

**SnapLogic (Ovum recommendation: Challenger)**

<table>
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<tr>
<th>Table 12: Middleware-as-a-service suite components evaluated, SnapLogic</th>
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<tr>
<td><strong>Cloud integration</strong></td>
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<td><strong>API platform</strong></td>
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<td><strong>IoT application integration</strong></td>
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<tr>
<td>SnapLogic Enterprise Integration Cloud and partnerships with Google (Apigee) and Red Hat (3scale)</td>
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<tr>
<td>SnapLogic Enterprise Integration Cloud</td>
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<tr>
<td>SnapLogic Enterprise Integration Cloud and partnership with specialized EDI integration vendors, such as DI Central</td>
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<td>SnapLogic Enterprise Integration Cloud</td>
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<td>SnapLogic Enterprise Integration Cloud</td>
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Source: Ovum
Ovum SWOT assessment

Strengths

SnapLogic Enterprise Integration Cloud is a leading iPaaS offering

SnapLogic achieved a high score for the “cloud integration” criteria group under the technology assessment dimension. The core platform architecture is a key differentiator for SnapLogic iPaaS. The elasticity provides the scalability/infrastructure resources required for supporting low-latency and data-intensive integrations. SnapLogic iPaaS supports different styles (batch, event-driven, and streaming modes) and types of integration (application, data, and API-led integration).

In terms of rapid API creation and end-to-end API management capabilities (API platform), SnapLogic has partnered with Google (Apigee) and Red Hat (3scale). B2B/EDI integration requirements are met via partnerships with specialized vendors such as DI Central. SnapLogic was the first specialized iPaaS vendor to support mediation with the MQTT protocol for IoT integration, and its iPaaS now supports AMQP protocol via RabbitMQ Snap. SnapLogic offers an extensive set of prebuilt connectors (more than 400 Snaps) to simplify application and data integration, and its big data credentials are noteworthy. The Spring 2017 release of SnapLogic Enterprise Integration Cloud introduced several platform enhancements that help users automate, manage, and monitor integration processes. Noteworthy are new features introduced for the SnapLogic Integration Assistant (part of its Iris Artificial Intelligence vision) and its growing adoption. SnapLogic Integration Assistant uses machine learning to deliver step-by-step guidance for building integration flows, as well as providing recommendations for pipeline optimization and integration flow configuration and operations using actual performance insights.

SnapLogic is one of the fastest growing iPaaS vendors and received $40m in Series F funding last year, which augurs well for its global expansion and product development plans. In terms of technology assessment, there isn’t much difference between SnapLogic and the other leading vendors included in this ODM. It should therefore be considered for deals where enterprises are looking for an iPaaS vendor that can support other use cases, such as API management with cloud integration or SaaS applications/cloud data stores exposed via APIs to mobile applications.

Weaknesses

Some gaps in SnapLogic’s middleware-as-a-service offering for hybrid integration
SnapLogic’s product strategy has so far focused on developing a best-of-breed iPaaS solution with extensive data integration capabilities. This strategy has worked well for SnapLogic and its revenue and customer base has grown rapidly over the last two to three years. To address other iPaaS customer requirements (API management and mobile application integration, for example), SnapLogic forged partnerships with specialized middleware vendors. However, use cases other than cloud applications and data integration are still peripheral to SnapLogic’s product strategy. To expand from iPaaS toward a comprehensive MWaaS suite, SnapLogic will have to undertake dedicated product development and fill gaps in its offering to better support a wider range of hybrid integration use cases.

**Opportunities**

**Enterprise-scale deals involving major transformation in integration strategy via iPaaS adoption**

SnapLogic continues to gain significant ground in the large enterprise segment and can meet the requirements of two different types of user: integration practitioners/developers and less-skilled users (non-developers). A major market opportunity for SnapLogic is to target enterprise-scale deals where iPaaS adoption is endorsed by integration competency center (ICC) leaders and iPaaS is used as a strategic integration platform to meet cloud and API-led integration requirements.

The other route is LoB-led adoption of SnapLogic iPaaS and the subsequent proliferation in its use across the enterprise. For these deals, SnapLogic can exploit its partnerships with Google (Apigee) and Red Hat (3scale) to meet API-led integration and API management requirements.

**Threats**

**Leading iPaaS vendors with an evolving middleware-as-a-service proposition**

The combination of “iPaaS and API management” is good enough for meeting some but not all hybrid integration requirements. SnapLogic will face stiff competition from iPaaS vendors with an evolving MWaaS proposition, and particularly from vendors that have a dedicated API management offering. Moreover, SnapLogic will continue to face competition from its nearest competitors (specialized iPaaS vendors) for opportunities involving enterprise-scale and LoB-led integration initiatives.

**WSO2 (Ovum recommendation: Challenger)**

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<thead>
<tr>
<th>Table 13: Middleware-as-a-service suite components evaluated, WSO2</th>
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<tbody>
<tr>
<td>Cloud integration</td>
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*Source: Ovum*
Ovum SWOT assessment

**Strengths**

**Substantial API-led hybrid integration and end-to-end API management capabilities**

WSO2 can support a range of hybrid integration requirements with a combination of its WSO2 Integration Cloud, WSO2 API Cloud, and WSO2 Device Cloud. The WSO2 Integration Cloud combines the capabilities of WSO2 Enterprise Service Bus (a mature ESB product) and WSO2 Data Services Server to enable cloud integration, and WSO2 API Cloud can be used for end-to-end API management and as a component of a solution for mobile application/back-end and IoT integration.

WSO2 achieved a high score for the “API platform” criteria group under the technology assessment dimension. With its MWaaS suite (see Table 13), WSO2 fosters an API-led approach to integration and there is a significant level of integration between the different components of its middleware stack. In March 2017, WSO2 introduced “Ballerina”, a programming language with both textual and graphical syntaxes to enable less-skilled users to develop integration flows by describing them as sequence diagrams.

Enterprises with the development prowess to experiment with and adopt open source middleware should consider WSO2’s MWaaS products. WSO2 API Cloud is a functionally rich product, which in combination with the WSO2 Integration Cloud can provide substantial hybrid integration capabilities.

**Weaknesses**

**Packaging of middleware-as-a-service products could be improved**

On an overall basis, WSO2 provides several components necessary for an MWaaS suite aimed at hybrid integration use cases. However, despite having these essential “nuts and bolts”, WSO2 has not effectively packaged its middleware product set to offer dedicated iPaaS and mobile application/backend integration (mBaaS) solutions. This can be mainly attributed to the completely open source strategy that WSO2 continues to follow and espouse. In the end, open source software calls for more than average development prowess and the ability to experiment (and customize) to work out an appropriate combination for a given integration scenario. However, WSO2 would benefit from better packaging of its products to support customers hard-pressed to meet digital business integration needs.

**Significant scope for improvement in product marketing**
Compared to some of its competitors, WSO2 engages in relatively few marketing activities, which hinders improvement in terms of its brand recognition and competitive market positioning, particularly in regions where it does not have a significant direct presence. Because it mainly targets enterprise/integration architects and hands-on technologists, WSO2’s product marketing activities have a technology-centric flavor. However, it is important to follow a mix of technology- and business-centric approaches to sales and marketing to effectively target a wider range of users and decision-makers, such as business leaders funding an LoB-led digital business initiative or marketing leaders looking for rapid SaaS integration via iPaaS.

**Opportunities**

**Enterprises with skilled developers looking to exploit open source middleware for developing a hybrid integration platform**

WSO2 will largely compete with other middleware vendors for holistic hybrid integration opportunities and not for tactical opportunities involving piecemeal solutions, such as standalone sale of iPaaS or mBaaS. WSO2 can compete for and win opportunities involving enterprises with in-house development prowess to exploit open source middleware for hybrid integration use cases (a mix of API management and on-premise application and SaaS integration scenarios, for example). This could also include development of an SOA and its extension (via additional middleware components) to hybrid integration use cases. WSO2’s MWaaS suite can be used for IoT integration use cases, particularly because it supports a range of common messaging standards and fosters an API-led approach to integration.

**Threats**

**Major middleware-as-a-service vendors targeting holistic hybrid integration opportunities**

WSO2 will face significant competition from MWaaS vendors that have dedicated products for API management and cloud, mobile, B2B, and IoT integration. This is particularly applicable to enterprise-scale deals where integration competency center leaders or senior IT management are involved in decision-making.

**Methodology**

An invitation followed by the ODM evaluation criteria spreadsheet comprising questions across two evaluation dimensions were sent to all vendors meeting the inclusion criteria, with nine vendors opting to participate. Ovum had thorough briefings with the final nine vendors to discuss and validate their responses to the ODM questionnaire and understand latest product developments, strategies, and roadmaps.

This ODM includes observations/inputs from Ovum’s conversations (including those conducted based on customer references) with IT leaders, enterprise architects, digital transformation initiative leaders, and enterprise developers and integration practitioners using MWaaS suites. This is an update of the ODM published on June 29, 2017.

**Technology assessment**

Ovum identified the features and capabilities that would differentiate leading MWaaS suites. The criteria groups and associated percentage weightings are as follows:
Cloud integration (weighting assigned = 35%)

- Use cases:
  - on-premise-to-on-premise application integration
  - on-premise-to-SaaS application integration
  - SaaS-to-SaaS application integration
- prebuilt connectors/adapters or other suitable tools and resources for a range of applications/data sources
- automated suggestions for error resolution
- connector development kit (CDK) or SDK for developing new connectors
- template development kit enabling the creation of reusable integration templates or resources simplifying integration
- data quality services including data profiling, de-duplication, enrichment, cleansing, and matching
- dedicated resources for low-latency integration scenarios
- free trial version
- delivery via a regional data center
- data integration performance
- developer productivity tools

API platform (weighting assigned = 35%)

- API developer portal and customization
- API design and rapid composition capabilities
- API catalogue
- API mockup capabilities
- distributed team participation in API design and development process
- API cloning
- API testing capabilities
- collaboration venue
- dashboard for tracking key metrics
- integration with third-party analytics solutions
- reporting and analytics
- predictive analytics capability
- API monetization tools
- delivery via a regional data center
- infrastructure-as-a-service (IaaS) portability
- open source PaaS compatibility
- deployment on software containers
- multi-data center deployment
- API versioning
API migration automation
Swagger representation
API deprecation and retirement
automated fail over
microservice orchestration and management
support for Node.js framework
routing based on message content, headers, and identity
instant publishing

**B2B, mobile application, and IoT application integration** (weighting assigned = 30%)
- cloud-based EDI integration service
- MFT-as-a-service
- trading partner onboarding and community management
- transaction monitoring
- support for SMEs
- mobile-based monitoring and reporting
- delivery via a regional data center
- support for ad hoc file transfers
- availability of MBaaS
- prebuilt connectors
- SDK for developing custom connectors
- tools and resources simplifying backend integration
- mediation with IoT messaging protocols
- API-enabled application integration
- API management for IoT

In this criteria group, IoT application integration-related capabilities were assigned a minimal weighting.

**Execution and market impact assessment**

In this dimension, Ovum assessed the capability of an MWaaS suite across the following key areas:

**Cohesiveness and innovation** (weighting assigned =30%):
- level of integration between iPaaS/cloud integration and API platforms:
  - at UI level
  - at platform/component API level
- cohesiveness
- API-led connectivity
- homogeneity
- re-architecting for better integration
- uniformity of underlying infrastructure
▪ uniform UX
▪ availability as pure-play PaaS

**Scalability and medium and large enterprise fit** (weighting assigned =25%): investment required for a range of integration scenarios, including:

▪ on-premise-to-SaaS
▪ on-premise-to-mobile application integration
▪ a mix of cloud integration, API management, and mobile application integration scenarios.

**Product strategy** (weighting assigned =45%): product development and improvements/enhancements over the next nine to 12 months, strength of product roadmap, alignment with mainstream architectures, and market presence and penetration.

**Market impact** (weighting assigned =0%): revenue and geographical spread of customer base.

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**Appendix**

**Further reading**

*2018 Trends to Watch: Integration*, IT0022-001091 (October 2017)

*Beyond API management, digital business calls for API platforms fostering good design principles*, IT0022-000928 (April 2017)

*Enterprise Integration Strategy: Critical Success Factors for Hybrid Integration*, IT0022-000843 (January 2017)

*Critical Success Factors for Cloud Integration*, IT0022-000861 (February 2017)

*Critical Success Factors for Enterprise API Initiatives*, IT0022-000846 (February 2017)

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**Ovum Consulting**

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum’s consulting team may be able to help you. For more information about Ovum’s consulting capabilities, please contact us directly at consulting@ovum.com.

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