White Paper

How Modern Integration Platform-as-a-Service (iPaaS) Enables Business Strategy

Sponsored by: Microsoft

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SITUATION OVERVIEW

Integration historically has not been a priority for most business leaders, often leaving IT developers to use either antiquated tools, or custom code, adding to an already mounting pile of technical debt. Or application and data integration was the domain of a specialist group within IT using specialized software and extensive training. Over the last few years, business has exerted more control over technology decision making, and integration is now a core skill needed by every developer. These changes were fueled by four key shifts that tied integration to both digital transformation and modernization initiatives, largely disrupting the status quo and forcing business and IT leaders to refactor the role integration plays in digital enablement:

Acceleration of Cloud: Since the emergence of the COVID-19 pandemic, organizations accelerated their shift to cloud applications and infrastructure to meet new digital needs, including business continuity during shutdowns, remote working, and digital commerce. As many businesses begin using more applications in the cloud, new integration needs in multi-cloud and hybrid deployment scenarios force them to re-think integration approaches.

New Customer Expectations: Customers embrace digital experiences. They expect more from their vendors, complete with up-to-date information for improved situational awareness and decision making. This puts tremendous pressure on developers to deliver more features more frequently that extends from the front-end to the backend to speed up cycle times, offer new digital services and remove any friction that detracts from a good customer experience. Integration software is critical to speed up the refresh rates of data, improve the automation across applications and between trading partners and core to connecting new features into their systems.

Application Architecture Dependency on APIs: Modern applications are composed of services that are accessible via APIs. Each of the services are composed of microservices, also dependent on APIs. The need to manage, secure and govern the lifecycle of these APIs is fundamental, creating urgency to ensure best-in-class API management, API gateway software, and API integration to support modern application development and the ability to orchestrate straight-through-automation seamlessly and reliably.

Need to Reduce Complexity: Truly modern integration platforms enable developers to simplify the development process using codeless tools that support visual development along with libraries of pre-built connecters, integrated security, and familiar developer languages for

scenarios where some code is still required. By providing this through a single suite of tools, integration becomes the connective tissue that helps to simplify the growing complexity of supporting the interconnected parts of enterprise class systems and end-to-end process consistency across application and organizational silos.

Given these market forces, IDC forecasts that the rapid growth in integration and API management over the past few years will continue, with current spending doubling by 2025. Businesses and IT increasingly understand that the need to digitally transform and modernize their applications and infrastructure also means they must modernize their integration approach to achieve both the scale and speed to needed to compete in the digital-first economy.

IN THIS WHITE PAPER

This IDC Whitepaper explores what is triggering the need for businesses to modernize their integration tools, including the challenges faced with legacy tools. It also explores the typical selection process and assessment criteria to select a new tool and the benefits experienced.

IDC conducted a survey of 278 respondents in North America and Europe who were considering or already made the decision to adopt a cloud-based iPaaS tool to modernize their integration, including a significant portion that specifically adopted Microsoft Azure Integration Services as their iPaaS. IDC also interviewed Microsoft Azure customers to gain an in-depth understanding of the evaluation and selection process and key outcomes involved with adopting Azure Integration Services.

FIGURE 1

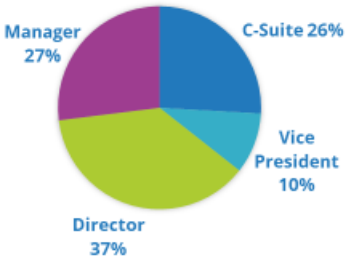
Survey Respondent Demographics

Country

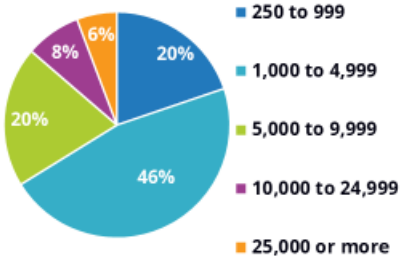
United States	n=107
United Kingdom	n=63
Germany	n=50
Denmark, Norway, Sweden	n=58
Total	N=278

Industry

Job Title



Company Size (Employees)



iPaaS Respondent Criteria

- Use a public cloud
- Have an iPaaS **or** have an iPaaS but plan to supplement or replace within 12 months **or** do not have an iPaaS, but plan to adopt within 12 months
- Knowledgeable of the decision-making process to adopt and/or implement iPaaS

Source: IDC 2021 iPaaS Survey sponsored by Microsoft; n=278

In 2020, the worldwide integration software market grew 11.7% to $6.5 billion. This market includes spending on API management, integration platforms and standalone connectors and adapters, including both legacy and modern integration tools and iPaaS offerings. The market will grow at a rapid 17.6% CAGR to $14.3 billion by 2025, according to IDC's integration forecast. In 2020, cloud spending on iPaaS grew more than seven times faster than software running on-premises. We expect preferences for cloud to continue, and by 2023, the cloud integration segment will exceed the traditional software integration market.

Business and IT leaders, architects, development teams and Center of Excellence integration specialists now more than ever are tuning into the benefits that modern iPaaS tools can offer and the recurring productivity issues these tools can solve.

HOW SHOULD ENTERPRISES EVALUATE INTEGRATION TOOLS

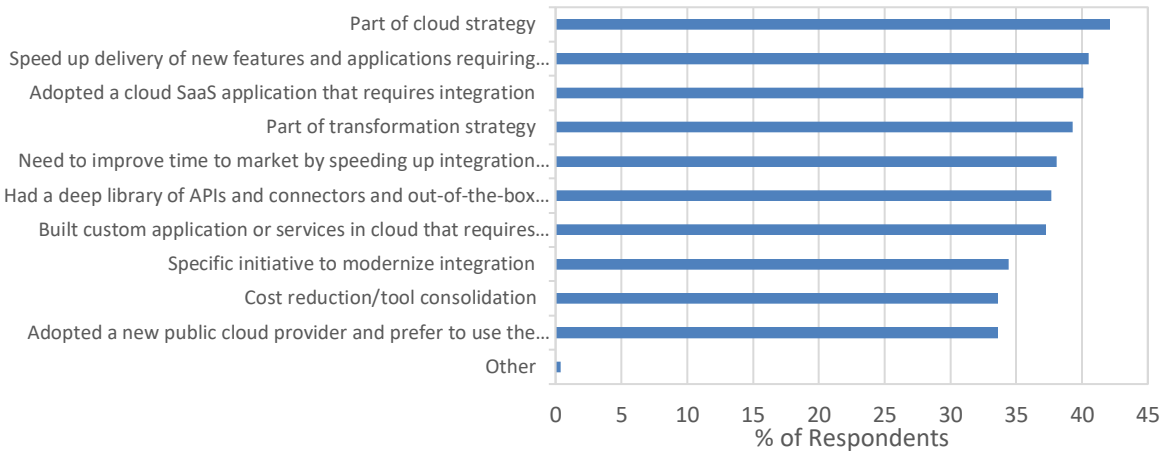
Evaluating new applications and tools can be daunting because they set the architectural guidepost for the businesses' digital transformation for the short and medium term, and possibly beyond. Initial triggers that drive the need to modernize integration often translate into core decision criteria in standardizing on a new tool.

The top driver for adopting a specific iPaaS or cloud integration service is including iPaaS as part of an overall cloud strategy, shown in Figure 2. Tied for second place are the drivers of adoption of a SaaS application that requires integration and the need to increase the speed of delivery of new features and applications. As organizations adopt a cloud or assets running in the cloud, respondents recognize integration becomes a necessary enabling capability that improves the time to business value of cloud adoption. Enterprises want to modernize applications as well as customer experiences and have recognized that new tools are needed to meet these goals.

FIGURE 2

iPaaS Adoption Triggers

Q. What drove your organization's decision to adopt your primary iPaaS or cloud integration service?



Source: IDC 2021 iPaaS Survey sponsored by Microsoft; n=247

An important part of speeding up delivery of new integration features involves reducing the need for custom code. Many of the features of an iPaaS support speed of development, including a deep library of APIs and connectors. The newer integration services combine out-of-the-box assets with codeless features that offer sophisticated integration capabilities without the need for coding skills or custom integration development. Traditionally, there has been the debate about the value of customizing integration versus depending on out-of-the-box features. But as one Azure Integration Services customer shared, the best tools provide a flexible approach that reduces the complexity of custom code as often as possible.

> "We had some custom-built integrations where the complexity and overhead of managing and operating the flows takes significant effort."-- *Online Retailer*

Flexibility in modern tools means providing a combination of codeless and custom code development capabilities. Line of business developers are looking for more ability to enable integrations and automations safely and accurately, but traditional approaches to tooling and governance have reduced the effectiveness. For enterprises that want to truly enable these capabilities, look for tools with discovery and monitoring capabilities, so that governance is about getting to 'yes' as often as possible, as opposed to the historical 'no' that it is associated with governance. This is particularly important for data-sharing initiatives with business partners, and data monetization strategies.

Having a library of connectors that are customizable is another key evaluation criteria because it not only speeds up development, and enables self-service with less risk, but it also helps increase the ROI of core business applications by providing a more complete picture when the connectors are needed. As noted in Figure 2, having a deep library of APIs and connectors and out of the box codeless features that made the iPaaS solution easy to learn and use was a top driver for at least 37% of respondents when selecting a specific iPaaS service. Connectors can often replace custom, point-to-point coded integrations for core business applications, and are supported directly by the integration vendor as source applications are updated via new releases.

Finally, it's important to understand how the new integration tool fits into the target technical architecture. The goal of modernization is to reduce as much technical debt as possible, which often includes single purpose tools that can be redeployed on a common, modern platform. It's also important to evaluate existing skillsets to understand how much existing developer skillsets can be leveraged versus learning new developer tools. This is especially true in organizations with moderate to high developer turnover.

Enterprises that are starting a journey to modernize integration need to weigh several factors, including corporate policies, organizational unit participation, integration patterns and use cases, existing technical architecture, and aspirational technology plans. Many of these factors impact benefit realization potential of new integration tools. Organizations that consider these factors carefully, will have a more successful selection process that leads to stronger adoption and better return-on-investment.

BENEFITS OF IPAAS

One of the trends we've been tracking is the shift in enterprises from centralized IT as the primary adopters of technology to business unit IT adoption. Our assumption coming into this project was that as business units move to cloud, development skills are vertically integrated to directly support a primary cloud and that cloud's ecosystem. This contrasts sharply with central IT policies, traditionally focused on building standard core capabilities based on selecting best-of-breed platforms that can be leveraged across any deployment location.

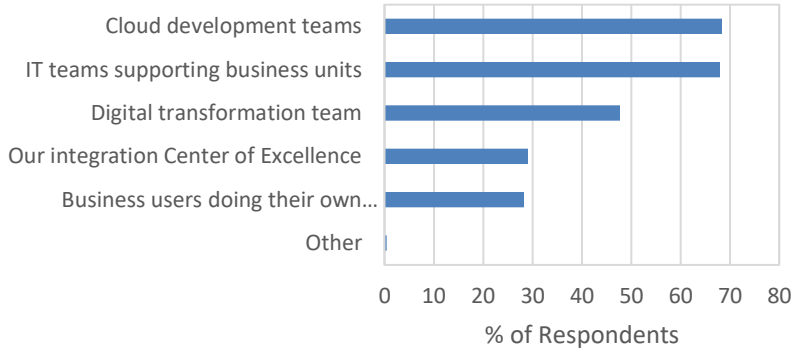
This project gave us an opportunity to validate our hypothesis. For the project, we filtered for respondents running workload on Azure who were also using or planning to use an iPaaS or integration services on Azure. Of that, 77.4% of respondents use at least one Azure Integration Service, which aligns with our hypothesis.

Another test of our hypothesis looks at which developers were using an iPaaS. Figure 3 shows that only 29% of the respondents cited a Center of Excellence (COE) as primary developers and users of iPaaS. The two most commonly cited developer groups were cloud development teams and developers in IT teams supporting business units, each with 68% of respondents. This is a sharp contrast from the time when it was common to have a specialist team or a COE inside IT focusing on integration. With the popularization of REST APIs as part of development, integration development is much more straightforward.

FIGURE 3

iPaaS Developers and Users

Q. Who are the primary developers and users of your iPaaS



Source: IDC 2021 iPaaS Survey sponsored by Microsoft; n=247

In the survey, we filtered for respondents who already adopted an iPaaS or cloud integration service or planned to adopt within 12 months. Of the 278 respondents:

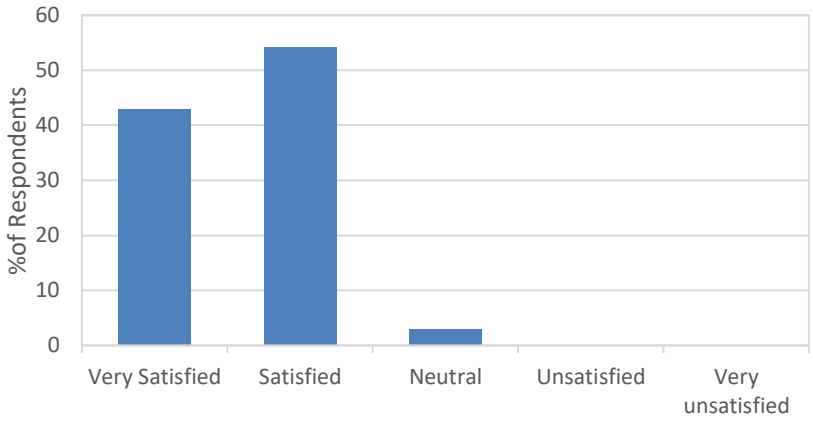
- Only 4.7% of respondents had not yet adopted an iPaaS but plan to within 12 months
- 27.7% planned to supplement or replace their iPaaS within the next 12 months
- 67.6% adopted an iPaaS and have no plans to change.
- 62.8% adopted their iPaaS within the last two years, meaning total benefits may yet increase with more use.

Survey respondents who use an iPaaS or cloud integration services on Azure generally are satisfied shown in Figure 4. This satisfaction also reflects in the individual iPaaS component scores in Figure 5, which all average range between satisfied and very satisfied shown.

FIGURE 4

iPaaS Customer Satisfaction Scores

Q. How satisfied overall are you with your organization's primary PaaS or cloud integration services?

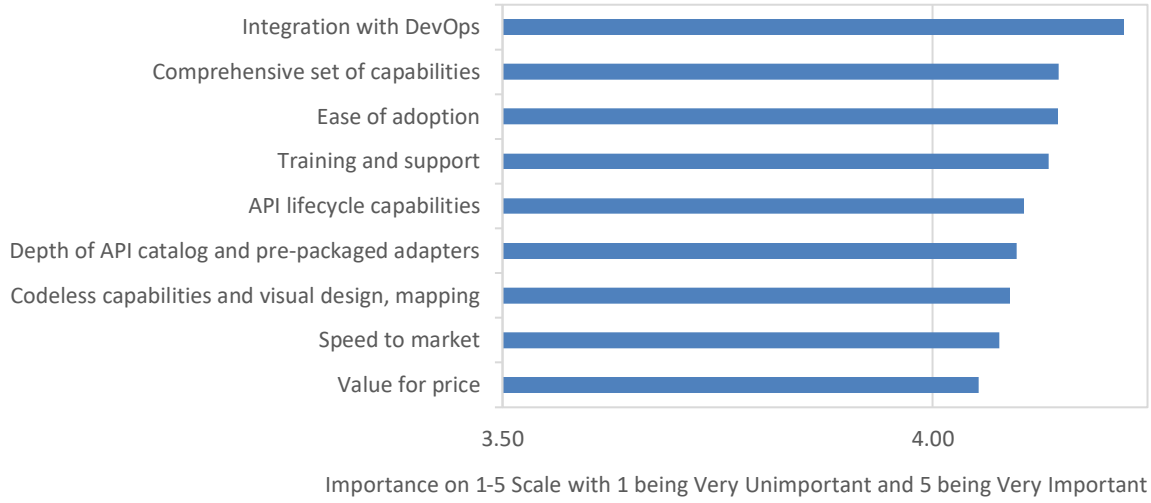


Source: IDC 2021 iPaaS Survey sponsored by Microsoft; n=265

FIGURE 5

Satisfaction with Individual Integration Features

Q. How satisfied are you with the individual features/capabilities of your iPaaS or cloud integration services?



Source: IDC 2021 iPaaS Survey sponsored by Microsoft; n=247

Survey respondents and customers interviewed are realizing benefits for their businesses especially in the following areas, as part of their overall IT and technology strategies:

- Increased speed to market
- Enabling automation and AI
- Improved security, reliability, and governance
- Cost optimization

Increasing Speed to Market

As shown previously in Figure 2, 40.5% of organizations cite "speed up delivery of new features and applications requiring integration" as a top reason for adopting an iPaaS or cloud-based integration tool, making it the second most cited reason overall.

Today, using the vendor and ecosystem services of a particular cloud provider is important. Tomorrow, it may be that expertise gained in using the particular toolset on one cloud are relevant across clouds, which means that platform capabilities matter, especially portability. An important enabling factor for deployment portability for speed to market assumes the platform is built on a cloud native architecture running on Kubernetes. Kubernetes-based platforms in combination of a vendor or enterprise managed integration control plane will offer the flexibility, productivity, and control developers need to build and scale modern applications everywhere needed.

Finally, 80% of survey respondents ranked "codeless capabilities and visual design, mapping" among the top-two capabilities when evaluating iPaaS and cloud integration services. Codeless and visual development capabilities are an essential component of increasing speed to market.

Interviewed organizations also provided examples of how access to functionality such as DevOps integration with Azure Integration Services, self-service capabilities, and the ability to extend and retract their Azure environments in near real-time have made their development teams more agile. Other examples cited include:

- **Speed as compared to on-premises:** "You can ramp up very quickly. For example, I can spin up a virtual machine in 5 minutes or less with an operating system and a public IP address. If I was on premise, I would have to raise a support ticket. I would have to reach out to that team. We would have to have meetings. We have to have all these different things to justify the existence of another VM sitting in an on-premises solution." -- *Global Manufacturer*
- **Increased development speed to prototype functionality for customers and win new business:** "If a new concept comes along that a customer needs, we can prototype quickly and have a leg up on getting that piece of business. Our services often need to combine workloads that run on-premises with cloud workloads. [With Microsoft Azure Integration Services], we can put things in front of the customer quickly." --*Technology Services Provider*
- **Low-code and codeless contributing to speed:** "We are in MVP (minimum viable product) mode, currently, but what we've built using Microsoft Logic Apps so far was very quick to market. We were able to use a smaller engineering team because of low code. It was quick to build and deploy and had 4-5 integrations. And it has been low cost to operate. So far we are happy." -- *Online Retailer*

Enabling Automation and AI

Integration is an enabling component of automating processes effectively and is also key to unlocking AI capabilities. Frequently, automations are triggered by events, key moments in the customer journey or other core processes in the business. These events can trigger automations which generate and assign tasks and add records into systems, such as a customer placing an order in an ecommerce platform. True process automation can't be achieved for many use cases without connected data and applications, because they are the connective tissue that bridge organizational and application silos.

To address this, iPaaS offerings are increasingly enabling the aggregation of data from many data sources to many data stores using pre-built connects. Solutions that have these existing libraries of connectors help accelerate the automation of workflows, for example.

More than half of survey respondents indicated that today, as compared to two years ago, they have enabled "automated processes" with their integration, orchestration, and API management projects for Azure Cloud.

In addition, integrated applications are also key to enabling AI capabilities, such as machine learning. Data aggregated from siloed applications is necessary to train models and to provide full customer context. AI applications utilize this data to make better predictions, making relevant recommendations and enabling improved decision making. This improves improve customer acquisition, loyalty and retention and significantly improve back-office speed and efficiency.

Per Figure 5, respondents to the survey were most satisfied with features that enabled integration with DevOps. This includes simplified testing.

> **Use of templates for simplified testing**: "One thing that Azure brought to our journey is DevOps. We use GitHub, and part of our process is to leverage CI/CD pipelines and built-in test automation. We use the templates they provide." -- *Technology Services Provider*

Integration of builder tools with DevOps and test automation are critical for speed and resiliency. An example is the use of Functions extensions, which enable developers to create, debug, manage, and deploy serverless apps from Visual Studio and Visual Studio Code, are intended to help developers be more efficient while using their local machine yet still be fully integrated with the Azure platform.

Increasing Security, Reliability and Governance Capabilities

Security is important in all facets of integration and managing APIs to ensure reliable and safe connectivity. An abstracted integration suite with embedded security that is easy to use and implement using open protocols while supported by a wide ecosystem of partners is relevant for both start-ups and enterprise needs. Security has long been the top concern for the public cloud because of the shared resource model. Concerns surrounding security, data privacy, and data sovereignty of cloud services are particularly strong inhibitors in Western Europe.

Data is growing faster in the cloud and at the edge as compared to on-premises, making consistent governance of data across locations and environments critical. Legacy, on-premises based governance policies are creating roadblocks for business users to innovate. With cloud native application deployment, organizations need to take a cloud-centric placement and governance approach to data protection, whereby products, systems, and services (i.e., backup as a service, disaster recovery as a service) will be deployed and managed centrally in the cloud, with integration capabilities being key for the ecosystem.

When we asked respondents to rate business outcomes today compared with two years ago for running integration workloads on Azure Cloud, the top two were increased performance (62.5%) and increased security (60.2%). In addition, over the same period 'increased reliability' was cited by 57.2% of customers, meaning less downtime or other impacts to end-users and customers. These are critically important findings because faster time to development isn't helpful if more vulnerabilities are created. This was a top discussion point with our interviews:

- **Use a governance approach to safely enable business units:** "We wanted to be able say "Come, develop!" Except that we have to follow rules that were really designed for on premise-based architecture. The business would say, I need to be able to connect to this system and IT would say no. This has changed with Microsoft iPaaS." -- *Global Manufacturer*
- **Use of Azure policy is helping with managing the environment more securely:** "In the early days, we weren't taking advantage of all policy capabilities, but we've invested time and effort to mature in this space. We're now applying management group policies to help drive standardization and improve governance." -- *Online Retailer*
- **Use of managed identify from Microsoft:** "We previously used a connection string approach for certain resources, now we use (Microsoft) managed identity wherever possible. It's a simple, quick way to manage our security effectively. The combination of RBAC (role-based access controls) and network allow-lists is a powerful combination"-- *Online Retailer*
- **End-to-end visibility:** "We [IT] develop and support the integrations for our business. If anything goes wrong, we want to know before the business does. Before [Microsoft Azure integrations], the business would alert us if something was going wrong and we were reacting. That negatively impacted revenue because if it was related to customer billing, it was hard to go back and bill. Thus, one of the things we were looking for was end-to-end visibility of integrations. That brought us to [Microsoft Azure integrations.] Now we can be proactive and find out before the business if anything goes wrong." -- *Residential and Small Business Mechanical System Services Provider*
- **Overall security:** "I was skeptical at first as to the security capabilities [of Microsoft]. That changed after I attended the Ignite conference in November of 2019. I attended the workshops. The detail on security opened my mind to say that Azure was a good way to go. Microsoft has given us the technology and tools for security that we needed, including. concepts such as zero trust, " -- *Residential and Small Business Mechanical System Services Provider*

Cost Optimization

Cost optimization is both a benefit and a best practice for cloud. Many iPaaS vendors offer integration services as a menu which is intended to provide customers the flexibility to only sign up for the services they need. The IDC research found the following ways in which interviewees and surveyed companies found cost benefits:

- **Developer resources are used more optimally, and developers can accomplish more:** 74.4% of survey respondents report increasing the integration development activity with Azure Integration Services over the last two years, with nearly one-third reporting the increase as significant.
  - **POC speed:** "We can make a proof of concept in days rather than months by making use of the pre-built, existing connectors. You have to make tweaks and adjustments, but you don't have to build it from scratch, and that allows us to prove out concepts to customers

relatively quickly, which saves costs and helps win business." -- *Technology Services Provider*

- **Cost transparency:** "The tools you get in the Azure portal make it easy for you to identify what are the high-cost items you're using as so you can target where to try and optimize costs. By surfacing costs at resource group level, it's easy for us to drill down and start seeing which various components that make up the solution are costing us the most."

  -- *Online Retailer*

- **Customers can achieve cost elasticity with the cloud, not paying for resources when not needed:**
  - **Elastic scale of cloud:** "We can spin up 40 servers in 5 minutes and back to zero again. That alone pays for itself." -- *Residential and Small Business Mechanical System Services Provider*

NOTES FROM THE FIELD

As part of this research, IDC interviewed four Azure Integration Services customers to learn about their reasons for selecting the products, their experience in using them and lessons learned. Interview questions included:

- What challenges led to your organization deciding to modernize integration?
- Why did you decide to use Azure Integration Services? Did you consider other products or approaches?
- Describe the learning curve for you or your teams in learning to use components of Azure Integration services?
- What was the biggest benefit you gained over your previous integration tools? What other benefits did you gain?

The following is a summary of each company's prior situation and challenges, reasons for choosing Azure Integration Services, commentary on the learning curve, and the benefits they received. In addition, we provide specific quotes from the interviews in other sections of this paper where they serve as supporting evidence for key points in an integration modernization journey with Azure Integration Services.

Global Manufacturing Company

According to one of the enterprise architects at this 350,000-employee global manufacturer, "We chose Microsoft Azure to be the center of our hub and spoke architecture. From there, it was a natural extension to use Azure Integration Services." The spokes of their architecture require integration with on-premises systems and other cloud/SaaS systems, including Microsoft productivity tools, Microsoft Azure cloud infrastructure, Salesforce, Workday, AWS cloud infrastructure, and SAP. The company also currently uses another solution for integration services for other proprietary needs around IoT devices and data streaming.

Five years ago, the company managed a mostly on-premises architecture with monolithic solutions. This included the old style of APIs that could have 50-100 methods per service, Today, the strategy is different. Their philosophy is to be a no code/low code and buy vs. build company. According to the customer's enterprise architect, "we would rather use no/low code and prefer to configure vs.

customize. If we need to get to custom code, that's ok, but our architectural style is focused no/low code because we don't want to be stuck with on-premises customized applications."

Cloud Architecture Learning Curve

When asked about the learning curve, the enterprise architect discussed the following lessons learned:

- **Learning How to Architect for the Cloud**: "Part of the learning curve with cloud is how to architect. You can't just lift and shift; it will cost you very differently… with on-premises infrastructure, you own a farm of servers. You aren't judged on cost of number of API calls because the cost isn't variable with on-premises infrastructure. You can be lazy in how you architect the solution. But with cloud, you are throttled. For example, you may only be allowed two thousand actions [API calls] per day, so you have to architect differently for the cloud."
- **Carefully Assess the Cost Impact of New Cloud Features**: The team may get recommendations about new services that align with requirements but implementing without factoring in the cost of the service can result in an unexpectedly large bill.
- **Change Policies to Align with Speed of Business**: The changes in policies that were required to adopt cloud at the speed businesses required was a key lesson learned. For example, according to the architect, there is a lot of red take in on-premises architecture. Moving to the cloud required IT to grant access to an IP range or a port. The architect told us that the policy at the time prohibited direct connections. The business teams pushed back on the red tape. Business holds the budget and wants to move at the speed of light. IT's hands were tied because of the policies they had to follow. That led the business to externally adopt cloud technology and bypass IT. As they matured in cloud, policies had to be restructured, according to the architect.

In addition to removing red tape and enabling the business to operate faster, another benefit the company noted of using Azure Integration Services is the ability to bring data from master systems, like SAP, to the cloud so it can be used in other systems and applications. According to the enterprise architect, "we like to think of ourselves as a leader in the industry as far as digital infrastructure and smart infrastructure, so we had to move with the industry to the cloud. In choosing Microsoft Azure, it made sense to use it as the integration layer also. It's ability to integrate within the broader Microsoft solution set is good, and their tool chest is broad and wide."

Technology Services Company

This customer of Azure Integration Services previously delivered its electronic data interchange technology services solely with on-premises infrastructure and architecture. To continue to serve their customers' strict requirements, one key priority was to offer services via the cloud. However, one of the challenges is that those new cloud-based services must speak reliably and securely with the company's on-premises systems. As the company executive noted, "our business strategy is to give complete flexibility to customers in how they consume our services. This requires cloud, and the cloud-based systems must integrate with our core [on-premises] platform."

Microsoft Azure was one of the first clouds they began working with because of the robustness of the solution. As the company executive noted, "[Microsoft Azure] is a very rich tool set. They have the pieces and parts available to make a solution as robust as you need; it's just a matter of cost. And it takes skills and understanding to properly architect and deploy [for the cloud]." When the company began evaluating cloud providers, the company executive said they looked at the main cloud providers. Two key advantages they found in Microsoft Azure were a larger talent pool of people

familiar with the Microsoft Azure ecosystem and, specifically for integration, that when "looked at the richness of the connectors and the maturity of the platform, it led us in that (Microsoft Azure) direction."

As with most iPaaS offerings, Azure Integration Services also has a large library of pre-built connectors. As the company executive noted, "[with Azure Integration Services] you just have to make tweaks and adjustments; you don't have to build it from scratch. This helps us deliver proofs of concepts to our clients in a matter of days rather than months." This was noted in a key feature from other survey respondents as well, as noted in earlier in Figure 2, making it a table stakes requirement.

One part of the learning curve has been with ensuring security without compromising on resilience and reliability. As the company executive noted, "Some people have the impression that security comes automatically in the cloud. In our experience, you have to spend a lot of time architecting the solutions so that you have the security and the reliability pieces covered. And more resilience and reliability are in the premium, pay-for features." Reliability was also a key business outcome experienced by 57.2% of survey respondents in the last two years since modernizing the integration platforms, meaning that security and reliability together can be accomplished holistically.

Rapid Prototyping and Agile Development Critical

Key benefits of using Azure Integration Services included the rapid prototyping that became an advantage in winning new business. Another benefit was the alignment with their journey to the cloud where they have had to simultaneously adopt cloud and also hone their skills in DevOps. "We were already an agile development company, but now we use GitHub as part of our DevOps process. We use the built-in test automation with Microsoft and are working hard to stay on the bleeding edge," the company executive noted.

Organizations are still learning the differences of developing in the cloud for hybrid environments, the executive noted: "Can you build a solution quickly to see whether it works? Yes. Can you bring it to production quickly? That's a different story because all the pieces you might have to worry about in on-premises environment, like security and reliability, you still have to get right in the cloud." It's clear that organizations must continue to focus on the complete people, process and technology picture when working with cloud technology as they modernize.

Online Retail Company

For this online retail company, technology plays the central role in its mission to become the leader in its industry. A principal software engineer and a lead data engineer provided their perspectives to IDC in an interview on their use of Azure Integration Services.

Prior to using Azure Integration Services, the retailer used a variety of integration technologies, but found widespread adoption across the business was more challenging than expected. This was attributed largely to the fact that they were unfamiliar ecosystems for many of their engineering teams.

Key reasons why they adopted Azure Integration Services were:

- Their engineers were already versed in .NET and VS Code, and the familiar authoring tools meant that the learning curve wasn't too steep and they were able to extend those skills to integration patterns. This allows individual teams to take on more integrations as needed, rather than relying on a centralised team - which can become a bottleneck."

- The low code capabilities of the integration services also improved ease of use, further empowering developers to be productive and innovate. Using Microsoft Logic Apps was quick to market, allowed them to use a smaller engineering team, and is low cost to operate.
- The managed identity capabilities of Microsoft Azure Data Factory were a fast way to manage security. The combination of MSI and secrets retrieved from an RBAC secured key vault, meant minimal configuration and connection strings to manage, which helps deliver the capability quickly whilst adhering to security guidelines.

One of the core aspects of this company's culture is innovation, and they had the following to say about working with Microsoft, "We have an excellent working relationship with Microsoft and have regular calls and feedback sessions to ensure that we're using their products as intended, as well as helping to shape their backlog where we think a product can be improved. For Logic Apps Standard, we were early adopters of the Preview versions, so worked closely with Microsoft as the product evolved. We always do our due diligence to determine if it's the right way to solve the problem." The company works with their vendor partners to ensure the service will deliver good value for cost, and solve a pressing need, using the correct tool for the job.

Residential and Small Business Mechanical System Services

For this mechanical system services company serving residential and small business customers, transforming IT into a business partner is a key part of their journey to the cloud. IDC interviewed their VP of IT, director of application and data management and their third-party consultant that serves the company with architecture and development services. Prior to using Azure Integration Services, they had an on-premises solution for integration, which they primarily used to integrate with their on-premises implementation of SAP. The existing integration solution was not meeting reliability standards. They also knew the existing on-premises solution wouldn't grow with their business.

End-to-End Visibility Is Critical

In looking for a new integration solution, one of the things they were looking for was end-to-end visibility of integrations, including with the on-premises SAP systems. According to the VP of IT, "Before, the business would let us know when something was going wrong, and we were reacting. If that was something that impacted revenue, like not sending out a bill, that was a tough one – it's hard to go back to a customer and say you made a mistake." He continued that ideally "we want to know before the business does [if something is going wrong]." When making the decision to choose a cloud provider, Microsoft Azure was a candidate because of their use of Microsoft in other areas including application development, but still, they approached the choice with healthy due diligence. According to the VP of IT, "at first, I was especially skeptical about the ability to secure. I went to Microsoft Ignite in November 2019 and attended the workshops. In short, the detail they provided on security opened my mind to say that [Azure]was a good way to go."

That said, they continue to architect and develop with a cloud vendor agnostic mentality. "That way we can leverage the Legos from other cloud vendors. The way the integration is designed allows us to run on any cloud vendor," stated the company's development services provider. The flexibility that Azure Integration Services provides them to run on other cloud services was a benefit for this company.

The company noted that their prior approach led to high points of failure. According to the VP of IT, "we had to take a level set in the organization. As the business grows, we now have an architectural framework that supports that, with no single point of [integration] failure to present risk. Our cloud agnostic vision allows us to go where we want." The Azure Integration Services are part of the foundational footprint that provides them security and earns the trust from the business.

As part of their strategic mission and journey into the cloud, the company said that IT has become more embedded in the business. "We have helped enable [the business's] vision, and they have embraced us as a partner," said the company's director of application and data management. IDC sees the continued goal of IT and business partnership at enterprises, and it is clearly becoming reality at this company.

AZURE INTEGRATION SERVICES

The Azure Integration Services suite provides a comprehensive set of integrations services that are used standalone and in combination to help customers modernize their integration approaches. The core components include:

- **API Management:** Microsoft's API lifecycle management and gateway services enables the lifecycle management of developing and publishing APIs securely for internal and external developers to use when connecting to back-end systems hosted anywhere
- **Logic Apps:** Intended to provide a tool to create workflows and orchestrate business processes to connect services in the cloud and on premises, including an ecosystem of more than 450 SaaS and cloud-based connectors
- **Event Hubs**: Event ingestion and streaming platform supporting high-speed, high-volume collection, processing, storage and delivery of event data.
- **Event Grid:** Microsoft's event management service meant to act as a single service for managing the routing of all events from any source to multiple destinations.
- **Service Bus:** Microsoft's messaging service to connect on-premises and cloud-based apps and services to implement highly secure messaging workflows
- **Azure Functions:** Microsoft's event-driven, serverless compute platform intended to solve complex orchestration problems
- **Data Factory:** A visual mapping tool to connect data sources to construct ETL and ELT processes and accelerate data transformation, intended to support data pipelines and enterprise workflows. Includes more than 90 built-in connectors.

Azure Integration Services is meant to be a key part of an enterprise modernization journey. As part of their integration modernization, Azure customers frequently use a mix of different Azure Integration Services such as Azure API Management, Logic Apps, Service Bus, Event Grid, Data Factory, Azure Functions, based on what services they need to solve their business integration challenges.

In IDC's most recent integration and API management market share report, Microsoft was the fourth largest vendor and a growth leader. In terms of overall market share including both legacy and modern integration tools, Microsoft ranks 4th in overall market share, capturing 9.5% of the market. That position continued to strengthen as well in 2020, where Microsoft's year-over-year growth was 23.2%.

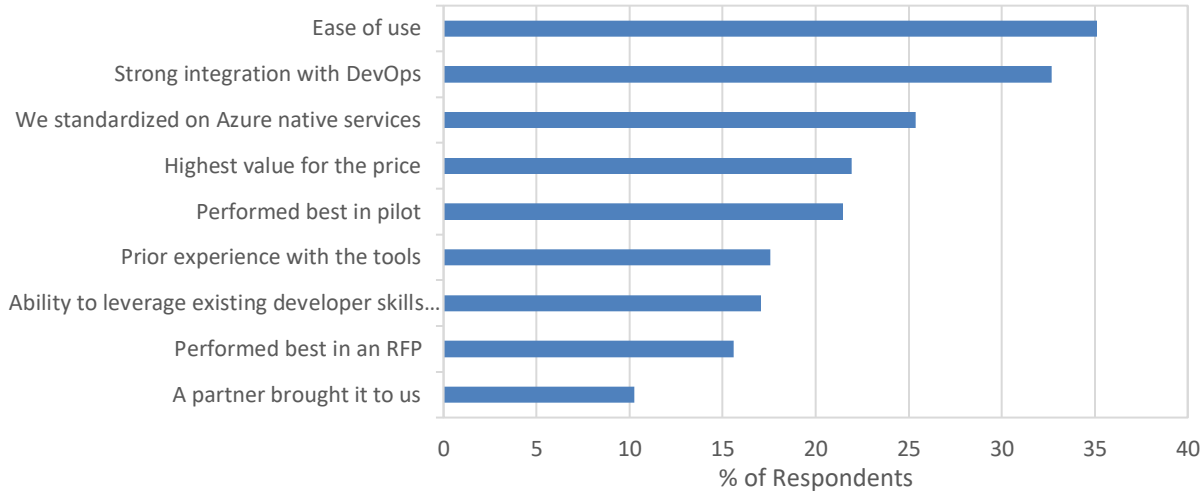
The Selection Process

When it comes to selecting integration tools, interview data suggests that selection of new integration tools tends to follow a less formal selection process, particularly for Azure customers. As shown in Figure 5, ease of use and strong integration with DevOps were the top two reasons organizations identified for why they selected Azure Integration Services, chosen by 35% and 33% of respondents respectively. These reasons indicate that a good number of organizations selecting Azure Integration Services have DevOps practices, and that furthermore, ease of use is not something that can be compromised,

FIGURE 6

Azure iPaaS Selection

Q. Why did your organization select Microsoft Azure Integration Services?

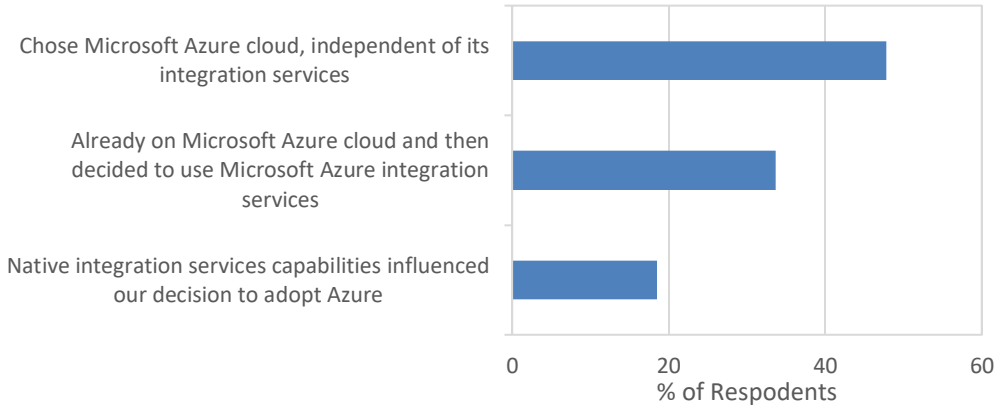


Source: IDC 2021 iPaaS Survey sponsored by Microsoft; n=205

A common selection approach, ranked by 25% of respondents as a top selection reason, is to adopt the tools of the preferred public cloud provider, with the assumption that native services of the vendor will simplify integration and make it more reliable. In the case of Microsoft, customers that have standardized on Azure Integration Services, usually selected Azure cloud first. Figure 7 demonstrates that when enterprises are already Azure customers, Azure Integration Services tends to be a natural choice for them because it both fits their requirements including ease of use and strong integration with DevOps.

FIGURE 7

Which did your organization choose first: Azure cloud or Azure Integration Services?



Source: IDC 2021 iPaaS Survey sponsored by Microsoft; n=205

Respondents also likely equate ease of use with using tools that are in a family of programming languages that developers know. Using modern flavors of these tools makes it easier for developers, along with codeless capabilities, to upgrade their integration skills versus learning a brand-new tool. One existing Azure Integration Services customer phrased it this way.

"With our previous approach, we found that we had to have people with different skill sets, whereas by keeping within the .net ecosystem, we are able to utilize our existing engineering skills. That was part of the decision making that has made us go towards Microsoft based approach." - *Online Retailer*

But it remains incredibly important to review functional requirements for both IT and line of business developers to ensure expected benefits are realized. Businesses may be tempted to skip key parts of the evaluation process and simply make use of tools that are easily accessible either through adjacent functionality or trial access. This approach may work in the short term, but does create some adoption risk long-term, if future needs aren't considered, and new service features aren't adopted when released that can improve benefit realization described earlier.

Azure Integration Services Adoption

As shown in Figure 8, 82.4% of Azure customers report using Azure's API Management capabilities, followed by 55.1% using Logic Apps and 50.7% using Event Hub.

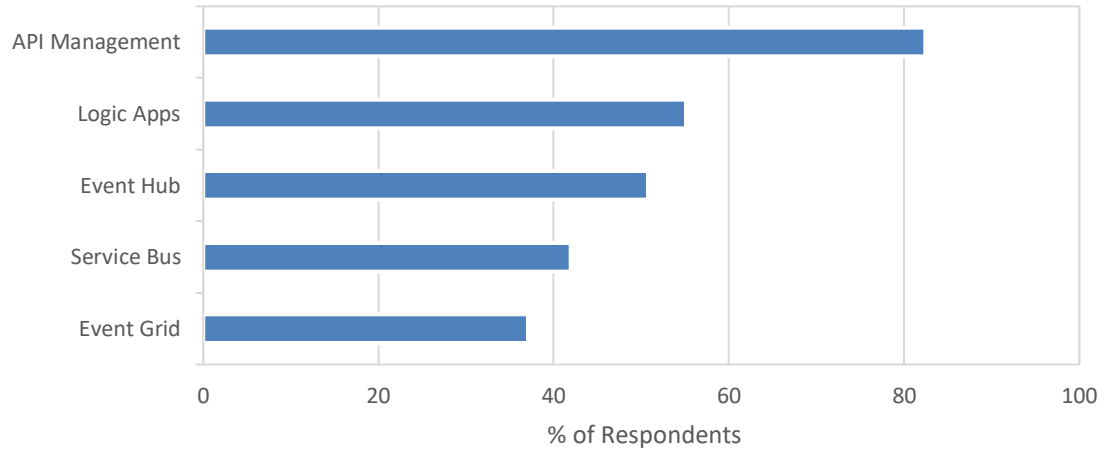
The most popular Azure Integration Service was API management, with 82.4% of survey respondents adopting. Logic Apps was second, with 55.1% adoption. In addition, 36% of respondents reported "Orchestration" as the next capability they intended to adopt, which was the highest of all other capabilities measured. Orchestration is built using Logic Apps.

Event Hub was adopted by 50.7% of respondents and aligns with the growing popularity of modernizing by adopting an event-driven architecture for key systems.

FIGURE 8

Azure Integration Services Adoption

Q. Which of the following Azure Integration Services does your organization use?



Source: IDC 2021 iPaaS Survey sponsored by Microsoft; n=205

The customers interviewed for this research specifically reported high satisfaction with how Azure Integrations Services is increasing speed to market. Similarly, more than 90% of survey respondents that were Azure users said that, compared to two years ago, their company's speed to market for integration/API development and change management is faster (moderately or substantial). Faster and more agile consumption of resources with Microsoft Azure has fostered expanded and enhanced development capabilities for organizations, making it more likely that the services, applications, and features meet the needs of customers and employees. This overall trend observed by IDC means that companies are looking at total value proposition to improve business outcomes when evaluating integration needs.

As a further note on low code development, Azure Integration Services is commonly used in conjunction with Microsoft Power Platform for low code application development. A common use case is for developers to make use of Azure API Management to publish APIs to the Power Platform for discovery and consumption. Developers can also use Logic Apps as a custom connector in the Power Platform and the ecosystem of 450+ SaaS and cloud-based connectors. In summary, the ease to either make new APIs with Azure Integration Services or choose from the set of existing connectors helps enterprises accelerate and automate application development via the low code Power Platform.

CHALLENGES AND OPPORTUNITIES

Organizations looking to modernize and become digital innovators using the cloud require sound integration capabilities as a fundamental enabler. As compared to on-premises infrastructure and systems, cloud workloads must be managed and optimized differently. Everything from developer environments to security requires a new approach. The following are the key challenges, and their related opportunities, essential to consider in your cloud selection and architecture decisions.

- Use Your Full Developer Bench: For many organizations, modernizing integration means moving away from the Integration Center of Excellence approach, and instead making use of all developer skillsets. When asked which teams would be making use of new iPaaS tools, only 15.6% cited an integration center of excellence, lower than any other enterprise team, including business users doing their own development. Instead of having a single, central team, push integration responsibilities out to enable all teams and a wider set of users so that integration-specific developers do not become the bottleneck.
- Minimize Learning Curves: Part of the reason ease of use ranks so highly in the selection process is because reduces the time and effort to learn new tools. Adopting tools that match with your existing skillsets can speed up modernization efforts and reduce learning ramp. You want to enable your developers and architects to focus on learning and adopting where they add value, not on relearning skillsets and difficult to use environments, like programming languages or proprietary scripting languages, just to be able to use integration tools.
- Build Integration with Orchestration in Mind: The strong adoption of API management capabilities noted in the survey, followed by planned adoption of orchestration capabilities, shows that many organizations are thinking about automation incrementally, not holistically. The risk with this approach is that you may need to rework integrations later to achieve more complete process automation that more dramatically reduce overall productivity challenges, speed up cycle times, and enhances the customer experience. When evaluating iPaaS options, understand what your core integration patterns are, map those to the iPaaS capabilities and began to build the more sophisticated orchestration-intensive design patterns as reusable services -- or recipes – that can be rapidly configured and adopted sooner rather than later.

- **Keep Security While Re-thinking Governance**: Adopting cloud tools and best practices can reduce sprawl and reduce accidental exposure, but security and governance tools and approaches must be modernized. Modern tools integrate with access control protocols to ensure consistent and secure access to minimize risk. Rethinking the approach to governance to be about safe enablement will decrease bottlenecks that limit the gains of modern tools, increasing the likelihood that business partners work with IT, not around it.
- **Try, Don't trust:** Complete proof of concepts to test what outcomes you want to achieve, and assess the costs of your integration approach to right-size expectations and budgets on the cost of the approach. Use multiple short-term and aspirational use cases to ensure a good fit with organizational needs.
- **Future proof your investment**: Being cloud agnostic and ensuring you can run in on-premises environments, including the edge, will help future proof your investment. Also, understand the product roadmap for additional pre-built connectors and any throughput limitations, which are key areas to help enable cost savings. In addition, IDC sees that many cloud-first businesses are already building new capabilities with event driven architectures. Where speed and situational awareness matter, adoption will favor EDA. Make sure your integration solution can help enable this future best practice.
- **Select a solution with High Satisfaction:** While many leading integration vendors have large customer bases, ensure that the solution you select provides strong satisfaction, particularly for enabling the benefits that are most important to your organization. While many vendors have strong satisfaction ratings, 97.1 of Azure Integration Services customers reported being satisfied with their iPaaS, with 42.9% being 'very satisfied'.

CONCLUSION

The growing need for modern application integration platforms and related services is arising from expanded use of hybrid cloud, multi-cloud and IoT environments, where access to data and application logic are core enablers in today's digital world. In accordance with cloud development and delivery, today's modern application integration platforms are winning out over legacy tools because of the business's need to scale effectively, deliver reliability, and increase speed to market of new features, functionality and insights. With acceleration of cloud adoption, increased customer expectations for digital experiences, and the need to reduce complexity, it therefore follows that modern application integration platforms have a different set of expectations, benefits, and selection considerations.

IDC research shows that while integration platform selection is often closely aligned with cloud strategy, key benefits are unlocked when companies prioritize ease of use, security and plan integration with process automation in mind. With ease of use, IT teams can enable a broad bench of developers who can create and manage integrations, moving away from yesterday's center of excellence approach which was too often becoming a bottleneck.

Making sure an integration platform has embedded security features, like managed identity, is another way companies can unlock speed benefits at the same time as security benefits, both of which are critical in delivering digital transformation initiatives. By taking a continuous learning approach to cloud architecture and development, including integration strategy, there is no need to simply trust a vendor to deliver capabilities, but rather, to take a strong partnership approach in creating POCs or MVPs (minimum viable products) to be sure that your business needs are met.

Finally, while the growth of cloud computing and services is evident, at the same time, co-existence of cloud, on-premises and edge infrastructure will continue long into the future. Therefore, when it comes to integration platforms, enterprises will find that solutions that provide the future proofing of broad infrastructure coverage, including providing cloud agnostic capabilities, will be an important part of

achieving the combined benefits of cost effectiveness, fast speed to market, and security; they all go hand in hand.

About IDC

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

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