IDC MarketScape

IDC MarketScape: Worldwide PaaS and Developer Services 2017 Vendor Assessment

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THIS IDC MARKETSCAPE EXCERPT FEATURES: SALESFORCE

IDC MARKETSCAPE FIGURE

FIGURE 1

IDC MarketScape Worldwide PaaS and Developer Services Vendor Assessment

Source: IDC, 2017

Please see the Appendix for detailed methodology, market definition, and scoring criteria.
IN THIS EXCERPT

The content for this excerpt was taken directly from IDC MarketScape: Worldwide PaaS and Developer Services 2017 Vendor Assessment (Doc #US43209917). All or parts of the following sections are included in this excerpt: IDC Opinion, IDC MarketScape Vendor Inclusion Criteria, Essential Guidance, Vendor Summary Profile, Appendix and Learn More. Also included is Figure 1.

IDC OPINION

Cloud technology is rapidly changing and developers now have a range of capabilities to assemble an environment essential to productive delivery of applications. With fast disruption occurring in every industry, using a platform-as-a-service (PaaS) solution to gain speed and take advantage of integration points should be considered as part of any organizations DX transformation. Organizations simply can't build applications with the same speed and quality without leveraging a PaaS solution.

IDC considers the PaaS portfolio to consist of tools to automate the application development and deployment life cycle supported by a variety of developer services while abstracting the supporting infrastructure. Depending on the solution needed, application building takes multiple approaches varying from using an abstracted stack of virtualized components to a low/no-code platform. This IDC study excludes the low/no-code platforms while assessing vendors that deliver a comprehensive collection of cloud-delivered services to developers.

The PaaS space as part of the overall cloud landscape is the smallest in volume but the fastest growing (46% in 2016) and arguably the most strategic of choices any organization can make. Vendors have different approaches to helping customers meet the growing demand for application development. The vendors are positioning their value propositions based on their relative strengths in terms of both the solution and their go-to-market approach. Some vendors primarily go directly to customers with a standalone offer, while others deliver their solutions mainly through partners, often in a hybrid environment. Some vendors have a strong footprint in the IaaS space where they make the PaaS solutions more and more an integral part of those offerings where others are pure-play PaaS providers in addition to their SaaS offering like Salesforce.com. For SAP and Oracle, they offer their PaaS solutions in addition to their movement to become a cloud application provider as well as their traditional on-premise software offerings.

Open source software (OSS) has become mainstream, but this is increasingly the way companies build new products today. Virtually every public cloud relies on OSS at some level of the technology stack, and PaaS offerings are often built on open source. CloudFoundry and OpenShift have been leading the PaaS open source movement and both are adopting container orchestration into their solutions. At the same time, standards like Swagger in API management and TensorFlow in cognitive are becoming popular developer services used as part of a larger PaaS solution. IT buyers now see OSS solutions as equal to, or in many cases, superior to proprietary solutions, with many organizations moving to an "open source software first" strategy. PaaS vendors recognize this shift and are increasingly starting with OSS as the basis for new solutions. The challenge is sorting through the multitude of PaaS projects to select those that companies should be paying attention to.

The growth of services that can be easily embedded into applications using APIs and SDKs is giving additional mechanisms in delivering value to users.
PaaS technologies is rapidly changing and customers should keep track of solutions that take full advantage of tools like containers and microservices. While vendors’ support of standards vary, customers should look for solutions that enable composition of applications from a variety of cloud-delivered subscription services, regardless of the source.

The adoption of PaaS accelerates across the enterprise segment. The options available are increasing and each cloud provider continues to add differentiated new services on their platform. At the same time, a lot of the PaaS adoption has been ad hoc, and there is still a relatively low level of maturity across enterprise organizations on how to best adopt PaaS solutions — especially when it comes to using multiple public cloud platforms alongside their existing on-premise applications. The companies that are doing this right are taking a long-term view with a strategically anchored foundation for the transition and clear long-term objectives and goals regarding needs and expectations from the public cloud platforms. Further, they take a structured comprehensive approach to the transition, catering for skill set buildup, process evolution, and reinforcement of new frameworks. This need is accentuated with the dynamic landscape of vendor offerings constantly changing the market and opportunities for adopting cloud solutions.

IDC MARKETSCAPE VENDOR INCLUSION CRITERIA

The criteria for inclusion of vendors in this IDC MarketScape for worldwide PaaS and developer services vendor assessment analysis includes the following:

- Application platform offering should be delivered as a public cloud service and conform with basic cloud characteristics like shared/standard service, solution packaged, self-service, elastic resource scaling, elastic/use-based pricing, ubiquitous (authorized) network access, standard UI technologies, and published service interface/API. Offerings should have efficient support of application life-cycle management features like testing and continuous integration/continuous delivery/deployment (CI/CD). Container/microservices and event-driven computing (aka functions) capabilities will be considered.
- Offering should directly or indirectly support developer services in the integration/API management, big data/analytics, IoT, social, and mobile capabilities.
- Offering should have been available for public use for at least six months.
- Vendor should have revenue from cloud application platform of at least $1 million in calendar year 2016.
- Offering should have at least three production customers (hosted on public cloud) available for reference.

ADVICE FOR TECHNOLOGY BUYERS

The PaaS space is arguably one of the most complex and fastest-growing spaces in the overall cloud industry. Vendors are jockeying for position since controlling the platform also gives vendors a strategic inroad to integrate with IaaS services that some of them provide with high-margin delivery mechanisms already in place. Understanding the vendors motives and broader agenda is important in the decision-making process for selecting the right PaaS vendor. The impact on the PaaS solution has broader impact on the overall application strategy than the initial scope provided.

The vendors covered in this IDC MarketScape are a subset of the overall platform-as-a-service ecosystem and all offer different value propositions based on their relative strength.
IDC recommends that organizations take a closer look at the PaaS space and evaluate if and how it could help accelerate their digital transformation (DX). Virtually all cloud transition strategies would benefit from leveraging PaaS for replatforming existing legacy applications, building net new, or integrating and extending SaaS solutions with custom code.

IDC further recommends that IT leaders challenge their organizations on the usage of PaaS. It can be met with a lot of resistance where incumbent developers prefer to build applications the way they're used to rather than step out of their comfort zone and take advantage of new modern ways of development. It can be equally true on the other end of the spectrum where individual developers get seduced with a new technology choice and lead the company down that path based on their preference to learn that technology. IDC’s advice to leaders is to clearly learn the PaaS landscape and understand the choices available. Challenging old school development practices to improve speed, quality, and cost could accelerate the DX agenda execution.

Specifically, IDC recommends that organizations:

- **Pick no more than two PaaS solutions to reduce complexity.** The reason IDC suggests two PaaS solutions is that typically the need for replatforming existing versus building net-new applications have vastly different requirements.

- **Make the decision on PaaS solutions that should be used based on your talent strategy.** What skills you have available, plan to grow, and acquire should dictate the choices for the PaaS solution you start using. Building the skills and IP around a commercially available PaaS builds up the company's ability to deliver and integrate new IT into the broader DX agenda. It's how a company makes a standard PaaS its own platform with APIs into its existing legacy being developed.

- **Balance lock-in risk with speed to value.** Some solutions have harder integration to IaaS than others as well. Decide on a solution that is more important — speed and availability of abstracted services or full flexibility to integrate to anything. Many applications are required to accept and manage data streaming from external sources, including the growing set of data from IoT sensors. Some PaaS solutions are targeted more than others to build applications for mobile devices. Explosive data growth inputs could provide additional needs for insight into usage patterns that can be leveraged for digital marketing as another example. Assess the specific application requirements that will deliver the value for the business when deciding on the platform to pick.
VENDOR SUMMARY PROFILE

This section briefly explains IDC’s key observations resulting in a vendor’s position in the IDC MarketScape. While every vendor is evaluated against each of the criteria outlined in the Appendix, the description here provides a summary of the vendor’s strengths and challenges.

Salesforce

Salesforce is positioned as a Leader in the IDC MarketScape for worldwide PaaS and developer services providers.

Salesforce is a public company formed in 1999 to offer cloud-based customer relationship management. Salesforce grew quickly as a model of how to deliver enterprise software to the cloud deployment and subscription-focused business models. Salesforce acquired ExactTarget, a provider of cross-channel digital marketing solutions; RelateIQ, a relationship intelligence platform that uses machine intelligence to capture data from email, calendars, and smartphone calls; EdgeSpring, a provider of a business analytics application platform; and Heroku, a deployment-centric, developer-focused application platform.

Salesforce pulled together diverse platform services into the Salesforce Platform, including the Lightning platform, integration services, AI services, process automation, developer tools, and mobile services. In addition, supporting services include Heroku, Salesforce Shield, and IoT services. Salesforce Platform includes AppExchange, the app marketplace, and Trailhead, a learning tool that allows companies to train their teams on Salesforce Platform's services.

Heroku provides a deployment-centric platform supporting polyglot programming language support, open technologies like Docker, and integration with GitHub, one-click scalability, and continuous delivery. Heroku Private Spaces, a feature for Heroku, provides network isolation and dedicated runtime resources for enhanced security and privacy. VPC Peering enables a private network connection between Heroku Spaces and AWS VPC that customers control. Spaces can also be created in geographically distributed regions to run applications closer to users for better latency and experiences and, sometimes, to meet compliance and regulatory requirements.

Salesforce sees its differentiators as support for all types of developers, including coders and business users, security, identity integration across Salesforce Platform services and, finally, a strong ecosystem of add-on providers, AppExchange partners, and open source contributors providing superior developer experience. For Heroku, primary competition comes from Pivotal. Salesforce Platform is the primary PaaS offering from Salesforce. Salesforce is one of the few vendors in the platform-as-a-service market with offerings in both the model-driven and deployment-centric categories. Salesforce completed the Heroku acquisition four years after Heroku was formed as a company.

Heroku uses Amazon Web Services as its sole hosting infrastructure. It was an early adopter of container-based application deployment and management and continues to define the category in terms of developer experience. Heroku supports the build, deployment, and scale of applications written in Ruby, Node.js, Java, PHP, Python, Go, Scala, and Clojure inside isolated containers called dynos.

Heroku also supports buildpacks — open source scripts that can compile source code for an app written in a particular language or framework into an executable app that can run in Heroku’s universal runtime environment. As part of the Salesforce’s Platform, Heroku Enterprise offers Heroku Private Spaces that allows enterprises to have a virtual private PaaS with enhanced network isolation and
access control for a group of apps and data, as well as dedicated resources, private networking, and private databases.

Heroku's pricing model provides plans and flexibility for developers, from students and individual hobbyists to start-ups and enterprises. Dynos are containers that provide vertical and horizontal scalability for running applications and come in different types: Free, Hobby, Standard, and Performance.

The Lightning Platform is the core of Salesforce’s low-code PaaS offering, focused on UI-driven development with drag-and-drop capabilities to compose applications, design workflow, and configure schema for the underlying Salesforce metadata model. The Lightning Platform includes the core PaaS offering previously known as Force.com as well as the more recent introduction of a new client-side presentation layer called Lightning Experience. Lightning Platform can also be customized programmatically with Apex, Visualforce, and Javascript.

The Lightning Platform is primarily licensed on a per-user-per month model for registered users, with additional capacity available for resource-based capabilities like the number of custom objects, amount of storage, and the number of API calls beyond the included capacity that comes with standard Salesforce Editions.

Salesforce intends to maintain or grow its Heroku market share by adding services to the current portfolio and building new capabilities around IoT while leveraging the overall Salesforce ecosystem.

**Strengths**

Salesforce has a strong marketplace offering with a wide partner ecosystem. The mobile, AI, and IoT capabilities add to meeting developer needs. Salesforce has a strong developer outreach, with global deployment possible. Partners and customers reported excellent support of a platform that was easy to deploy by leveraging the AWS infrastructure and Google cloud platform infrastructure was added recently.

**Challenges**

Salesforce does a great job in abstracting the infrastructure but is too opinionated for some customers that need greater control of their underlying infrastructure configuration. Salesforce’s Heroku story needs to communicate value of the ability to build 12 factor applications with granular control of capabilities.

Salesforce is considered as an easy platform to build applications on but not easy to migrate applications off its products. While Salesforce continues to overcome this objection, it should have a good response to customer queries on this subject to open up new types of customers.

**Vendors to Watch**

As platform technologies are maturing to include container-oriented delivery and functions-based approaches, existing leaders in the platform space are pivoting to include a cloud-native approach for developers. Pivotal that does well in enterprise solutions but lacks a public cloud service is worth considering. Pivotal's model is the pairing of the Cloud Foundry platform with a highly structured cloud-native development methodology (e.g., pair programming with Extreme or XP, rapid iteration, microservices). Pivotal continues to ensure that Cloud Foundry takes advantage of innovative technologies such as Kubernetes.
Several vendors are capitalizing on the preference by developers to use the container orchestration approach in handling their application development life-cycle challenges and including higher-level developer-friendly platform services to their solutions. Among them are Apcera, Apprenda, CoreOS, Docker, and Rancher.

Another vendor worth mentioning is Jelastic, founded in 2011, with headquarters in Palo Alto (California, United States) and Malaga (Spain). Jelastic has a platform offering that is meant to reach developers directly or through hosting service providers, and it also provided enterprises a private cloud solution often delivered through systems integrators.

APPENDIX

Reading an IDC MarketScape Graph

For the purposes of this analysis, IDC divided potential key measures for success into two primary categories: capabilities and strategies.

Positioning on the y-axis reflects the vendor’s current capabilities and menu of services and how well aligned the vendor is to customer needs. The capabilities category focuses on the capabilities of the company and product today, here and now. Under this category, IDC analysts will look at how well a vendor is building/delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis, or strategies axis, indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategies category focuses on high-level decisions and underlying assumptions about offerings, customer segments, and business and go-to-market plans for the next three to five years.

The size of the individual vendor markers in the IDC MarketScape represents the market share of each individual vendor within the specific market segment being assessed.

IDC MarketScape Methodology

IDC MarketScape criteria selection, weightings, and vendor scores represent well-researched IDC judgment about the market and specific vendors. IDC analysts tailor the range of standard characteristics by which vendors are measured through structured discussions, surveys, and interviews with market leaders, participants, and end users. Market weightings are based on user interviews, buyer surveys, and the input of IDC experts in each market. IDC analysts base individual vendor scores, and ultimately vendor positions on the IDC MarketScape, on detailed surveys and interviews with the vendors, publicly available information, and end-user experiences in an effort to provide an accurate and consistent assessment of each vendor’s characteristics, behavior, and capability.

Market Definition

Business models are continuing to be disrupted by start-ups leveraging cloud technology that provides low-cost and enhanced agility, with an abundance of open source tools optimizing application delivery. Enterprises face the challenge to digitally transform themselves in a constantly changing environment with unpredictable circumstances in areas of regulations and privacy laws. Applying technology across all processes is seen as a key competitive advantage that can be leveraged to meet unexpected competition. Maturing consumer technologies are raising awareness of the application functions possible and increasing the pressure on IT departments to provide enterprises similar solutions. Applications built
with legacy technology do not allow the same amount of freedom to IT departments compared with born-on-the-web companies. To meet this demand, IT departments are looking for application development tools, environments, and methodologies that will allow them to accelerate development in a multicloud environment that includes both public and on-premise infrastructure. The proliferating array of mobile and networked devices is raising the bar of capabilities expected from vendors.

Platform as a service (PaaS) consists of cloud application platforms (CAPs) and associated developer services that are emerging as key enablers of application development acceleration and cloud/mobile enablement. With growth of data sources, machine learning and cognitive technologies are providing additional insight for enterprises to automate business processes, improving business outcomes. Integration services enabling Internet of Things (IoT) initiatives are driving automation in the manufacturing and healthcare fields, driving change in traditionally inefficient processes.

Cloud application platforms and developer services solutions provide integrated services (i.e., made up of multiple discrete software functions) organized around the tasks of application development and life-cycle management; application deployment; code testing, quality, data analytics, and management; and integration when they are provided as a service delivered through public cloud or specifically designed to be included in a private cloud implementation. Virtualization, containerization, and dynamic scalability can help optimize resource utilization but do not change any of the underlying assignment of key roles and responsibilities. When PaaS is offered as a public cloud, customers use shared runtime platform assets; ownership and management of the platform transition from the customer to the service provider, and the use of platform capabilities is presumed to be shared.

**PaaS and Developer Services**

**Application Platform**

Whether designed for public cloud or private cloud, all PaaS and developer services, at a minimum, must conform to IDC’s eight basic cloud characteristics:

- Solution packaged
- Published service interface/API
- Shared/standard services
- Standard UI technologies
- Elastic resource scaling
- Ubiquitous (authorized) network access
- Self-service
- Elastic, term-based pricing (no perpetual license)

A CAP enables the deployment of an application as well as manages its ongoing operation. These cloud-based tools can be delivered as either a pre-integrated platform or a suite of tools. Cloud development and life-cycle services (CDLS) provide a set of abstracted services and tooling to facilitate the development and enable the deployment of an application as well as manage its ongoing operation. These tools can be delivered as either a pre-integrated platform or a suite of tools that together address cloud-based application development (e.g., cloud integrated development environments [IDEs]), deployment, code analysis, testing, quality, software configuration, and change and process management. Testing is required to ensure that applications built using multiple services meet business expectations and is increasingly included as a function of CDLS.
The core services/capabilities that PaaS provides are discussed in the sections that follow.

**Development**

Development handles the complete application/development life cycle including project management, utilizing development methodologies, troubleshooting, version control, and updates. Further:

- **Integrated development environment:** IDE tools can be delivered as either a pre-integrated platform or a suite of tools that together address cloud-based application development (e.g., cloud IDEs), deployment, code analysis, testing, quality, software configuration, and change and process management.

- **Languages:** Develop, deploy, and manage applications are written in multiple languages – particularly those that are popular with developers or are useful for specific, high-value use cases.

- **Mobile enablement:** This includes application development geared to mobile device operating systems (OSs) and recognizing that mobile apps need to communicate with back-end systems that may be legacy on-premise applications, databases, or systems of record.

**Deployment**

Underneath the umbrella of public cloud service, there are a growing variety of options available relating to public/private/VPN connection, geolocation of data, options for dedicated data storage devices, and so forth. In detail:

- **Hosted private cloud:** Virtually isolated single-tenant services are provisioned from a shared resource pool.

- **Multitenancy:** Multitenant solutions share the abstracted infrastructure in an efficient manner delivered through virtual machines (VMs) and/or databases. In a multitenant public cloud, "shared" resources (e.g., storage for a cloud storage service and a CRM application for CRM SaaS) are physically shared among multiple enterprises.

- **High availability:** These solutions take advantage of multiple certified datacenters, geographic dispersal, redundant load balancers, zero downtime upgrades, and high-performance hardware/software as well as automatic remediation at multiple levels like application instances, container processes, and VM instances.

**Containers**

Software containers are essentially a virtualization technology, similar in concept to hypervisors, except containers abstract an OS instead of server hardware. Each application is presented with a pristine virtual copy of the operating system, and the application is made to believe that it is the only application installed and running on that OS. An application and its immediate dependencies are packaged into a container file. Optionally, various OS user space tools and libraries may also be included:

- Container engine software is responsible for packaging/building the container, implementing the kernel container isolation features, and then providing an abstracted runtime environment that allows the container to reintegrate with the underlying operating system and execute as if it was natively installed on the host operating system.

- Container orchestration software is critical to ensuring high levels of scalability, latency, and security for container cluster management, provisioning, and control based on customer defined policies' requirements. Using technologies such as open source Kubernetes, Docker Swarm, Mesosphere DCOS, and many other solutions, container orchestration solutions are designed to support enterprise on-premise, hybrid, and public cloud infrastructure.
Manage and Run

Continuous integration/continuous delivery (CI/CD) enables application functionality to be easily changed with automation of the commit to deployment process. The goal is to take a code change and make it available in a production environment in as little as a few hours. Further:

- **Management**: Management involves application and infrastructure management, provisioning, deployment, performance monitoring, troubleshooting, analytics, and reporting.
- **Elastic scaling**: Elastic scaling involves the CAP helping developers manage and optimize their infrastructure resources in testing and production (largely dependent on the underlying infrastructure).
- **Continuous integration/deployment**: With more agile development brought on by microservices architectures and DevOps approaches, code was being pushed to test and production at faster and faster rates. The packaging of containers ensured that the application environment would stay exactly the same as it moved through the process. In addition, the fast start-up time of containers was a big benefit in this type of architecture, with it being common to push code in production multiple times a day.

**Developer Services**

**Data**

- **Data services**: Data services include database management and analytics either built into the CAP natively as part of the platform or offered as an add-on capability provided by the CAP vendor directly or by third parties.
- **Analytics**: Advanced and predictive analytics software includes data mining and statistical software. It uses a range of techniques to create, test, and execute statistical models. Some techniques used are machine learning, regression, neural networks, rule induction, and clustering. Advanced and predictive analytics are used to discover relationships in data and make predictions that are hidden, not apparent, or too complex to be extracted using query, reporting, and multidimensional analysis software.

**Integration**

- **Integration**: Connects applications and endpoints easily so that a comprehensive business problem can be resolved by combining the capabilities of diverse resources, and includes management to handle the publication, consumption, and security of APIs.
- **Security**: Describes features at the infrastructure and application levels (via roles and/or permissioned environments, hardware, and datacenter certifications and best practices; integration with existing IAMs; and how data in motion and data at rest are secured) to yield development and production processes that meet compliance requirements, performance SLAs, and security objectives.

**Other Features**

- **Marketplace availability**: Marketplace availability allows users to easily assemble or supplement solutions using applications, services, or APIs offered by the vendor and third parties published in a common catalog.
- **Geographic location**: Spatial information management (SIM) software (also called geographic information system [GIS]) includes tools for data entry/conversion (surveying/COGO, aerial photo rectification, remote sensing, GPS, etc.), mapping/spatial query, and business analysis.
Related Research

- *PaaS Is Passé – Cloud-Native Developer Services Change the Landscape* (IDC DR2017_LAL4_LC_SO, February 2017)

Synopsis

This IDC study represents a vendor assessment of PaaS and developer services through the IDC MarketScape model. The ramp-up of public cloud adoption by enterprises in building applications, accompanied by steady investment in expansion of platform services by the market leaders, has broadened the range of public cloud platform offerings for the end customer. The growth and variety of platform services helps both providers and customers, with public cloud providers investing in automation of application life cycle as well as higher-level services, and end customers picking the most appropriate services for their application needs.

The PaaS market is changing, making the choice of the right solution a multifaceted exercise. Selecting the right PaaS solutions is arguably one of the more difficult ones given its complexity of choices. Enterprises need to assess solutions available and match them with in-house skills and the problem at hand. Some of the questions buyers need to answer are:

- Is the primary need for agility in building new applications or replatforming of existing applications and workloads?
- Is the application meant for high-scale consumer facing or employee/supplier/partner facing? (This will determine need for scale and whether it should be hosted in-house or on a public cloud infrastructure. Based on these answers, customers should determine what are the platform's limitations to meet these needs.)
- Do the PaaS tools provide the levels of high availability, elastic scaling, and security that you require?
- Is the PaaS vendor tied to a single infrastructure?
- Does the application development tool support the languages and frameworks that your developers are using? Does your application need require a next-generation platform using containers?
- Do the PaaS tools have the integration and extension capabilities that will allow you to leverage the platform appropriately, internally and externally, and easily take advantage of third-party applications and services to extend the functionality of your solution?
- Is cloud enablement a strategic imperative? What is the preferred cloud deployment model – public, private, or hybrid?
• Is the vendor viable on a long-term basis and capable of supporting its offering, and is the vendor offering a stable architecture and willing to provide availability stats on a continuing basis? Is the vendor staffed to provide a high level of support?

"Digital transformation is putting a great deal of pressure on organizations to deliver applications at a much higher pace than before in all industries. Vendors are meeting this demand by providing innovative approaches to meeting developer needs taking advantage of a wide variety of cloud technology improvements," said Larry Carvalho, research manager, Platform as a Service. "In the environment of rapidly changing PaaS solutions offered, customers need to match their business needs and available skills to pick the right approach and solution to reduce the deficit between delivery capability and demand for applications."

"Organizations are focused on delivering on their DX agenda’s and their overall cloud transition strategy is a critical vehicle to deliver on that. The opportunity for organizations to adopt PaaS and make that an integral part of their cloud transition strategy to deliver on their digital initiatives are huge. Beyond the obvious speed, quality, and cost benefits, there are strategic options available with readily made components such as IoT integration, and already built components such as advanced speech recognition to just name one example. Organizations can create strategic differentiation leveraging capabilities from PaaS solutions. Just as the opportunity is big, the challenge of doing this in an organized manner is critical. Companies need to take a structured comprehensive approach when developing their cloud transition strategy," states Erik Berggren, VP, Cloud Strategies at IDC.
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