

White Paper

Accelerate Business Transformation and Agility Across Multicloud Deployments

Sponsored by: IBM

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Executive Summary

Enterprises find themselves increasingly faced with much more complex challenges to stay competitive. Part of this complexity is the need to move at a faster pace in keeping with changes in customer needs, regulations, the competitive landscape, technology shifts and, as always, the perennial challenge of budgetary constraints. Companies are now trying to develop more holistic approaches for optimizing the value of their IT assets and associated people and processes to meet critical business objectives, such as optimizing return on investment (ROI), increasing productivity, and developing more innovative products and services. Enterprises are increasingly leveraging the power of hybrid cloud services to both navigate their way to using cloud and ensure continuous operations and access to innovation. This IDC white paper examines and highlights key enterprise needs and requirements in utilizing hybrid cloud services, which spans both the transformation to cloud and the continuous management of cloud environments (both private and public), as well as critical challenges in utilizing these types of services. This white paper also discusses IBM's hybrid cloud services strategy and framework that is anchored on the value proposition of "choice with consistency."

Market Overview

Enterprises continue to look for ways of becoming more agile, becoming more responsive to customer needs, and optimizing ROI. CIOs today face a significant challenge because implementing a hybrid cloud model is not only technically complex but also difficult because it positions the CIO and the IT function to be the integrating mechanism for collaborating with all the other executives and functions in the organization. To achieve these goals, enterprises are utilizing services firms to support both the transformation to and the continuous management of hybrid environments that involve different combinations of private and public clouds as well as legacy environments. IDC research also shows that services firms must address the following needs to help enterprises meet their business and technology goals:

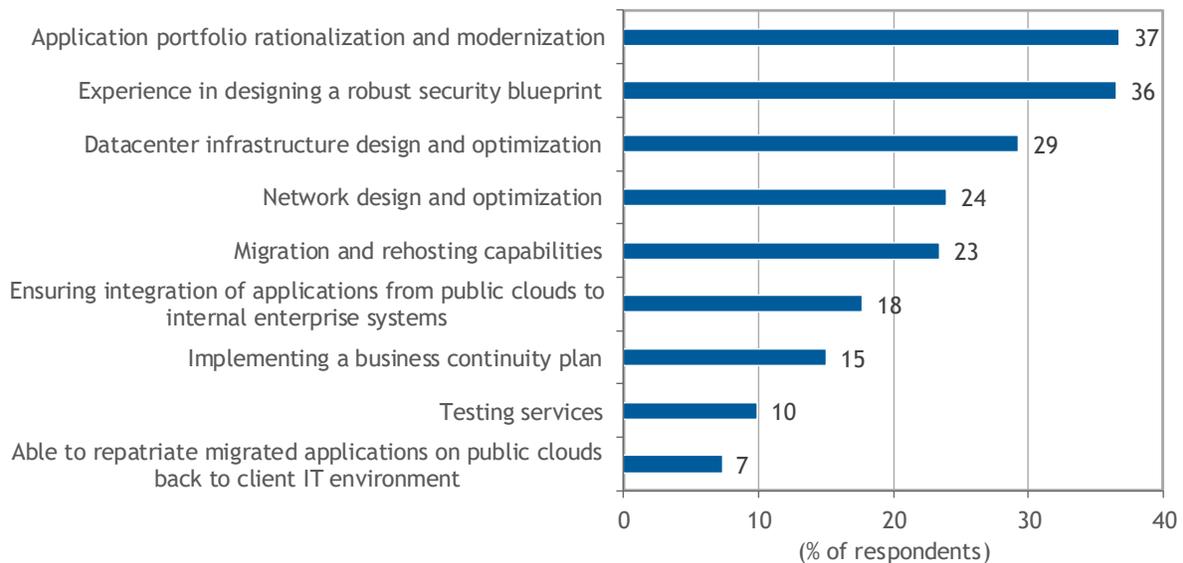
- **Technology advisory and consulting requirements to develop a hybrid cloud strategy.** As Figure 1 highlights, the top technology professional services skills that enterprises expect of service providers in developing a robust hybrid set of capabilities in the move to managed services are application portfolio rationalization and modernization, experience in designing a robust security blueprint, and datacenter infrastructure design and optimization. These requirements reflect the broad breadth of capabilities that providers need to support the extensive landscape of applications and infrastructure used by enterprises as well as address constantly changing and expanding security issues.

- **Transformational road map preferences and capabilities.** As Figure 2 shows, the top priorities of enterprises in transforming to cloud involve upgrading legacy to private cloud using existing assets; rehosting or replatforming legacy or packaged applications onto private and/or private clouds; and replacing existing infrastructure with public cloud infrastructure as a service (IaaS). In addition, firms indicate that top skills they seek in service providers to support this transformation include expertise in public clouds (e.g., AWS, Google, Azure, Alibaba, and IBM Cloud), legacy technology applications (e.g., COBOL, SAP, Oracle, and Microsoft), and infrastructure technology and tools.
- **Drivers and inhibitors of managed cloud (operations/governance).** Top business drivers for using managed services in continuous management of cloud environments (see Figure 3) are that businesses are demanding more agility and/or speed from IT and the need to increase revenue by enabling firms to build new revenue-generating products and services faster. However, customers continue to be concerned about the lack of effective security and that cloud cannot support the operational/performance requirements of critical applications (such as SAP and Oracle), as shown in Figure 4. These inhibitors become more complex for clients that deploy applications across multicloud environments where contracts can have varying levels of governance and service-level agreements (SLAs) and management requires skills across the various cloud platforms. The onus is on service providers to implement a broad set of capabilities to help enterprises achieve results and mitigate risks. Capabilities must include technologies such as cognitive/artificial intelligence (AI), advanced security detection and analytic techniques (e.g., behavioral analysis, correlation of black and white threat lists, and sandboxing), and the use of cloud management platforms (CMPs), containers, and open source.

FIGURE 1

Transformational Requirements in Moving to Managed Cloud Services

Q. Which two professional services would you require of providers to support your move to using managed cloud services?



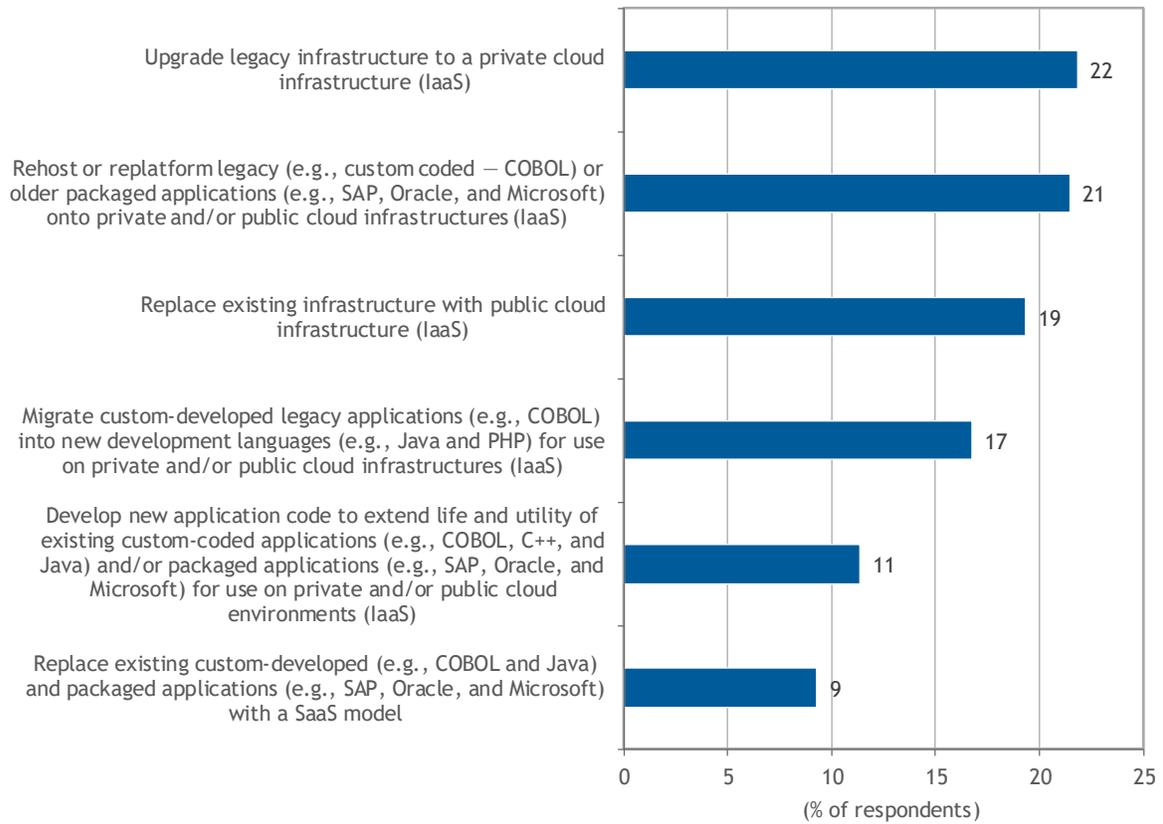
n = 1,500

Source: IDC's *Worldwide Managed CloudView Survey*, 2018

FIGURE 2

Modernization and Transformation to Managed Cloud Services

Q. *Modernization to cloud: In using managed cloud services, which one of the following modernization tactics would be your primary objective?*



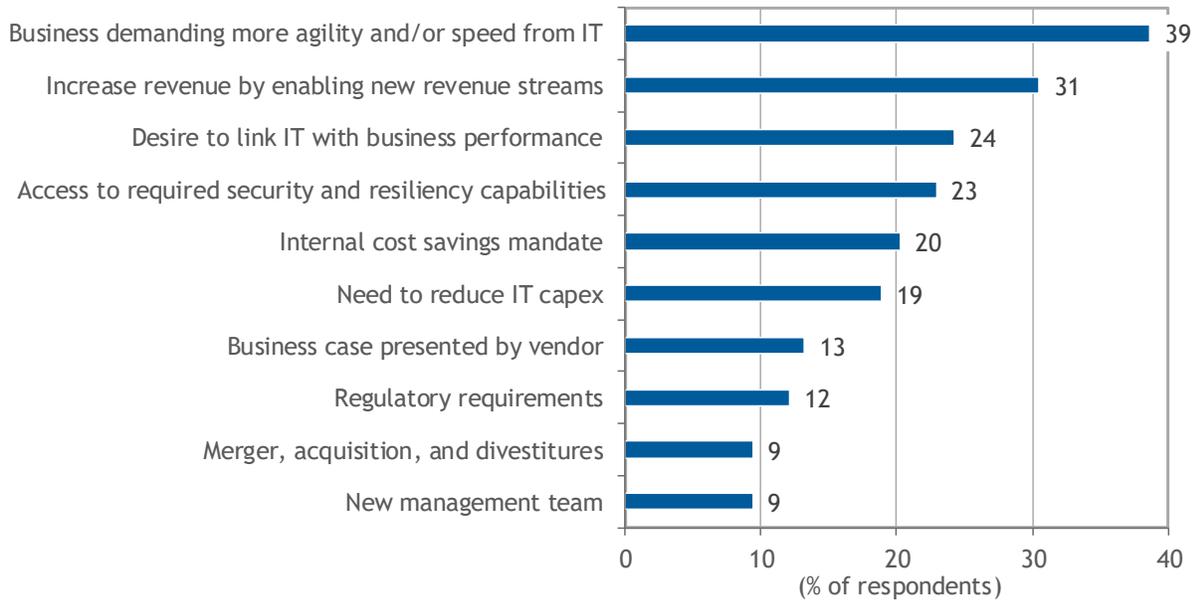
n = 1,500

Source: IDC's *Worldwide Managed CloudView Survey*, 2018

FIGURE 3

Business Drivers for Managed Cloud Services

Q. *Business drivers: Which two of the following do you believe are the primary business drivers in utilizing managed cloud services?*



n = 1,500

Source: IDC's *Worldwide Managed CloudView Survey*, 2018

FIGURE 4

Managed Cloud Services Inhibitors

Q. *Inhibitors: Which two of the following, if any, are major concerns with or worries that may inhibit you from using managed cloud services?*



n = 1,500

Source: IDC's *Worldwide Managed CloudView Survey*, 2018

Building a Hybrid Cloud Services Strategy

Success for enterprises looking to utilize services firms to help transform their operations to a hybrid cloud as well as ensure the continuous operations of their cloud environments, while extracting the optimal value of these services to achieve their business and technology goals, involves defining and managing a complex set of factors. These factors can be segmented into the following six elements. However, firms will need to tailor these to their specific businesses as they will vary by industry and geography.

- **Ensuring an optimal transformation process.** A successful transformation process must include delivering innovation, the most critical factor, while providing technical insights and competencies and ensuring integration of the vendor's project team with the client's internal team. However, service providers must address critical inhibitors that can place limits on enterprise use of third parties for transformational capabilities. Inhibitors include the inability of the provider to transform critical business processes, offer relevant industry insights and competence, and deliver an end-to-end suite of services from business and IT consulting to application development (DevOps) to managed services.

- **Establishing critical business and financial objectives for hybrid cloud services.** Defining the road map to hybrid cloud services starts with establishing the key business objectives that firms are looking to achieve, improving employee productivity, improving supply chain optimization, achieving cost reduction goals, and driving product innovation and market thought leadership. In addition, financial objectives are just as crucial, with most firms viewing ROI and productivity (e.g., revenue per employee) as paramount in utilizing hybrid cloud services.
- **Rationalizing and transforming application portfolio by cloud type.** Optimizing the value of services supporting hybrid clouds requires aligning workload types (e.g., ERP, SCM, CRM, and productivity) by cloud preference (e.g., on-premises private cloud, hosted private cloud, and public cloud). In addition, it is imperative to determine which applications should be maintained, refactored, or completely rewritten and replaced with cloud-native architectures. However, firms indicate that it is critical to assess a broad range of criteria to determine the optimal balance of where applications are hosted (private and/or public cloud). Factors include access to better security, meeting critical regulations, helping standardized IT, optimizing ROI, optimizing utilization, and reducing IT budget. A well-defined road map should result in more optimal performance of the cloud environment and drive higher business performance.
- **Determining the role of key technologies and capabilities.** Implementing a hybrid cloud also requires aligning key technologies and capabilities with each stage across transformation and continuous operations requirements. At the transformational stage, platform as a service (PaaS) will play a critical role in refactoring applications as well as developing cloud-native capabilities. However, the increased use of PaaS should be aligned with the move to a DevOps model of developing, testing, and managing applications on clouds. This will require considerable coordination and orchestration across organizational units and business processes and potential organizational restructuring. Further, when moving into the continuous management of cloud environments, firms will need to implement governance and controls in the form of CMPs that can provide service assurance and financial management across all clouds. This needs to be coupled with use of AI, containers, and open source to ensure speed, flexibility, and greater granularity of services.
- **Defining security and continuity requirements.** The paramount concerns over security in using hybrid cloud require enterprises to incorporate a broad set of capabilities that address key issues such as data breaches, system vulnerabilities, and malware. First, firms need to ensure that providers offer security strategy, planning, policy assessment, and development capabilities across a full range of clouds (private, public, and hybrid) that are designed to meet critical factors such as compliance, regulations, and SLAs. In addition, service providers need to support functional and performance testing of security technologies along with advanced analytics (e.g., predictive capabilities of vulnerabilities and identity and access management data). Implementing these security requirements must be addressed starting at the initial stages of designing a road map in developing hybrid cloud solutions. In multicloud environments, suppliers of managed application services should be looking for ways to deliver standardized services, built-in security, and consistent delivery as measured by quality of services (e.g., availability, provisioning times).
- **Establishing strategic key performance indicators (KPIs) and pricing preferences.** Firms need to clearly define strategic KPIs. These KPIs should include SLAs, with attention to availability and response times of systems and applications as well as required time for provisioning of applications, which can vary from hours to just minutes, depending on the industry and business process. As with service levels, enterprises need to clearly define the pricing approaches they want to utilize, whether fixed or variable, but do so by specific applications and business processes because pricing is driven by a broad set of factors across different types of clouds (private and public) and applications (e.g., ERP, SCM, CRM, and productivity). Ultimately, these KPIs will help determine key capabilities that providers need to deploy, from critical technologies to management processes and governance.

IBM Hybrid Cloud Solutions

IBM's hybrid cloud services strategy is centered on the overarching value proposition of "choice with consistency" that enables the portability and flexibility enterprises are seeking in utilizing multiple cloud resources to meet business requirements. Figure 5 highlights the critical building blocks of this value proposition.

FIGURE 5

Five Key Principles Define IBM's Approach

1 Hybrid Enable enterprises across Public, Private, and traditional environments	2 Multicloud Manage other vendors' Clouds, acknowledging the reality that client environments are heterogeneous	3 Open Build capabilities that are open by design, enabling client flexibility and reducing vendor "lock in"	4 Secure Provide reliability and continuous security for the client's environment	5 Management Consistent service level, support, logging, management and delivery across complete cloud environment
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Source: IBM, 2019

Value Proposition and Differentiators

In delivering "choice with consistency," IBM's hybrid cloud services are designed to achieve the following benefits and value for enterprises:

- Meet customers where they are in their transformation journey while accelerating business transformation and agility
- Minimize risk and cost while leveraging new and existing investments to help innovate and differentiate
- Offer flexibility by decoupling the choice of runtime systems from the choice of cloud deployment model
- Simplify and harden the implementation and management of modern infrastructure capabilities across multicloud deployments
- Provide service assurance via highly secure public and private clouds
- Ensure control and visibility across clouds via hybrid integration and multicloud management
- Provide ability to manage ERP applications across multiple cloud environments with guaranteed SLAs, built-in security, and a unified management portal

Overview of Hybrid Cloud Offerings and Capabilities

To support clients along their journey to implement and manage hybrid cloud environments, IBM utilizes its vast set of resources and capabilities that includes 90,000 cloud experts and experience moving 100,000 workloads to the cloud and managing 30,000 clients worldwide via 60 IBM Cloud datacenters across 19 countries. As part of these capabilities, IBM incorporates its industry expertise

along with proven methodologies and technology across a full life cycle of services, from advising and building to moving and managing hybrid clouds with attention to the following:

- Multivendor, multicloud architectures
- Advisory, migration, and modernization services
- Automated tools that can assess existing applications and workloads and determine what to migrate and modernize and where to best run it
- Methods to transform skills, culture, and processes
- Service management and brokerage to procure and manage multivendor environments
- Management of ERP applications such as SAP and Oracle across public, private, and hybrid cloud environments
- End-to-end governance, security, and compliance expertise to reduce unnecessary risks

Underscoring IBM's services strategy is the company's deep experience in business transformation, application modernization, and cloud-managed services, which supports simultaneous transformation approaches (e.g., lift and shift, contain/extend, refactor/cloud native/microservices, and data classification/movement/governance). Further, IBM's hybrid cloud supports the full array of cloud environments including private and public clouds (across PaaS, IaaS, and software as a service [SaaS], DevOps for continuous transformation, management services (e.g., orchestration, service management, and data governance) for continuous operations, and security to ensure service assurance and resiliency.

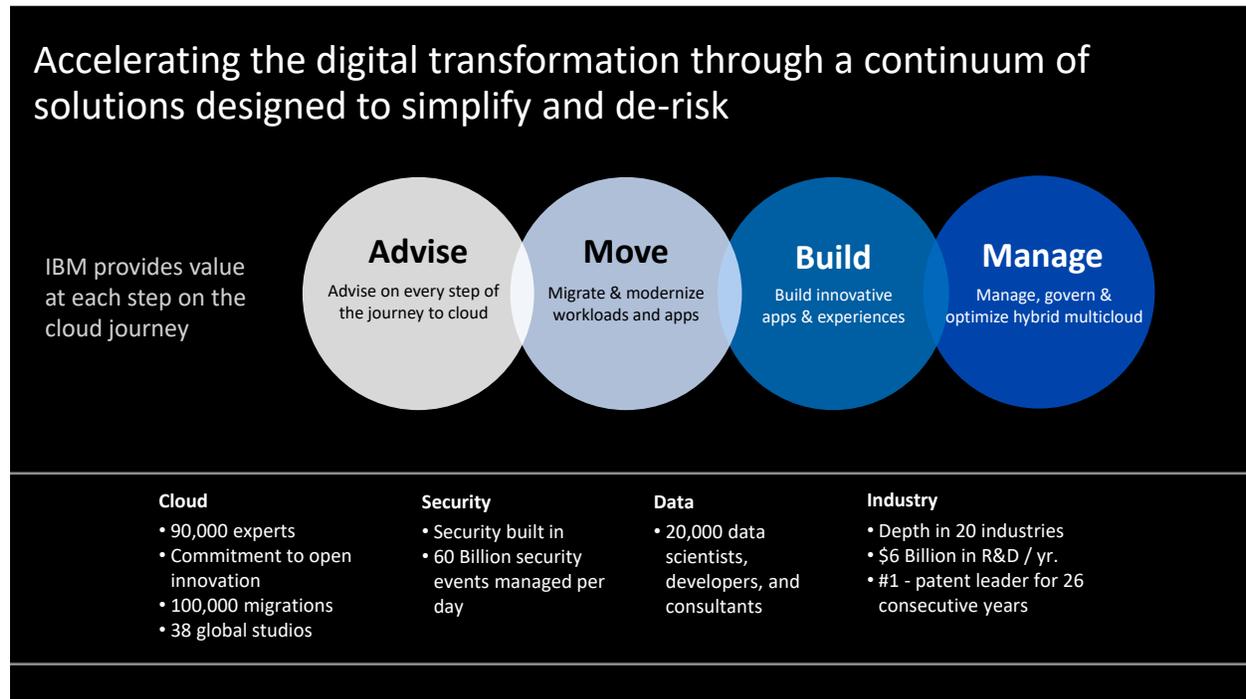
IBM's Approach: Value-Driven Transformation

Figure 6 highlights the life cycle of services that IBM offers, along with core capabilities, to help enterprises transform to a hybrid, multicloud world. These offerings involve the following services.

- **Business-driven transformation:** IBM views itself as the transformation agent that can help enterprises modernize existing applications/infrastructure while transforming from tightly integrated to modular and composable architectures. IBM can draw from the decades of related project knowledge and experience in its internal data lake, dating back well before the use of cloud as an IT delivery model, to help clients drive their transformation agendas.
- **Application modernization:** IBM is an enterprise's multicloud integrator that utilizes key technologies and capabilities (e.g., Kubernetes, microservices, middleware libraries, and PaaS) to transform workloads, processes, business logic, and user experiences that can run on any cloud.
- **Multicloud deployment:** Via its multicloud controller, IBM provides a means of enabling multicloud deployment that can orchestrate workloads and services across multiple clouds.
- **Service management and brokerage:** IBM's AI-driven IBM Services for Multicloud Management becomes the backbone that prioritizes workload standardization, management, governance, orchestration, security, insights, and recommendations across multiple clouds.
- **DevOps:** Through the IBM Cloud Tooling, IBM delivers DevOps transformation that enables continuous delivery, platform management, and support for developer tools.
- **Data governance and security:** IBM Services Platform with Watson provides the underlying data management and AI platform to process data and information across all clouds, supported by a data governance discipline. IBM provides security across data, platforms, and all clouds via IBM's extensive set of security practices, detection capabilities, and automated policies.
- **Business-critical applications:** IBM provides ongoing management of applications such as SAP, Oracle, and Commerce with standardized delivery across the globe supported on private clouds, IBM Cloud, and non-IBM cloud platforms.

FIGURE 6

IBM Business Value-Driven Enterprise Transformation to Hybrid Cloud



Source: IBM, 2019

Challenges and Opportunities

While enterprises acknowledge the role of third-party service providers in supporting transformation to and continuous management of hybrid cloud environments as a means of achieving their business goals, buyers indicate that there are some critical requirements and concerns that all service providers, including IBM, need to address. Specifically:

- **Provide proof points and case references.** Assuring enterprises that they can meet the myriad requirements when using hybrid cloud services requires service providers to provide customer case references. However, client references should provide critical proof points in the value of hybrid cloud that can accelerate transformation, provide for flexibility in cloud resources across service providers and their partner ecosystems, ensure control over end-to-end operations, and allow for continuous innovation.
- **Meet key business requirements.** Fundamental for buyers is ensuring that they can reach their business objectives. In the case of hybrid cloud services, this means optimizing ROI, improving employee productivity, improving supply chain optimization, achieving cost reduction goals, and driving product innovation and market thought leadership. This will require service providers to invest in a wide array of technologies (e.g., AI, cloud management platforms, and containers), delivery options (e.g., public and private clouds), and processes (e.g., DevOps).

- **Define road map of transformation.** Achieving business objectives requires developing a road map of transformation that aligns different workloads (e.g., ERP, CRM, SCM, and productivity) with the optimal cloud solution (e.g., private and public), most appropriate transformational requirements (e.g., rehost, refactor, and rewrite), and most effective architecture (e.g., containers/serverless computing). All these components need to be aligned with critical end-user requirements such as financial management and SLAs need (e.g., availability and provisioning times).
- **Ensure flexibility of cloud options including use of partnership ecosystems.** With agility the top driver for using hybrid cloud services, enterprises will depend on service providers to offer not only a wide array of cloud options (e.g. private and public clouds) but also the flexibility of consuming cloud utilizing any resource. This will require that service providers maintain an agnostic approach by utilizing not just their own cloud resources but also those of other technology (hardware and software) vendors and cloud providers (e.g., AWS, Azure, Google, Alibaba, and IBM Cloud).
- **Support the ability to maintain control.** Loss of control remains a major concern among buyers of hybrid cloud services. While having access to management tools and platforms that can offer visibility in the form of cloud management platforms will help mitigate these concerns, these management platforms also must support more complex needs in providing predictive analytics to ensure operational excellence that is supported by robust security and resiliency capabilities.
- **Ensure robust security and service assurance.** Buyers continuously rank security as their top concern when utilizing hybrid cloud services. Further, for many enterprises, meeting stringent SLAs (e.g., availability and time to provisioning) is also part of the equation of ensuring quality of service. To mitigate these risks, providers need to offer a full array of capabilities across security, paying attention to advanced security techniques as well as incorporating highly redundant cloud environments and greater levels of automation that include AI.

Summary and Conclusions

With the move to cloud as the de facto means of deploying capabilities for IT assets and resources, enterprises are increasingly looking to hybrid cloud services to achieve critical business objectives, such as agility and innovation, while staying competitive. This will require firms to consider the following:

- **Understand the service provider's hybrid cloud strategy and framework.** This is critical in areas such as types of architectures and technologies utilized for hybrid cloud, modernization options, breadth of partnerships with technology firms and public cloud providers, types of controls and governance, and investment strategy to ensure access to innovative capabilities.
- **Create a robust and highly integrated transformational plan and governance structure.** The resulting hybrid cloud solution must consider all relevant people, processes, and technology assets, both in-house and third party, and should align with overall business goals and objectives. Key factors include aligning critical business outcomes with how different workloads are utilized on different types of clouds and ensuring control over operations with strong governance involving project management office (PMO) and management platforms.
- **Ensure that service providers can not only be agnostic but also have a point of view.** Enterprises need access to a full array of technology (software and hardware) vendor partners and public cloud providers, whether for IaaS, PaaS, or SaaS. Coupled with this is the need for providers to offer prescriptive guidance that clearly defines what makes up the optimal hybrid cloud solution. In the end, it's all about having access to the right resources at the right time.

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