IBM Optimizes Multicloud Strategies for Enterprise Digital Transformation

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IDC OPINION

It is rarely simple to transition a large enterprise from using disconnected, departmental cloud service subscriptions to running an efficient, unified corporate multicloud architecture at scale and to do so in a professional manner. Likewise, integrating multicloud services with an organization's legacy IT operations remains a challenge.

Many line-of-business (LOB) and developer teams initially turned to public cloud services because they believed their IT organization was too slow and couldn't keep up with modern digital business requirements. Many of these individual public cloud services met individual LOB needs. But managing an organization's consumption of multiple cloud services and integrating these services with legacy IT operations to deliver true digital transformation remain elusive goals. There are inherent conflicts between speed and innovation and the need to control costs and maintain efficiency. Overcoming the cultural objections voiced by IT and LOB team members is important to gaining acceptance of a centralized supply chain management approach to cloud.

Many organizations struggle to effectively evaluate, select, deploy, and operate complex multicloud environments. Use of a supply chain management approach to optimizing multicloud architectures can simplify and streamline operations, while seeking support from experienced third-party services partners can help:

- Accelerate the analysis of workload requirements and appropriate cloud services options
- Design and implement the types of policies and self-service strategies needed to deliver applications using an IT-as-a-service (ITaaS) model that takes full advantage of multicloud options
- Automate the provisioning and ongoing optimization of the best possible mix of on-premises and public cloud resources
- Streamline data and workflow integrations across legacy IT systems, private clouds, and dynamic public cloud services

SITUATION OVERVIEW: DIGITAL TRANSFORMATION DRIVES NEW INFRASTRUCTURE PRIORITIES

Many types of businesses are implementing aggressive digital transformation strategies by rapidly creating new online and mobile services that leverage recent innovations in social, big data, DevOps, and cloud technologies. These offerings can range from adding more interactive service, support, and shopping features to creating whole new markets based on cognitive computing, internet of things, or virtual reality.

According to IDC's 2015 *Digital Transformation Professional Services Spending Intentions Survey,* both IT and business leaders report similar digital transformation drivers. IT and LOB decision makers are responding to the need to improve the organization's overall operational efficiency, but LOB leaders prioritize business effectiveness and innovation as equally important goals. IT decision makers tend to put greater emphasis on reducing costs and responding to competitive pressures than they do on innovation (see Figure 1).

FIGURE 1

Digital Transformation Drivers

Q.   Why is your company undertaking this digital transformation initiative at this time?
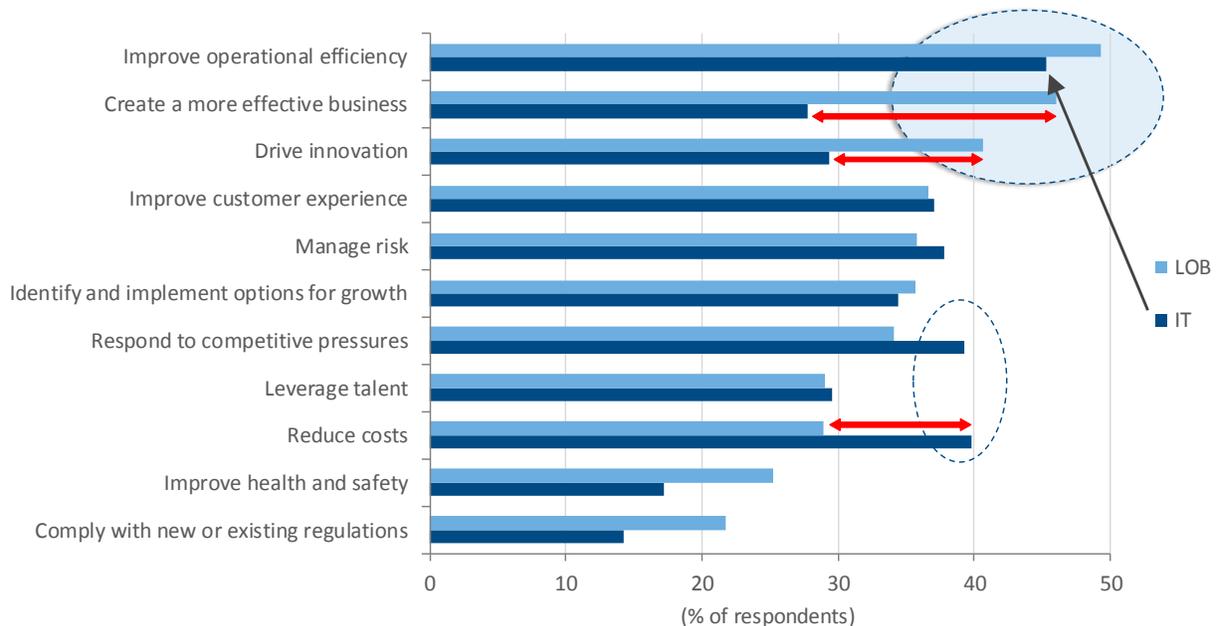
n = 156 for IT, n = 155 for LOB

Source: IDC's *Digital Transformation Professional Services Spending Intentions Survey,* December 2015

Digital business transformation initiatives are helping many enterprises reinvent the way they engage with customers and partners and are opening up new markets and revenue opportunities. However, these initiatives are creating a great deal of disruption across development and IT operations environments. Unlike traditional application environments that evolved slowly and had predictable

capacity and performance needs, the applications used to enable today's digital business strategies are highly dynamic. The use of agile development and continuous delivery methodologies means that new features are released frequently and that the way that end users and legacy systems interact with these modern applications can shift just as fast. Depending on the workload – whether it is web, mobile, or the internet of things – a single transaction may require integrations with dozens of in-house and third-party systems. If any one specific application service such as pricing, customer validation, advertising, or personalized information displays fails to work as planned, the customer or employee may abandon the application or the business may lose revenue.

Digital Transformation Relies on Multicloud Strategies

The balancing act between the need for speed and innovation and the need to control costs and maintain efficiency has often driven LOB and developer teams to seek out on-demand public cloud infrastructure as a service (IaaS) and platform as a service (PaaS) to support rapid development; self-service; automated, near-instant access to resources; and continuous development and delivery of new functionality. Rather than limit themselves to one or two application upgrades a year, many LOB and developer teams now push new releases out daily, weekly, or monthly.

This rapid rate of change can make it difficult for relatively static in-house IT environments to keep up with a constant stream of updates and unpredictable capacity demands. As a result, many organizations have turned to flexible, on-demand public cloud services to provide rapid access to development resources, big data and analytics, DevOps automation, and highly scalable computing and storage. This has led to a majority of enterprise-scale organizations currently relying on multiple public cloud services in addition to in-house and outsourced private clouds and legacy IT platforms.
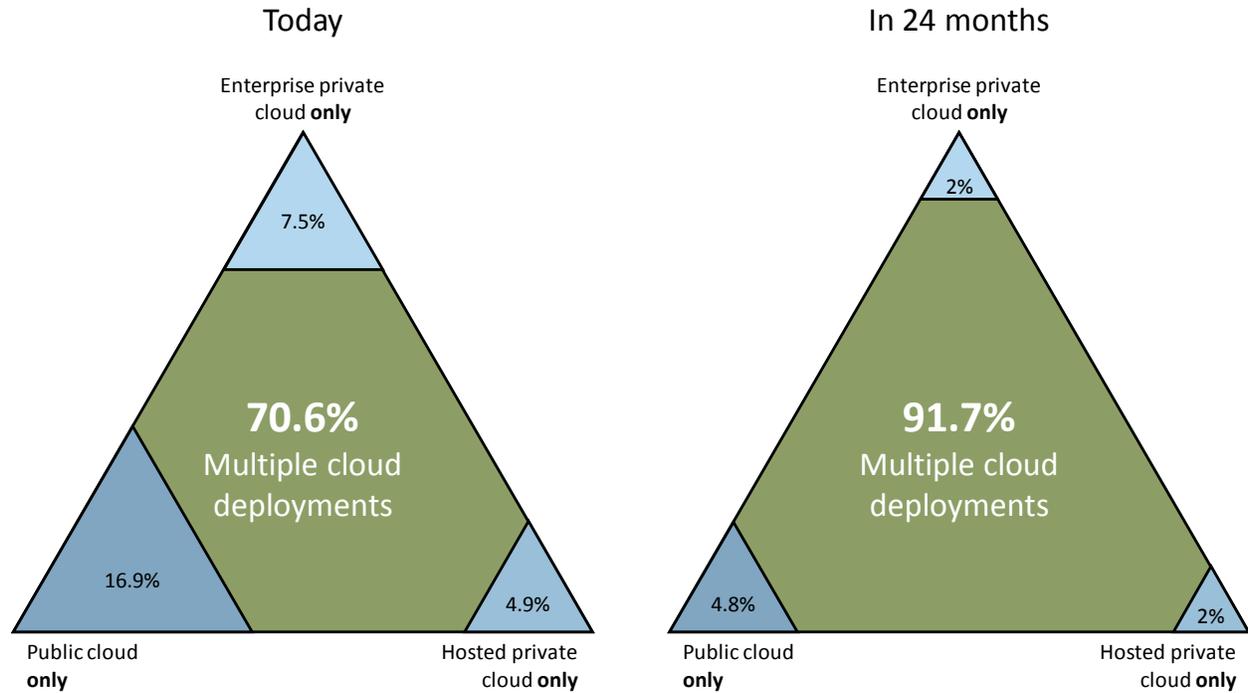
Multicloud strategies are important enablers of enterprise digital transformation. Matching workload performance, security, cost, and compliance requirements with the capabilities of different on-premises and public cloud service options can help IT leadership teams ensure that developers and LOB teams are able to enable digital transformation while also addressing corporate risk management and spending priorities in a comprehensive manner. However, the IT teams need to do so in a way that is reliable and consistent and can be scalable and ready-made to exploit the on-demand nature of public cloud services.

IDC estimates that around the world, more than 70% of enterprises that currently use cloud have already adopted a multicloud strategy. Over 90% of enterprises are expected to do so in the next 24 months (see Figure 2).

FIGURE 2

Multicloud Strategies Dominate Enterprise Plans

Q.   Please estimate what percentage of your organization's total annual IT budget (including ...) is allocated to each of the following procurement/management models.

Today

Enterprise private cloud **only**

7.5%

70.6%
Multiple cloud deployments

16.9%

4.9%

Public cloud **only**

Hosted private cloud **only**

In 24 months

Enterprise private cloud **only**

2%

91.7%
Multiple cloud deployments

4.8%

2%

Public cloud **only**

Hosted private cloud **only**

n = 6,159 worldwide respondents

Note: Data is weighted by GDP and company size.

Source: IDC's *CloudView Survey*, January 2016

The Downside of Multicloud Strategies: Inefficiency and Risk

Many organizations are beginning to understand that uncoordinated use of multiple clouds can carry business risk and actually slow innovation as modern applications struggle to integrate with traditional systems and rapid application updates are pushed before they are fully tested. Furthermore, integrating data and applications hosted across multiple clouds can be challenging, and total corporate spending is likely to be higher than if the company negotiated a larger-scale enterprise pricing agreement.

To support the goals of individual developer and LOB teams while improving operational efficiency and risk management, many IT leaders are becoming more collaborative partners with LOB stakeholders and working with them more closely to support the dual mandates of agility and efficiency. Collaborative enterprise teams need to agree on the performance, security, and integration requirements for each application and then agree on the most appropriate set of infrastructure to support it. Public cloud services, private clouds, outsourced IT, and/or legacy IT all have a role.

LOB participants might best understand this by analogy. Think of professional golfers who are able to select the right club in the moment it's needed for the perfect shot. The same concept applies to optimizing the use of multiple clouds.

IDC's research shows that organizations at more mature levels of multicloud management understand the need to balance the varying goals and needs of business, developer, and IT teams. IT teams remain responsible for maintaining security, optimizing costs, managing integrations with legacy systems, and ensuring that confidential data protection and compliance requirements are met. Simultaneously, developers and LOB decision makers are becoming increasingly active in shaping IT purchasing choices and funding both development and infrastructure resources.

FUTURE STRATEGIES: COLLABORATIVE MULTICLOUD MANAGEMENT REQUIRED

In mature multicloud environments, collaborative business, developer, and IT teams work to define requirements as services that are defined by policies and SLAs that can be fulfilled by cloud services providers and/or in-house IT. The goal is for LOB end users and developers to be able to rapidly access required services, gain deep insight about real-time application performance, rapidly adapt, and proactively innovate. In parallel, IT operations teams monitor the underlying services, manage supplier sourcing, manage contract and chargeback processes, and deliver services to end users, much like supply chain managers expedite and optimize the purchase and delivery of parts to a manufacturing line.

Mature organizations work to jointly define key policies for data protection and location, the treatment of strategic or proprietary IP, support for business unit SLAs, and governance related to cloud service access control and usage. This IT-as-a-service approach enables organizations to manage multiple clouds as part of a composable, modular cloud supply chain.

Effective cloud service supply chain management (sometimes referred to as cloud service brokering) allows IT and business decision makers to collaborate and optimize use of in-house and third-party cloud services by:

- Taking advantage of advanced analytics to assess the characteristics of each workload and identify the best cloud service to support those requirements
- Developing tested workload and infrastructure templates and configuration automation to ensure consistent deployment, migration, and portability regardless of the cloud selected
- Providing end users, developers, and IT staff with a unified service catalog and self-service portal to streamline selection and provisioning of multiple services across the organization
- Consistently applying automated policy-based governance as well as compliance and access control across cloud resources
- Managing, monitoring, and analyzing multiple cloud vendor SLAs and pricing levels on a consistent basis to ensure optimized costs and end-to-end service performance
- Monitoring usage and managing billing and chargeback/showback using cloud service provider-specific terminologies and bills of materials
- Incorporating legacy datacenter resources into the service catalog as appropriate to ensure a unified end-user experience

Each enterprise has a unique mix of workloads and a specific set of infrastructure and developer requirements. To optimize the cost, performance, and security of each workload, IT organizations and their developer and LOB counterparts need to make continual trade-offs and assessments across the cloud services and IT infrastructure supply chain.
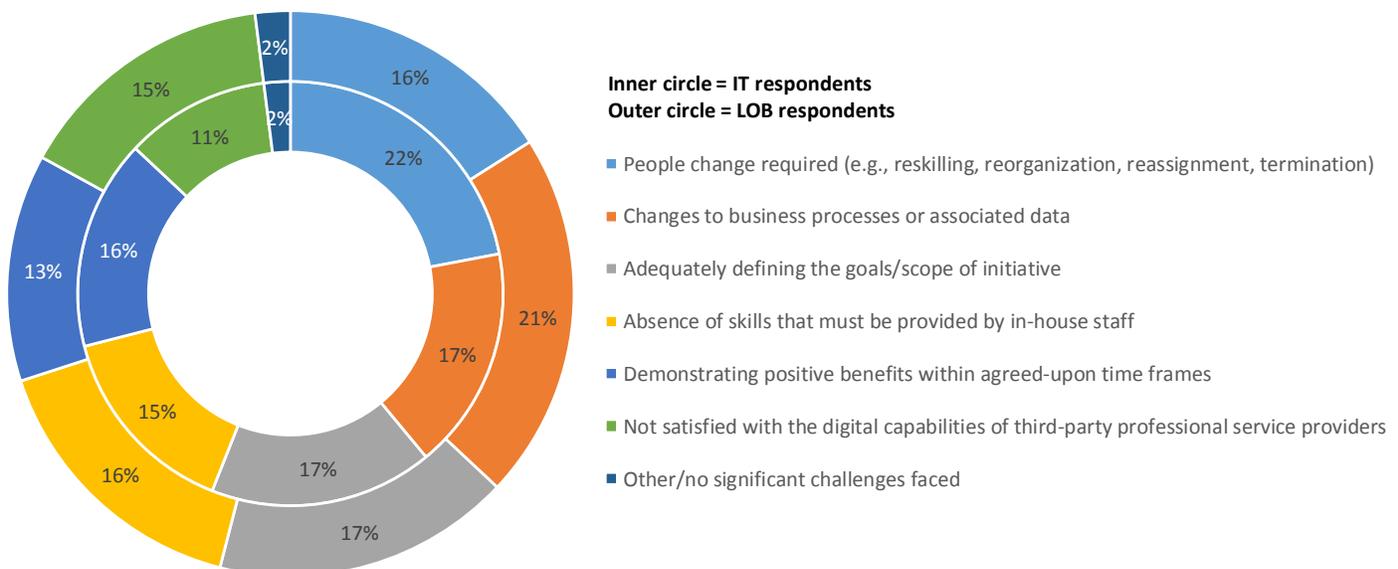
People and Process Challenges Can Get in the Way of Effective Multicloud Digital Transformation Strategies

As the scale and complexity of public cloud usage expand, more and more enterprises are recognizing the value of managing multiple cloud resources as a consistent, policy-based IT supply chain that helps maximize corporate purchasing power while avoiding single-vendor lock-in. However, as with many digital transformation programs, people and business process changes can often be difficult and slow or stymie the effort to move forward (see Figure 3).

FIGURE 3

Digital Transformation Challenges

Q.   What are the biggest challenges faced by your organization as you implement your digital transformation initiative?

Inner circle = IT respondents
Outer circle = LOB respondents

- People change required (e.g., reskilling, reorganization, reassignment, termination)
- Changes to business processes or associated data
- Adequately defining the goals/scope of initiative
- Absence of skills that must be provided by in-house staff
- Demonstrating positive benefits within agreed-upon time frames
- Not satisfied with the digital capabilities of third-party professional service providers
- Other/no significant challenges faced

n = 156 for IT, n = 155 for LOB

Source: IDC's *Digital Transformation Professional Services Spending Intentions Survey,* December 2015

The most pressing people and process challenges related to multicloud optimization focus on gaining developer and LOB acceptance of the idea that a coordinated approach to cloud sourcing and operations will be just as fast and agile as what they've been able to accomplish on their own using public cloud services.

By consolidating purchasing and contract negotiation, many organizations can better control costs while improving service and support. Further, a centralized organization can keep track of ongoing changes and updates to service provider offerings and pricing models and negotiate optimal contracts and discounts on an ongoing basis.

Use cases and business priorities that often provide a pathway to help move an organization away from departmental cloud silos and toward a more comprehensive multicloud supply chain management approach include:

- **Need to modernize on-premises infrastructure and migrate mission-critical workloads and databases to take advantage of cloud platforms that provide state-of-the-art automated self-service, access control, and scalability.** Enterprises may opt to shift development resources to public cloud while continuing to run production workloads on-premises. Or they may choose to modernize on-premises development resources using private cloud self-service templates and tools. Successful modernization and migration require detailed understanding of application characteristics and access to tested application templates to automate deployment, self-service, and ongoing operations.

- **Demand for broad-based adoption of agile development methodologies that need to scale quickly by taking advantage of multiple public cloud PaaS and IaaS platforms.** Use of standard templates and images paired with ongoing monitoring of service levels allows enterprises to more rapidly deploy self-service tools and validate the mix of services used to enable different classes of developers and applications while supporting accurate usage monitoring and chargeback to keep spending in line with business priorities.

- **Recognition of the need to manage the consumption of cloud services by improving cloud service governance and cost controls.** Often, organizations are blindsided by unexpected costs from unmonitored public cloud use. They may also discover situations where confidential information is put at risk by groups that are not fully aware of how to support corporate compliance requirements. In the interests of reducing business risk and improving the cost of operations, many organizations may look to create more standardized multicloud monitoring and supply chain management processes that can consistently implement and audit compliance with corporate governance and change control.

- **Need for more consistent integration across public and private cloud and legacy systems.** Many of an organization's most important web and mobile applications may need to tightly integrate with important back-end applications and databases. Enterprise IT teams may be asked to improve the stability and reliability of integrations and recognize that APIs and data integration standards need to be implemented across the board. By matching cloud services to the needs of workloads and using standard templates to ensure consistent integration, the organization can become more agile and responsive.

- **Adoption of IT-as-a-service strategies.** The most sophisticated CIOs recognize that they must focus on using policies and automation to deliver IT as a service based on composable modules and a mix of public cloud and in-house services. This approach relies on extensive use of service catalogs and policy-based self-service platforms to empower developer and business team innovation, which optimizes costs and security. Analytics are critical to assessing where specific workloads should be deployed across on-premises and public cloud platforms.

IDC surveys of heavy cloud users (i.e., organizations that already use multiple clouds) show that more mature organizations have been actively investing in unified monitoring, analytics, automation, and control across multicloud architectures. As shown in Figure 4, consistent multicloud monitoring and reporting, ROI and financial controls, and use of consistent workload templates are top priorities for heavy cloud users that are working to optimize the operation of multicloud environments.

FIGURE 4

Cloud Management Tools Deployed by Heavy Cloud Users

Q.   *Which cloud systems management tools are most widely deployed by heavy cloud users based in the United States?*
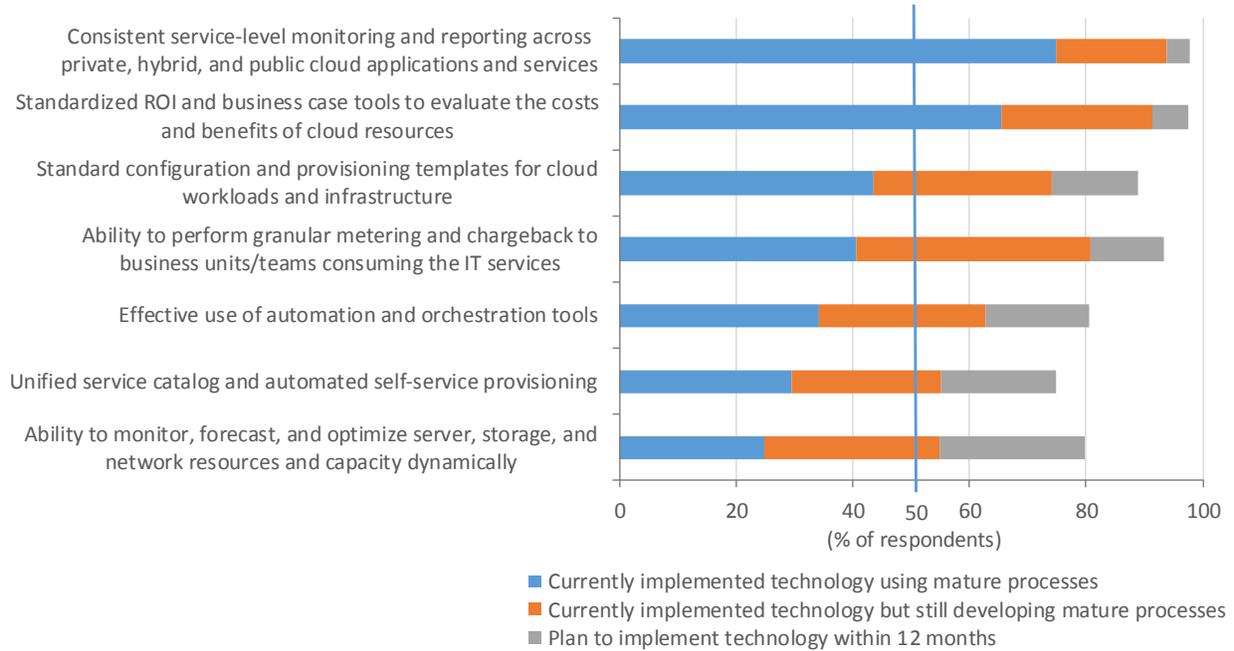
n = 701

Base = United States-based heavy cloud users

Source: IDC's *CloudView Survey,* 2015

The need to implement more coordinated cloud service supply chain management and control while maintaining agile business and development environments often means that the IT team has little time to learn on the job. To effectively optimize the cloud service supply chain, decision makers need to understand the architectural and performance requirements of each workload and be able to accurately assess how that workload will be supported by various cloud service options, including internal and outsourced IT. Further, decision makers need accurate, up-to-date pricing and performance data for various cloud services so that they are able to apply policies about compliance, data protection, and data location to each workload.

For many organizations, the transformation of the IT operations organization into an IT and cloud supply chain manager requires partnering with outside experts that know how to evaluate options, implement governance, and share proven best practices, analytics, and automation.

In a multicloud IT-as-a-service world, IT teams need to manage and optimize a supply chain of cloud resources that can be evaluated, selected, purchased, deployed, and managed as needed for rapidly changing business demands. Ideally, to maintain business agility, LOB users should be able to self-select and provision cloud resources based on corporate policies and contracts via a single, unified portal that is tied into workload- and user-specific access policies and cost profiles.

A comprehensive service catalog needs to be maintained and integrated with internal self-service processes and tools in ways that enforce access control and security and ensure that users access resources only while they and their applications are approved. IT and business decision makers need a proven process to collaboratively evaluate, select, and deploy workloads appropriately while keeping track of changes and maintaining the optimal mix.

CONSIDERING IBM

Many organizations find that third-party cloud brokerage services can streamline the process by providing pre-validated workload profiles, up-to-date cloud service provider information, and analytics to speed analysis and selection. Expert insight and integration services can help complete deployments and create repeatable, automated strategies. A cross-enterprise view of cloud resources and contracts can help leverage corporate buying power while standardizing implementations and enabling more consistent LOB service levels.

IBM offers a broad mix of cloud-agnostic professional and support services as well as cloud management software tools and cloud services. The company is also well positioned to help integrate existing legacy IT systems with public and private cloud environments. Specifically, IBM Cloud Brokerage Services can create customer-specific multicloud strategies, including development of application assessments, cloud comparisons, migrations and deployments, and ongoing operations.

In addition to gaining access to IBM's experienced consulting and integration services teams, customers benefit from IBM's analytics-driven insights about best practices for designing, implementing, and operating multicloud environments. IBM Cloud Brokerage Services are strengthened by using the cloud-agnostic platform IBM Cloud Brokerage (acquired from Gravitant), which provides a multicloud service analytics and deployment platform that can be used directly by customers or as part of a broader IBM Brokerage Services assessment or ongoing operational engagement.

IBM Integrated Management Infrastructure (IMI) services are available to link legacy IT with private and public clouds, including AWS, IBM SoftLayer, and Microsoft Azure. IBM is able to provide flexible remote monitoring and management of this hybrid cloud/noncloud environment. Clients can select the specific service components they want across cloud management, traditional monitoring and reporting, and custom engineering services. IBM BlueMix and IBM SoftLayer are available to provide optional platform-as-a-service and infrastructure-as-a-service public cloud resources, including bare metal as a service.

From an operational perspective, IBM's modular supply chain management approach to multicloud strategies is differentiated from some other cloud service broker solutions. Specifically, with regard to making assessments and comparing cloud options, IBM models and selects cloud service choices on the basis of an analysis of the application's full architecture and dependencies – including storage, backup, database, network, middleware, and compute. Unlike some solutions that primarily optimize the cost of IaaS VMs, IBM's approach includes profiles for hundreds of application configurations such as specifications for backup, network connectivity, storage, compliance, and database features. As a result, IBM is able to evaluate the end-to-end performance of the application and to construct a full-service template and chargeback report that incorporates all the requirements of the application.

IBM has developed more than 1,500 workload templates and constantly updates its database of dozens of cloud service provider options and pricing models to analyze and recommend the best combination of cloud services for an organization's specific workload mix. IBM Cloud Brokerage software generates an estimated bill of materials for all the services required from the providers selected and provides a framework for tracking and charging back usage.

Working in concert with the IBM Cloud Brokerage platform, a team of IBM Global Business Services trusted advisors deliver technology-agnostic consulting capabilities to enable organizations to plan for successful cloud adoption and business value realization along the journey to becoming an IT-as-a-service provider. This journey can be achieved by delivering a variety of capabilities, including defining the optimal hybrid cloud strategy, identifying areas of opportunity within the application portfolio for cloud, designing the future-state architecture, defining the optimal IT operating model, and outlining a tactical road map to execute on key initiatives.

The combination of IBM Cloud Brokerage software, IBM Cloud Brokerage Services, and IBM's broader cloud and professional services portfolio offers a comprehensive set of processes, skills, and best practices that can assist customers in visualizing their digital strategies and operationalizing those strategies across multicloud architectures.

CHALLENGES/OPPORTUNITIES

As was noted previously, people and process change can often be more challenging than technological updates. IBM and its CIO customers may need to invest in extensive educational and proof-of-concept programs in order to win over individual LOB and developer teams. Since the biggest financial benefits will come only when the enterprise has been able to fully leverage its buying power and optimize the mapping of workloads to cloud services, it could take several years to achieve the expected ROI.

IBM and its customers should be realistic about the rate at which customers can evolve and structure cloud management transition programs so as to get some sizable wins early in the process. By demonstrating success and the value that can be achieved with a more structured approach to cloud supply chain management, it will become easier to win over the more reluctant groups.

Finally, IBM needs to remind prospects that even though it is a cloud service provider itself, the role of its brokerage services group is not to sell IBM cloud services alone but to be agnostic (think Switzerland) in the planning, design, building, and operation of multicloud services on behalf of clients. Proof points matter, and IBM can point to the large purchases that the company regularly makes of its competitors' equipment and services as part of implementing and operating multicloud environments for its clients.

ESSENTIAL GUIDANCE

In the digital transformation era, businesses will compete based on their ability to rapidly develop, deploy, and optimize online and mobile innovation using multicloud services. Business processes will become more modular and composable, and organizations will need to orchestrate and optimize complex processes the same way they orchestrate and optimize infrastructure and workload deployment, migration, and scaling today.

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