IDC TECHNOLOGY SPOTLIGHT

Supply Chain Management Best Practices Optimize Multicloud Architectures

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Adapted from Multicloud Management Priorities: Automation, Portability, and Unified Self-Service by Mary Johnston Turner, IDC #US41587016 and *Professional Services for Digital Transformation: End-User Spending Survey* by Gard Little and Rebecca Segal, IDC #US40149816

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IDC's research shows that as more and more organizations implement multicloud strategies, evaluating, deploying, integrating, and automating ongoing management of these resources can become increasingly complex, costly, and cumbersome. The role of IT operations teams is quickly evolving to include multicloud sourcing and supply chain management. This Technology Spotlight examines strategies and tactics that IT teams can use to optimize multicloud environments. The paper also considers IBM's cloud-agnostic implementation services and software solutions for helping enterprise IT teams streamline the design, integration, and operation of multicloud environments.

Introduction: Multicloud Strategies Enable Digital Business

Digital business transformation efforts are rapidly reshaping enterprise IT and business strategies, but these efforts are also rapidly stressing IT organizations with aging IT infrastructures. This reshaping involves rethinking business processes and organizational structures, often decomposing them into smaller elements that can be assembled/disassembled in new ways (think Lego bricks). Likewise, this reshaping involves decomposing IT processes and systems into smaller components, which can be "composed," Lego-like, in new ways to support a business process transformation. A key related task is defining application workloads, which are business process components that can be supported or enabled by using these composable IT elements.

As more and more applications are developed to engage with customers and respond in real time using complex big data analysis, enterprise developers and line-of-business (LOB) innovators are taking advantage of a myriad of public cloud service offerings. Many of these organizations describe their strategy as hybrid cloud — that is, taking advantage of multiple cloud services from multiple providers in order to best serve the needs of specific workloads and business initiatives. In this multicloud era, the value of being a knowledgeable cloud services integrator increases even further.

Multicloud strategies can include one or more software-as-a-service (SaaS) solutions that replace legacy packaged software; platform-as-a-service (PaaS) solutions to provide developers with instant, curated and automated development resources; or infrastructure-as-a-service (IaaS) solutions to deliver highly scalable, instantly accessible computing and storage on demand. According to IDC's January 2016 *CloudView Survey* of 916 North American–based organizations, 70.5% currently use or have firm plans to subscribe to multiple external cloud services from different providers.

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Looking at 214 IT decision makers who describe their current environment as hybrid or multicloud, IDC's research shows that 55% of respondents expect to act as corporate cloud service brokers. Nearly two-thirds (65%) of respondents plan to be able to use automation to provide end users with cross-cloud application portability. Over half (58%) of respondents expect to offer end users global, unified self-service catalogs that span a range of cloud service provider offerings (see Figure 1).

FIGURE 1

Managing Multiple Cloud Vendors

Please note the extent to which you agree with the following statements about your organization's use of external cloud vendors:

(Percentage of hybrid cloud users who agree or strongly agree with the following expectations for managing multiple cloud vendors)
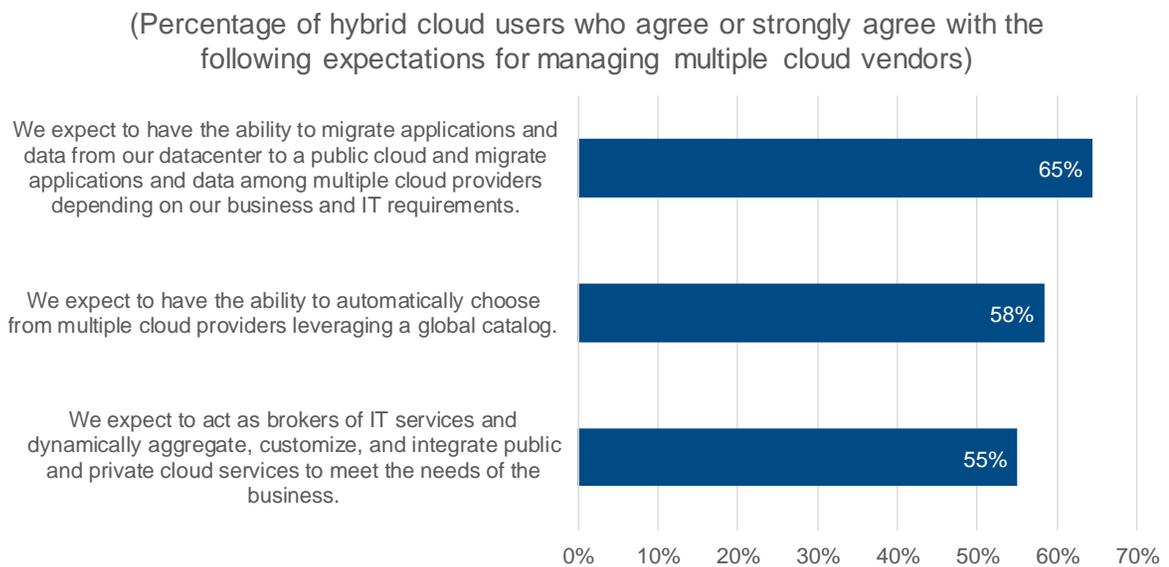
n = 214 North American hybrid cloud users

Source: IDC's *CloudView Survey,* 2016

IT teams that aspire to enable digital transformation and to act as cloud service brokers and LOB partners must evolve their skills and operational processes beyond traditional systems and software deployment, patching, and configuration management. Specifically, they must equip themselves to be internal service providers that can act as strategic advisors to developers and LOB leaders while taking responsibility for controlling costs, maintaining service-level agreements (SLAs), and ensuring compliance with corporate policies and governance.

For many IT organizations, this type of transition can be challenging. To accelerate time to value and speed organizational transformation, many IT decision makers opt to partner with experienced service providers and consultants that can contribute skills, tools, and knowledge about cloud options and best practices for managing the cloud service supply chain.

Multicloud management is an area where third-party expertise can be helpful by providing IT teams with structured, proven processes and frameworks for evaluating workload requirements and assessing how to best support them across a range of dedicated on-premise and hosted clouds as

well as shared public cloud offerings. This type of third-party service provider can accelerate digital transition and the implementation of consistent and efficient multicloud management strategies by supporting assessments with operational skills, automation platforms, and up-to-date knowledge of cloud service pricing, performance, and security profiles.

Benefits of Taking a Supply Chain Management Approach to Cloud Service Optimization

Given the multitude of available cloud services, getting accurate, up-to-date information and conducting appropriate trade-off and what-if analyses can be difficult. Even accurately assessing which cloud is best for which workload can be complicated.

These types of workload-driven assessments require a deep understanding of each workload's performance attributes, configuration dependencies, and SLAs. For example, applications that are I/O intensive or require persistent storage may be better served by on-premise, hosted, or high-performance public cloud services, while applications that are latency sensitive or are expected to experience wide variations in usage may be better supported by highly scalable commodity clouds. Workloads that contain confidential information or are subject to stringent regulatory requirements may need a different set of options.

Beyond assessing individual workload requirements, cloud advisors need to consider opportunities to consolidate corporate buying power. Negotiation of volume discounts or multiyear agreements need to consider how the organization's volume requirements and usage patterns will shift over time. Once preferred providers are selected, services need to be integrated into corporate portals, end user access control and training must be implemented, and usage needs to be monitored; this facilitates chargeback and the ability to optimize across the life cycle of each workload.

Taken as a whole, this workload-driven approach to cloud selection and management represents an important shift in the way that IT organizations interact with development and LOB teams. Rather than take direct responsibility for ordering infrastructure, configuring systems, and maintaining individual components, IT teams rapidly transition to become contract managers, auditors, and advisors to end users. They need to apply the same types of discipline, workflows, and governance to deal with fulfilling cloud requirements as the factory floor uses to ensure a steady flow of parts into the production process.

Many IT organizations are ill-prepared to undertake this type of comprehensive supply chain management approach and end up struggling to become efficient in workload assessments as well as in the design, deployment, and ongoing operation of multicloud environments. They have neither the tools nor the knowledge of best practices that are needed to map workloads to cloud options and to ensure use of a consistent approach to managing cloud services. As a result, many enterprises allow individual user groups and departments to make their own cloud service decisions. This distributed approach often drives up costs and makes it much more difficult to audit and manage security and information management compliance programs.

Experienced third-party service providers can often provide insight into best practices for evaluating and managing multicloud architectures. Organizations that have helped many enterprises organize and execute a mature multicloud supply chain management approach will often bring state-of-the-art modeling and automation tools, templates, and analytics as well as proven best practices for governance and chargeback. The best partners are cloud agnostic (in the sense of being indifferent to which underlying cloud services are selected by a client) and focus on helping clients make better cloud sourcing decisions and implement comprehensive multicloud strategies that are most appropriate for the needs of the specific organization.

Considering IBM Cloud Brokerage Solutions

IBM offers customers a rich set of cloud supply chain management and brokerage services as part of the IBM Cloud Brokerage Solutions portfolio. Based on extensive real-world experience helping scores of customers evaluate, optimize, and automate operation of complex multicloud environments, IBM provides customers with a broad set of assessment, integration, and ongoing operational services supported by the IBM Cloud Brokerage software that enables enterprises to compare, monitor, and analyze cloud services from multiple suppliers on a single screen.

Acquired by IBM from Gravitant in 2015, the IBM Cloud Brokerage platform was developed by experts who crafted product strategies for the original Commerce One supply chain platform and worked to develop and deploy an early cloud brokerage platform used by the Texas Health and Human Services agency beginning in 2010. The team's supply chain management approach to cloud selection, deployment, and operations is distinct from that of some solutions that focus primarily on configuration and provisioning.

IBM Cloud Brokerage software focuses on applications and service requirements using a supply chain framework to standardize and automate the full life cycle of cloud services assessment, purchase, and use. It models and optimizes cloud service options based on an analysis of an application's full architecture and dependencies, including storage, backup, database, network, middleware, and compute. It tracks and evaluates geographic coverage, costs, and quality of service for many cloud services.
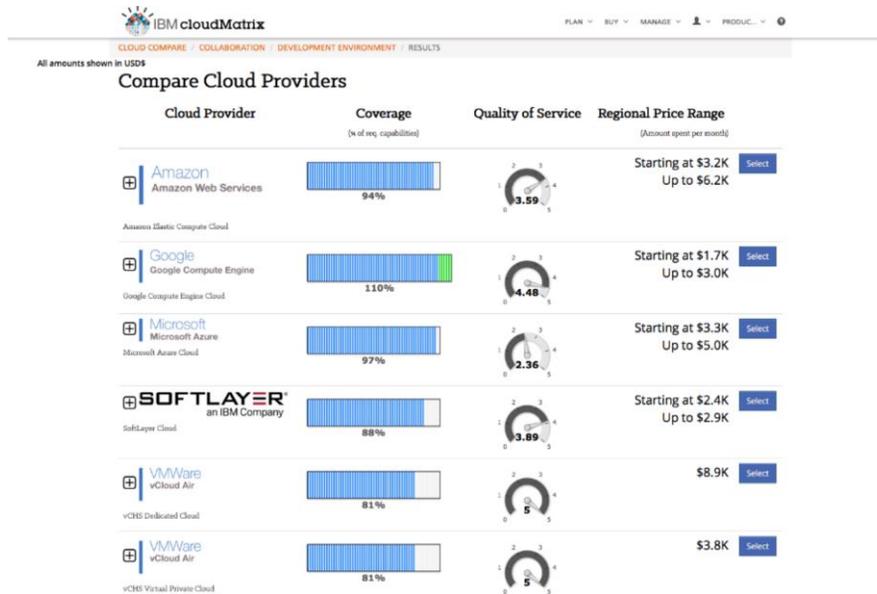
IBM Cloud Brokerage software includes several modules that provide the following integrated plan, buy, and manage capabilities:

■ **Plan** provides graphic design tools and templates to evaluate and assess whether an application is suited for cloud and then determines which cloud option makes the most sense from a cost and performance perspective. An application screening wizard helps analysts quickly conduct assessments using a simple Q&A format.

■ **Buy** provides end users with a service request portal and access to a customized, approved cloud service marketplace or menu of options. The module supports workflows and policies related to finance, legal, and business unit approvals.

■ **Manage** provides provisioning and orchestration of API integrations and order management coordination with third-party services.

■ **Day 2 Operations** helps discover and track assets, provides ongoing service catalog support, manages user roles, and creates ongoing utilization and chargeback/showback reports.

Application templates provided by IBM are used to model and compare workload-specific trade-offs across available cloud services (see Figure 2). Using a single unified dashboard, enterprises can evaluate trade-offs and request resources across the full breadth and depth of their organization's cloud service portfolio. This analysis can be used to populate individualized self-service catalogs and to ensure that workload-specific policies for information management and change control are enforced.

FIGURE 2

IBM Cloud Brokerage Provider Comparison Dashboard

Source: IBM, 2016

IBM's Cloud Brokerage Services team relies on IBM Cloud Brokerage software to enable a range of planning, transformation, and operational services, including cloud workload and infrastructure planning assessments, architectural design efforts, cloud service catalog design projects, and cloud migration, operations, and integration services engagements. Additional offerings such as IBM's Integrated Managed Infrastructure services can be added to the mix to link existing legacy IT systems and resources with public and private clouds.

IBM's Cloud Brokerage Services, including analysis provided by IBM Cloud Brokerage software, are cloud agnostic. By applying software, analytics, and operational best practices to enterprise-specific multicloud supply chain management requirements, IBM helps customers source, provision, and manage cloud services in ways that maximize business agility while maintaining control over costs, performance, and business risk.

Working in concert with IBM's Cloud Brokerage Solutions portfolio, a team of trusted advisors from IBM Global Business Services delivers technology-agnostic consulting capabilities to enable organizations to plan for successful cloud adoption and business value realization. This can be achieved by delivering a variety of capabilities, including defining an 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. These services enable enterprises to increase value from brokerage platforms through innovative new business services, blueprint solution development, and application migration consulting services. Using this trusted advisor approach, IBM enables clients to evaluate their organizations holistically across people, processes, and technologies, which is critical to maximizing the business value of cloud adoption.

Challenges

The concept of managing cloud services as a composable IT supply chain is a new concept for many IT organizations. Central IT teams may have limited visibility into existing cloud workloads and may not be fully aware of how DevOps and LOB teams expect to evolve applications over time. Additionally, LOB and developer teams have come to depend on the agility and autonomy provided by their ability to purchase cloud services directly and may resist IT trying to assert control over their relationship with the cloud service provider.

IBM and its customers often need to overcome cultural concerns long before they can successfully design and implement comprehensive multicloud sourcing and supply chain strategies. IBM will need to proactively educate both IT and business stakeholders about the benefits of this approach before it will be able to fully deliver on its promises. A key priority will be to educate individual groups to understand that what may be an optimal decision for them may not be optimal when considering their entire organization. Likewise, it's key to ensure that organizational incentives are structured to promote optimal outcomes for the entire organization and not only a subset.

IBM, as an agent, has a challenge to convince prospects that it is agnostic about the underlying cloud services selected for consumption by its clients. IBM does not receive a commission each time a particular cloud service is consumed; rather, IBM is paid for its expertise to plan/design/build, and sometimes manage, these multicloud supply chains, and this should go a long way toward making that clear.

Conclusion

Applying model-based, analytically driven supply chain management best practices for the design and execution of multicloud strategies may help many organizations better optimize the cost and performance of cloud services while maintaining business agility and reducing overall business risk. Cloud service supply chain management is a cultural shift as much as it is a technological change. If IBM can effectively demonstrate the cost savings and benefits of applying a supply chain management approach to cloud brokering and operations, the company will have the opportunity to help many organizations shift from inefficient cloud architecture to comprehensive, enterprise-class multicloud operations that will scale over time as needed to support ongoing changes to the business.