

Solution Showcase

Challenges for Migrating to Today's Growing Multi-cloud Environments

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Abstract: As organizations continue to migrate and move their production applications into the public cloud, we find that they are also leveraging multiple cloud infrastructure providers, or multi-cloud environments. As the use of multi-cloud environments grows, the challenges associated are becoming clear.

- ESG research shows that organizations are extensively using multiple public cloud infrastructure providers today and expect that number to grow in the future.
- ESG research found that organizations weigh many complex factors when they determine how their applications go to the public cloud and are experiencing new challenges with the public cloud and, specifically, multi-cloud environments.
- Companies need help from their systems management solutions to determine how best to use their public cloud resources and to address the new, multi-cloud-based challenges they are facing.

Overview

In today's IT organization, it's not a question of whether or not public cloud resources are used for production applications but about which applications should be deployed there. This surge in the use of public cloud has also included the use of multiple public cloud service providers (CSPs), a concept also known as multi-cloud. In the *2018 IT Spending Intentions Survey*, ESG found that 81% of organizations are now using two or more public cloud infrastructure (infrastructure-as-a-service [IaaS] or platform-as-a-service [PaaS]) providers), with 51% using three or more providers.¹ With this extensive adoption of both public cloud and multi-cloud environments comes unique challenges, as companies continue to migrate applications and look for ways to maintain the control, manageability, and security they expect.

Multi-cloud Adoption Growing but the Decision Making for Applications Remains Complex

As the use of multi-cloud environments becomes mainstream, IT organizations have begun to recognize the need to shift to an application management focus for their IT systems, as opposed to the traditional infrastructure-only view. The decisions about where and how to deploy and manage applications across multiple cloud providers is significantly more complex than making those decisions about traditional on-premises or even single cloud application deployments. With this complexity in mind, the first point to examine is the future of multi-cloud environments. Will the future of multi-cloud

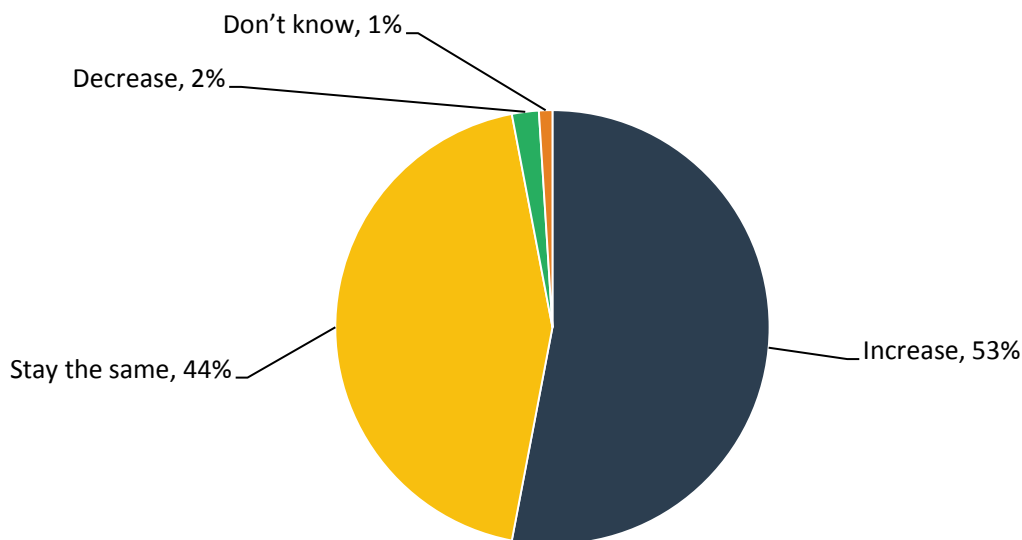
¹ Source: ESG Master Survey Results, [2018 IT Spending Intentions Survey](#), December 2017.

environments be one of consolidation, with a reduction in the number of providers, or will it continue to expand with greater fragmentation?

ESG surveyed IT professionals at organizations that currently use multiple cloud infrastructure providers to learn about the impacts of running public cloud and multi-cloud environments on their organizations. ESG surveyed 513 IT professionals responsible for their organization's cloud infrastructure technologies and strategies at organizations that were using more than one unique public cloud service provider (IaaS and/or PaaS). The respondents were at midmarket (i.e., 100 to 999 employees) and enterprise (i.e., 1,000 or more employees) organizations in North America, Western Europe, Asia Pacific, and Latin America. To better understand the future state of multiple cloud service providers in their organizations, ESG asked the survey respondents whether they expect the number of CSPs their organizations use to increase, stay the same, or decrease within the next three years (see Figure 1).² ESG found that 53% of organizations that currently use two or more CSPs expect that number to increase within the next three years. In addition to that finding, the results also showed that 44% of respondents believe that the number of CSPs used by their organization will stay the same over the next three years. A very small percentage, only 2% of those surveyed, believed that the number of CSPs they use will decrease.

Figure 1. Expected Change in Number of Unique CSPs Used

Within the next three years, do you expect the number of unique CSPs your organization uses to increase, stay the same, or decrease? (Percent of respondents, N=513)



Source: Enterprise Strategy Group

These results strongly support the conclusion that future multi-cloud environments will be greater in variety with a corresponding increase in complexity. The presumption by some in the industry that the public cloud market will consolidate to only a handful of providers is not supported by ESG's research. Multi-cloud environments are being driven by application requirements and preferences, which in turn will drive the ability of CSPs to focus on specific workload features and functions to carve out their space in the crowded public cloud market.

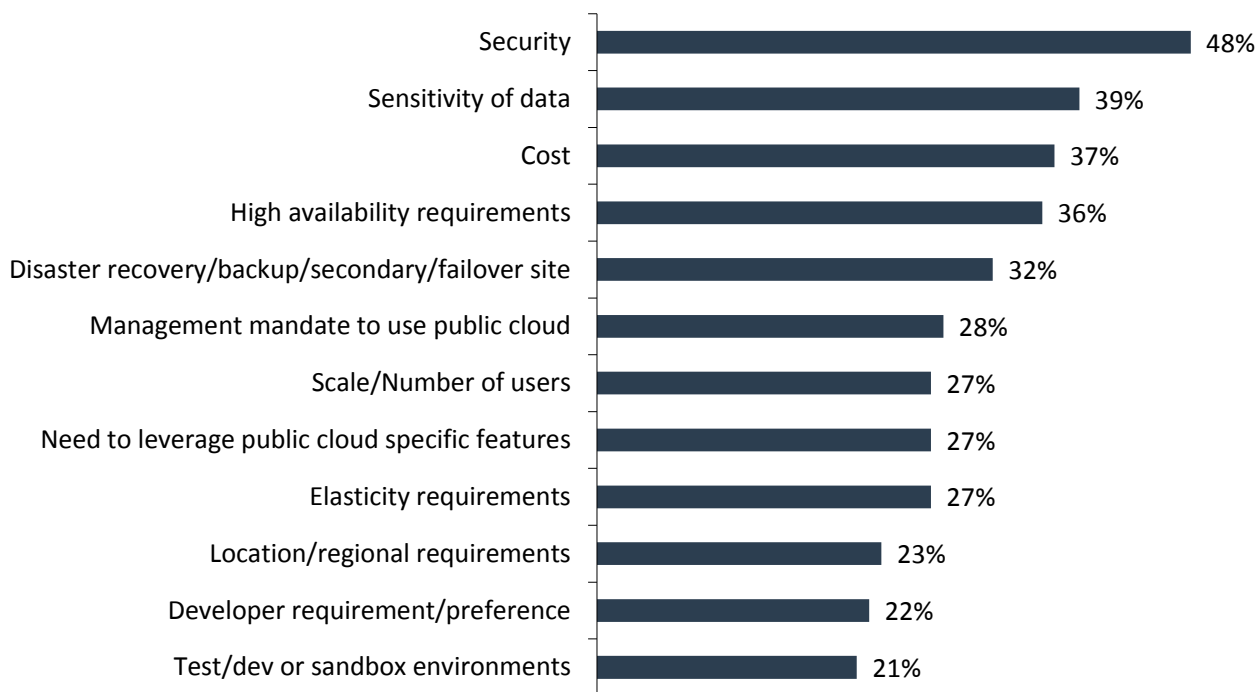
² Source: ESG Research Survey, *The Emergence of Multi-cloud Strategies*, January 2018. All other ESG research references and charts in this solution showcase have been taken from this research survey, unless otherwise noted.

But how do organizations make decisions on whether or not to place their applications and workloads in public cloud infrastructure? What factors do they consider in that decision-making process, whether they decide to use public cloud infrastructures or not? To determine the key factors in the decision whether to deploy on-premises or off-premises, ESG asked the respondents how their organizations determine which applications or workloads stay on-premises and which to move to public cloud infrastructure (see Figure 2). The data shows that a number of key factors go into the decision-making process. Nearly half (48%) of respondents selected security, followed by sensitivity of data (39%) and cost (37%). Broadly, the factors around risk mitigation, whether related to security, availability, or cost, were at the top of the list as the most-cited responses. More technical requirements, such as scale, elasticity, and developer requirements, still rated high amongst the respondents but were clearly less popular than the risk mitigation areas.

With these results, we can see that the abilities of cloud applications to manage risk and ensure operational excellence are factors deemed critical by organizations when deciding which workloads are placed into public cloud infrastructures. These decision factors support the need for organizations to implement multi-cloud-enabled systems management solutions, which allow organizations to assess the risk and costs of application deployment and remove their concerns. As the use of public cloud continues to grow, the need to assess and manage across cloud platforms will be a key enabler for continued growth and management.

Figure 2. How Organizations Determine Which Applications/Workloads Stay On-premises and Which to Move to Public Cloud Infrastructure

How does your organization determine which applications or workloads stay on-premises versus moving to public cloud infrastructure? (Percent of respondents, N=513, multiple responses accepted)



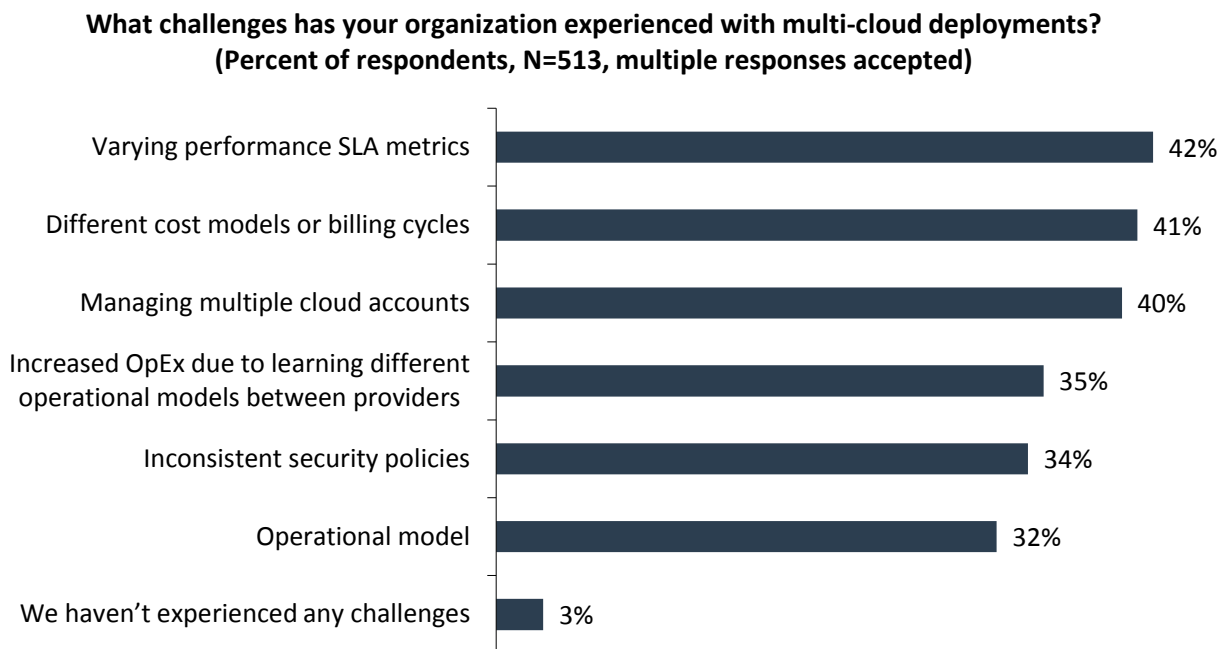
Source: Enterprise Strategy Group

Multi-cloud Environments Have Unique Challenges and Lessons to be Learned

In addition to these many reasons for using public cloud infrastructure providers, ESG’s research has found unique challenges when it comes to operating multi-cloud environments. The diversity of operational models and terminologies between different cloud service providers complicates the management of multi-cloud environments. To better

understand the specific issues unique to multi-cloud, ESG asked the survey respondents about the challenges their organizations have experienced with multi-cloud deployments. As seen in Figure 3, the most commonly cited challenge was the varying performance SLA metrics that are provided by the CSPs. With different terminologies and measurements, it becomes difficult to measure SLAs for applications between different CSP environments. IT departments have trouble understanding all the different SLA metrics in each individual environment, let alone competitively comparing metrics for potential migrations across environments. The challenges continue, with 41% of respondents citing the different cost models or billing cycles between CSPs, 40% citing the challenges related to just managing multiple cloud accounts, and 34% citing inconsistent security policies. The most-cited responses are related to administrative issues around managing multi-cloud environments, including determining the differing SLAs and costs between providers, as well as inconsistent operational models and security policies, all of which directly impact how organizations get the most capability and value out of their multi-cloud environments.

Figure 3. Challenges with Multi-cloud Deployments



Source: Enterprise Strategy Group

The ability of a multi-cloud management solution to synthesize and aggregate this administrative information is crucial to gaining a better understanding across multi-cloud environments. Organizations need to have the capability to look across their cloud landscape and understand their performance, costs, and security policies. Without multi-cloud-specific capabilities, IT organizations will effectively create all-new management silos for multi-cloud operations. Operating within those silos will make it difficult to compare performance, costs, and security features between clouds, making the migration to the public cloud and between regions and providers more difficult. As the number of unique CSPs grows (as seen in Figure 1), the problems related to multi-cloud will only get worse. Organizations should be aggressive in finding multi-cloud management solutions that can aggregate and optimize their growing multi-cloud environments.

Why BMC and TrueSight Solutions

BMC understands the challenges of migrating applications and workloads from on-premises to public cloud and the ongoing Day 2+ management. TrueSight provides organizations with visibility and insight into on-premises and public cloud infrastructure and applications. This is one of the key capabilities that ESG research shows is necessary to support cost

effective migrations in a multi-cloud world. TrueSight delivers multi-cloud migration and management capabilities that include:

Simulated Migration

- Simulate migrations of on-premises resources to public cloud. Recommendations for resource configuration that match performance and utilization needs are provided along with associated costs. Compare on-premises and multi-vendor public cloud costs and performance to determine the most economical placement and ensure performance, as well as plan for operational budgets.

Control Spend

- Visibility into daily spend across on-premises, AWS, Azure, and Google Cloud resources, recommendations for optimizing resource usage and reducing spend, and budget management provide the essential capabilities for controlling public cloud spend.

Secure and Compliant Resources

- Secure and compliant resource configuration meets business and compliance requirements by automatically scanning, detecting, and remediating misconfigurations of cloud resources, including containers, that create exposures. Eliminate exposures to breaches that can put your business at risk.

By leveraging these key capabilities, TrueSight enables organizations to bring together multi-cloud capabilities to ensure cost efficient and secure infrastructure resources and applications.

TrueSight solutions plan, optimize, and secure multi-cloud infrastructure services and applications, accelerating innovation through greater operational efficiency. Using automated migration planning, cloud expense management, and cloud security across cloud providers, cloud operations teams manage costs and risk. Eliminate the challenges that typically slowdown or halt cloud adoption with the visibility, automation, and security needed for successful cloud adoption and—more importantly—accelerate your digital transformation.

The Bigger Truth

In today's multi-cloud world, organizations are looking to reduce the complexity of their IT systems as the use of CSPs continues to grow. What has become clear is that companies need solutions that are uniquely multi-cloud-enabled, with features and functions that are specifically tailored for managing multiple CSPs. A good multi-cloud-enabled systems management solution needs to provide key features and functions for organizations, including:

- Risk mitigation through visibility across cloud providers and the ability to provide consistent, relevant information about cloud resource services.
- Multi-cloud administration, including cost analysis, SLA determination, and budget management.
- An application-, not infrastructure-, based management orientation, with automation and machine learning to support cost optimization in the multi-cloud environment.
- Business and industry compliance adherence by automatically detecting and remediating cloud security exposures, including misconfigurations and compliance violations.

Most organizations are already multi-cloud today and their use of multiple cloud infrastructure providers will increase, not decrease, in the future. With the unique multi-cloud challenges and lessons learned identified by ESG research, it is imperative that organizations be aggressive with developing their multi-cloud-enabled IT management capabilities, led by the implementation of a multi-cloud-enabled operations management solution.

Capabilities found in TrueSight align with the results of ESG research by having multi-cloud connectivity, integrating both on- and off-premises resource usage, and offering the key performance, cost, and security compliance capabilities that organizations find most important. TrueSight enables multi-cloud migration and ongoing multi-cloud cost, infrastructure resource, and security management across environments and services.

Today's IT groups cannot be behind the curve in staying on top of their multi-cloud environments. By leveraging the full management capabilities of such a solution, across cloud infrastructure providers, organizations can truly make optimal use of their cloud capabilities and key supporting factors to enable cloud and IT itself to be the engine that drives digital transformation across their entire business. Organizations that are looking to meet these challenges, both today and tomorrow, should look into BMC TrueSight for their multi-cloud and hybrid cloud systems management solution.

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