

MAKING MULTI-CLOUD WORK FOR YOU

You've probably already caught the multi-cloud bug, by choice or necessity (i.e., it's already taken hold throughout your enterprise). But the technology is evolving rapidly, so your top issue might well be how to manage this multi-headed beast that's become essential to your business.

"Multi-cloud and multi-vendor are becoming the preferred strategies for most companies," writes analyst John Fruehe of Moor Insights & Strategies. But, he adds, "Interconnection, policy adherence, and common management will need to be in place for these strategies to succeed."

Multi-cloud has thrust its way to the forefront of cloud strategies. The latest RightScale [State of the Cloud](#) report finds that 85% of enterprises have opted for a multi-cloud approach. They're driven by the allure of flexibility, the ability to choose the right environment for particular workloads, and the avoidance of vendor lock-in.

However, multi-cloud options arrive well before most organizations are sufficiently equipped to manage them. "The fact that most CIOs leverage multiple cloud providers means enterprises are already waist-deep in complex cloud vendor management," Clint Boulton observes in [CIO](#).

In theory, enterprises should be able to migrate a workload from one cloud environment to another at will. Reality, though, falls short of the ideal. In fact, multi-cloud brings its own set of management complications.

"It's tough to manage multiple cloud providers," [Peter Thoman writes in Data Center Journal](#). "First, it's critical to ensure that all necessary services are covered – making the switch from a

one-size-fits-all solution to multiple clouds doesn't make sense if your IT infrastructure has gaps. It's also important to monitor and track potential network issues across all cloud services or risk problems with access control, services refusing to 'play nicely' and security breaches."

KEEPING UP WITH INNOVATION

Managing complexity is no easy task given the unrelenting pace of innovation in this area. Every cloud provider must constantly evolve its services and technologies to keep up with competitors.

VentureBeat detailed the staggering announcements of services from market leader AWS at its November 2016 [re:Invent conference](#). In 2013, [one TechCrunch contributor noted](#), AWS provided 280 new services; during 2016, about 1,000 services were launched. And that's just one of the Big 3 hyperscale cloud service providers.

Migration of existing workloads to the cloud would certainly be easier if everybody were to simply follow Amazon's lead, but that is not going to happen. "AWS has fielded some strong tools and has numerous successful migrations under its belt, but Microsoft, Oracle, and IBM are all working hard to defend their markets by building cloud environments specifically designed to support migrations," [SiliconAngle's Bert Latamor writes in parsing the thoughts of Wikibon's Peter Burris](#).

The competitive frenzy of the innovators can easily overwhelm the ability of enterprises to absorb new technology and keep up with the pace. "It can be challenging for CIOs to manage operations across different cloud environments and from different vendors," [writes CXO Today's Sohini Bagchi](#). "When not monitored and

controlled properly, operational issues start stacking up at a rapid speed, leading to difficulty maintaining access control, bug patches, and security update."

FROM VMS TO CONTAINERS

That frenzy is evident in the rush to implement container technology, with vendors promising easier and greater workload portability than is possible by using virtual machines (VM). Many organizations have spent the better part of the last decade mastering the concept and implementation of VMs and now must adapt to a new paradigm that itself is still taking shape.

"The common management framework for containers makes it easier to host them in multiple clouds and in data centers and move applications among all the options, something that can benefit an organization moving toward DevOps," [writes Tom Nolle](#), president and founder of CIMI Corp. Meanwhile, there's a battle to settle on a common container orchestration platform, with [Google pushing hard for the Kubernetes project](#).

But few organizations are equipped with the necessary tools to fully utilize these evolving cloud technologies. "[C]loud management tools differ vastly, and tool complexity will only increase over time," [observes David Linthicum](#). Unfortunately, as he points out, "there's no single, one-size-fits-all solution. Some, such as the container management tools, are very application-oriented. Others are DevOps-oriented or just focus on cloud and non-cloud infrastructure."

KEEPING FRUSTRATION AT BAY

It's easy for frustration to creep in when contemplating the learning curve of multi-cloud management. Yet, the payoff in cost savings, efficiency, and productivity is irresistible.

"Choosing the best-suited cloud service for each workload allows you to satisfy the unique requirements for each specific use case," [writes Rackspace CTO John Engates](#). "Investing in multiple cloud providers gives you more choice as to where you run cloud workloads, which gives you leverage to minimize price hikes and other risks related to vendor lock-in."

Network World recently offered [a guide to selecting infrastructure as a service](#) from competitors AWS, Microsoft Azure, and Google Cloud Platform. But, as the publication points out, "With more and more workloads going to the cloud, and the top vendors being as competitive as they've been, deciding on which provider to go with isn't getting any easier."

It really comes down to the specifics of your business and your particular use cases, says Engates. "For example, if you're a traditional Microsoft IT shop, Azure may be the best fit for many workloads, with a Microsoft Private Cloud architecture for workloads with stringent security or compliance requirements,"

he says. "However, you may also want to utilize AWS services like Kinesis if you need real-time streaming data, or Rackspace's ObjectRocket database-as-a-service if your app requires highly performant MongoDB or Redis."

MAKING THE BEST DECISIONS

There's a lot that goes into determining which cloud, and which cloud provider, best maps to the needs of your specific workloads. Many organizations are going to run up against internal limitations in evaluating their options. "To make the best decisions, you need cloud experts who understand the wide array of services offered by the leading providers, their strengths and weaknesses, and how they map to your specific needs," Engates advises.

The simplest decision may be to offload the complexity of managing your multi-cloud state to a service provider able to map the right cloud service to the right workload, and to handle the complexity of migration, architecture, security, and operations. That is one way to slay the multi-headed beast of complexity that comes with multi-cloud.