



# **TAME** ARCHITECTURAL **COMPLEXITY**

4 STEPS TO YOUR SUCCESSFUL CLOUD JOURNEY

## INTRODUCTION

In a world where digital transformation is a strategic imperative, many enterprises have embarked on the journey to the cloud in search of greater agility, better-aligned operational costs, on-demand scalability, and a sharper focus on their core business.

Some organizations have carefully crafted strategies for cloud technology adoption; but for most, their journey to the cloud has been an ad hoc affair. Many have deployed applications in a number of different clouds: public clouds, private clouds, and even combinations of the two. While public and private clouds demonstrate how effective they can be in enabling companies to deploy applications quickly, hybrid cloud strategies prove the value of hosting

applications in both cloud and on-premises environments. Similarly, SaaS offerings transform the way businesses interact with customers, partners, and vendors.

Our complex multi-cloud world differs starkly from how the “cloud” is portrayed in the news and in vendor slideware. It’s not an amorphous, single entity of shared application delivery, compute, storage, and networking

resources, as some IT professionals and executives would like to believe. Rather, the cloud is composed of a heterogeneous mix of cloud service providers (CSPs), infrastructures, technologies, and architectures that are often deployed in multiple global nodes. This is multi-cloud—and like any technology, it offers both benefits and challenges.



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# MULTI-CLOUD IS CLOSER THAN YOU THINK

Some IT leaders and business owners comfort themselves with the belief that multi-cloud might not affect them for years. Others hope to go “all-in” with a single preferred provider. Many only have visibility into a limited number of app deployments, or some test-and-development environments hosted by a single cloud service provider.

However, upon closer examination, most IT leaders find elements critical to the operation of their business in many different cloud spaces. Some developers prefer AWS, while others like Azure or Google—and with DevOps making more and more operational decisions, production applications end up everywhere. Combine this with CRM tools and other SaaS-based business offerings, and you’re left with a complex and nearly unmanageable infrastructure. In fact, the higher up the IT organization you go, the clearer it gets: multi-cloud architectures are the new reality.

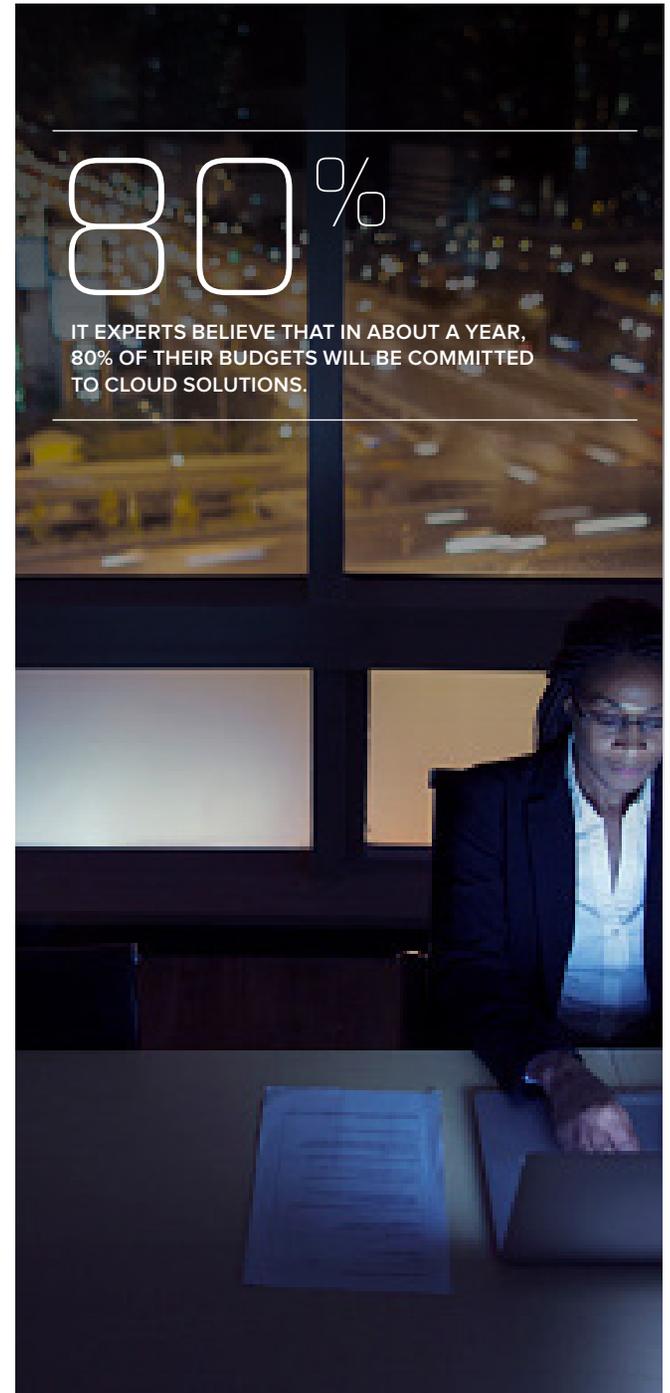
According to a recent survey on cloud adoption, IT experts believe that in about a year, 80% of their budgets will be committed to cloud solutions.<sup>1</sup> If you are one of the businesses that doesn’t have a cloud strategy

yet, take a moment to think about your answers to a few critical questions:

- Do you have applications that have varying performance requirements?
- Do you need to maintain supplier leverage with your infrastructure providers to hedge costs?
- Do you have different application development or operations teams that procure cloud services in non-traditional ways?
- Are your users, employees, or business units geographically diverse?
- Are there applications that you know are migrating to a SaaS model, such as O365?

Did you answer “yes” to any of the above questions? If so, you’re likely heading toward a multi-cloud model in the near future. And if you answered “yes” to more than one question, congratulations—you’re already living in the multi-cloud world.

First, let’s take a look at the many promised benefits of multi-cloud architectures.



<sup>1</sup> <https://www.forbes.com/sites/louiscolombus/2017/04/23/2017-state-of-cloud-adoption-and-security>

# THE PROMISES OF MULTI-CLOUD

Multi-cloud architectures enable businesses to extract the best-in-class services from each cloud provider while mitigating risk of downtime or data loss resulting from a catastrophic disruption at any single CSP. Not only can you deploy your application in the cloud with the best suite of native services, you can also tailor application services to the user to provide a richer experience (e.g., moving latency-sensitive workloads closer to the consumer in real time). In addition, multi-cloud can decrease concerns with data sovereignty compliance by allowing you to let the application and

data live where it's geographically appropriate. Put simply, multi-cloud enables you to place your workloads where it makes most sense for them to be.

Embracing a multi-cloud strategy creates options, and enables agility that would be impossible otherwise. Those enterprises with multiple cloud presences can easily comply with specific partner and customer needs, while others run the risk of being left behind.

However, a multi-cloud strategy also presents some challenges.

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# THE PITFALLS OF MULTI-CLOUD

First, and most importantly, it's key to remember that every cloud is different. They may seem the same to the naked eye, but they are unique and each must be treated differently. Because of this simple fact, effective strategies must take into consideration the potential pitfalls of adopting a multi-cloud model.

## MULTI-CLOUD SPRAWL

Different IT and DevOps teams—silozed by organizational structure or function—design and deploy their applications, selecting the cloud provider infrastructure services and technologies that best meet their individual needs. This is the beginning of multi-cloud sprawl, where existing applications have been “lifted and shifted”—sometimes to multiple providers—or where “born-in-the-cloud” applications were deployed in an unplanned and unmanaged manner. The biggest problem with multi-cloud sprawl is that by the time you realize it's a problem, you're already deep inside it, dealing with problems of manageability, security, and scalability that can seem unsolvable.

## ARCHITECTURAL COMPLEXITY

As applications drive business, organizations make IT decisions based on the needs of the app, leading many to leverage multiple cloud platforms. According to the F5 State of Application Delivery 2018 report, 56% of respondents say that cloud decisions are made on a case by case, per-application basis.<sup>2</sup>

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OF RESPONDENTS TO THE F5 STATE OF APPLICATION DELIVERY 2018 SURVEY SAY THAT CLOUD DECISIONS ARE MADE ON A CASE BY CASE, PER-APPLICATION BASIS.

Agile DevOps teams often use native cloud services to meet their short-term needs to deploy apps quickly. However, more often than not, these “limited-use” systems become production ones with lives of their own. Although using native cloud services seems like a cost-efficient, simple, and fast application deployment approach for small teams with aggressive timelines or narrowly focused projects, this mindset often leads to the use of disparate cloud platforms based on differing architectures, varying degrees/types of application services, multiple toolsets, and new application owners.

Driven by the need for speed, teams often make decisions without the oversight or inputs of operations professionals. The result is architectural complexity across the enterprise, which makes application mobility from one environment (or one cloud) to another not only more difficult, but significantly more expensive.

<sup>2</sup> F5 State of Application Delivery 2018 Report

## LIMITED APPLICATION SERVICES

Typically, native cloud services are simple and easy to deploy, but they may not be sufficient to support enterprise applications. After investing in understanding and implementing these basic app services, businesses can discover that an important required capability for the evolving application cannot be met—and there is no way to customize or recover. In terms of resources, time, and application performance, it can be a high price to pay for a simpler initial deployment.

These native cloud services are also proprietary and cannot be used in other public or private cloud environments. As a result, this leads to IT staff—already short-skilled in cloud operations—having to learn, adapt, and maintain multiple, rapidly evolving, yet siloed, cloud

# 42%

**NEARLY HALF OF ALL ORGANIZATIONS SAID THAT APPLYING CONSISTENT SECURITY ACROSS ALL COMPANY APPLICATIONS WAS A CHALLENGE.**

provider technologies to keep applications running effectively. Native cloud services also vary broadly in terms of capability. These differences can make applying

the services effectively and consistently to applications more difficult individually, and more fragmented collectively.

This complexity increases for security-oriented application services, such as WAFs, identity and access control, and DDoS protection. IT organizations must cobble together a minimum bar for application security in different environments—from the apps already in private data centers to the newer apps deployed in public clouds. It's next to impossible to harmonize the different security services, and then apply and maintain security policies as conditions change. Nearly half of all organizations in the State of Application Delivery 2018 report said that applying consistent security across all company applications was a challenge.<sup>3</sup> As a result, IT organizations face significant compliance gaps and heightened security risks.

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# MULTI-CLOUD BEST PRACTICES

Every successful migration effort requires developing a comprehensive strategy in support of the migration, and sometimes making difficult choices up front. The most tempting decision is to skip this step altogether and dive right in to migration activities, but that seemingly “easy” option can doom a cloud move to failure.

IT professionals who have adopted a best practices model start with an understanding of the desired outcome, and a mechanism to both validate and measure success in the journey. From that solid foundation, you can achieve both an adequate assessment of which applications to migrate, and an understanding of the migration goals (e.g., improved performance, reduced latency, scale).

## PHASE I: DO WE REALLY WANT TO DO THIS?

With all of the cloud hype and promise of lower cost models, not every business—nor every application—should move to a cloud framework, let alone a multi-cloud one. All too often, we hear stories of an executive ordering IT to “move to the cloud” without a good understanding of what that means. A better approach is to develop a real business case with respect to the goals you set in your overall strategy. Answer the question, “Why am I doing this?” If the allure of cost savings is the only metric being considered, you might be making a mistake.

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## PHASE II: WHAT APPS SHOULD I MOVE AND WHY?

Different professionals call this stage a variety of names, but it’s really about taking inventory of your existing environment. Give careful consideration to underlying (and differing) CSP support facilities (e.g., compute, storage, infrastructure) and restrictions associated with software licensing.

A good rule of thumb during this phase is to really think about the application itself, and what it takes to run it. While it might make sense to move an application that was developed only a few years ago, it likely makes less sense to try and move an application that has been around for a decade, and is more strongly tied to its native supporting infrastructure environment. decisions without the oversight or inputs of operations professionals. The result is architectural complexity across the enterprise, which makes application mobility from one environment (or one cloud) to another not only more difficult, but significantly more expensive.

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### PHASE III: GO FOR IT!

Design your deployments with multi-cloud in mind. Select tools that can be used across multiple clouds to increase flexibility. Then, migrate, validate, and repeat. If you follow this simple advice, your chances of success are high. Many enterprises today have adopted a CI/CD (continuous integration, continuous deployment) strategy for their cloud roll-outs, and they work.

It's often best to begin with an application that is relatively simple in nature and learn from the experience. The iterative process lends itself to rapid and continuous improvement in both products and services—in this case, your applications' success in a multi-cloud framework.

Of course, be sure you have a strategy outlined for testing the newly deployed application and shutting down the legacy system(s) once your apps are running as they should. The most successful deployments are those where both the application development and the network operations teams are well aligned, and work together throughout the whole process.

### PHASE IV: MOVING FORWARD AND ADOPTING CLOUD-ORIENTED PRACTICES

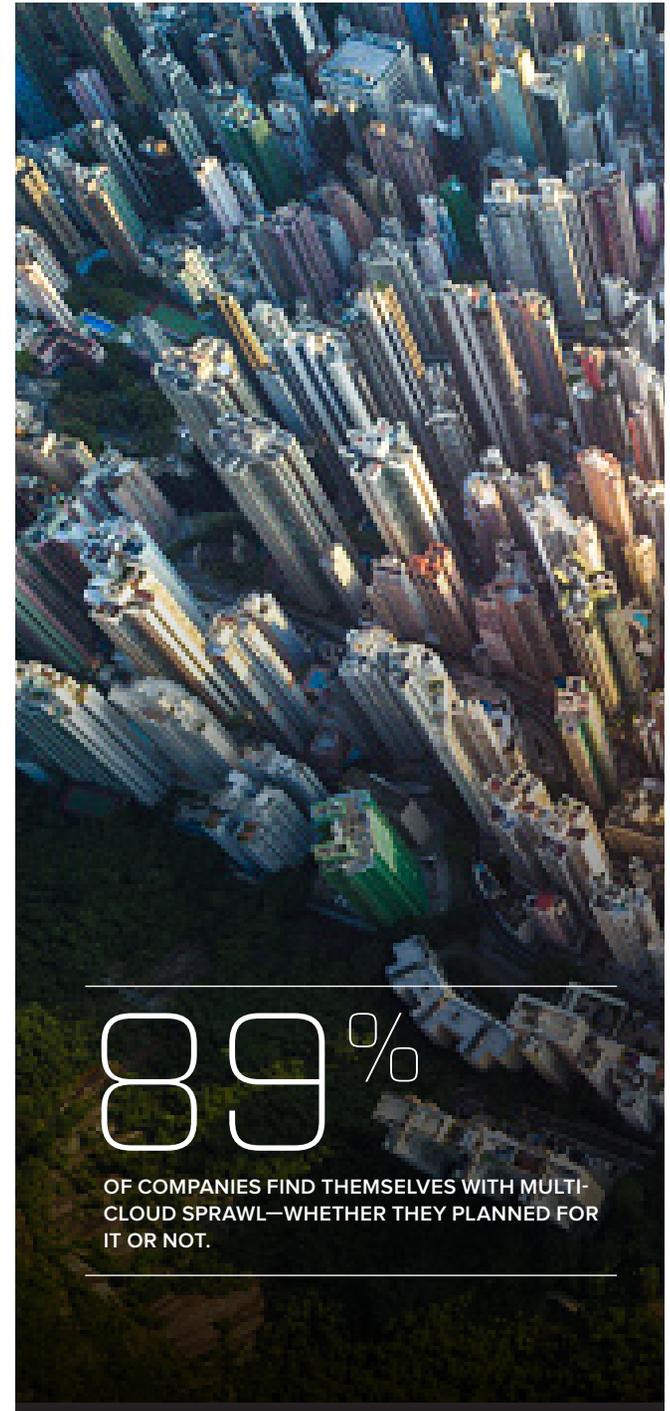
As your first step in the cloud journey—and as your first application is migrated away from your legacy systems—keep in mind that modern IT is about systems-level thinking, not task-level engagement. In this modern, cloud-focused world, conventional development and deployment models are becoming obsolete. By embracing the agility and scalability of the cloud—combined with system-wide automation—an IT organization can become button creators, not just button pushers.

### THE MULTI-CLOUD REALITY

The often-confusing, always-complex world of multi-cloud is here to stay. According to the State of Application Delivery 2018 report<sup>4</sup>, the reality is that 89% of companies find themselves with multi-cloud sprawl—whether they planned for it or not. Businesses with a thoughtful, strategic plan for cloud adoption can best avoid the pitfalls of sprawl, siloed architectures, and insufficient application services, while taking advantage of all the promises of multi-cloud environments.

Learn more at [f5.com/multicloud](https://f5.com/multicloud).

<sup>4</sup> F5 State of Application Delivery 2018 Report



## UNLEASH YOUR APPS WITH MULTI-CLOUD FREEDOM

With cloud, the options have multiplied and so has the complexity. You need to learn it all and be the expert, but the rapid rate of change makes it difficult. Everyone expects you to ensure apps work without fail. You know that is a big ask. You need to scale, you need consistent security, you need to automate and simplify operations to do it faster. You need to move apps freely between clouds with consistent services. You need the freedom to deliver any app, anywhere with confidence.

To learn more, visit [F5.com/multicloud](https://F5.com/multicloud).



US Headquarters: 401 Elliott Ave W, Seattle, WA 98119 | 888-882-4447 // Americas: [info@f5.com](mailto:info@f5.com) // Asia-Pacific: [apacinfo@f5.com](mailto:apacinfo@f5.com) // Europe/Middle East/Africa: [emeainfo@f5.com](mailto:emeainfo@f5.com) // Japan: [f5j-info@f5.com](mailto:f5j-info@f5.com)

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