



STEPPING INTO THE CLOUD:
A PRACTICAL GUIDE TO CREATING
AND IMPLEMENTING A SUCCESSFUL CLOUD

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INTRODUCTION

The cloud decision may be the easy part. For most businesses, the benefits promised by cloud computing—including agility, process optimization, speed to market, and cost reduction—warrant a closer look, if not a test drive. At least at the decision-table, curiosity and hope in the potential for transformation are winning out over caution.

The *next steps* pose the challenge. Before migration starts, cloud options must be researched, a realistic business case must be built, a project plan must be developed and implemented, and success metrics need to be established. Faced with an ever growing and fragmented provider market and conflicting reports of risks and benefits, many companies struggle to take a good idea to a practical reality. Where to start? Which workloads are best suited for cloud? Which cloud model will deliver fastest returns?

This practical guide offers steps for moving your company into the cloud, at whatever pace you prefer, with a focus on the IBM Cloud portfolio offered by IBM and its partners.

REMEMBER: THERE IS NO SUCH THING AS “THE CLOUD”

The media still tends to speak of “the” cloud, as though it were a single technology or deployment model. The decision process would be easier for enterprises if that were true, but of course it is not.

Instead, it’s more useful to understand that “the cloud” is shorthand for a range of service and deployment models that rely on elements such as standardization, automation, and optimization to deliver IT services efficiently and consistently, via a network. Many in the industry, including the National Institute of Standards and Technology (NIST), recognize three cloud service models: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). In addition, cloud can be deployed in a private, public, or hybrid model. Finally, though we most often understand cloud solutions to be deployed from the provider’s data center, via dedicated or shared resources, it is possible to deploy a private cloud on-premises, or in a hybrid configuration that connects the customers’ and providers’ data centers.

Adding to the challenge for enterprises is that commercial cloud services diverge wildly, in terms of flexibility, security, interoperability, and performance. As such, enterprises must select not only the appropriate deployment and service models, but the right vendor.

But perhaps the multifaceted cloud should be considered in a positive light. After all, why should the term “cloud” define a single solution if the problems that enterprises set out to solve are as varied as the enterprises themselves? Every company has different business objectives, risk tolerance, regulatory and competitive constraints, sunk investment, budget, and growth plans. A company’s optimal IT deployment profile (consisting of both cloud and traditional models) will be a factor of all those variables. As a result, each business must embark on its own, individual cloud “journey” that defines the entry points and timetable for becoming a cloud-optimized organization.

Understanding the cloud journey and codifying it into a strategic roadmap is the first step toward approaching the cloud, and one that enables every business to make smart investment decisions.

BEYOND THE CLOUD DECISION: WHAT TO DO NEXT

For most enterprises, the cloud journey will span many years. According to a recent Frost & Sullivan survey, corporate IT departments plan to increase the number of workloads in the cloud from an average of 6.2 to 10.7, by 2015. But the open-ended timetable should not be equated with years of resource-sapping disruption. Because there are so many entry points that require little or no resource commitment, cloud projects can easily be run in parallel.



Corporate IT departments plan to more than double the number of workloads in the cloud, from an average of 6.2 to 10.7, by 2015.



This section includes a practical list of steps to take to jump-start your cloud project. While the order of the steps may be helpful to some companies, you may choose to begin and continue your own cloud journey at any point. The most important point is to get started by doing *something*.

1. **Educate the IT team.** It may not be strictly necessary to gain the support of your entire team, but it will make the project smoother. Technical staff may look at cloud as IT outsourcing, and may view adoption of a cloud strategy as a threat to their jobs. Instead, clarify that in any cloud deployment, the enterprise IT team retains full responsibility for managing the workload, including performance and security. Emphasize that offloading the “grunt work” of infrastructure deployment and maintenance to a cloud provider will free up staffers to participate in strategic projects that cover the hottest areas of technology, including collaboration, mobility, and social enterprise. With a team of cloud evangelists on staff, you will be assured of creative and forward-thinking solutions to same old IT challenges, as well as spur new and innovative ideas to propel the business forward. As a result, senior leaders and line of business colleagues will start to see IT in a new light—that of an innovative partner focused on business results.
2. **Adopt a “Cloud First” policy for any new projects.** This simply means that for new application requests from lines of business, start by considering cloud-based solutions. Can the needed functionality largely be met by a SaaS application or a pre-integrated solution from a cloud provider’s catalogue? Can a Web-based application be developed, tested, and deployed directly from the cloud? With a Cloud First policy, corporate developers become champions of the cloud strategy and heroes to their line of business colleagues (for whom “Cloud First” equates to “Solutions Faster”). In communicating the Cloud First policy to senior executives and line of business managers, IT should emphasize cloud benefits such as faster time to deploy, improved quality, and lower costs—offering tangible proof of IT’s transformation into a business growth partner.
3. **Move test and development to the public cloud.** The earliest users of IaaS were developers, whose sporadic but intense infrastructure needs make it difficult to justify the capital costs of server purchases. On-demand access to scalable resources and pay-as-you-go pricing enable developers to test, replicate, tweak, and test again in an environment that replicates the production environment. Because of the natural fit, it often makes sense to deploy your test and development workloads on a highly scalable and efficient public

cloud service, such as IaaS from SoftLayer, an IBM company, at the outset of the cloud project, before you've even completed your strategic assessment. This simple move will free up hundreds of hours of IT operational resources to work on the cloud or other strategic projects; resources that would otherwise be devoted to the grunt work of configuring and pulling down server resources to enable the development team.

- 4. Review your IT maintenance schedule** for planned hardware and software upgrades and refreshes. Major upgrades can be disruptive to users, as well as costly and time-consuming to implement. Where possible, you should synchronize the planned upgrades with your cloud project.

Hardware – In a recent Frost & Sullivan survey of U.S. IT decision-makers, nearly 50 percent reported that they will consider cloud services when it is time to replace aging server infrastructure. They are looking to the cloud to relieve capital budgets and introduce greater flexibility into the IT department. As your hardware ages, consider whether the workloads supported by the servers could be handled more cost-effectively in a hosted cloud environment.



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In some cases, you may decide that certain workloads should remain in your premises-based data center for the time being. Reasons may include a desire for greater control over security, concern over requirements for compliance audits, or a need to assure reliable and predictable performance without worrying about who or what else is sharing the hosted cloud server. Regardless of your reasons, if you are not quite ready to move the workloads out of your data center, consider replacing the hardware with a cloud-optimized solution, such as the IBM PureSystems family, which ships with hypervisors and management software already included. IBM PureSystems enable you to build a private cloud in your own data center. Even more valuable to the cloud journey is that IBM PureSystems are interoperable with the on-demand Infrastructure as a Service platform from SoftLayer, an IBM company. Via an extensive set of application Programming Interfaces (APIs), you can develop an application so that some elements (e.g., a proprietary database) are deployed in-house on the IBM PureSystems server; and other elements (e.g., the public Website interface) are run from the SoftLayer data center, utilizing any of the range of on-demand infrastructure configurations (shared or dedicated, virtualized or bare metal). This provides flexibility in your cloud journey, as well as a smooth path to migrating, bursting, or sharing workloads across deployment environments.

Software – As you plan major upgrades or new releases for your systems and applications, consider cloud-suitability. “Born-on-the-Web” applications can usually be migrated fairly easily and with a predictable, fixed cost and timeframe. IBM estimates that some 60 percent of corporate workloads fall into this category. You may choose to target these workloads early in your plan, as a minimally-disruptive way to start yielding cloud benefits.

You may be able to “cloud-enable” certain legacy systems (estimated at another 20 percent of workloads) through “replatforming;” that is, deploying the code to a robust cloud platform. While this involves a little

more work than migrating Web apps, it creates efficiencies in maintaining, managing, and delivering the workloads.

For a small number of highly complex and customized workloads, a total reengineering may be required. This is a long-term project in which you must consider Total Cost of Ownership: whether the upfront costs and disruption are justified by the anticipated benefits (e.g., greater efficiency, functionality, flexibility, visibility, ease of administrative burden, and lower maintenance costs).

5. **Convene a cross-functional project planning team** to identify workloads to migrate. This is your opportunity to gain the trust of line of business managers who, in many companies, consider IT to be a roadblock. In presenting the cloud to your line of business counterparts, emphasize how they (not IT) will directly benefit. For example, the cloud's faster provisioning times mean fewer backlogs and less contention for resources, so that projects are more likely to complete on time and within budget. Line of business managers may also be able to integrate greater functionality into their cloud applications; for example, a software catalogue built on the IBM Cloud makes it easy to integrate collaboration, data analytics, and other capabilities into your cloud workloads.

In addition to key stakeholders from line of business groups (e.g., sales, marketing, and engineering), ensure your cross-functional team includes:

- Developers and application engineers who can assess workloads for “cloud suitability,” based on how they were built.
 - Representatives from the teams responsible for compliance, security, and disaster recovery, who can help assess risks associated with data and workloads, and ensure solutions are appropriate.
 - Senior leaders who can assess workloads in terms of strategic importance to the business.
6. **Hire an expert to spearhead the project.** In setting out to build their cloud strategies, most businesses face two handicaps. The first is lack of expertise. Cloud is a new model, and very few enterprises have on-staff knowledge of how it works, what solutions are available, and how to deploy it to optimal effect. The second handicap is lack of spare resources. In today's technology-fueled business environment, most IT departments are stretched thin. They do not have the luxury of pulling a host of valuable resources off other projects to focus full-time on the cloud migration and integration. No wonder 77 percent of the IT decision-makers responding to the 2013 Frost & Sullivan Cloud User Survey plan to engage an outside expert to help develop and implement their cloud strategies. An outside expert can assist with tasks from risk assessment, to strategy development, to project planning, to management of the migration project.

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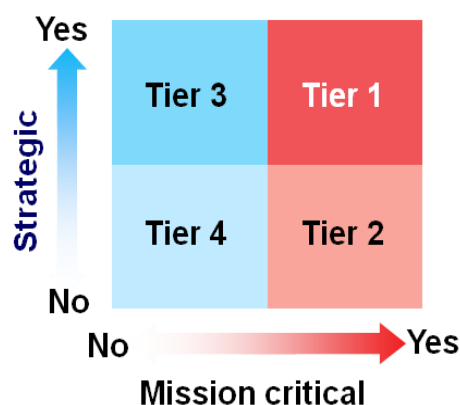
Because “cloud” is a relatively new discipline, with new entrants appearing with alarming frequency, it is important to look for a partner with the levels of expertise and experience you need for a smooth implementation. Consider the provider’s experience in managing data centers across all deployment models (traditional and cloud; private, public, and hybrid); this will ensure that the consultant not only understands how the cloud model works, but also how IT departments work. Also seek out a provider with strong expertise in security—not just how to deploy security software, but also how to conduct a risk assessment and ensure workloads are secured appropriately. Because cloud is all about workloads and processes (not just standalone apps), it is also wise to select a vendor with expertise in applying technology to optimize business processes.

Should the expert be the cloud provider? Although some consultants tout their “cloud-agnostic” approach, the truth is, only 18 percent of businesses select an independent consultant for their cloud strategy and implementation project. Instead, most businesses build a partnership with a cloud or managed service provider who serves as a single point of responsibility for the cloud strategy, from planning to implementation. This means, of course, selecting a full-service provider that offers both the range of deployment models and service levels you will need in your cloud, as well as the managed and professional services to get you there. Furthermore, to maximize the value of your cloud platform, it is important to consider the partner ecosystem supported by your vendor. A broad ecosystem of independent software vendors and systems integrators will ensure you have access to the technology and solutions you need from a variety of partners.

7. Consider ongoing cloud support needs. The time to consider how you will manage your cloud is now, before you start moving strategic workloads. While you may be at the beginning of your cloud journey, you should look ahead to the inevitable time when the majority of workloads will be cloud-delivered. That means your team will be co-managing the data, applications, and workloads with your cloud partner. How much responsibility for cloud workloads will your team retain, and how much will you put in the hands of your cloud service provider? To many enterprises, the answer will be to focus the internal team on new ways of using technology to solve business problems, gain a competitive edge, and bring innovative products to market. The task of deploying, maintaining, and optimizing an increasingly diverse set of cloud deployments may be best offloaded to a cloud provider in the form of managed services. Taking a long-term view of your cloud journey may prompt you to select one of the few cloud service providers to offer a managed service option, such as IBM Cloud Services. IBM Cloud Managed Services are part of IBM’s extensive portfolio of cloud services, which covers multiple domains and delivery models, and frees up more of your own resources to help you drive innovation.

8. Build the migration and integration project plan. Now it’s time to build the onramps to your company’s cloud journey. Keep these steps in mind as you build your plan:

Work with your expert and cross-functional team to identify two or three simple and low-risk workloads to move to the cloud. For most enterprises, the best bets are Web-enabled workloads that are neither critical, nor strategic to the running of the business, and that require limited interaction with external data sources. Among respondents to the Frost & Sullivan survey, the most common IaaS workloads are Website hosting (cited by 55 percent of businesses), followed by archival storage (53 percent). Figure 1 below shows a simple tool developed by IBM to help businesses assess and prioritize their workloads for cloud migration.

Figure 1: IBM Workload Assessment Tool

	Tier 4	Tier 3	Tier 2	Tier 1
Application Class	Not strategic or mission critical	Strategic but not mission critical	Mission critical	Key – Most critical
Typical distribution	55%	20%	20%	5%
Availability required	Low 95% or less	Medium 95-98.5%	High 98.5-99.7%	Very high Never down
Support effort	Best effort	Business hours	24*7	24*7
Monitoring	No monitoring	Basic server	Infrastructure	Application level

Source: IBM

- Determine appropriate deployment model for each workload you select. Criteria will vary based on a combination of the application attributes (for example, degree of proprietary data, complexity) and your company's appetite for risk and control, weighed against the expectations for cost reduction. You may decide to deploy proprietary databases in a hosted private cloud environment, and a less critical application, such as email, in a public cloud. You can also choose how much management time and effort you want to devote to ongoing efforts, and select (per workload) a fully managed, partially managed, or do-it-yourself deployment. A robust public cloud platform such as that offered by SoftLayer, an IBM company, which supports multiple configurations, management options, and deployment scenarios, is a simple way to start your cloud journey.
- Identify measures for success per workload. Depending on the workload, you may be able to quantify lower IT costs associated with maintenance, or productivity enhancements, or increased revenues associated with less downtime. This is where the goodwill generated with your Line of Business colleagues will pay off. By jointly determining the goals upfront, you will share in the success of your cloud deployment.
- **Let the migration and integration begin!**

ENSURING A SUCCESSFUL CLOUD IMPLEMENTATION: HOW IBM CAN HELP

IBM and its extensive network of cloud-certified partners are well-equipped to help businesses get started and move forward on their cloud journey. The IBM Cloud is an integrated portfolio of hardware, software, cloud managed services, and business solutions. With the 2013 acquisition of SoftLayer, IBM supports the full range of cloud deployment models: private, public, and hybrid cloud. From a robust network of IBM and SoftLayer cloud data centers worldwide, the company delivers the full stack of cloud services: Infrastructure, Platform, and Software as a Service.

Drawing on decades of experience managing corporate data centers, IBM and its partners can provide professional services engagements to help you build a cloud strategy, assess your workloads, assess your security risk and resiliency plans, migrate to cloud, and even provide ongoing management and monitoring of cloud services. IBM can also help you optimize your on-premises data center, with private cloud and virtualization products and services that integrate with your new cloud environment.

For businesses starting on their cloud journey, this means that IBM and its partners have the know-how and the product portfolio to take them into the future. With the IBM Cloud portfolio, cloud solutions are not add-ons that cause administrative burdens, but an opportunity to transform and optimize IT—at your own pace and in your own way.

One of the newest additions to the IBM Cloud portfolio is the powerful infrastructure platform from SoftLayer, an IBM company. SoftLayer brings an industry-leading range of scalable, on-demand Infrastructure as a Service options. The SoftLayer platform supports a flexible, high-performance enterprise-grade cloud in any configuration: dedicated or shared servers, virtualized or bare metal, all managed through a single interface. With the SoftLayer platform, businesses of all sizes are able to build, configure, change, and tweak their cloud solutions to provide optimal price-performance for every workload.

The reason you can trust IBM for your cloud journey is that the IBM Cloud portfolio was designed and built for the way enterprises operate. The SoftLayer API supports over 1600 function calls, thus ensuring seamless integration across cloud and hosting environments. Furthermore, all IBM Cloud offerings are built with enterprise-grade features and functionality, including robust service level agreements, broad resiliency options, and security components that are built in, with higher levels available as needed. The flexibility ensures that you have the right choices for each workload, without requiring you to pay for more than you need.

THE LAST WORD

We are all headed toward the cloud. Most enterprises accept that at some point in the future, the majority of workloads and data will be cloud-delivered. What they are struggling with is when the cloud will be the norm; which workloads should be deployed via which model; and most importantly, how they can embark on a cloud strategy that will prepare their business for the future.

Faced with these uncertainties, some businesses respond with paralysis, afraid to take steps they may regret. Others try out multiple providers, only to become frustrated when anticipated benefits are offset by the high administrative burden and lack of integration across platforms.

A better approach is to accept that your business is on a cloud journey. You can choose your entry points: Public

cloud? On-premises private cloud? SaaS? You can choose your timeline: legacy workloads first, or the next app request?

To maximize your chance for success, you should choose your traveling partner wisely. Select a partner with the most robust cloud portfolio—one that allows you to build on your cloud strategy as your company grows, without backtracking. A partner with proven experience and expertise as a business technology leader. As an ideal partner on the cloud journey, many businesses choose IBM, whose cloud strategy is now enhanced with the infrastructure platform from SoftLayer, an IBM company. IBM and its partners offer the comprehensive cloud expertise and service portfolio to help you take that next step...and the step after that...and after that...until you have implemented your cloud strategy.

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For more information on the IBM Cloud, visit www.ibm.com/cloud.

For information on IBM Strategy and Design Services for Cloud Infrastructure, visit <http://www-935.ibm.com/services/us/en/it-services/strategy-and-design-services-for-a-cloud-infrastructure.html>

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