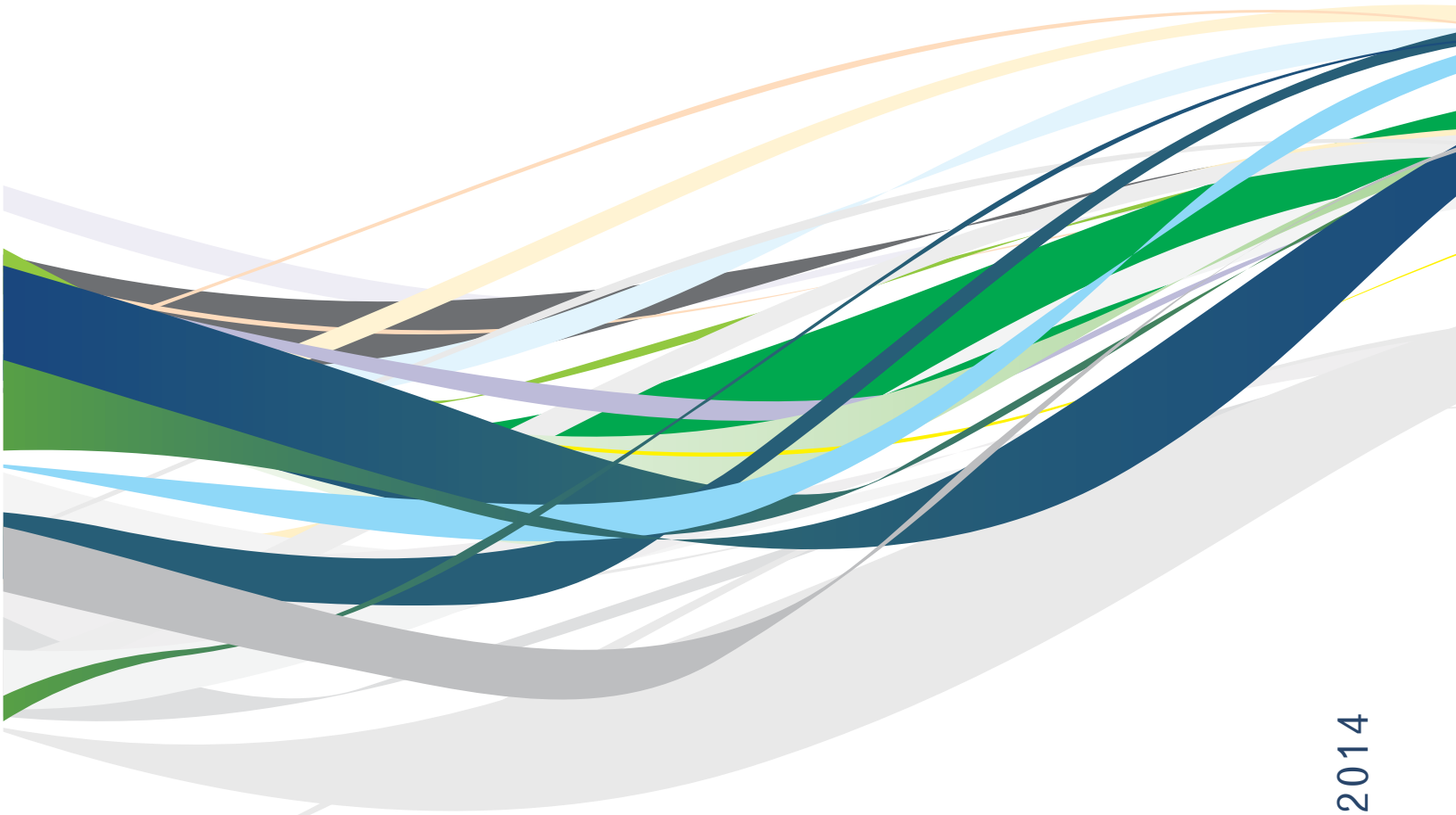
TRANSITION TO CLOUD: CHALLENGES AND BEST PRACTICES

By Moninder Bhogal, IMS Solutions Architect, NIIT Technologies, Inc.



2014

Table of contents

Executive Summary

Just a short while ago—around 2010—the CIOs of many major companies were understandably reluctant to adopt the cloud as their strategic IT solution. Cloud was more of a promising concept that was widely discussed, but very few enterprise leaders really had a clear picture of the possible capabilities and benefits vs. the pitfalls associated with cloud computing. Shortly thereafter, in 2012 and 2013, as computing and data management challenges within traditional IT environments continued to mount, more intrepid organizations decided to take the plunge into cloud. Fast forward to 2014: cloud has advanced far beyond the experimental stage and is giving every indication that it's here to stay. As cloud offerings have grown into full flower, the primary questions when considering the move to cloud have now become:

- "I understand cloud may not be right for everyone, but how do I know if it's right for me?"
- "Who can I trust to provide the right cloud solution for my enterprise?"
- "What can I do to overcome challenges and mitigate risk?"

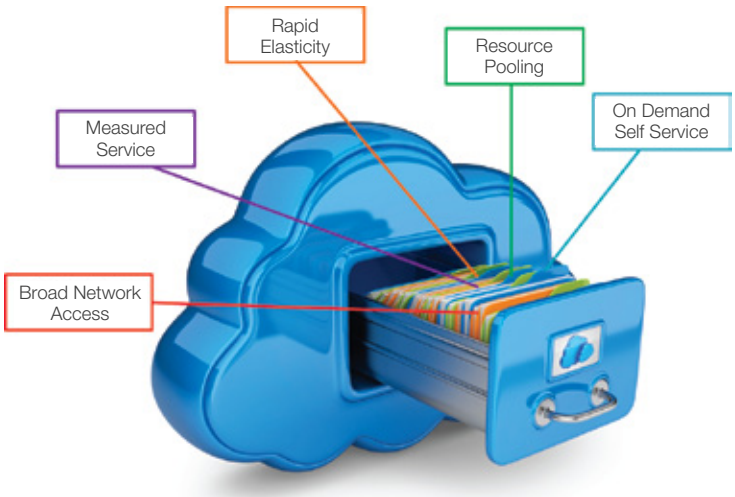
This paper examines how business owners, end users, application owners and IT integrators can determine if cloud will accomplish their specific business objectives. It also describes the challenges that can be expected when transitioning to cloud and gives a clear picture of the benefits—as well as the pitfalls—associated with making the leap. Finally, it details proven industry best practices that will help ensure that the enterprise achieves its objectives.

So What's So Great About Cloud? Everything.

When properly provisioned, the transition to cloud can provide greater data security; an elastic environment that can be expanded as the need arises; and robust, fast, reliable disaster recovery—not to mention the fact that the cloud actors can transition the cloud consumer to the cloud with zero downtime.

That's an impressive list of advantages. Can cloud *really* deliver all of that? Again, when *properly provisioned,* yes. In fact, the U.S. Institute of Standards and Technology (NIST) has identified five basic advantages offered by cloud computing that traditional computing cannot deliver. (See Fig. 1.) Here's a basic overview:

- **Agility**—Cloud enhances the agility to immediately respond to changing business requirements, providing capabilities that can be provisioned and released in very elastic ways—sometimes automatically—to deliver rapid inward and outward scaling that fluctuates to meet variable demand. This remarkable elasticity can deliver unlimited capabilities in any quantity and at any time.
- **Self-Service on Demand**—The on-demand feature enables IT system availability on short notice, so server time and network storage can be automatically provisioned as needed, without the need for human interaction with multiple service providers. Ultimately, this increases business efficiency.
- **Resource Pooling**—The cloud's multi-tenant model serves multiple consumers, meeting fluctuating consumer demand by dynamically assigning and reassigning physical and virtual resources like storage, processing, memory and network bandwidth. The net result is cost reduction, which delivers maximum value.
- **Broad Network Access**—Mobilization and globalization capabilities are available over the network and can be accessed through standard mobile phones, tablets, laptops and workstations. Thus, the business can connect people anywhere in the world.
- **Measured Service**—The metering capability of cloud systems automatically controls and optimizes resource use for storage, processing, bandwidth and active user accounts. This level of monitoring, controlling, auditing and reporting resource usage enables transparency for both provider and consumer, further reducing costs and providing accurate accountability.



NIST: Key Principles to Cloud Computing

Fig. 1. The major advantages associated with moving to the cloud. Information in diagram courtesy of NIST.

Cloud Actors and Their Roles

NIST has defined the specific roles of five major kinds of actors in a typical cloud engagement. They include the following: (See diagram in Fig. 2.)

- Cloud Consumer—End users
- Cloud Auditor—Governance body
- Cloud Provider—Company that provides cloud service to consumers
- Cloud Broker—Company that facilitates cloud provisioning between provider and consumers
- Cloud Carrier—Company that provides connectivity and transport for cloud

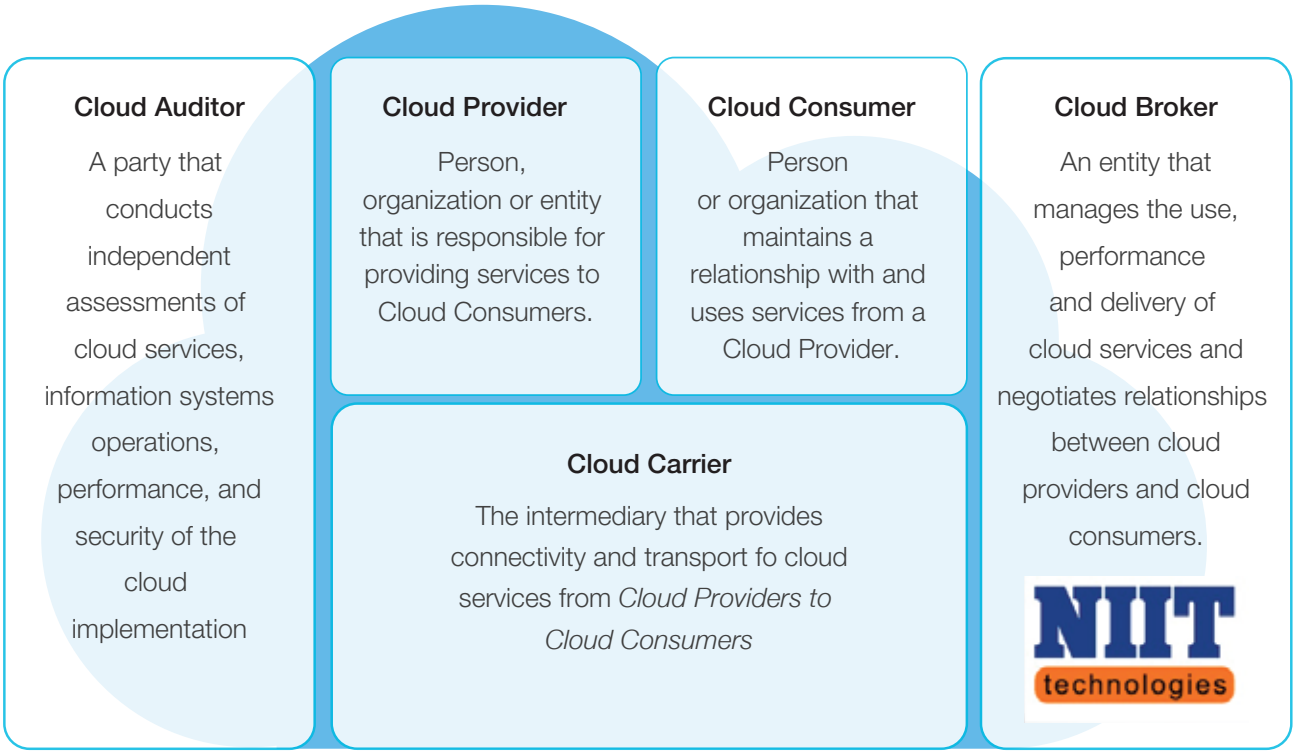


Fig. 2. Cloud actors and their roles. Definitions courtesy of NIST.

Simply put, a cloud consumer engages a cloud broker, who assembles the best combination of cloud carrier and cloud provider that can achieve the cloud consumer's goals, satisfy the cloud auditor's compliance requirements and ensure the best outcome for all concerned. The cloud broker serves as the facilitator for all business conducted by this chain of cloud actors.

Why Outsource Cloud Services to a Third Party?

So you're thinking that you're ready to move to the cloud. Maybe you're eyeing your own private cloud, but you're wondering if this is something you "should not try at home." In order to get an accurate read on the third-party question, adjust your thinking to a larger scale. Have you plotted both your long-term and short-term cloud sourcing strategy? Start there—then go one level deeper and consider that having a private cloud demands servers and data centers in multiple locations. It also means that your users will want to access your data in multiple countries via the nearest server. Finally, consider that since your customer's experience is probably at the forefront of your company's loyalty strategies, the success of your cloud could very well depend on the speed at which data is received across your servers.

So that's one of the advantages of outsourcing; a qualified third party can relieve you of the painful burden of ensuring the ease and speed at which your data travels through various Internet service provider channels, across other continents and along undersea cables. But the single biggest reason to outsource cloud to a third party is sticker shock. *Expect to pay millions of dollars to build a cloud platform that is secure, compliant and licensed.*

Another Day in Paradise: Overcoming Challenges and Mitigating Risks

First, get a full, professional assessment to determine the requirements for running an existing application in the cloud—without it, there is a risk that you will be stuck with the wrong solution. The assessment should identify applications that are appropriate candidates for transition to cloud and include a cost benefit analysis to determine the right platform to be used. The right cloud broker will present the solution that is the correct fit for your unique circumstances and situation—and depending on your variables that could be a public, private, hybrid or community cloud.

Like Clockwork: A Swiss Manufacturer's Transition to Cloud

In 2012, a large cement manufacturing company based in Switzerland was interested in moving to the cloud but had concerns about security. The manufacturing company was experiencing frustrating challenges with provisioning time and scalability in the Asia Pacific region. Intrigued by the possibilities offered by cloud, the company's CIO determined that moving to the cloud could solve its business challenges, which included:

- An application footprint that had expanded considerably and resulted in a need for more data center space
- Rapid growth from a regional to global scale, which created the need for processing and operating with variable load levels
- Running some temporary operations that would enable reconciliation of accounting functions

This was a case in which NIIT Technologies was able to leverage its cloud offering, Caliver—which it formulated via its joint venture with Hitachi—to help the cement manufacturer attain its goals. Ultimately, Caliver enabled the client to:

- Successfully accomplish a seamless transfer of applications to the cloud
- Pay only for services consumed
- Address demand variability with agile infrastructure provisioning

Next, be forewarned that end users tend to overuse the cloud's on-demand self-service feature, which quickly results in budget overruns. However, the right governance model can curb the overuse; without it, you may find you're forced to halt this feature. And don't forget that uncontrolled, on-demand self-service can also negatively impact the cloud's rapid elasticity, and if that is unavailable, your enterprise will be robbed of that benefit. Over-allocation also results in depleted business-as-usual (BAU) capacity, which causes scalability of processing and operation to break down. The bottom line: put a proper governance model in place at the outset.

The third concern is customization. Your transition to the cloud will not automatically provide you with a ready-to-use platform; it will require customized coding that accommodates your applications in the cloud environment. Your IT partner must demonstrate a high level of domain expertise and business knowledge to properly customize your applications to run in the cloud.

One last roadblock to the agility you're seeking is the lack of connection among development, operations and quality assurance that has historically plagued traditional IT organizations. These fragmented, disconnected silos slow everything down, as we've all observed for decades. In that scenario, the development process is sequential from start to finish, and while the application developer may be involved in the entire process, the stakeholder is only involved in the planning phase. Thus, these silos, which still lurk everywhere, impede collaboration and responsiveness. Development proceeds sluggishly, but this is not the case with cloud; as we will shortly see, an IT partner with deep Development/Operations, or DevOps, knowledge can get you past this hurdle.

Practice Makes Perfect: Leveraging Best Practices Ensures a Smooth Transition

Now that we've seen some of the challenges, obstacles and risks associated with a move to the cloud, let's examine a number of best practices that have emerged to overcome them.

Over the past four years, as cloud has matured, the chargeback model—also known as pay-per-use—has become the most effective way

to address the overarching governance issue described above. A proven way to accomplish this is to engage a single source that provides managed services; this is popularly known as “one throat to choke.” One company accepts accountability, so no one points a finger if and when a problem arises. This single provider should be able to integrate the applications in the traditional IT space with the cloud, as well as display an astute understanding of business needs and how to map them to the right cloud offering. Ideally, the provider should also offer open source solutions backed by operational support to enable the cloud consumer to avoid huge licensing costs and a dramatic reduction in total cost of ownership.

Intelligent assessment of each client’s unique situation is absolutely imperative. Unless you can analyze the actual gains that are achievable with a properly provisioned transition to cloud, you’ll be unable to make an informed decision. Just do the math. If the probable pain of the transition threatens to exceed the pleasure of any potential gains, abandon the effort. Wisely accept the fact that cloud is not for you—at least not at this point in time.

For example, if you’ve determined that your operating system needs automated patching, but the cost of setting up an automated patching capability will be higher than the cost of operating the environment that needs patching, don’t go there. However, in a different scenario, cloud might be a viable solution; a proper assessment might conclude that the private-cloud costs associated with planning, implementation and licensing/support are likely to be prohibitive. If so, the public cloud route would be the way to go. No two situations are alike. There is no “one-size-fits-all,” so insist on the size that’s the right fit for YOU.

Cultivating the right mindset is also key: the current trend is moving us from a traditional IT culture to a “DevOps” culture. DevOps, which is short for Development/Operations, encompasses an ecosystem of processes, methods and systems for communication, collaboration and integration among the development, operations and quality assurance departments within an organization. A best-practices cloud services provider understands DevOps and is able to manage an agile development methodology that addresses any disconnect between development and operations by automating application lifecycles and infrastructures. This level of understanding enables greater operational agility, even as an enterprise’s IT architecture undergoes accelerated ongoing change.

Sooner or Later, We're All Moving to the Cloud.

So we've seen that the transition to cloud promises many substantial benefits, and we've also seen that the benefits are not attained independently of challenges. Transitioning to cloud is not an overnight endeavor; it is a process that requires a holistic understanding of the challenges and ultimate impacts on your enterprise's business—and that takes time.

When implemented correctly, cloud provides a much more robust, scalable, cost-efficient and available environment than that of a traditional IT infrastructure environment. It also brings flexibility, agility and efficiency, as well as expanded mobility and global impact to your organization—but achieving this requires a practical, long-term strategy accompanied by deep understanding on your part. There's no substitute for doing your homework: acquiring a solid understanding of the five cloud actors' roles associated with cloud implementation is the first prerequisite to a successful transition to cloud. Armed with this knowledge, you will have a foundation for choosing the best way to handle your implementation, as well as the right source for the cloud software you need.

Your "Cloud 101" education may well convince you that outsourcing your cloud implementation may not only save you a considerable investment but also free your internal management team to focus on your core business—the bread and butter of your enterprise. Or you may discover that now is not the right time for your organization to make the move to cloud—but rest assured, that day is coming. Ultimately, the transition from a traditional IT environment to the cloud is inevitable, so plan for it.

Finally, we've seen that it's imperative to choose the *right* IT partner, who will enhance your understanding of such issues as cloud governance and customization of your applications, as well as help you determine the most effective way to integrate your development and operations teams. Paying close attention to all of these factors will enable you to lay a strong foundation for your cloud strategy and reap the rewards of a successful implementation.

About the Author

Moninder Bhogal, who is Senior Director, Infrastructure Management Services (IMS), at NIIT Technologies, Inc., has extensive experience in the management of IMS architecture at numerous financial institutions. His diverse background also encompasses considerable expertise in data center consolidation strategies; business continuity process/disaster recovery (BCP/DR) planning, analysis and support; cloud transition/adoption strategies; testing strategies; IT transformation and integration; and operations management and automation.

An Outsourcing Center Report