

CLOUD COMPUTING

# Finding the Silver Lining

Steven Hall, Partner, ISG



## INTRODUCTION

Formulating an information technology (IT) enterprise strategy has suddenly become a lot more complex. Just when we thought the outsourcing marketplace was maturing into a predictable and stable set of services and offerings, the landscape has changed. The emergence of Cloud Computing has altered the very fabric of how IT service providers deliver services and how an enterprise purchases and consumes those services. Let's take a look at the hype, the reality, the challenges and the actions you can take to begin your journey on the road to finding Cloud Computing's silver lining.

## THE HYPE ABOUT CLOUD COMPUTING

For those of us in and around the IT industry today, it is difficult to have a discussion or read a publication without encountering some mention of Cloud Computing. Barron's screams the cloud headlines from its front page, prognosticating the impending upheaval in our industry because of this amazing new technology. Companies such as Google and Amazon tout billion-dollar investments in hardware and software infrastructures to address the staggering potential in the small-business and consumer markets for cloud-based services. These heretofore consumer-oriented companies are engaged in a frontal assault to win their share of the corporate IT market. Traditional multinational outsourcing giants such as IBM, HP and CSC, as well as many India-heritage outsourcers, are investing huge amounts of capital to retain and expand their base of corporate enterprise clients while salivating over the opportunity to compete for the small-business and consumer sectors.

Today's chief information officer (CIO) is being bombarded from all sides with pressure to investigate, acquire and deploy this new cloud capability immediately, if not sooner. The chief executive officer, board of directors and investors want to know why the touted benefits of the cloud aren't being exploited. The CIO's internal and external customers are demanding responsiveness, agility and best-of-breed solutions to their IT needs. They are demanding that the CIO be able to address their frequent and often unpredictable changes in resource demand quickly and, in many cases, without long-term commitments. The CFO is demanding that all of this be delivered with declining year-over-year costs that vary predictably with actual consumption. These benefits are being proclaimed as reasons to rush to this marvelous new capability — Cloud Computing. In response to all of this, the CIO is being forced to separate cloud fact from fiction, myth from reality, and what's really available and what's not; all while keeping the organization's existing services operating and under control. With that landscape in place, let's now take a look at the reality of Cloud Computing, what the challenges are in adoption, and what you can do now to ease your way into this brave new world.



**The CIO is being forced to separate cloud fact from fiction, myth from reality, and what's really available and what's not; all while keeping the organization's existing services operating and under control.**

## CURRENT REALITIES

Upon embarking on this journey, one of the first problems you will encounter is the diverse set of definitions for Cloud Computing advanced by the marketplace. Instead of creating yet one more definition of our own, we will use the definition provided by the U.S. Department of Commerce National Institute of Standards and Technology (NIST). According to NIST, the definition of Cloud Computing is: —A model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider Interaction. ||

Within this Cloud Computing model, NIST recognizes three major service delivery models.

- 1. Cloud Software as a Service (SaaS):** The capability provided to the consumer to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through a thin client interface such as a Web browser (e.g., Web-based e-mail, Salesforce.com, Google Apps and Microsoft Business Productivity Online Suite). The consumer does not manage or control the underlying cloud infrastructure — including network, servers, operating systems, storage or even individual application capabilities — with the possible exception of limited user-specific application configuration settings.
- 2. Cloud Platform as a Service (PaaS):** The capability provided to the consumer to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages and tools supported by the provider (e.g., Google App Engine, Microsoft Azure, Amazon Web Services and IBM Cloud). The consumer does not manage or control the underlying cloud infrastructure — including network, servers, operating systems or storage — but has control over the deployed applications and possibly the hosting environment configurations.
- 3. Cloud Infrastructure as a Service (IaaS):** The capability provided to the consumer to provision processing, storage, networks and other fundamental computing resources by deploying and running customer software, which can include operating systems and applications (Amazon Elastic Compute, Simple Queue Service and Elastic Block Store; Microsoft Compute, Queues, Blobs and Tables). The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage and deployed applications, and possibly limited control and configuration of select networking components (e.g., host firewalls, load balancers).

These three services all share the common characteristics of being delivered over the Internet, being run on a pool of shared hardware, executing a standardized set of software, and being supported by a team of specialized personnel and standardized processes from multiple locations around the globe. Payment for these services is often based on units of measure that are aligned to the way the business consumes them, such as the number of users of a particular application, the number of developers or testers, the number of supported Web sites, the amount of data storage utilized or the number of transactions processed.



Although many of these terms are new and different, many of the benefits that are promised seem familiar.

Although many of these terms are new and different, many of the benefits that are promised seem familiar. We may find ourselves asking, — How does this differ from the promises I've heard in the past? Wasn't I promised many of these features by grid computing, || capacity on demand and ASP software applications? So how does Cloud Computing differ? It is the



next logical step on the faster, better, cheaper evolutionary chain. There is really nothing revolutionary about the technology or delivery of services via the cloud. There has been a continuing trend toward better and faster connectivity, browser-based applications and faster and cheaper hardware, and we are all now beginning to reap the benefits. This is the next step on the road to Internet computing that author Nicholas Carr describes in his bestselling book —*The Big Switch*. | |

The biggest development that is allowing this cloud technology to become a reality is the change in us! Anyone younger than 30 has lived most of his or her life surrounded by personal computers, hand-held mobile devices and the Internet. As individual consumers, most of us have a Web-based e-mail account, use Online banking, and make hotel and airline reservations Online. Some of us may even have our own personal Web site. Our expectations include a greater willingness to give our personal data to trusted vendors and a belief that our financial transactions are encrypted and safe as those transactions move through the Web. We use Online blogs, forums, wikis and RSS feeds to get our information. We have come to realize and accept the fact that many transactions will slow down at peak periods and that, yes, we will get the occasional — page not found or — error occurred — please resubmit message. We learned to allow market forces to create incentives for vendors to protect our data, to add additional capacity to avoid excessive transaction delays and to keep application errors to a minimum. The amazingly fast, cheap and commoditized network we now call the Internet has replaced the slow, expensive and dedicated circuits we formerly purchased to solve our connectivity needs.

Over the same period of time, CIOs have learned that internal standardization of hardware and software will reduce operating costs, and that commercially available software applications installed with little or no customization will address users' business needs with minimal need for additional application development staff. Additionally, CIOs have learned that using these commercially available applications rather than custom software allows for quicker upgrades and new functionality with minimal support costs.

These changes in our own expectations coupled with the investments in technology and marketing by the service provider community have created a perfect storm of activity around cloud computing. This time around, the promises are real and available, and we have an appetite for what's out there. So what's stopping us?



**These changes in our own expectations coupled with the investments in technology and marketing by the service provider community created by a perfect storm of activity around cloud computing.**

## TECHNICAL CHALLENGES

With all of these apparent benefits, what are the challenges that impede enterprise-wide adoption of cloud services? Part of the problem is rooted in the very same principles that underpin a service provider's ability to deliver these services in an agile, cost-efficient manner in the first place. The issues are:

1. A pool of standardized highly utilized hardware.
2. Standardization of software and processes.
3. A high-speed, multipathed, reliable network.
4. Geographically disparate delivery locations with highly leveraged support staff.

Unfortunately, in contrast, the typical corporate IT world often consists of a legacy of diverse business applications and services that often require specific hardware configurations, running a variety of different software stacks, delivered from highly protected delivery locations over a dedicated secure network. In addition, all of this is traditionally operated and maintained by a dedicated IT staff that has intimate knowledge of the specific applications and the hardware and software they operate on, and an in-depth knowledge of the business processes they support. The CIO's application portfolio often covers the spectrum of standardization — from highly standardized commercial off-the-shelf packages to internally developed applications supporting the very core of the business, sometimes written in proprietary programming languages and often running on out-of-date, unsupported hardware. Often, internal applications are designed in a tightly coupled manner, sharing a single database, and are susceptible to failure when network latency increases beyond a certain point. All of these points need careful analysis and consideration before attempting to implement them in a cloud model.



**So it would seem that even if we are ready to embrace this new capability as individuals, the road to corporate adoption still has some potholes. There are no issues bigger than data security and intellectual property protection.**

So it would seem that even if we are ready to embrace this new capability as individuals, the road to corporate adoption still has some potholes. There are no issues bigger than data security and intellectual property protection. Personal information protection regulations may make the concept of storing corporate data in an unknown location, possibly on foreign soil, unpalatable to corporate risk managers. Legal discoverability issues for e-mail stored in foreign countries pose a significant challenge, as do a widely diverse set of intellectual property protection laws from country to country. These issues will be solved, but it will take time. Solutions to the data placement and discoverability issues are already evolving, such as the concept of — data anchoring that allows a consumer to dictate the geographic placement of sensitive data and — anchor it in that location.

## CLOUD COMPUTING



**This need for geographic proximity of applications and data will lead to some challenges. These challenges can be overcome by the careful selection of the applications to be moved to the cloud.**

A second set of related challenges emerges that are caused by the relative anonymity of where the applications are hosted. Many applications have processing and data dependencies on other related applications. Spreading these applications across disparate geographic locations may cause unintended consequences due to network latency or inaccessibility. Moreover, IT best practices have driven database design in such a manner that we often create a single, shared repository of data that is accessed by many applications. This need for geographic proximity of applications and data will lead to some challenges. These challenges can be overcome by the careful selection of the applications to be moved to the cloud.

User authentication, identity management and single sign-on capabilities are problematic when spreading applications and services across disparate service providers. Again, the cloud marketplace has recognized this as an impediment, and work is under way on multiple fronts to solve this challenge. One potential solution to this problem is the use of yet another service provider that becomes the security and authentication gatekeeper for all of the other cloud providers.

There is also a commercial war going on in the cloud over the ownership of the application programming interfaces (APIs) used to access the infrastructure and platform resources provided through the cloud. Just as a battle was fought for Beta versus VHS, Blu-ray versus HD-DVDs and Windows versus OS/2, a predominant player will emerge with the eventual de-facto standard. The trick for the CIO will be how not to bet the enterprise on the eventual loser.

## COMMERCIAL CHALLENGES

On the commercial front, there are considerable challenges in determining just what a good deal is. Each cloud service provider will intentionally structure its standard terms and conditions, pricing methods and service levels a little differently in order to create competitive advantage. The evaluation of this multitude of moving parts will make an apples-to-apples comparison of two or more offerings very difficult. Even more problematic may be the challenge the CIO will face when trying to compare the cost of the cloud offering to internal costs for the same service.



**The CIO must be aware of any constraints in current outsourcing contracts before moving forward.**

The CIO must be aware of any constraints in current outsourcing contracts before moving forward. First of all, consideration must be given to how a cloud transaction fits into the overall IT strategy and organization. Existing commercial and pricing terms must be evaluated. For example, if an existing contract includes a minimum revenue commitment, the financial impact of that commitment must be evaluated to avoid penalties or incremental fees. Additionally, an existing contract may include termination clauses and assistance language that must be met. Finally, the existing pricing structure needs to be flexible enough to allow committed and predictable cost while transitioning from the existing contract to a new cloud arrangement.

## CLOUD COMPUTING



**Proposals from cloud providers will come in many shapes and sizes.**

When a CIO begins to receive proposals from cloud providers, they will come in many shapes and sizes. From a commercial perspective, there are few norms that cloud provider bids will follow. Both contract terms and pricing will vary greatly. There is not a standard service level methodology, and master service agreement terms will vary widely, all creating even greater confusion as to whether the arrangement is a good deal or not.

Likewise, there are no norms or standard structures for cloud transactions. Each cloud provider has its own way of providing and pricing the service, and the proposal will likely be a take-it-or-leave-it opportunity. Pricing units that have historically been IT-focused will likely be more business-focused.

ISG believes the pricing methodology is primarily driven by the type of service being acquired whether that is a standard public cloud offering, a vendor-hosted offering or a more dedicated private cloud offering. The more-standard offerings should be based on a pay-as-you-go model, with little or no fixed costs or commitments. The more-customized solutions should be a combination of a fixed subscription fee plus a variable component with the cloud providers requiring a committed term.

The greatest difficulty in evaluating costs is how to best evaluate pricing. The internal adjusting of provider bids based on the actual proposal, a process referred to as normalizing the bids, will be more important than ever before. Disparate proposals, pricing structures, pricing units and financial terms must be dissected to understand the true costs of the proposal as compared to current internal or previously sourced costs.

It is critical to understand that the cloud provider price will almost never actually represent the total cost of the transaction. There may be many additional and hidden costs that must be contemplated in the evaluation. For example, a proposal may not include Level 1 service desk and technical resources required to interact with the cloud provider's Level 2 support. Or the bid may not include additional bandwidth required to support their requirements. Or there may be a number of assets on the IT organization's books that are not fully depreciated and would have to be written off in the event a cloud contract were to be signed.



**It is critical to understand that the cloud provider price will almost never represent the total cost of the transaction.**

There are many other such examples of costs that must be anticipated in addition to the cloud provider's proposal costs. These hidden costs all must be considered as a part of the normalization process. In fact, there may be a number of cases in which the overall cost evaluation may be less of a cost comparison or savings assessment and more of a return-on-investment (ROI) evaluation.

In addition, the legal stance of the consumer-heritage cloud providers such as Amazon and Google is very different from that of traditional IT service providers. ISG recently reviewed the standard terms and conditions from several of the major consumer-heritage cloud providers. Their terms and conditions were extremely favorable to the provider, with many of the commonly expected protections for clients notably absent (e.g., meaningful credits for



service-level failures, client right to approve major changes in the services, client audit rights, provider liability for damages, etc.). ISG has observed that large transactions with consumer-heritage cloud providers sometimes fall apart over issues like these. We recommend that CIOs involve their commercial and legal advisors early in the process of evaluating any strategic cloud initiative.

## WHAT A CIO CAN DO TODAY ABOUT CLOUD COMPUTING



**Cloud Computing is not only real but also is tremendously exciting. It has the potential to change how we perceive and consume IT services.**

Having said all of this, Cloud Computing is not only real but also is tremendously exciting. It has the potential to change how we perceive and consume IT services. Given the challenges we talked about, which are just a sample of the major hurdles, what steps can the CIO take today to prepare an organization to move toward a cloud delivery model?

The first step is to understand the current set of applications and services. This understanding is essential in formulating strategic and tactical plans to incorporate cloud offerings in the environment. The following activities will provide the information on which to base a cloud adoption strategy.

First, it will be imperative to understand your corporate application portfolio. Begin to answer the following questions:

1. What specific hardware and software requirements are there for each application or service?
2. What are the network bandwidth and latency requirements and sensitivities?
3. What are the interdependencies between your applications?
4. Where is each application in its lifecycle? Is there any reason to move it?
5. What are the applications critical to the core business, and what is the tolerance for outages?
6. To what extent do the applications contain proprietary and confidential business or personal information or intellectual property?
7. Do you have the internal resources or access to service provider resources with the requisite skills to develop and integrate components in the cloud?

The next step is to understand your existing cost structure for each application or related group of applications or services so that you will have a basis for future comparison.



Understanding your existing contractual commitments will allow you to evaluate the options you really have in the short term. Identify your commercial terms and conditions related to:

1. Software licenses and maintenance obligations.
2. Existing outsourcing or service contracts.
3. Hardware leases and maintenance agreements.

An understanding of your corporate risk tolerance will be essential in evaluating what types of services you can consider as you explore the marketplace. These risks should be evaluated in at least the following ways:

1. By application.
2. By type of data.
3. By geography.

Next, understand the offerings in the marketplace:

1. How mature are they?
2. How do they handle security?
3. What are the committed service levels (if any)?
4. How are they priced?
5. What are the key contractual terms and conditions?
6. What are the technical or commercial barriers in migrating away from the offering?

Finally, drive standardization in your own organization:

1. Standardize the development organization on a limited number of industry-standard tools and practices aligned with those provided in the cloud.
2. Select one or more applications or services for a —test|| implementation.



**Small and medium-sized businesses will take the lead as early adopters of the full array of cloud services.**

## WHAT'S NEXT

Small and medium-sized businesses will take the lead as early adopters of the full array of cloud services. Corporate enterprise usage will start slowly, with early adopters consuming the most mature of the offerings for specific applications or services. Enterprises will have to decide which applications and services can be consumed in this commodity-based world, and which ones need to be kept within the walls of the enterprise. The consumption of IaaS

## CLOUD COMPUTING



**E-mail and collaboration services are good candidates for taking to the cloud, assuming there are no extraordinary requirements for data retention and legal discoverability.**

for corporate Web sites, especially brand-specific information and Online product catalogs and ordering, will be exploited first because much of the content is non proprietary by its very nature. E-mail and collaboration services are good candidates for taking to the cloud, assuming there are no extraordinary requirements for data retention and legal discoverability. Initial testing and trials of PaaS offerings for development and test environments also are good low-risk candidates with significant saving potential.

Until the market matures, enterprises will probably be more comfortable in procuring their cloud services from the traditional outsourcers, with the exceptions of specialty SaaS applications and e-mail and collaboration services. The consumer-oriented Amazon, Google and other cloud providers will have to demonstrate an ability to provide secure and reliable service to small and mid sized businesses before being able to make significant penetration into the enterprise market.

## **CONCLUSION**

In summary, cloud computing opens up significant benefits in time-to-market and cost of IT services. It is still in its infancy, but it will become the dominant method for delivering applications, IT infrastructure and development services. There are challenges and obstacles to overcome along the way, and it will be awhile before the market is mature enough to accommodate our most sensitive, business-critical needs. But change and technological advancement are as inevitable as the market's desire for revolutionary new products. In the meantime, we can pick and choose the available offerings that match our corporate appetite for risk versus reward. There is a silver lining in the cloud, but as with all good things, a significant effort will be required to attain it.

## ABOUT THE AUTHOR

### **CLOUD COMPUTING** **Finding the Silver Lining**

Published January 3, 2013



#### **STEVEN HALL**

Partner, ISG

Steve helps enterprises think through the opportunities and complexities brought about by today's dizzying array of emerging technologies. He is a seasoned professional, fluent in how to make transformational change with cloud, automation, mobile or DevOps and discerning in where and when they add value. He has helped implement many global service delivery models and advised large multi-national corporations on their IT strategies. Steve co-authored *Managing Global Development Risk, A Guide to Managing Global Software Development*. As a Partner and member of ISG's Executive Board, Steve leads ISG's Digital Strategy and all ISG Service Lines for the Americas. Steve also leads ISG's Alliance group and is ISG's Executive Sponsor to the TBM Council.



## ABOUT ISG

**ISG (Information Services Group)** (NASDAQ: III) is a leading global technology research and advisory firm. A trusted business partner to more than 700 clients, including 75 of the top 100 enterprises in the world, ISG is committed to helping corporations, public sector organizations, and service and technology providers achieve operational excellence and faster growth. The firm specializes in digital transformation services, including automation, cloud and data analytics; sourcing advisory; managed governance and risk services; network carrier services; technology strategy and operations design; change management; market intelligence and technology research and analysis. Founded in 2006, and based in Stamford, Conn., ISG employs more than 1,300 professionals operating in more than 20 countries—a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry’s most comprehensive marketplace data. For more information, visit [www.isg-one.com](http://www.isg-one.com).

Let's connect **NOW...**

