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Cloud Computing

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By

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Introduction

There is no end to the predictions that cloud computing is going to dramatically change IT and how organizations use technology. However, while everyone knows what's coming, as with other significant technological changes, the challenge for IT leaders with cloud computing will be understanding the change from a variety of perspectives – technological, strategic, financial, and organizational -- and learning how and where to utilize it effectively. The CIO Brief invited two cloud experts, Doug Girvin, President and CEO of Stantive Technologies Group, and Jon Maxim, founder of Maxelerate, to discuss the use of cloud computing in companies and some of the issues with which CIOs are wrestling regarding the cloud.

To Cloud or not to Cloud?

Doug Girvin introduced his presentation with the key question: Should our company be moving to the cloud? His company, Stantive Technologies, has been building clouds for clients and doing business in the cloud since 2000. Today, Stantive has over 60 customers in nine countries and is experiencing 100% annual growth. Its business is entirely focused on taking its customers' business to the cloud.

Canadian companies have been much slower than others to adopt cloud computing. Doug cited a *Globe and Mail* article that shows how heavily global companies have been investing in the cloud. On average, 34% of IT budgets worldwide are now being spent on cloud computing. "The world is moving into the cloud very quickly," he said. "It's delusional thinking to believe that we can take our time with the cloud. It's incumbent on us as a country to see what's going on in the rest of the world and to move aggressively."

What is Cloud Computing?

There are many different models of cloud computing, explained Doug. "The simplest way to view it is as multi-tenant, highly scalable, single instance computing." While many people distinguish between four types of cloud computing: infrastructure-as-a-service (IaaS); platform-as-a-service (PaaS); software-as-a-service (SaaS); and business-process-as-a-service (BaaS), these models are now converging towards PaaS. "Amazon, Google and SalesForce.com have all become platforms," he said. "Moving forward 'cloud computing' will simply be part of IT and many existing IT services will be transitioned to the cloud over the next 10 years." In short, within 10 years, all of our IT architecture will be wrong, he believes.

True cloud computing requires a complete rethink of IT. "PaaS inverts the assumptions of what architecture looks like and solves the largest traditional IT problem – integration," he said. Companies that move quickly to cloud computing can take advantage of this integration in their business models.

Considerations for Cloud Adoption

CIOs must address several issues when considering using the cloud:

- **Architecture**. It is more difficult to take a strategic architectural approach to the cloud because each instance of cloud usage is like installing a platform but architecture is still very important for selecting the right platform(s) and for linking them together.
- **Collaboration**. Effective integration requires increased cross-business unit collaboration. For example, multiple business units may have multiple Salesforce instances and companies will need middleware to recognize this.
- **Resistance** can be very strong to the cloud as it takes the application layer IT role closer to the user. However, "We've noticed a big shift of developers working more closely with users," said Doug.
- **Governance.** Cloud computing is essentially a powerful platform operating across the enterprise incorporating both IT and the business units. It's a new layer of IT and therefore a new role for IT governance and the CIO.
- **Vendor Management.** Creating SLAs is challenging in the cloud and especially difficult when multiple vendors are involved.

"Our experience is that moving to the cloud involves a decision of cost versus strategy," said Doug. Does the company want a variable cost solution to save money or does it see IT as a big enabler?" He noted that risk management is more challenging across multiple independent vendors. "The role of IT is changing," he said. "It's moving closer to the end user and becoming more architectural." Agile computing is becoming increasingly popular as a way to create richer user experiences and enable rapid iteration. "It's much harder to take a waterfall development approach with the cloud," he pointed out. While these changes may be hard for some in IT to accept, they are a great opportunity to get users more involved and to get buy-in from them.

Some companies, such as those in Financial Services, will have more of a struggle adopting cloud computing than others. In these cases, Doug recommends starting with lower risk and customer-facing applications to build experience and showcase the environment. Organizations can also build "walled gardens" to vet all internet transactions for additional protection. However, this may increase response time for users to unacceptable levels. For example, Amex found that this approach increased response time from 3 seconds to 11 seconds.

Contracting in the Cloud

Jon Maxim believes that companies have many questions that need to be answered when contracting with a cloud services provider. "In many ways, this is the same process as outsourcing," he stated "but there are some subtleties that make it more challenging." While the contracts themselves haven't changed much and there is no need for a different or enhanced governance structure other than what is currently in place, for cloud computing, there are three additional questions that companies should be asking:

1. **What are the key factors that should be considered when deciding to adopt different types of cloud computing (i.e., SaaS, PaaS, IaaS)?**

   Jon identified five key factors to consider when deciding to adopt cloud computing: security, security, security, control, and security. Most IT organizations in larger corporations have an official IT policy of not adopting cloud because of their serious concerns for security. "Security breaches are *very* high profile and have cost billions in settlements," said Jon. However, many business units persist in using cloud computing "over IT's dead body". Therefore, CIOs need to recognize that security breaches *will* happen and have a plan for what to do *when* they happen and how to mitigate the risk. For example, one major global corporation has decided to classify its data and put its most sensitive data in a physical vault. "For these data, cloud computing would be unthinkable," he noted. In short, security is *the* most important consideration when deciding whether or not to move to the cloud.

   Control is the other major consideration in the cloud decision. Jon noted that some companies are beginning to insource certain services because, although outsourcing/cloud may be cheaper, the cost of losing control is too high. For example he said, "Many companies are infuriated because outsourcers are not investing in new technology that will give their clients more flexibility." Cloud computing does not provide an organization with the ability to make changes when they want, so for core competencies especially, this can be a significant factor in the cloud decision.

2. **What factors should be addressed before deciding to adopt cloud computing for a need?**

   Jon outlined a four-phase process that he recommends CIOs use when looking for a cloud computing vendor:

   a) **Maintaining a Competitive Environment.** This is done by exploring a variety of options.
   b) **Preparation.** This involves developing skill levels, establishing a process for deciding, and determining needs and exact requirements. Following this, companies must then prepare to "own the contract" (see below), assemble a negotiating team, determine a negotiation strategy, and acquire vendor knowledge.
   c) **Negotiation.** This involves selecting vendors, obtaining proposals, and awarding a contract.
   d) **Management**. After contracting for a cloud service an organization should manage the contract, seek to optimize vendor performance, control difficult vendors and direct the long-term relationship.

   Jon highlighted "own the contract" as a particularly important task since this is the master agreement that will direct the value a company will get from the cloud. "CIOs should determine whether they want to contract for things or for outcomes," he said. "Most people believe that contracts should be designed for outcomes, but companies can also contract for products and services as things. Asking, "Who is responsible for the outcomes?" will determine the best type of contract for a need. Thus, if a company contracts for a "thing", the company itself is responsible for how it is delivered; if it contracts for an outcome, the vendor is and then the vendor has the right to tell the company *how* they are going to deliver. Therefore, "be careful what you ask for around outcomes and what you are really contracting for," he concluded.

If a company wants complete control, it should contract for a thing. "This is a very important legal concept," he explained. "If there's a dispute and the company has told the vendor *how* to do something, the courts have taken the attitude the client knows its business best and should take responsibility for the outcome." He recommends not combining things and outcomes in a single contract, but splitting these into two different contracts with different requirements. For example, one contract for a thing would specify that a vendor would develop a set of requirements for a certain type software. A second contract for an outcome, would specify the software to be developed based on these requirements. In short, if a company wants to control *how* things are done, it should use a "thing contract" while contracting for *what* should be done (e.g., PC maintenance) should be handled as an "outcomes" contract.

The contents of a contract are also extremely important. Jon stressed that the first parts of a contract, known as the recitals, preambles, inducements and expertise, can be more critical than the other parts because they set the tone for why the two parties are doing business. For example, "If anything is unclear in the rest of a contract, the courts will look at the preamble for clarification, so if the intent is good service, this will be the standard that it uses to resolve a dispute."

Enforcement of a contract is essential. Many companies have good contracts but never enforce them. In some cases, they can't even find their contracts when a dispute arises. Enforcement has several levels. While verbal agreements are a start, they are not really enforceable. Therefore, a written agreement, such as an email is much better. Contracts with signatures may be more enforceable but they are limited to statutory remedies, if the parties go to court. This is why most contracts specify warranties (or expectations) through terms such as SLAs. However, Jon pointed out that the term "penalty" should never be used in a contract as this the court's right to assess. The term "remedy" should be used instead.

3. **What metrics are appropriate and realistic to collect in order to ensure that our company receives business value (e.g., SLAs) and what should a company be looking for in a cloud computing vendor?**
One of the challenges of structuring cloud computing contracts is designing clear SLAs. If several players are involved (e.g. using sub-contractors to provide some portion of the services), it is hard to determine who should be responsible for delivering a particular SLA. "If you make one party responsible, make sure that they can deliver what you are asking and that they have contractual control over the other parties involved, which also must written into your contract with them. Most people don't know how to do this and lawyers often don't understand the nature of this business."

In addition to identifying who is responsible for an SLA, it is also important to ask: What's a reasonable SLA? "You should be very practical when writing SLAs," he said. A good SLA will contain a clear description of what is expected, for example: "Maintain a physical inventory of equipment and software assets." This should be further broken down into one or more objectives, such as: "Maintain an accurate asset inventory with accuracy to be determined by a quarterly spot check process." Finally, goals should be set, e.g., "As measured quarterly, the inventory will be 99% accurate."

Remedies should also be practical. While most contracts specify monetary remedies, CIOs should really consider what outcomes they want. “Do you want money or performance?” asked Jon. “A good remedy is one that gets you your desired outcome and non-monetary remedies may be more powerful motivators.”

Discussion

How can we structure cloud computing deals so that they work well? Jon explained that a key component is who is doing the integration. If your company is the integrator, SLAs must be written in a way that ties everyone together but so that your company manages the process. Alternately, all parties could subcontract with an integrator who would manage the process for a company. Doug pointed out that there are differences between cloud computing contracts and outsourcing ones. In the first, a platform is provided and a company can build its own apps in that environment. In a more traditional outsourcing contract, companies need to know if an application fails, who is responsible?

What advice do you have about security in the cloud? There is no silver bullet for having an absolutely secure cloud computing environment, said Doug. Companies should ask: “If someone hacked our systems, who could tell?” In some cases, it’s very public but in others it’s not widely known. Security agreements can backfire on a CIO if users end up taking on a risk. Therefore, contracts must clearly state who is liable for security breaches. However, many vendors are themselves working on cloud platforms so contracts should be clear about who is providing the physical infrastructure for the cloud and should specify requirements for security, liability, location of servers, and privacy.

Doug stressed that there are likely as many security risks inside the organization as out and companies need to deal with these as well. Companies also need to determine where their data will reside and if they are comfortable with their data being kept outside the organization and/or the country.

Jon stated that visibility is important in maintaining security. “Dashboards with information about who is doing what and where with your company’s data and who is accessing what data are very useful and more cloud computing vendors should be providing this.” In addition, CIOs should ask companies for their security certifications.

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