



The Business Case For The Cloud
What is it and why is it great for business?

June 2010
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Introduction

Computing technology, by nature, changes rapidly. Technology as it was five years ago is widely considered obsolete; what we use today will be obsolete five years hence. This speedy evolution gives us a constant barrage of new terms, new tools and new capabilities—and while the ultimate goal is to give us more functionality and a better way to do business, it may sometimes become frustrating and confusing. Why? Because there is so much to learn, and once we've learned it, we have to do it all over again.

Why must there be this rapid change? Why do the computers I bought three years ago have to be upgraded or replaced, even when they continue to be functional? No, it's not all part of a grand conspiracy to get us to spend more money. It's just the result of constant research, new thought, and incredible discoveries, all designed to make our lives easier.

Cloud computing is part of this continuum of change. There are questions about the cloud, there may be doubts, and there are those who insist that this particular technology "isn't ready", or just isn't practical for business use. The same however, has been said about every technological innovation since the ENIAC. In fact, while the term "cloud computing" is fairly new, the technology is based on sound, proven concepts that have been around for years. Cloud computing is already making significant headway into the corporate world, and represents a solid, proven technology that brings business users the advantage of flexibility, cost reduction, and rapid innovation.

What is it?

The term "cloud computing" leads one to believe that it is something entirely new, but this is most decidedly not the case. Cloud computing at its essence is merely a set of scalable, virtualized services that are delivered remotely. Usually delivered on a pay-as-you-go basis, cloud computing allows users to consume resources as needed, and scale up and down instantly without having to over-provision or pay for resources that are not being used.

The type of resources being delivered over the cloud can be varied, and fall into one of three categories: software-as-a-service, platform-as-a-service, and infrastructure-as-a-service. By far the most common and well-known category is software-as-a-service (SaaS), and many of the largest software providers in the world have moved to this delivery model at least in part, to satisfy the growing demand.

But cloud computing goes far beyond the software layer. The platform-as-a-service component of cloud computing underlies the software, and provides a convenient way for developers of cloud software to access components and other development tools.

Perhaps the most rapidly growing component of the cloud is infrastructure-as-a-service (IaaS), which delivers compute and storage resources on a remote basis. This portion of cloud computing has gained prominence for several reasons, not the least of which is the commoditization of server and storage hardware. These essential hardware components continue to move towards a state of functional equilibrium over time, while at the same time decreasing in price. For the hardware manufacturers, this means decreasing revenues, as competition increases and margins decrease,

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since the hardware providers, having achieved more or less the same level of functionality and power, must compete on price.

But while the hardware manufacturers compete fiercely on price, they also move aggressively to keep up with one another in terms of computing power.

Moore's Law, a generalization which holds that data density approximately doubles every year, continues to hold true, and today, the consequences of this law are being seen in the form of a move to the cloud. The reasons are simple. Over time, hardware manufacturers advance technology, bringing out more powerful servers and more capable storage arrays—although again, those manufacturers rapidly move to an approximate state of equilibrium. As a result, the industry as a whole moves forward at a rapid pace. And while we can say with certainty that the hardware market has been commoditized to a large extent, it is still necessary—because of the rapid pace of change—to continue to purchase new equipment even while the old equipment is still functional. This is a direct consequence of Moore's Law.

Now Moore's Law results in two things, one positive and one negative:

1. We get better technology that constantly improves, over a relatively short period of time
2. We have to bear a continuing capital outlay to keep up with these better technologies

What if we could enjoy the positive results of Moore's Law, that is, enjoying continuously improving technology with more power and more capacity; without having to suffer the constant cost of capital upgrades every year?

Cloud computing allows us to do exactly that.

The business case for the cloud

Entrepreneurial companies, small businesses and start-ups are the lifeblood of the global economy. They are what drives innovation and adds to overall employment, and they represent everything that is good and right about the nature of the capitalist system. But historically, smaller businesses have been at a disadvantage compared to larger enterprises simply because they are more likely to be undercapitalized. Some of the most important business software for example, includes categories like ERP, which integrates every aspect of the business, allows for a "bigger picture" to be taken, and accommodates the workflow that exists between multiple departments without incurring redundancy. But these systems are notorious for costing millions of dollars to implement, often taking over a year to roll out. A small business simply cannot afford these types of systems.

Small businesses get what big companies have

What cloud computing does for the small business, is allows for the creation of a system whereby the small business user can gain access to high-end equipment and state-of-the-art software, which would otherwise be available only to larger organizations with much deeper pockets.

Smaller companies often must make difficult choices when it comes to capital expenditures. New on-premises software rollouts can be costly, not only in software licenses, but also in terms of integration costs, and ongoing maintenance and upgrades. Many times, the small business owner must make that choice between new software, or other perhaps more pressing spending needs.

The result is that smaller organizations are able to compete better and more effectively, and on more of a level playing field, with much larger competitors.

Start-ups get started

Entrepreneurs launching start-up companies face particularly large challenges, especially if they are not one of the lucky few to get venture funding. Yet, start-ups provide some of the greatest levels of innovation to the business community. Start-up companies are able to overcome some of their initial funding challenges through cloud technology. Because cloud services are available typically without a large up-front fee, and because it is no longer necessary for the start-up to buy large amounts of on-premises equipment and software, they are able to get up and running quickly and affordably. And very often, this makes the difference between survival, and a quick death.

Enterprises get enterprising

But is cloud computing just for small businesses and start-ups? Not at all. At the enterprise level, larger companies are growing more concerned about multi-million dollar implementations. And although these larger corporations are better able to weather the cost, it is nonetheless a major line item—and one that is under increasing scrutiny during times of cost-cutting and decreased revenues.

Many of the existing enterprise vendors are already rolling out cloud versions of their enterprise offerings, giving their largest customers an opportunity to bypass the costly on-premises rollouts in favor of an incremental cloud-based implementation. This not only drastically reduces costs, it also allows the enterprise company to roll out major mission-critical applications on a componentized basis—allowing for an easier transition.

What does it bring to the table

The two greatest advantages that cloud computing delivers to business users are flexibility, and cost savings.

On the cost savings front, the bottom line benefit comes from not having to purchase, install and maintain equipment on-premises. In addition, because the resources being used are maintained by the cloud provider, upgrades are transparent and represent no additional cost to the buyer. Looking a layer deeper, we can examine where those savings come from. Since the cloud provider, and not the user, purchases and upgrades equipment and takes care of ongoing maintenance, the capital cost is borne by the cloud provider.

Naturally, the cloud provider must pass costs onto the client, but here is where the hidden benefit comes in. Cloud technology relies on virtualization, which means that a single resource, such as a server, is actually divided into multiple "virtual" servers, each securely separated by firewalling and other technologies. The same virtualization techniques are used for storage-as-a-service. In the latter case, this technique overcomes the otherwise common tactic of over-provisioning. Because storage space is allocated dynamically, as needed, the cloud provider is able to make full use of the storage resources. When a company runs their own storage arrays, without the benefit of virtualization technology, it typically uses only 30 percent or so of available storage. The cloud provider, on the

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other hand, is able to increase that to 90 percent or more without any performance penalty, and pass the savings onto the client.

Cost savings may be less important to some organizations than flexibility, and cloud computing answers the call there as well. Cloud computing is gaining followers for many of the same reasons companies are moving towards outsourcing, virtual company models, and strategic partnerships as opposed to doing everything in-house.

When a company hires an employee for example, there is a cost involved. It takes time and resources just to hire somebody, then it takes more time for that person to get "up to speed" with company protocol. Besides salary, the company also bears cost for employment taxes, superannuation contributions, and so forth. There may also be employment contracts involved. This allows for very little flexibility in terms of the normal business cycle, since the employee continues to draw a salary and enjoy benefits regardless of the workload and the company revenue being brought in. As a result, businesses have gained strategic advantage through outsourcing tasks to strategic partners.

The same is true with capital equipment and software. When a company for example, purchases hardware equipment, they are also committing to dedicating staff to maintain that equipment over time, and also making a commitment to making upgrades when they become necessary (which is usually quite frequent). The cloud model allows the company the flexibility to add equipment and software as needed, without the long-term commitment. In other words, instead of sinking capital into equipment and dedicating staff to maintaining it, the company can instead enjoy the flexibility of purchasing compute or storage resources when they are needed, purchasing more during peak times, and cutting back during slow times.

The flexibility of getting started immediately is a major plus. In highly competitive businesses, the ability to respond quickly is of utmost importance. The ability to obtain compute services or software on a moment's notice, and have it up and running within minutes, isn't just a convenience—it gives businesses a greater opportunity to offer services, take advantage of opportunities, and deliver a competitive edge to their clients.

This quick-start capability that the cloud brings to the table also makes it possible for a company to freely experiment. When a company is working on a beta service, or merely working on a proof-of-concept project, it's not always easy to get the decision-makers to go along with a capital expenditure for something that may not work out. The cloud model allows for those projects to take place with less risk.

Cloud Computing: The Next Generation

Cloud computing, as with all computing since the dawn of the information age, continues to evolve. The first iteration of cloud computing revolved around basic compute and software services being delivered to consumers and small businesses. One of the most well-known applications is free email accounts like Hotmail and Gmail, and common applications such as photo sharing sites and online storage. Very quickly, cloud computing's potential was recognized by developers, entrepreneurs, and larger organizations, and cloud providers were quick to respond with more robust, and more feature-

rich applications and server and storage services. The current generation of cloud computing includes services that can accommodate businesses of any size, allowing them to take advantage of the flexibility, scalability and power of the cloud, while enjoying the incredible cost benefit.

But what does the future hold for the cloud? Already, cloud providers are at work designing the next generation of this groundbreaking technology.

No business left behind

By far the greatest impact of cloud computing will be that nobody gets left behind in the new cloud-based information age. In the past, businesses were divided. There were small, home-based businesses that didn't have the money, the time to implement, or the technological know-how to install the equipment and software that was necessary to keep up with state-of-the-art advancements.

As a result, the smallest businesses were *left behind* the innovation wave.

Even beyond the home-based and SOHO businesses, small business with 100 or fewer employees also were *left behind*. These smaller organizations tend to have smaller IT departments, which are typically overburdened; and they also need to be very focused on the bottom line. Those two factors mean that smaller companies tend not to be on the cutting edge of technology, and may be operating with equipment that is outdated.

Even midsize and enterprise-size businesses may get left behind. Publicly-held corporations that are beholden to stockholders and a board of directors have other priorities. While an enterprise IT department may see a forklift upgrade as necessary, and may even explain the benefits of such to the board, the decision-makers often see these types of infrastructure upgrades as cost centers that can be delayed during a budget crunch. And so, even larger enterprises can get left behind in the technology curve.

The cloud computing model solves this dilemma by securely delivering compute resources, including infrastructure, platform, and software, on an as-needed and easily scalable basis. When a business of any size needs access to additional server or storage capacity for example, it can be provisioned instantly, without the need for capital expenditure. And besides saving on the up-front costs, the business also enjoys the advantage of the latest, state-of-the-art equipment, since cloud providers are able to invest in the best infrastructure available and distribute the cost between many users through commonly accepted and secure virtualization techniques.

Conclusion

Staying ahead of the technology curve is important to businesses, from home-based companies to the largest publicly-held corporations. Yet with the rapid pace of change, doing so has become costly, and often prohibitive. Cloud technology addresses this vexing dilemma by offering a technique to obtain state-of-the-art compute and storage resources, along with the latest software tools, on an on-demand basis.

Remaining competitive is a constant challenge for any business, and having cloud computing in one's arsenal of business tools may well give a company that vital competitive edge they need to survive and flourish in today's economy.