Defining the Business Value of Cloud Computing

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Every executive wonders about possibilities – the "what ifs" – that point them to new business opportunities. Questions like:

- What if I could be more responsive to my customers' needs?
- What if I could get my product to market faster, and ahead of the competition?
- What if I could enter and exit markets quickly, as opportunities present themselves?
- What if I could focus more on what my business does best – my specialty?

Imagine if you could make these "what ifs" happen. What would it take? While there are many possible answers, three are non-negotiable: **agility** to sense and respond to challenges, **speed** in delivering new solutions, and **flexibility** to adapt to ever-changing requirements. All three are standard issue in a global economy, now made more real through new computing capabilities.

Think Cloud Computing

The emergence of cloud computing makes it seem like the sky's the limit when it comes to new opportunities to use technology to improve how business is done. Cloud computing offers companies creative ways to address how they utilize IT, which in turn frees them up to focus on what matters most – their business objectives.

Such options will prompt companies of all sizes to consider moving to the cloud. In fact, John Foley at *Information Week* predicts that the cloud computing market "will grow at healthy rate—10%, 20%, 30%, or more."[i]

What made the emergence of cloud computing attainable? Several factors. Server virtualization made data center consolidation a reality. And technology standards, like web services, have been widely adopted. There is also more computing power available, on demand, and it's easily accessible over high-speed networks leveraging open standards. This provides options for solutions that previously would have been technologically challenging and cost prohibitive.

As a result, organizations today are taking a hard look at how they can benefit from cloud computing. In January 2009, Avanade commissioned an independent global survey of more than 500 business and IT leaders in 17 countries on their views of cloud computing. In the survey, more than half said that in uncertain economic times they saw technology as "an efficiency tool to reduce costs." And almost three-fourths of them noted that they view cloud computing "as a real technology option." Such a response shows that businesses see that the technical capabilities offered by the cloud can help reduce costs while making them more nimble.

What cloud computing does is take a process anchored to one company, one data center and one facility – and frees it. It enables businesses to move from working within their own IT bubble and use the cloud to access technologies they need, when they need them, at the scale they need them.

But the hype about cloud computing has helped create some unrealistic expectations about what cloud can deliver; making almost unbelievable promises: return on investment will rise; costs will contract; and revenue will improve. Cloud computing, some claim, will make all things possible.

All of this cloud computing attention creates an aura of excitement and hype. But like the electrically-charged clouds that collide in the sky, the hype emanating from cloud computing generates a lot of distracting flash and confusing noise. More than a third of the cloud computing survey respondents in the Avanade research study admitted that cloud computing is confusing and hard to understand. The term cloud computing entered the technological lexicon in late 2007, and in a very short period of time it "topped the list of tech buzzwords IT pros are most tired of hearing," as noted by *Information Week*.[ii]

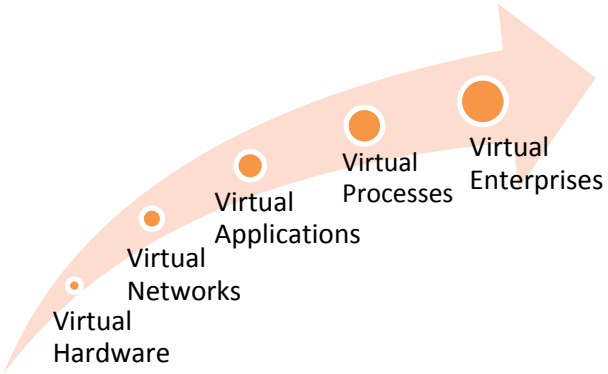
Trying to grasp just what the cloud represents can be challenging. How it's defined depends on how wide or narrow people see it.

Bringing Clarity out of Complexity

The key is to bring clarity to the complexity created by this new opportunity. To do this, companies need to know what cloud computing is, what it does and what it offers.

Avanade defines cloud computing as enabling and delivering computing services – compute power, data storage, network bandwidth, and application software – over a network on an as needed basis.

Cloud computing serves as an umbrella term. It encompasses many types of services, including prominently known Software-as-a-Service (SaaS). It is a way to use computers and software that reduces the need for local infrastructure and operational management. At the opposite end of the spectrum, "private" clouds rely on the use of on-premise data center capacity or applications potentially managed by a third party from a remote location, much like traditional outsourcing. Cloud computing is part of a long and powerful trend towards virtualization.



Clearly defined business benefits can be derived from cloud computing. In the Avanade survey 65% of the respondents felt that cloud computing allowed them to focus more on their business and 70% indicated it would improve their flexibility.

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But cloud computing is not a panacea. Organizations should consider the possible challenges and risks as part of pursuing a cloud computing strategy.

Companies need to remain alert to how the cloud is forming, and reforming, and what steps they can take to capitalize on the technology, while protecting themselves. Gartner recommended that "Clients should evaluate cloud-based offerings (that fit the purpose), starting from the date of initial investment, then availability of the offering, the number of actual references and statistics of relevant growth, and the financial stability of the provider."[iii]

We need only to think back to the 1990s to appreciate such scrutiny. Application Service Providers (ASPs) emerged as a way of purchasing the use of software over the Internet, hosted by a third party. ASPs resembled its modern-day cousin, Software-as-a-Service. But the ASP was the right idea at the wrong time and it never took off, for several reasons, including the lack of technology standards, bandwidth and end user comfort in giving up control of the processes and data.

Cloud computing offers a different way to procure and use software and computing services. The continuing evolution of technology will enable cloud computing to make possible a complete overhaul in how IT services are provisioned and consumed. Improvements in security, bandwidth, technology standards and virtualization have seeded the cloud of today.

The Business Mandate for Cloud Computing

The potential business benefit to cloud computing becomes clearer when you look at what cloud enables—helping companies become more **responsive**, more **connected**, and more **specialized**.

Being responsive

Cloud computing enables companies to be more responsive in a number of situations, such as entering and exiting markets quickly and cost effectively.

Consider a major film distribution company, for example. After the film is produced, the distributor wants to digitally distribute trailers to theater owners in different global markets. The film release takes place on different days and times around the globe, and runs for a specified time period. The distributor needs large amounts of computing power to prepare different versions of the many trailers in a variety of formats, including for theaters, online viewing, mobile devices, etc. Later, it will need significant bandwidth to distribute the online versions of these films. In time, demand will subside and the distributor would ideally be relieved of the cost and maintenance of the large network pipeline it once needed. These types of "bursty" compute, network, or storage requirements are common in many industries. So, instead of purchasing, installing and configuring needed infrastructure and software, the distributor might use the elastic compute, storage and bandwidth available on demand, in the cloud.

Being connected

This same example shows how a company can be better connected to its partners. The ability to supply movie trailers through cloud technologies enables the distributor to connect and collaborate more effectively with theater chains, reviewers and critics, and online consumers. These partners get access to trailers quickly and easily. And the partners can work with the distributor to access a film clip that runs a particular length of time, and addresses different rating requirements. A theater, for example, could request a two-minute trailer that appeals to the local regulatory agencies that categorize and rate the films.

The studio also benefits from the increased visibility provided by the trailers, but at a substantially lower cost. It may even make it possible for the distributor to penetrate new markets and connect with a theater owner that may have been bypassed in the past because of the higher costs in managing a larger mix of theatre chains and independent theater owners.

Being specialized

In a business environment filled with an increasing number of competitors, companies need to differentiate themselves more than ever. One way for them to accomplish this involves focusing on their core expertise – what they do best.

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Management consultant Geoffrey A. Moore emphasized the importance of focusing on a company's "core" in his best-selling book, *Dealing with Darwin*. In that book, Moore stressed how essential it was to understand the difference between core and context. For Moore, the core represented whatever a company does better than anyone. Everything else needs to be viewed as "context" and how it can help the core achieve and maintain its competitive edge.

Some of what is considered context – things that support a business but do not contribute to its core differentiation – might be prime candidates for cloud computing. By sending certain functions cloud-ward, businesses can focus more on the core – product innovation, customer relationships, strategic business growth initiatives, and more. It can allot more valuable time, resources and attention to specializing in its core area. Cloud makes exploration and entry into new geographic markets and product segments faster, cheaper and less risky. And dedicated resources can be shifted from the mundane to focus on innovation.

More than two-thirds of the respondents in Avanade's global cloud computing survey said the cloud would allow them to react more quickly to market conditions and competitors. And 70% of the survey respondents indicate that cloud would improve their ability to be more flexible.

All this allows a company to focus on what it does well, while improving technology performance onsite. From a technology standpoint, cloud computing offers companies new opportunities. And it allows some of its IT risk to be shared by a third party.

With cloud computing, on-demand capabilities become almost ubiquitous. It offers commodity scale through a broad internet fabric that creates an opportunity to leverage existing infrastructure. Instead of bearing the costs with your own data center, you can reduce costs through the use of shared computing power in the cloud.

For some, the cloud may offer potential balance sheet benefits too. For example, by procuring computing power and software needs on an as-needed, subscription basis, it shifts portions of a company's IT investment from a capital expense to an operational expense. In this scenario, companies can reduce their capital expenses and move to a "pay-per-use" model.

Companies can also jump off the upgrade treadmill because they will be licensing what they consume versus having to service what they consume. Some see this as a way of achieving business continuity by leveraging robust data-centers that exceed their on-premise capabilities. Clearly there are many potential benefits.

Is Cloud Computing the Answer for You?

Every company must decide if cloud computing will serve its particular needs. In order to do that, they must evaluate the potential business value it offers and the challenges involved. What's most important to them? Is it costs? Is it control? Is it scale?

Control versus scale

One spectrum on which cloud computing can be evaluated runs from "control" at one end to "scale" on the other. Positioning yourself at one end of the spectrum or the other aren't the only options. Companies can decide where they are most comfortable along the spectrum.

Let's use transportation as a way of understanding how that spectrum might look. We'll compare what we'll call "Ground Transportation" and "Cloud Transportation."

In Ground Transportation, you use an automobile. The automobile transports a quarter ton of freight 20 miles. But it travels on a wide network of roads, departs at the time you prefer and allows you to take the route of your choice.

With Cloud Transportation, you travel via freight train. The train carries one ton of freight 436 miles. It travels from one particular place to another particular place. It departs twice a day at specific times and follows a predefined route.

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The automobile offers a high degree of control, but it provides low economies of scale. You go where, when and how you want. But you pay for this flexibility through financing the automobile's upkeep, gas, and repairs.

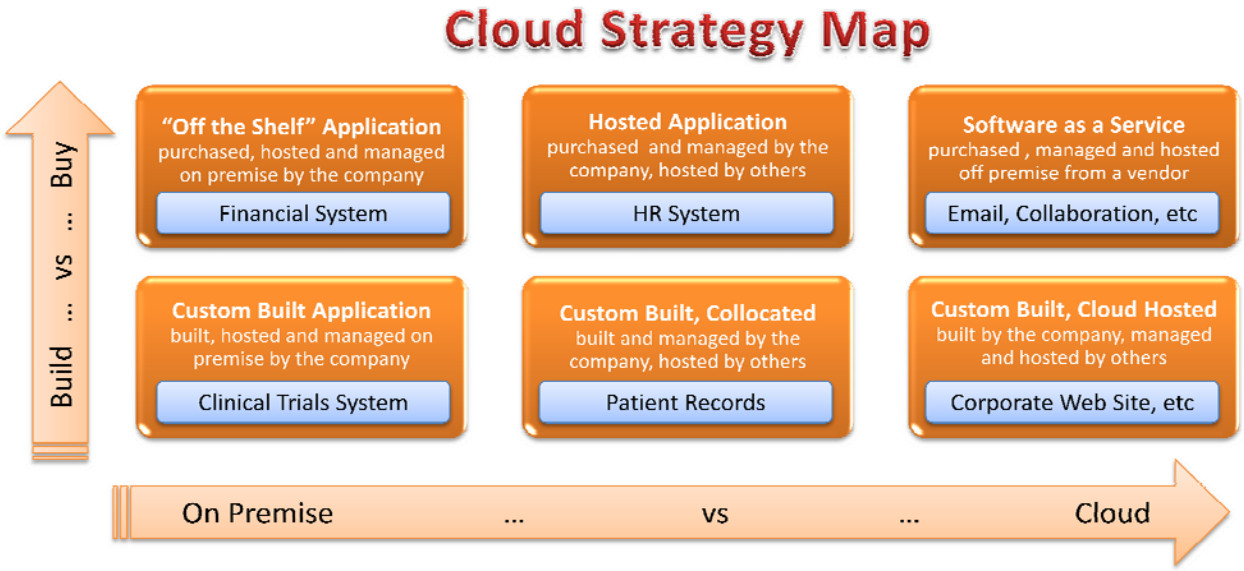
The train provides a low level of control, but high economies of scale. You follow a prescribed schedule and route. But you pay only for the trips that you chose to take, and don't bear the entire burden of maintaining the train, rail, and stations. You pay only for what you want, when you want it.

Another way to look at it would be to think about your applications on premise and the path you might follow toward the cloud. The cloud strategy map[iv] offers a way to see how you might decide where to host and manage different types of applications. Which approach is better for your company? It depends on a number of factors.

- An application that runs on-premise requires that you buy your own hardware, and manage your own data center. That means plenty of control, but low economies of scale and higher costs.
- An application that runs at a hosting provider allows you to share the cost of infrastructure and management services. It gives you a mix of control and economy of scale.
- An application that runs as a cloud service offers a lower level of direct control but vastly higher economies of scale.

Assessing the landscape

In addition to understanding the spectrum of control and scale, it makes sense for companies to assess the economic, competitive and business landscape ahead.



But think about it this way: it's really nothing more than the classic "build versus buy" decision IT has been making for years. Buy a pre-built ERP system or build your own? The decision about cloud is similar. The same assessment an IT manager would make when deciding to build or buy applications applies to the cloud or on-premise decision.

On the spectrum of control verses scale, where do you stand? Consider the following:

Companies must identify what technology investment they require to realize their business objectives for the long term while managing through short-term down cycles.

Consider contract manufacturing. Some companies manufacture products that are commodities. They require minimal research and development and involve little proprietary knowledge. One product operates in much the same way as any other. So outsourcing to a contract manufacturer involves low risk. But a pharmaceutical company,

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which has highly sensitive intellectual property, faces tremendous risk with outsourcing. The product differentiation in that case is incalculable. Such a company requires greater control of its information, where it's stored, and who has access to it. It also requires measures to keep the data from competitors and accessible at all times.

Own or outsource

Companies should see their IT services in a similar manner. They need to determine which of their technologies should be:

- Owned and managed internally,
- Owned internally but managed by a third party,
- Purchased, managed, and accessed through the cloud.

Companies can also jump off the upgrade treadmill because they will be licensing what they consume versus having to service what they consume.

With cloud computing, the burden of creating, developing and sustaining the entire infrastructure unilaterally gets lifted from a company that may be shouldering it unnecessarily. In the cloud, companies can share the load. And if serious problems arise, cloud access provides opportunities that could help the business leverage more affordable and robust disaster recovery options.

Where are some specific areas where companies could use cloud computing?

One way some companies are taking advantage of the cloud is in using short-term computing power in product development. For example, a company wants to manage a team of software developers working on a new product and wants to set up a test environment for the application. Instead of buying servers, configuring and testing the systems and applications, the company simply taps a cloud service provider for instant access to pre-configured developer workstations as well as unlimited testing environments.

This also offers the opportunity to run programs whenever and wherever the need arises. Applications could be tested, and tested concurrently on multiple servers in the cloud. And if a company needs to shut down the project and leave it for a time, it could be picked up later – quickly, with no upfront capital expense required.

Another example is retailing. During a peak period of activity, like holiday selling seasons, the retailer will require more compute capacity and bandwidth for transaction processing or analytics for pricing or fraud detection. Instead of purchasing the needed technology and having it dormant during non-peak seasons, the retailer could access it in the cloud, paying only for their actual usage.

In yet another scenario, multiple organizations within an industry might band together to deliver a shared services model in the cloud. Take credit card processing to illustrate how industry clouds could work. When someone swipes a card, the credit card company provides a service between the retailer and the bank to process the purchase. In this fashion retailers need not worry about having a relationship with every bank that issues credit cards. The credit card company manages that relationship on their behalf. The technology underpinning this trust, relationship, and transaction resides in the cloud.

Risks

In spite of all the potential benefits that cloud computing can offer, risks exist. Here are some areas that require vigilance:

- *SLA management and major outage impact*
- *Security concerns and privacy*
- *Control of IT*
- *Compliance*
- *Viability*
- *Integration*
- *Skills*

Let's look at these factors in more detail.

SLA management and major outage impact: Service Level Agreements provide a promise of reliability. In order to minimize risk, companies need to have SLAs even in places they wouldn't think they needed them.

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What happens if there is a major outage in the cloud? Outages have occurred with such cloud providers as Amazon and Google. "Enterprises are right to be cautious about relying on such consumer/SME-oriented suppliers for anything resembling a mission critical application or service. A spate of service outages on the Amazon and Google platforms has increased enterprise caution about the reliability of consumer-market-oriented cloud providers," Ovum warned.[v] With time, however, cloud users will learn how to deal with such outages. And the fact is that most applications don't require better than 99% availability because companies recognize few things work perfectly all the time.

Security concerns and privacy: Security issues must be weighed as well. How will a company make sure that confidential information remains protected? Could a company's proprietary data be accessed by a cloud provider, or another cloud user, or even worse, a competitor?

Security takes on a new dimension in the cloud. And how trust is envisioned may change. "Cloud services are going to create a new level of trust between end-users, providers, and enterprises. There's no way around it, simply because there are so many moving pieces to a cloud service that are outside our control," said Alan Murphy in the Virtual Data Center blog.[vi]

As with any business relationship, trust is a key factor: "Trust is at the heart of the resistance that many enterprise customers have with the cloud," James Urquhart posted on CNET. [vii]

How comfortable companies feel in the cloud will determine their degree of engagement, and what kind of information they will share and what services they will contract. Trust, in fact, has always been a factor between organizations. Many organizations share confidential data about their personnel externally as part of doing business. Automatic Data Processing (ADP), for example, processes confidential payroll data – including employee name, social security numbers, pay levels and benefits information. In many cases this sharing occurs over the same network, using the same security paradigms that are leveraged by major cloud vendors. The difference? ADP has earned the trust of their customers, as cloud providers will need to do also.

What efforts need to be made to keep company information private? How can the data about employees, customers, partners and the company be kept from prying eyes? Businesses must be alert to the possibilities of criminals and spies accessing their data. Governments may seek information stored in the cloud as well. These are all valid security concerns, to be addressed both on-premise and in the cloud.

Control of IT: The control of IT presents another issue. Companies can't depend on third parties to make the changes they may need; "… companies will always want to keep some applications in-house, for reasons of security, regulation or simply to maintain control," *The Economist* wrote in its report on corporate IT.[viii]

Portability is a risk. What if you want to bring your CRM application back in-house? There may not be a way to get it back. Companies need a fall-back. They need to find out if there's an exit strategy. Does their application model disconnect? Can they work during downtimes? Knowing the options is critical to determining when and how to use the cloud.

Compliance: Compliance raises other questions. Who owns the data? How is the data affected by being hosted in regional locations? What about government efforts to claim ownership or access to data stored on a cloud provider? As the internet became increasingly global, some governments sought to

Cloud and Cost Savings

Windows Azure will cost less than the overall price of running a server internally. Azure will be pay as you go. But customers can get discounts by prepaying. With regard to off-premise pricing, take Exchange Online as an example. It costs $10 per user per month.

Licensing the on-premises version of Exchange Server costs users $3 for Exchange Server per user per month. But with additional costs (including infrastructure, IT staff, licensing and operational costs), Microsoft estimates it adds up to an average of $18 per user per month.

--Doug Hauger, Microsoft General Manager

Source: InformationWeek, Feb. 12, 2009, Microsoft Windows Azure Pricing Expected Soon

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control it through firewalls designed to keep certain content inaccessible.

And there's the issue of how all this may be affected by government regulation, such as the Sarbanes-Oxley Act, and other compliance requirements, as well as the tracking process for regulatory reporting. How will the experience in the cloud allow for fast audits and the ability to respond to government inquiries within mandated timeframes? It helps companies to know more about data ownership and government regulations.

Viability: Another factor to consider is just how viable cloud computing will be. Who will set the standards? What providers will back up what they promise? Which service providers have staying power and resources for long term viability? Study the track record of companies trying to make investments in the cloud.

A Gartner report on cloud computing noted the following: "Strategic Planning Assumption: Through 2011, less than one-third of investments that vendors are making in the cloud will pay off, causing further market consolidation and forcing some providers to go out of business."[ix]

Integration: One factor not often considered when evaluating cloud computing is ensuring application integration across data centers. It's one thing for an individual or department to subscribe to a cloud service. But that poses significant risk of creating technology and business process silos. Some cloud vendors provide for application integration in their offerings, others do not. The key point companies must remember is to assess their ability to integrate both their applications and business processes around the cloud solutions that they adopt on and off premise.

Skills: Last, but not least, companies need to be aware of the skills required to build applications that run in the cloud. In many cases, developing cloud applications require different technology skills than what companies may have in their IT staff today. When planning for the cloud, companies need to understand and assess the impact that cloud vendor selection may have on their existing IT skills, and how they've traditionally built and managed systems.

The Avanade Point of View

Where do you go from here?

The cloud offers companies the opportunity to improve how they do business by re-envisioning how they utilize IT. It can help companies succeed in three critical areas.

- **First, cloud enables companies to be more responsive.** In a fast-paced, rapidly evolving global economy, the ability to respond quickly to the needs of customers, markets and opportunities represents a significant market differentiator.
- **Second, cloud offers access to technologies that help companies connect.** This drives deeper and more effective relationships with partners and customers.
- **Third, cloud computing enables specialization.** By tapping technologies available as a service instead of owning and managing all IT systems, companies can invest more of their time and resources in focusing on what truly differentiates them in the marketplace.

When considering how to enter the cloud, Avanade recommends that organizations:

- **Explore cloud-based offerings** – Think of the cloud as one of a number of IT options. Consider maintaining control of IT that creates competitive advantage, and utilizing cloud technologies for more commodity applications. Remember, the journey to cloud is an evolution.
- **Pursue a pilot** – take a custom application that leverages the instant scale, high compute, or bandwidth intensive capabilities of the cloud. Such a pilot can help a company become more familiar and knowledgeable about cloud computing and how it can benefit them. It might also lay the foundation for a private cloud infrastructure.
- **Investigate costs** – evaluate costs associated with internal IT versus the cost of cloud services. Such cost

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analysis will help determine if, and what, should be owned and managed internally, and what could be cloud ready.

- **Build a roadmap** – assessing your IT portfolio and which applications or services might benefit the most from cloud computing is step one. Try to align your IT strategy with your business needs. Decide how cloud computing can prepare you for the road. And find an organization that can spot the potholes and help you steer past the roadblocks.

There are clear business benefits that can be derived from cloud computing. But getting to the cloud and realizing the benefits of the cloud isn't a given. It requires a clear plan, sound analysis, and proven methodologies and practices.

As the industry goes through what some analysts believe will be significant consolidation with cloud, it makes sense for companies to partner with firms that have credentials, broad application platforms and a proven track record in navigating new and emerging technology platforms and strategies.

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