

CLOUD COMPUTING

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Somewhere out there the clouds of virtualisation are evolving rapidly — technology that could have a profound impact on the way people across the world work and collaborate with each other. Will cloud computing give us the benefit of a totally interconnected world or has the Information Technology industry fallen victim to another fad?

Industry observers believe that cloud computing will have a transformative effect. Gartner identified it as one of its top 10 strategic technologies for 2009.¹ Merrill Lynch analysts predict that by 2011 the market opportunity in cloud computing will amount to \$160 billion, comprising \$95 billion in business and productivity applications and \$65 billion in online advertising.²

With cloud computing rapidly gaining traction and demand often led by the business rather than the IT function, IT leaders are having to consider carefully what new skills and talent need to be brought on board, as well as what the implications are for investment and the role of IT in supporting the business.

If cloud computing is going to revolutionise the global commercial landscape as some suggest, then the IT function has an opportunity to play a critical role in the future success of any business. However, IT leaders will need to make significant adjustments to the profile and development of the talent they manage.

We believe that cloud computing is here to stay, although it will continue to evolve and change shape. In this newsletter we hear from IT executives who are at the forefront of the cloud phenomenon. They represent a range of companies occupying different parts of the cloud and offer plenty of insights into the future of cloud computing, the benefits and potential drawbacks and, perhaps most important of all, the impact that the advent of cloud computing will have on IT leadership and talent management.

Our grateful thanks to each of our contributors for their insights. We hope you find the ideas expressed in the following pages both useful and interesting.

¹ Gartner: 2009 Top 10 Strategic Priorities: <http://www.cmswire.com/cms/enterprise-20/gartner-2009-top-10-strategic-technologies-003348.php>

² Merrill Lynch. The Cloud Wars: \$100+ billion at stake, 2008

TALENT TALKS: Views from IT executives



Dave Robbins

CTO, Information Technology at NetApp, Inc.

Cloud computing represents a massive shift in IT Service delivery. New or emerging companies may never again employ full-time IT staff. As they grow into mid-sized and large enterprises they will not have the same 'fixed' IT burden as their more mature counterparts and this could represent a competitive advantage.

Cloud computing will continue to evolve. It may even get a name change somewhere along the line, too.

We actively review our portfolio and ask — what's core to our business? What do we value? For example, architecture, business analysis and project management are considered core, but not Level 1 or 2 systems administration or network operations.

Now is an exciting time to be in the business. As cloud evolves, organizations will have to look at IT and service providers differently. Shifting from fixed to variable cost is one of the key attributes of software as a service. IT has to recognize this as an opportunity, because business will buy this whether they like it or not.

Part of an IT organization's skill is how effectively it can select applications, source and procure services and handle contract/SLA management, as well as work with open authentication standards.

There is reluctance among CIOs to put the entire enterprise on the cloud, which is as it should be. The challenge is to think differently, focus on open standards, and change the mix of what we buy to deliver value more quickly to the business while not committing to large fixed budgets to support and maintain services.

As to security and data protection issues, there are things you need to think about but no real showstoppers. Businesses will need to engineer the right level of security, e-discovery and compliance into their agreements and hold providers to SLAs. In the US, The concern over fourth amendment rights is a bit trickier, but I believe it's overblown.



Mark Fulgham

Vice President, Data Center Emerging Technologies, Cisco Systems, Inc.

The whole premise of cloud is you don't necessarily need to know where your computational capabilities are, but you are guaranteed access to them when you need them.

Cloud computing could have a big impact on all kinds of organizations, enabling joint ventures, research firms, academic institutions and governments to have a secure and trustworthy means of connecting and sharing information in a more collaborative setting. If application providers really start to go down the salesforce.com route (and this is a big "if"), they could create an interesting set of extended supply chain simplifications, enabling researchers to use the same set of equipment to support stem cell research, or to enhance advanced diagnostic capabilities.

The whole cloud environment is going to demand a completely different orientation towards how IT services are delivered. Right now, the IT industry doesn't have the necessary skills. IT needs to emulate how a mature business works, offering a range of skills from transitional outsourcing, flow outsourcing and financial engineering to risk analysis and providing protection against loss of data and patent infringement. Where the skill sets do not exist, people are going to have to be creative and flexible to meet the challenge.

A lot of people have come into IT bringing with them business acumen. Now we need to assemble people who understand how to form and reform virtual teams to support the collaborative process. Cloud computing is not about technology, it's about data — protecting it, sharing it, demonstrating that it is secure and transforming data into knowledge that can easily be consumed by the business.

At Cisco we enable service providers to build out their public cloud infrastructure and help enterprise accounts to build out their private cloud infrastructure. The service provider is worried about multi-tenancy and the enterprise customer is worried about multi-user.

The blue chips are going to build private clouds in response to the demand for transparency and lower allocated costs. I'm advocating a new financial equation and calling it "ROVA" — Return on Virtual Assets. You have to frame the conversation in the language of business to get support for the necessary investments.

Cisco's own IT group is building private clouds, subscription-based services available to the various business units billed on a kind of timeshare basis. There are various layers. The first is *infrastructure as a service*, dealing mainly with storage. The second is *platform as a service*, which is the bundling of computing, storage and the network. The third is *application as a service*, which offers a specific set of applications on demand. And finally, *software as a service*, which brings together multiple applications through a more personalized portal.

“Cloud computing requires a change of mindset for the business and for the IT department.”

■ VINCENT COHAN & SAURO NICLI, AXA

CIOs need to recognize this stratification. If their priority is improving bill back and modification based on usage, a private cloud is a good solution. If they are looking at cloud to assist in joint ventures or collaborative-based engineering or supply chain simplification, then they're looking at a more rigorous process that has to be agreed up front by all parties.

I'm having a lot of fun introducing Cisco to the whole platform. The challenge is to build trusted relationships, put in place contractual commitments and most importantly secure the agreement and support of the board of directors to go in a certain direction, while maintain regulatory and compliance obligations, such as SOX.

The technology exists to do a lot of what cloud computing promises. However, there is a long way to go before processes, methods and trust within organizations will let it happen.



Stephen McHenry
Engineering Chancellor, Google

From the perspective of Google...

“Cloud computing” is the deployment of services (applications) that run on large networks of computers that are accessed over a network. The resources used by the applications can be changed dynamically to meet increased or reduced demand — without regard to where those resources are actually located. Users do not have to be concerned with managing the infrastructure that supports their applications.

Is it a fad? People have always asked this question about the introduction of any new technology — high-level compiled languages, the personal computer, graphic user interfaces (GUIs), and even the Internet itself. Like all of these, cloud computing represents the next major advance in computing infrastructure and application deployment on top of that infrastructure.

Without cloud computing, Google could not run the applications it does at ‘internet-scale’. It represents an important capital investment, and requires a continuous eye on improving the computing infrastructure. Providing the best service in a cost-effective manner means increasing computational capacity and lowering the cost of ownership. This dual goal has resulted in a number of advances in lower-power computing.

Robustness and economies of scale are huge benefits: without cloud computing, Google simply could not provide its services to a user base as vast as the Internet. The challenges of security and privacy are more visceral than technical. Our systems for managing and storing data are more secure than the average enterprise system. However, some people still prefer to be able to touch their servers.

Creating our computing cloud required specialized talent, and it will continue to do so if we are constantly to stay at the forefront of this exciting technology.

From the end-user's perspective...

Cloud computing represents a way to economically deploy applications using infrastructure that is not owned and maintained by the company itself. It

enables a company to focus on its core competencies, since it no longer needs staff to install and maintain a large computing environment. It allows a 'pay-as-you-go' model that does not require heavy up-front investment for application deployment, while still being flexible enough to accommodate sudden, unanticipated demand.

Users have access to a constant stream of innovation, as well as being able to access their data 'in the cloud' at any time, from any location, platform, or device. Cloud computing also enables new forms of real-time collaboration that just aren't possible with traditional desktop software.

Cloud computing is here to stay. Most large companies are just getting started with cloud computing, but that does not mean that it is a fad. Most companies are understandably risk-averse and approach the adoption of new technology with caution. As more and more companies have positive experiences with cloud computing, its use will become more widespread. It will ultimately become the norm for application deployment.

“Cloud computing will continue to evolve. It may even get a name change somewhere along the line, too.”

■ DAVE ROBBINS, NETAPP

The obvious benefits are ease of deployment, sudden adaptation to changing demand, and the reduction of resources required to maintain the computing infrastructure. There is no fundamental reason why a cloud computing vendor cannot compete favourably with a private corporate environment in terms of uptime, performance claims, data security, or privacy, although clearly companies will want to do their own due diligence before proceeding.

Many companies may not need to augment their staff to take advantage of cloud computing, since much of the specialized expertise required will be available from the vendor.



Tom Fisher

VP, Cloud Computing, SuccessFactors

Cloud Computing is not a fad — it is part of a classic technology evolution cycle. Early capabilities were described as 'ASP', further refined to 'On Demand', morphed into SaaS, and finally classified as cloud. For enterprises, cloud applications represent a sea change in the way applications are purchased, adopted, delivered and deployed. A major part of the rationale for Siemens adopting SuccessFactors is that they do not have to develop specialized talent to support the application.

Initially, the most compelling case for the cloud was cost. The subscription pricing for enterprise cloud applications means that customers typically only pay for what they use; this has enabled faster adoption and improved return on investment. The economic downturn accelerated cloud adoption, removing the burden of capital expenditure in upgrading software capabilities. Businesses are really focusing their IT spend on those systems that are true differentiators — those that enable the company to operate more efficiently, innovate more quickly, measure continuously and react based on hard data.

Drawbacks associated to enterprise cloud applications usually revolve around security — not having data behind a corporate firewall and entrusting a third party with both the management and protection of that data. Although this is really a non-issue, it is an objection every cloud application provider must be able to overcome. Privacy is also a concern, but cloud applications built from the ground up address these issues head on. The immature nature of data integration with Cloud applications is another drawback.

The greatest level of technical skill required is configuring the application and integrating it with other Cloud and locally hosted applications. This will be the next hot technical career — working with the various technologies in the marketplace to enable integration with traditional systems management solutions.



Paul Cheesbrough
Chief Information Officer,
Telegraph Media Group

Cloud computing is more than just a technical issue, it is a fundamental part of our business strategy — not just a means of delivering content, but an integral part of our internal fabric. We embrace applications over the internet and are able to maintain relationships with our customers that way.

Agility and innovation are key for us — the move from the physical to the digital world is happening incredibly fast and cloud computing is at the heart of that shift. We need the right systems and technical partnerships in place as the world changes. I'd go as far as to say that cloud computing is as big a revolution for enterprises as the internet has been for the consumer.

Traditionally the IT department can never get things in quick enough to satisfy the business users and the project sponsors, but cloud computing is effectively 'plug in and go', which is a huge benefit. The low cost of entry reduces the risk associated with capital outlay, although the cost of switching and transitioning out of former systems is not cheap.

Tech departments that embrace cloud computing early will, in five years time, be more strategic, valued and integrated with the core business, and make a difference to the bottom line — time will tell.



Tony Kerrison
Head of Infrastructure Services, ING N.V.

ING is very keen to deploy cloud computing technology — essentially the separation of applications from the underlying infrastructure — and to get to a point where technology is a service easily, efficiently and effectively provided to the company, regardless of location. In order to persuade the business that virtualisation and cloud computing is the way forward, we have had to focus strongly on the business benefits — scalability, flexibility and cost.

Cloud computing enables more flexibility and greater utilisation of assets. Basically, it reduces cost while adding value. Our aspiration is to become a full utility provider for our internal customers rather than just an infrastructure provider by, for example building disaster recovery into every cloud implementation.

For companies that want the benefits of cloud computing and don't want to be left behind, there will be a resurgence in technology investments. After the initial investment, cloud computing will help to keep the expense base reduced. It enables a continued development of shared services which diminish the application specific technologies.

“... profitability will come from the ability to drive scale and hence margins.”

■ MIKE DREYER, VISA

Cloud computing will cause a tremendous amount of change in workplace and global environments. The skills sets needed for cloud computing will not be the traditional ones. People will have to understand how to manage a 'workload' environment rather than a dedicated applications or infrastructure environment. This is quite a change for infrastructure people who are not used to handling the provision of capabilities and services. Our approach to address this challenge is to train our people, update their skill sets and, where needed, supplement them with skills from the market — particularly individuals at the forefront of cloud computing.

Cloud computing needs to become much more clear and defined in order to help people understand the benefits. There is a lot of confusion as to what it actually is and its implication to our business.



Vincent Cohan
SVP & Chief Technology
Officer, AXA
Sauro Nicli
Global Information
Officer, AXA

Cloud computing is part of our growth strategy. It could materially change how we develop applications and apply technology to business, especially when it comes to cost structure, investment and agility.

The term cloud computing is subject to many interpretations and a fair amount of hype. A standard set of processes for cloud computing still needs to be defined and implemented on the basis that it is a utility service. The cost model will be dramatically different.

Cloud computing is not just an external service, it is also internal. We are looking at evolving a hybrid model and developing our own internal cloud computing capabilities.

On-demand services will lead to faster reaction times in alignment with the company's needs. Cloud computing will enable and encourage convergence and improved scalability — it will create challenges that will stretch IT but ultimately make us stronger.

Cloud computing requires a change of mindset for the business and for the IT department. New technical skills will be needed. IT departments will need to become more business literate and will need to better understand users's needs and how to add value to the business. Security paradigms must be reassessed in the context of the cloud.

Vendors have a great potential to oversell. Investors in cloud computing will need to be savvy. More so than in typical outsourcing arrangements, there is a real danger of becoming locked in with a provider.

Discipline and commitment is needed when approaching the design and implementation of cloud computing projects. Moving to the new environment and standards while decommissioning the former systems will be challenging.



Peter Dew
Chief Information Officer & Group Director,
Human Resources, CEVA Logistics

Considering all costs associated with providing information technology to large organizations — base infrastructure, networks, applications — I have no doubt that cloud computing can have a dramatic impact on the reduction of IT costs and improve the speed of delivery of fit-for-purpose solutions. Having initially viewed cloud computing as something of a fad, at CEVA we are making good use of a couple of excellent cloud computing solutions.

SuccessFactors, an all-encompassing performance and talent management solution, has been in use at CEVA for over 18 months and used by 1800 of our most senior employees for all aspects of performance appraisal, and employee development. The flexible pricing, ease of configuration, and browser-based user interface has made it particularly easy to 'start small', 'think big' and 'scale quickly'.

“Cloud computing is not about technology, it's about data — protecting it, sharing it, demonstrating that it is secure and transforming data into knowledge that can easily be consumed by the business.”

■ MARK FULGHAM, CISCO

“As with the PC, those IT professionals that are unable to embrace the potential of the cloud and weave it into their IT strategies are likely to meet a similar fate to their mainframe predecessors!”

■ PETER DEW, CEVA LOGISTICS

My first experience of what I would call a true cloud computing application was the deployment of salesforce.com. I recall the initial IT organization’s perspective on this easy-to-deploy application as skeptical. This skepticism reminded me of a couple (at least two) decades earlier when the introduction of the PC heralded a similar disdain among the ranks of the ‘IT professionals’.

So, I believe that cloud computing is a natural evolution of our network-centric world and expect that more and more ‘utility’ business processes will be enabled by it. As with the PC, those IT professionals who are unable to embrace the potential of the cloud and weave it into their IT strategies are likely to meet a similar fate to their mainframe predecessors!



Mike Dreyer

Chief Information Officer, Visa

Cloud computing is really a model for service delivery. It is defined as an IT network that powers a set of products and services that can be accessed

through a secure, dedicated connection. Visa has been at the forefront of cloud computing for decades — our global processing infrastructure established more than 30 years ago is a prime example of service delivery in a “cloud”.

Today, our global network, VisaNet, connects more than 1,600 financial institutions, 28 million merchants and 1.7 billion Visa products around the globe. We

process 91 billion transactions a year through this cloud. VisaNet has been a key enabler to the global migration from cash to electronic payments globally. It continues to serve Visa clients around the globe with transactions processing, risk services and increasingly delivers information and business intelligence.

Visa’s IT team drives value for our clients and ensures consistent operations through two business releases a year. Our clients have definitely seen the value of our disciplined approach. To some extent the emergence of cloud computing is simply putting context around things that have been around a long time.

I think you’re going to see models evolve on the hosting side; utility processing and storage, infrastructure management and definitely software as a service. You’ll see a lot of take-up on the corporate service side, corporate systems, but profitability will come from the ability to drive scale and hence margins.

About the Information Officer Practice

Formed in response to the rising demand for world-class information technology leadership, Spencer Stuart's fully integrated global Information Officer Practice was the first of its kind. As the market leader in chief information officer searches, we conduct key information technology assignments for Fortune and FTSE companies across all industries.

Our global team of experienced consultants are recognized technology experts and have a comprehensive overview of, and privileged access to the world's leading IT talent. As a result, Spencer Stuart is conducting close to 200 senior-level information officer searches annually. In addition to recruiting CIOs, we provide concentrated expertise across the following information technology functions:

- > Applications Development
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Spencer Stuart has conducted more than 90 executive searches and board director appointments for clean technology companies in the past few years.

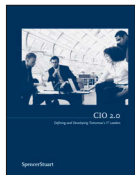
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www.spencerstuart.com/research/articles/1379/

Chief information officers discuss their own careers, the evolution of the CIO role, the key competencies CIOs of the future will need and what today's CIOs should be doing to ensure that their organizations will have the talent they need for the future.



Clean Technology: a CIO Connection Special Edition

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Thoughts from senior IT leaders on the industry's role in achieving environmental sustainability and addressing the problems of climate change.

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