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LEADINGedgeforum

EXECUTIVE PROGRAMME

Doing Business in the Cloud – Implications for Cost, Agility and Innovation

Executive Summary

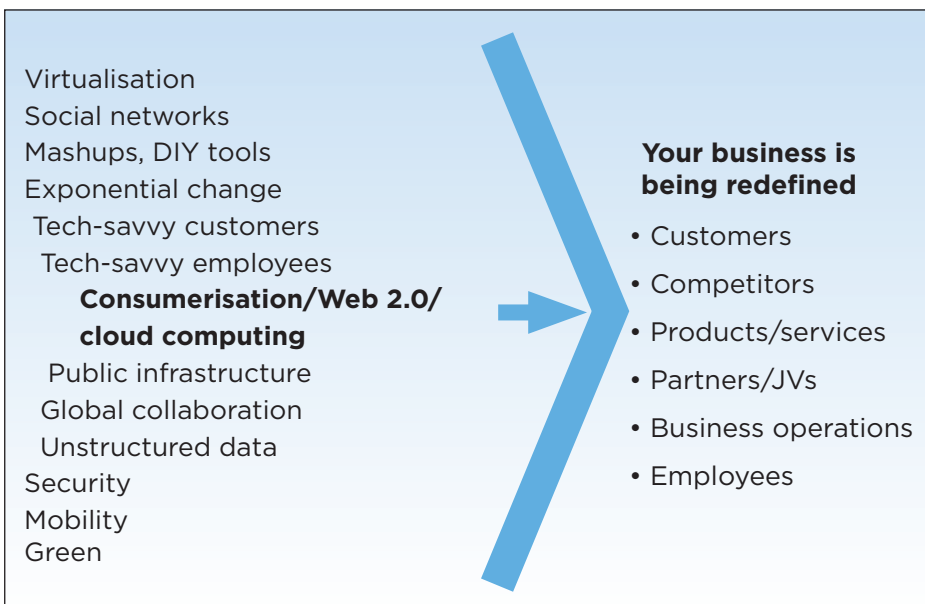
CSC



‘Cloud computing’ makes all the major components of computing – hardware, software, storage, networking, data, information and expertise – available virtually, globally and on-demand, over the Internet. While such capabilities have been developing for many years, what’s new is the ability to rapidly assemble and disassemble sophisticated, scalable, customised IT resources without any fixed capital investment, and to pay by subscription, usage or some other variable cost model. Since IT is an integral component of today’s businesses and is frequently a company’s single biggest capital cost, this paradigm shift in IT provision is having an increasingly disruptive impact on the way that organisations are designed, deployed and managed. We believe every business should monitor its progress.

The most important value the cloud brings is not lower costs. It is improved agility, not just for IT, but for the business as a whole. Cloud computing is already helping world-class organisations operate faster, more flexibly and effectively, as well as at a substantially lower cost. It is difficult to overstate the significance of the cloud’s ability to enable systems and even entire business infrastructures to be built, expanded, reduced, modified or shut down entirely without the lag times and fixed costs we have all become so used to. Consequently, the biggest cloud computing benefits are being gained in *business effectiveness* areas such as speed, availability, responsiveness and innovation. While quantifying these benefits is not always as easy as demonstrating lower costs, we urge you to consider issues such as quality, cycle time and customer/employee satisfaction. This is the main cloud computing opportunity today. It is the single biggest step in improving business/IT agility we can recall.

The cloud is part of a ‘bow wave’ of multiple changes that are affecting every part of the business. Cloud computing should not be evaluated in isolation. As shown in the figure, it is part of a wave of IT-related change that is redefining every area of your business, from influencing product design and streamlining operations to supporting new sales channels and global partnerships. Taken together, these innovations are enabling the ongoing ‘co-evolution’ of business and IT, creating an environment in which business and IT change are largely inseparable. While the current global recession has certainly cut deeply into many IT budgets, it also makes many businesses more willing to pursue new lower-cost computing alternatives. The net effect has been to accelerate the transition to the cloud.



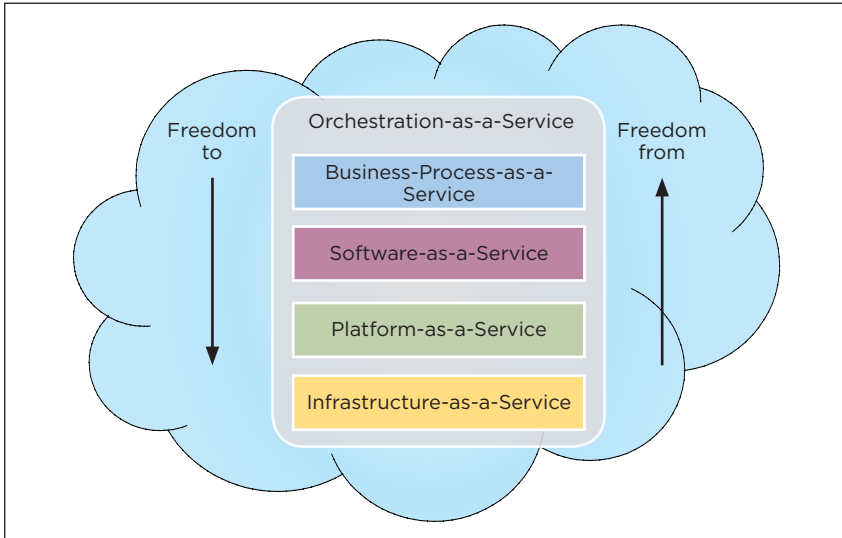
A bow wave of business and technology change

The massive scale of consumerised cloud suppliers has brought with it very different business models. A typical large enterprise data centre might require one IT administrator for every 20 to 40 servers. However, at leading cloud computing firms such as Amazon, the ratio is more like 1 to 2,500 – or more. Thus cloud computing can move labour down the list of data centre costs from first position to fourth. Similarly, today's leading cloud computing vendors achieve substantial savings in hardware costs by using large quantities of the cheapest hardware good enough to do the job instead of traditional high-end data centre technologies – rather like using paper plates instead of fine china. While not every company can easily do this, we recommend you to regularly revisit your need for the 'fine china' computer hardware approach and consider more 'disposable' computing.

The cloud offers the efficiencies of just-in-time computing. For a variety of historical, political and practical reasons, server utilisation in many enterprise data centres is as low as 10 percent, a level that would not be tolerated in any other expensive capital asset. Cloud computing enables a range of possible solutions to this long-intractable industry problem. It can provide the IT 'safety stock' of the future, reducing computer capacity inventories, smoothing out peak load requirements over many customers, and enabling each individual enterprise to run at much higher rates of utilisation, paying for extra capacity only when needed.

The move to the cloud will happen in stages. We foresee a staged migration. First research, development and testing will move to the cloud. In these situations, work is often done with 'dummy' data, which removes most security concerns and makes a rapid transition possible. As firms become more comfortable with the cloud they will also use it for short-term processing-intensive applications (such as large statistical analyses) and disaster recovery, and develop applications that can be deployed as services in the cloud. Eventually, the roles will switch. Production will move to the cloud and the local data centre will be used for disaster recovery and the storage of the most sensitive information. However, this three-stage transition to the cloud computing paradigm will not happen overnight. It could easily take a decade or more to reshape the enterprise IT computing landscape.

The most difficult change will be the transition from IT as doers to IT as supporters. Increasingly, employees are no longer just passive 'users' of IT services but are becoming 'double-deep', proactively integrating IT know-how with their job requirement. Consider how adept many workers have become with iPhones, PCs and the web; and that it is already possible for an individual to establish a server running in the cloud for ten cents an hour or less, charged to a credit card or even a pre-paid debit card. In this sense, employee skills, roles and technologies are all evolving together. To empower and support such employees with the necessary tools, skills and security, the enterprise IT organisation will need to shift from being a *provider* of IT to an *enabler* of IT. This will be a huge cultural change, and many IT groups and professionals will struggle with it.



The cloud consists of different layers

When considering which applications to move to the cloud, ask first how far up the stack they can be pushed. We see the architecture of the cloud as a stack of four layers, as shown in the figure. At the lowest layer, *Infrastructure-as-a-Service (IaaS)*, you get access to hardware resources, but little software support. At the level of *Business-Process-as-a-Service (BPaaS)*, you essentially outsource a specific business process. (A good example is outsourced payroll from a company such as ADP.) As you move down the stack you gain the *freedom to* choose particular features and capabilities. Similarly, as you move up the stack you enjoy the *freedom from* concern about how each of the lower levels works.

Orchestration-as-a-Service (OaaS) offers services such as monitoring, management, integration, security and optimisation, which wrap around the other layers and ensure the whole system works as required.

In moving an application to the cloud, assess at what level in the stack you should operate. Each layer has its own pros and cons, but as a rule of thumb, the appropriate layer is probably driven by the extent to which the application is 'core' to your business. If it does not create differentiating capabilities, then it is 'context' and should be high up the stack.

Don't think of the cloud in terms of replacing the data centre. Think instead about places where performance can be dramatically impacted by scalable, on-demand computing – such as your development and test environment. In one example, running a test internally would have meant spending \$30,000 on hardware and software, but only a few dollars in the cloud; in another, the IT department quoted a lead time of months to supply the servers for a complex analysis – it took minutes in the cloud. Do not judge cloud computing in terms of its impact on existing systems and data centres, but on its ability to move computing forward.

We disagree with those who say that company data centres hosted on company premises will cease to exist. Availability, concerns about becoming too dependent upon the Internet, and the scale of transition are significant barriers, and legal, regulatory and compliance issues make this sort of radical change unlikely in the foreseeable future.

Early adopters report that they wished that they had adopted a more holistic and inclusive approach from the beginning. The cloud will have impacts far beyond IT. Once your initial proofs of concept have been run and you have developed some level of comfort, start to reach out to other parts of the firm that can make use of these new on-demand capabilities. For example, talk to marketing about how they might use the cloud for large-scale data analysis. Speak with your ERP team about doing development and test in the cloud, and spend time with data centre staff exploring the benefits of reducing complexity by offloading these tasks, which are typically the source of reduced reliability in the data centre.

The future of business is collaboration, and the future of collaboration is in the cloud. The business world is increasingly collaborative. Companies routinely rely on third-party suppliers of specialised services, and on partners and joint ventures to pursue new products, markets and geographies more quickly and effectively. Online collaboration is becoming essential, and this often requires traditional IT security arrangements to be changed. In partnerships of equals, how can either party insist that interactions take place behind its particular firewall? The cloud, and more broadly, the Internet, is emerging as the logical, neutral meeting place. While cloud computing introduces its own additional security challenges that can only be addressed over time, security fears alone are unlikely to derail the cloud computing movement. The business risks of not exploring the cloud are even greater than those of holding back.

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