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IN THE IT CLOUD
REAL COST BENEFITS

VIRTUAL TRAVEL
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INTO THE CLOUD

Cloud computing is a relatively new development – but IT specialists believe it will have a resounding impact on the way businesses operate in the near future.

An InformationWeek Analytics 2010 Cloud Computing and IT Staffing Survey in July this year found 60 per cent of strategic IT managers have either adopted cloud services, or plan to adopt them, within the next two years.

Meanwhile, Gartner, a leading information technology research and advisory company headquartered in Stamford in the US, estimates that by 2015, enterprises will have spent around $125 billion on cloud computing solutions.

"IT managers are thinking strategically about cloud service deployments; more progressive enterprises are thinking through what their IT operations will look like in a world of increasing cloud service leverage," says Ben Pring, Research Vice President at Gartner.

Pring says the trials of the recent economic climate have only hastened the move towards cloud computing.

"The financial turbulence of the last 18 months has meant every organisation has been scrutinising every expenditure," he says. "An IT solution that can deliver functionality less expensively and with more agility – remembering that time is money – is hard to ignore."

DEFINING CLOUD COMPUTING

Gartner defines cloud computing as "a style of computing where scaleable and elastic IT-related capabilities are provided as a service to customers using internet technologies".

In a nutshell, cloud computing is internet-based computing that allows shared resources, software and information to be provided to computers on demand, similar to the setup of the electricity grid. Customers do not usually own the physical infrastructure. Instead they are billed depending on how much they consume or on a subscription or time-based model.

"In modern business speak it's a form of outsourcing of IT services; both hardware and software," explains Professor Bernard Pailthorpe, Professor of Computational Science at the University of Queensland.

"The most common experience of cloud computing would be using Facebook or Google, but of course those scales are far different from enterprise computing."

Macquarie Telecom says there are three markers that identify a cloud service – an underlying supporting infrastructure architecture that is shared, the ability to scale quickly and so create elastic expansion, and a charging system based on variable or fixed operational expenditures instead of large upfront investments.

SaaS GROWTH POTENTIAL

Interest in the SaaS (Software as a Service) element of cloud computing is particularly strong according to research by analyst firm IDC. It predicts revenues for SaaS will rise from US$13.1 billion in 2009 to US$40.5 billion by 2014.

Companies say they are moving towards SaaS because, as with cloud computing generally, it offers faster deployment, easier upgrades, and reduces the costs and headaches associated with buying and maintaining hardware.

Gartner says the financial services and manufacturing industries are the largest early adopters of cloud services such as SaaS, with communications and high-tech

KEY POINTS

- Cloud computing is internet-based computing that allows shared resources, software and information to be provided on demand, similar to the setup of the electricity grid.
- Interest in SaaS (software as a service) is particularly strong, according to research that predicts revenues for SaaS will reach US$40.5 billion by 2014.
- Companies are moving towards SaaS because, as with cloud computing generally, it offers faster deployment, easier upgrades, and reduces the costs and headaches associated with buying and maintaining hardware.
- Security and jurisdictional issues are an ongoing concern for businesses considering migration to a cloud computing model. For example, questions arise over who can access and view data when it is stored overseas by cloud providers based in other countries.
- Large Australian organisations and businesses have become early adopters of cloud computing and expect it to become an increasingly prevalent and significant technological advancement in Australia.

industries not far behind. Within Australia, early adopters of cloud services include Toyota, Visy, the Commonwealth Bank of Australia, the University of Melbourne and RMIT University.

Michael Harte, Commonwealth Bank of Australia Chief Information Officer and Group Executive for Enterprise Services, says the CBA has been investigating cloud computing possibilities since 2007.

"All we want to do is buy software and infrastructure as a service over a network," he said in a July interview with *CIO* magazine. "We only want to pay for what we use. And we only want to pay on demand."

Harte says the CBA has built a comprehensive stack of database services using cloud technology, with the ultimate goal being to deliver customers 'anytime, anywhere real-time convenience and real-time value'.

"We've got to free up the systems and move out of that clunky infrastructure into far more dynamic front-end content and capability," he says.

AUTOMOTIVE TO UNIVERSITIES

Michael Jenkins, Manager of Enterprise Architecture and Strategy at Toyota Australia, expects cloud computing to play an increasingly significant role in the company within the next five years.

"Our ultimate goal is to consume automatically self-regulating IT services supplied on a just-in-time basis," he said earlier this year.

In July last year, Visy also committed to cloud computing by signing a five year $50 million deal with Telstra to provide a whole of business network and an enterprise cloud computing platform. The move is expected to deliver Visy a 30 per cent cost saving.

Ken Major, Visy's Chief Information Officer at the time of the announcement, said the arrangement would allow Visy to focus on utilising rather than maintaining technology and will enable the company to improve core business efficiencies and increase overall productivity.

"In order to remain competitive and achieve our commercial objectives in a tough economic environment, we need to change the way in which our IT resources are utilised and look at more innovative offerings around a user-pay model with our vendors, so we can share the risk and reward and grow together," he said.

RMIT University in Melbourne also plans to increase its use of cloud computing, according to Allan Morris, Executive Director Information Technology Services.

"I believe the days of university IT groups, and universities themselves, hosting all of the solutions that they would normally host within the walls of a university are gone," Morris told *The Australian* in June this year.

CLOUD BENEFITS

For businesses, what are the major benefits of cloud computing solutions such as SaaS?

Professor Pailthorpe says cloud computing may be cost-effective, particularly for small to medium-sized businesses. Because there are reduced upfront costs, cloud computing removes entry barriers for companies that may otherwise be unable to afford the kind of technology on offer.

"It's about lower cost and less grief. You don't have the hassle of managing this system and you may also be able to access a richer portfolio of services than you would normally be able to afford," he says.

Agility is also a benefit. Systems can be accessed via a web browser regardless of a user's location and cloud computing's elasticity means resources are automatically available to manage a business' peak demand levels.

As applications don't have to be installed on each user's individual computer or device they are easier to maintain and upgrades can be rolled out quickly.

"And some of the large corporates offering these services, such as Microsoft and Google, probably have much better security protocols than small business. They know what they are doing," says Professor Pailthorpe.

Professor Rajkumar Buyya of the Department of Computer Science and Software Engineering at the University of Melbourne and Manjrasoft Pty Ltd cites similar benefits.

"You don't have to invest a lot in infrastructure, you pay for what you use and somebody is managing it for you," he says.

"Solutions can also be customised according to the needs or standards of different countries and of different industry sectors. And when the new hardware and software is introduced, managing an upgrade is quite difficult and expensive, but with cloud computing the provider delivers that in a seamless manner."

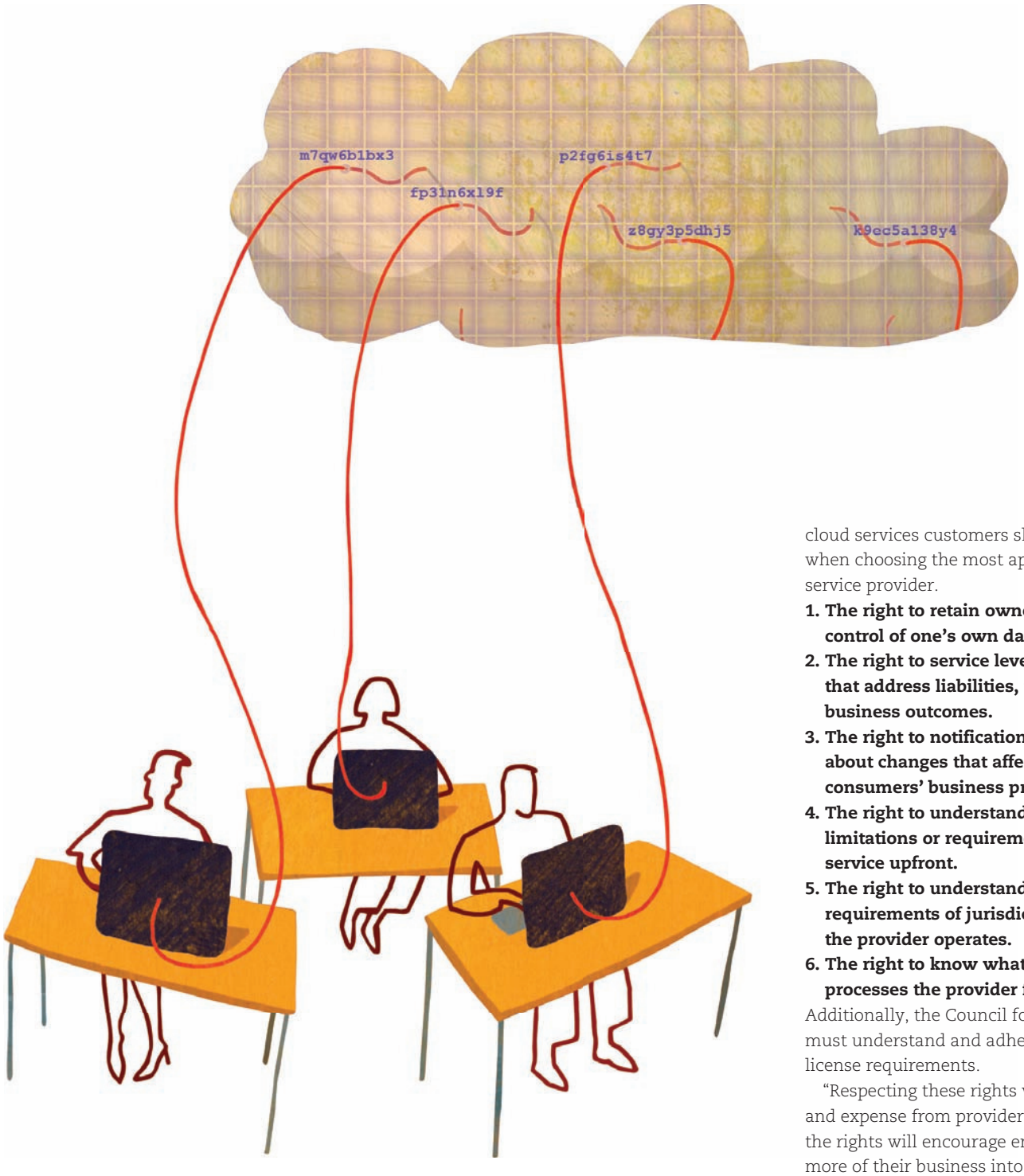
THE ISSUES

A 2010 report by the Cloud Security Alliance, a non-profit organisation formed to promote the use of best practices within cloud computing, says customers are both 'excited and nervous' about the technology.

The nerves are due to concerns about the risks of cloud computing if not properly secured, and the loss of direct control over systems for which they are nonetheless accountable.

Professor Pailthorpe agrees jurisdiction of data is a key issue for organisations contemplating the cloud.

"At the moment a lot of cloud providers



are located in the US and so they are subject to the Patriot Act. This means national security agencies, such as the FBI, can go and look at the data and records held by these providers and the agencies are not required to tell you," he says.

But he adds that cloud computing providers have resources and expertise to dedicate to tackling security issues and to introducing security measures. This should provide business customers with effective data storage and disaster recovery solutions.

Service reliability and performance is also a serious consideration for businesses entering the cloud computing arena. So providers are offering Service Level Guarantees (SLGs) and Service Level Agreements (SLAs) to convince users that performance levels will match their requirements and enhance, rather than hinder, their business.

"Since cloud applications are crucial to the core business operations of the consumers, it is essential that the consumers have guarantees from providers on service delivery," says Professor Buyya.

"Typically, these are provided through SLAs struck between provider and consumer."

MAKING A CHOICE

Gartner Inc formed a Global IT Council for Cloud Services to identify basic rights cloud services customers should insist on when choosing the most appropriate cloud service provider.

1. **The right to retain ownership, use and control of one's own data.**
2. **The right to service level agreements that address liabilities, remediation and business outcomes.**
3. **The right to notification and choice about changes that affect the service consumers' business processes.**
4. **The right to understand the technical limitations or requirements of the service upfront.**
5. **The right to understand the legal requirements of jurisdictions in which the provider operates.**
6. **The right to know what security processes the provider follows.**

Additionally, the Council found consumers must understand and adhere to software license requirements.

"Respecting these rights will require effort and expense from providers, but securing the rights will encourage enterprises to put more of their business into the cloud," says Daryl Plummer, Managing Vice President and Gartner Fellow.

"However, the six rights will not become a reality unless enterprises insist on them when they negotiate with service providers. We urge all enterprises to do what they can to establish these rights and responsibilities as the standard for cloud computing."

Professor Pailthorpe summarises the elements of an effective cloud computing offering:

"Good quality of service, good security (and) appropriate to the legal domain the business is operating in," he says.

"There must be a cost benefit; and be sure it simplifies your business operation so you hand over the grief to someone else."