THE FUTURE IS CLOUDY

Despite the apparent attractions of the cloud, Ireland's Chief Information Officers (CIOs) remain cautious about adoption, according to the findings of the two most recent Deloitte CIO surveys, reports **Stephen Garvey**.

The past decade has seen a seismic shift in computing. Cloud computing is being talked about by everyone and appearing on every prediction list. Why? Simply because cloud computing is the biggest thing since the Internet. Displaying all the characteristics of a disruptive technology, creating new markets and radically transforming existing markets within the IT world, cloud computing is grabbing the attention of the business world.

The National Institute of Standards and Technology (NIST) in the US has created an official definition of cloud computing after several years of work and 15 working drafts: "Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

When you strip away the technical jargon, cloud computing basically means you can have anytime, anywhere computing. It is a means of providing applications and services over the Internet without having to understand the underlying technology.

Cloud computing is not a product; it is an IT delivery model that delivers IT in a much more efficient way.

Using the cloud can provide many benefits for a business. Businesses can reduce overall spending by requiring fewer IT resources to support new business initiatives. IT overcapacity can be reduced through the use of 'pay-as-you-go' models requiring fewer data centre resources and reducing maintenance costs. IT expenses can be treated as operating costs rather than capital expenses. Employees who are no longer preoccupied with keeping legacy infrastructure operating can focus on delivering more value to the business in terms of new services and functionality.

When applications are delivered over the Internet, employees and customers can access what they need from heir cloud systems remotely. All that is required is a browser and an Internet connection. The ability of staff and customers to access critical applications or documents increases

Example: Delivering Agility through Cloud Technology

You are in a meeting with the management of your business. During the course of the meeting a new business opportunity is identified. The team believes that if the business can launch the new product or service in the next six weeks, it can steal a lead over its competitors and a rich new revenue stream will be opened up. Then reality hits, the team needs to purchase additional IT infrastructure and software, which based on the last project that was delivered, took over 12 weeks. Cloud computing can support the agility the business requires. An IT environment can be created in a matter of minutes, scaled up to meet the demands of busy periods and scaled down when not required. Small businesses can develop a global footprint, something which was unimaginable several years ago. Before cloud computing significant capital investment would have been required to purchase infrastructure and highly skilled staff would have been required to deploy and maintain it.

Cloud Service Models

Cloud computing can be largely broken down into three parts: software, platform and infrastructure. Each part has a different focus and can offer services to meet the requirements of your business.

Software as a Service (SaaS) is the concept of renting software from a service provider rather than buying it yourself. Google Docs, Salesforce.com and Microsoft Office 365 are all examples of this model. SaaS helps to lower the cost of business since businesses can access applications based on a monthly fee instead of having to pay a licence for that application to be hosted internally.

Platform as a Service (PaaS) offers development platforms for developers. PaaS provides services to develop, test, deploy, host and maintain applications. The provider of the service manages the routine maintenance of the infrastructure. With PaaS users have to write their own code and upload it to the service provider. Force.com from Salesforce.com is an example of this model. PaaS is based on metering or a subscription model so users only pay for what is used.

Finally *Infrastructure as a Service* (IaaS) is the delivery of computing infrastructure as a fully outsourced model. Amazon and Google are large global examples of IaaS providers but there are several niche players entering the market to satisfy local demands of businesses. Businesses can purchase enterprise-grade IT infrastructure using a pay as you go model that would be otherwise very costly to purchase and maintain.

efficiency and productivity for both your staff and your customers.

Despite the apparent attractions of the cloud, Ireland's Chief Information Officers (CIOs) remain cautious about adoption, according to the findings of the two most recent Deloitte CIO surveys. Of the organisations that responded, 40% are using cloud computing with two thirds of that 40% using Software as a Service [see inset panel].

Adoption has been slow, but there has been a net increase in cloud adoption over the course of the two surveys and over three-quarters of participants from the most recent survey intend to increase their usage of the cloud over the next 18 months. The sectors least enamoured with cloud computing are financial services, health and the public sector reflecting concerns about the per-ceived lack of data security. On a positive note only 4% of respondents have put on hold or cancelled their cloud initiatives.

It would appear that most businesses do not have a formal cloud adoption strategy. Businesses are tactically picking aspects of the cloud which may meet short-term requirements but are not looking strategically at the benefits cloud computing can offer their business. When developing a cloud adoption strategy there are several things a business has to consider:

➤ **Preparation**. Your business should think big but start small. Create a highly targeted plan for cloud adoption within your business. For example, consider adopting a cloud-based solution for a line of business system such as Salesforce.com (Customer Relationship Management) or Workday (Enterprise Resource Planning) or consider cloud-based infrastructure as an alternative to your next IT capital investment. To help you make these decisions you should create a 'cloud team' made up of key

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Cloud Deployment Model

There are various deployment models for Cloud Computing. *Private clouds* are built by businesses or organisations with existing infrastructure or to meet regulatory compliance. They are for the sole use of a single organisation. They can be managed and operated by the organisation or a third party, even a combination of them, and can exist on or off premises.

A *public cloud* is a commercial offering from vendors such as Amazon or Google. It is designed for use by the general public and exists on the premises of the cloud provider. Variations of these deployment models include the hybrid cloud and the community cloud.

A *community cloud* is where several businesses or organisations, with similar requirements, pool their resources to provide services to the group as a whole. These organisations often have shared concerns such as security or compliance requirements. It can be owned, managed and operated by one or more members of the community, a third party or combination of them and can exist on or off premises. This model works particularly well for public sector, academic or research organisations.

A *hybrid cloud* is a mixture of two or more distinct cloud infrastructures (e.g. private, public, or community). These clouds remain separate entities but are combined using technology, either open source or proprietary, allowing data and application portability. This means that businesses can break out to utilise cloud resources belonging to the other cloud during periods of peak demand.

stakeholders and advisors to help identify and clarify your business objectives and how best to achieve them. Based on your needs and capabilities you should consider public versus private clouds and a single vendor versus a multi-vendor strategy. Answering these questions will help you to start identifying the risks inherent for your business.

➤ **Review your business processes and applications**. The purpose of this is to identify whether there are any processes or applications that lend themselves to being first candidates for moving to the cloud. When a business or an accounting firm first moves to the cloud there is often a struggle to identify what can move. Likely candidates are email, customer relationship management, enterprise resource planning and accountancy functions such as invoicing, expense claims or cash flow forecasting. You and your 'cloud team' will need to consider if your current Internet connectivity is sufficient as this plays a vital role in cloud computing. You may need to increase the Internet bandwidth available for these services because as your business grows you will need to grow your Internet bandwidth also.

➤ **Service and deployment models**. Depending on the service type and the deployment model selected, the risk profile for your business will change. If you decide on SaaS, the service provider is responsible for maintaining acceptable service levels, security, data segregation, but you are primarily responsible for complying with laws and regulations. If

you decide on PaaS or IaaS [see inset panel on page 47] you are effectively responsible while the service provider ensures that the underlying platform or infra-structure components are secured. When you opt for a public cloud, you are placing your data with a third party. You should ask for assurances that the data is backed up and separated from that of other customers in the public cloud. Public clouds use multi-tenancy, where one instance of software potentially serves hundreds of customers. This includes data storage where data from several customers can be stored in a single database. This data can be encrypted or even kept separate (a distinct partition or even separate database). This allows your data to stay private and allows you to retain ownership and control and can help demonstrate regulatory compliance. If you decide on a private cloud then you need to ensure that data is kept separate and backed up. In a hybrid cloud both the service provider and your business may be responsible for the risks, making it difficult to distinguish respective responsibilities when things go wrong. Therefore, it is important to consider how you are going to integrate the cloud with existing IT services and to pay attention to the detail in the service level agreements offered by cloud vendors.

➤ **Vendor selection**. If a vendor is required then the vendor that best fits your businesses cloud strategy requirements has to be determined. To select a vendor you should request information

to determine the viability of the vendor and their track record. The responses are reviewed to identify vendors that meet the business requirements and your standards. The final step is to shortlist vendors and, using a Request for Quotation (RFQ), select the vendor based on a migration plan they map out which meets the needs of your business.

➤ **Risk and liability mitigation**. Contingency planning, exit strategies and liability insurance reduce the risk of migrating to the cloud.

➤ **Business as usual.** Having deployed the cloud adoption strategy and successfully migrated edge systems to the cloud, a sound governance model is required to ensure business as usual. The objectives which were set at the start of this process should be measured to ensure that they are being met.

As businesses start to deploy their cloud adoption strategies, they will find challenges in achieving these benefits. A sophisticated blend of IT infrastructure and operations capability is required to support seamless migration between onsite computing resources and those in the cloud. Truly disruptive technologies are rare; cloud computing is one of the greatest disruptive technologies ever seen. Adopting cloud computing allows businesses to focus on their core activities, to rapidly deliver services, to focus on initiating new revenue streams, to get to market faster and to meet changing customer expectations. ■

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