

Demystifying the Cloud

ROCC Computers

ROCC Computers Ltd

Stanford Gate
South Road
Brighton
BN1 6SB

Tel: 01273 274716
Email: info@rocc.co.uk

Author: Peter Luck
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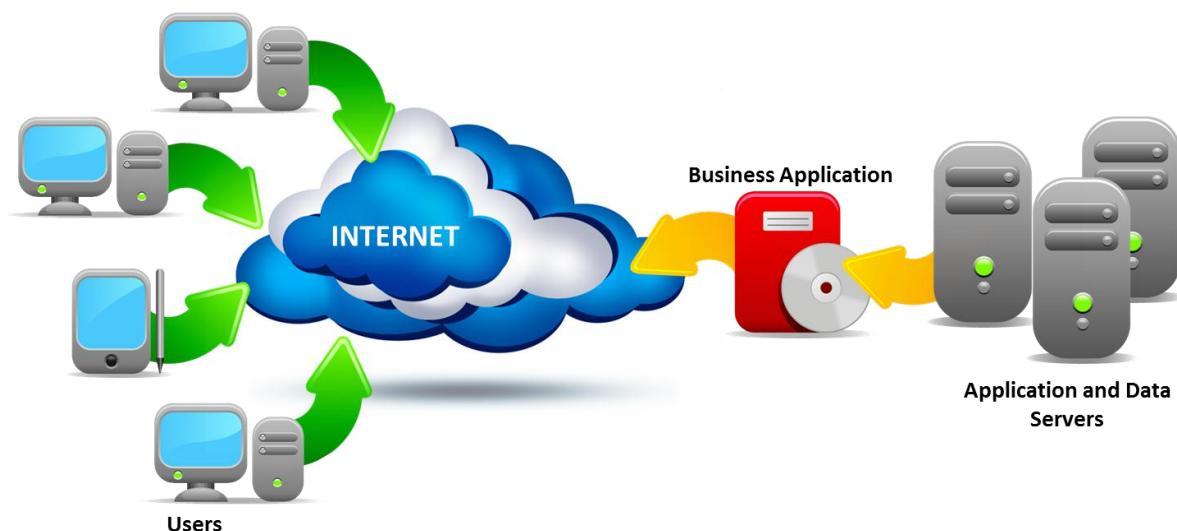
What is Cloud Computing?

“Cloud computing” is the current buzz word in the IT industry. You would be hard pushed to have any involvement in IT software and systems without having come across the term at least once. Before anyone can decide whether cloud computing is right for their business they first need to understand what the cloud is.

Cloud computing (also known as utility computing) describes a new method of delivering IT services to businesses and consumers through the internet. If anyone mentions “the cloud”, they really mean the internet.

The cloud is an alternative to traditional IT infrastructures. A good way to illustrate is to look at a business critical application. All companies will have an application that is core to their business; this could be an HR system, a finance system or a stock control system. In a traditional environment the company would need to have an infrastructure to support this application such as an application server, a database and database server, a UPS (uninterruptable power supply), possibly standby servers for availability and resilience and of course an individual or team of people to look after it.

The cloud offers organisations an alternative:



The illustration above shows that by using the cloud, business critical systems can be served to end users via the internet without the need for any on premise infrastructure. The cloud service provider will provide access to the application and manage the infrastructure required to serve it to the user (including application servers, databases and storage).

A great example of cloud computing that many consumers have been using long before the term “cloud” became popular is Microsoft Hotmail. Without the need for an onsite mail server such as MS Exchange, or the underlying hardware infrastructure, a user can send and receive email through their web browser. Hotmail provides the storage for the email to be stored and manages the underlying servers and databases.



Types of Cloud Service

SaaS

Software as a Service delivers software applications to clients via the internet. Using SaaS solutions, there is no need to install any software onto the customer's PC and therefore making setup and support of the application much simpler. SaaS solutions are usually central applications provided to many users therefore ensuring that upgrades and bug fixes are carried out centrally and not on individual client systems. Many SaaS applications allow a level of configuration to let individual users or organisations customise elements of the application.

PaaS

Platform as a Service provides the underlying hardware, operating system and software in a virtualised environment to allow a user to deploy an application. Microsoft's Windows Azure can be classed as a PaaS offering in that they will provide the user a virtual server including storage and the operating system to allow the user to install their own software and applications. Some PaaS solutions will also offer development and testing environments allowing developers to work with existing SaaS applications.

IaaS

Infrastructure as a Service provides companies with the equipment needed to run their business in a very similar way to PaaS but with a lot more control. As with PaaS, IaaS solutions can provide the hardware, storage, servers and networking components but the user is able to setup and own their own configuration. The user would be required to install their own platform for hosting applications, such as the operating system.

A Brief History of the Cloud

“Cloud computing” as a concept has actually been around for decades, but the cloud in its form we understand today has only taken off since the introduction of fast broadband connections back in the 1990’s.



The original pioneer was Salesforce.com with its customer relationship management (CRM) system delivered to businesses of all sizes from the web.

The next big milestone was the popular online book store Amazon launching its Web Services in July of 2002. The book giant offered online services such as storage to web sites and applications.

It took four years before the next significant development occurred and in 2006 there were two. Amazon launched its EC2 (Elastic Compute Cloud) and S3 (Simple Storage Service) and Google launched Google Docs. Amazon were building on their web services offering from 2002 while Google Docs provided users cloud based applications to handle word processing, spread sheets and presentations.

Google followed this up 2 years later with the release of Google Apps. A service which provided versions of Google products to rival Microsoft Office available for use for the web, such as Gmail, Google Calendar, Docs, Talk and Sites.

2009 saw Microsoft finally embrace the cloud with the release of Windows Azure to rival Amazon’s cloud offering of providing scalable on demand services and storage.

In 2010, Oracle launched the popular open source office suite Open Office to the cloud with the release of OpenOffice 3.3.

Key Features of Cloud Computing

- **Cost Models**

Cloud computing gives businesses more flexible costing options than the traditional purchase a server, purchase the software and host it yourself model. There are many costing models used by cloud providers and these are normally based on a monthly subscription worked out on number of users, number of transactions, amount of storage used etc. You pay for what you use. The obvious drawback to this is it can be difficult to predict what your costs are going to be.

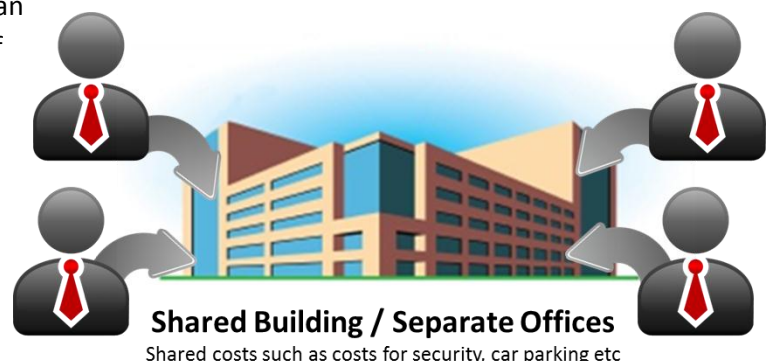
Many will claim that the cost of using an application or platform in the cloud is much lower than hosting yourself however this is not always the case. Anyone looking to venture into the cloud needs to look closely at how the provider will charge. Amazon's EC2 Service for example can provide you with a server suitable for a Windows environment at an on demand cost of as little as \$0.12 per hour (for a small server). If you then wanted a Windows server that could also run SQL Server database you would pay \$1.08 per hour. This however, is not where the charges end. If you were to sign up for an EC2 account and create a server, you would then also want to sign up for Elastic Block Storage to make sure any data held on your server instance is persisted even if the server is removed.

- **Scalability**

One of the great benefits of the cloud is being able to have scalable on demand solutions that provide the resources you need when you need them, but only when you need them therefore ensuring you aren't paying for CPU, RAM or storage that you don't always need. In a traditional environment you would need to bench mark your requirements and determine what your high water mark would be for peak performance (ie how much memory would be used when you have all users working on demanding tasks). This would then dictate the hardware purchased to supply those users.

- **Multi Tenancy**

Multi tenancy is what makes the cloud an affordable solution for many. Instead of multiple organisations running their own versions of applications on their own servers, the cloud would provide one version of an application shared by many organisations. This allows the costs of the application, the hardware it runs on and the team to support it to be shared amongst a group.



Think of it as a communal office block. There are many offices in a single building, each office is unique and customised for the organisation that uses it, but costs such as land rental are shared between all users of the building.

- **Low Maintenance**

Due to the nature of cloud computing, any applications or hardware you are using in the cloud is maintained and supported by the provider. Systems are accessed via the internet using a client PC; any upgrades to applications and software are carried out by the provider and will instantly apply to all clients using the software.

- **Reliability**

Reliability or the promise of reliability is a strong driver to the cloud. Most cloud providers will offer 99.5% or higher uptime on systems. There is no reliance on the user to worry about how this is achieved. However there have been some notable service failures (for example at Amazon) where systems have been unavailable for several hours. Due to the multi tenancy nature of the cloud, any outages will affect multiple companies making use of the service. Additionally the user has no ability to influence recovery time and is reliant on the cloud provider to manage this. Although in reality, how different is this to traditional environments where the business users are reliant on the IT department to get them up and running again?

Cloud Computing Concerns

The three biggest concerns about cloud computing are Security, Privacy and Reliability. Many organisations are nervous about handing over their business critical data to a third party and trusting that provider not to lose, corrupt or share that data and also to ensure that data is always available when the business needs it.

Organisations looking to venture into the cloud need to be vigilant and thoroughly investigate the providers they are considering using and the third parties they deal with. Questions should be asked regarding how much downtime do they experience, what SLA's (Service Level Agreements) they have in place, where will data be held, what security measures do they have in place to prevent attacks etc.

There have been some very visible failures in recent years such as Google's Gmail crash in February 2009, Amazon's 8 hour S3 failure in 2008 or their 1 hour failure in 2010 following a power outage but the key here is the word visible. Cloud providers live and die by their reputations, a provider could not afford many failures before word spreads and customers begin leaving them in droves so these companies will always invest large sums of money in ensuring their services are secure and reliable.

The Future for Cloud Computing

I would argue that the future of computing IS cloud computing. The uptake of businesses is increasing year on year with expenditure on cloud computing in the United States predicted to exceed \$13 billion by 2014.

Consumers will be the driver and the generation raised on Facebook, Flickr and Gmail will have none of the fears of the current generation with regards to storing information on the web.

Working practices will become increasingly mobile and users will demand the ability to access their applications and data from wherever they are.

Larger vendors will continue to enter the cloud but the playing field for software providers will begin to flatten as lower start-up costs and faster return on development investment will enable smaller innovative companies to compete directly with larger enterprise organisations.

The end user is going to be the biggest winner as companies have to focus more and more on providing a quality user experience as ultimately the cloud will give more power to users voting with their feet and therefore ensuring competition between suppliers is fierce.

The future is bright for any companies that are able to embrace the cloud and the opportunities that it can provide, but any organisations remaining inflexible and clinging onto their traditional practices will find the coming years a struggle.

About the Author



Peter Luck is the Head of Service at Brighton based ROCC Computers with over 13 years of experience in the IT industry. He is responsible for all product development and support services to customers using ROCC's Uniclass [Social Housing](#), [Waste Management](#), [Highways Management](#) and [Management Dashboard](#) software.

For more details about ROCC and its range of software and services please visit our website at www.rocc.com

