





## The challenges of a clouded market

If you are confused about cloud computing, are unsure of whether the hype is justified, and have no idea if it's right for your business, then you are not alone. With many definitions of the technology in the market right now, it's difficult to get a clear understanding what cloud computing is and what it does.

The truth is that cloud computing isn't as all-encompassing as many argue. It suits neither every organisation nor every IT application. Nor is it wholly new. Hosted email, for instance, is a cloud service, yet we've been offering it to customers since 1996. Nevertheless, if you respond to the opportunities and challenges it presents by burying your head in the sand, you'll no doubt find that cloud computing has continued growing when you look up.

According to a report by analysts at The 451 Group announced this month, the cloud computing marketplace will reach \$16.7bn in revenue by 2013. So unless you want your competitors to steal a march on you, you'd better arm yourself now with the necessary information to make a decision about this technology.

### **This article aims to help you do just that by providing:**

- a definition of cloud computing (or 'cloud')
- an outline of its benefits and pitfalls
- the steps involved in migrating, including what applications and IT functions are suited to cloud
- advice on how to measure the ROI of a cloud project
- important things to look for in a cloud service provider



## Making sense of cloud

Claranet's definition of cloud is: a computing infrastructure, sitting in a remote data centre, accessible via the internet or a Wide Area Network (WAN). The platform is owned and managed by a third-party organisation, purchased predominantly on an annuity revenue model and contracted on a short-term basis. There are two categories of cloud: public and private. A public cloud is multi-tenanted and a private cloud is dedicated to a single customer.

### The evolution of two key technologies has helped drive the recent expansion of cloud services:

- Major advances in networking technology - in particular the ubiquity of IP networks in business and huge reductions in the cost of Ethernet circuits
- The maturing of server virtualisation technology, which allows server resources to be aggregated to improve efficiency and reliability

To work out exactly what cloud can do for your business, it's useful to look at the three main types of cloud services. These are Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS) and Infrastructure-as-a-Service (IaaS):

**SaaS** provides customers with hosted online software applications to access and use, such as Hotmail and Salesforce. It is the most well-known and well-established type of cloud service. Compared to the others, its scope of customisable elements is more limited, only allowing organisations to add and manage data and make defined changes to applications.

**PaaS** is, in essence, enterprise-ready web space. It gives an organisation or developer a customisable platform, including the operating system, on which they can place and manipulate their application, code, content or intellectual property. It allows greater control and freedom than SaaS does. Microsoft's Azure and Claranet's Managed Application Hosting are examples of PaaS.

**IaaS** offers organisations outsourced computing resources – e.g. access to RAM, CPU, storage and networking – up to the operating system level. As such, it is the foundation-level cloud service, and gives the in-house IT team the most control over the outsourced infrastructure, allowing the manipulation of things like disk space and virtual network connections. Amazon's EC2 and Claranet's Managed Virtual Hosting services are an example of IaaS.



It's also useful to look at what IT applications and functions these platforms can support, dividing them into two categories: internal facing and external facing. Cloud is a well-established way to host and provide access to external facing infrastructure, such as websites and e-commerce engines. Many of Claranet's customers (such as Amnesty International, Ann Summers and Five) take advantage of Managed Virtual Hosting services to host websites or online applications. For internal facing IT systems, such as CRM and HR applications, VoIP switches and Microsoft's SharePoint, cloud is less established. Nevertheless, it is proving itself as an effective option to customers, including CRU and Healthcode, in the form of Managed Application Hosting.

Of course, a company's IT system will often have elements that are both external and internal facing. For example, DeVere Hotel's room booking system, which is hosted by us in a private cloud, has a front-end for customers and a back-end for hotel reception staff (the internal/external split is for illustrative purposes). The table below helps explain how all of this fits together, giving examples of what types of cloud service suit different parts of an IT infrastructure, and what tangible access the business will receive when these various types of services are purchased:

	SaaS	PaaS	IaaS
Internal facing	Salesforce	Hosted Microsoft SharePoint, Microsoft Exchange, CRM applications	Hosted VoIP, domain controllers, servers, development environments
External facing	Hotmail	Web hosting and managed application hosting	Web hosting and managed hosting
What the business will receive when these services are purchased	A login and password for the end user, to access an online application with user rights only	A login and password for the developer, to access a ready-to-go application environment, with administrator rights for changing some settings	A login and password for the IT engineer, to access computing resources such as servers and firewalls, with all-encompassing root access rights



## The benefits of cloud

As mentioned above, despite the hype, cloud computing isn't that new. Most of our multi-tenanted services, such as web space, hosted exchange e-mail, shared firewall, load balancers and shared storage, can be seen as cloud computing services. What's new today, and causing all the excitement, is the level to which businesses can shift their external facing and internal facing IT off-site, and the core benefits they can get from this, as follows:

### Cost reduction

- There is usually no (or reduced) capital expenditure (CapEx) for the parts of your IT infrastructure hosted on a cloud service
- Operational costs tend to be much lower because maintenance is handled by a third-party and is spread over the total platform. This means an end to hefty server maintenance costs and lower power bills
- Businesses pay for what they use, rather than paying for an under-utilised IT system (there is, on average, a remarkable 90-95% of unused capacity on a single physical server)

### Increased flexibility

- Cloud allows businesses to scale computing requirements up and down readily
- Flexible contracts and payment options are offered
- Less maintenance and administration of IT means the team is freed up to focus on developing an IT strategy that supports the business
- Users can potentially access certain cloud services from anywhere, at any time

### Increased reliability

- Cloud can give a business access to high performance data centres and networks, which equals high availability of computing power
- IT reliability is likely to be enhanced compared to in-house provision because most cloud services are managed by specialised, dedicated staff, with a broad range of skills to run and maintain these type of platforms on a 24x7 basis
- In the instance of a physical hardware failure, the virtual server will not experience downtime. This enhanced hardware resiliency means businesses don't have to 'double up' on servers to limit single points of failure



## The limits of cloud

Like any technology, cloud has its pitfalls and limitations.

The main potential pitfalls are:

- Complete reliance upon the network for access and application performance, which makes it essential to find a cloud provider that has expertise in networking and IT security.
- The remote access nature of cloud means that most businesses will need to spend more on bandwidth and quality of service (QoS) - although this increased expenditure is usually more than offset by resulting cost savings from the revamped IT infrastructure.
- Placing data in a public cloud means that businesses may not be able to vouch for its location, which has security and compliance ramifications, as discussed below.
- Performance is wholly reliant on a third party, which means that a strong service level agreement (SLA) and appropriate monitoring are vital to provide assurances and visibility of performance.
- If/when things go wrong, finding the root cause is a complicated task – underscoring the importance of a qualified cloud provider with experience of both the hosting and networking.
- Measuring ROI on a cloud project and migrating to cloud requires planning and execution by an experienced service provider.
- Another key challenge of moving to cloud is that migration requires a major shift in the focus and remit of the IT team, and therefore a great deal of trust in your IT partner. This is especially so in the case of IaaS, which involves outsourcing parts of a business IT infrastructure that IT managers are often not inclined to let go of. However, the benefits of outsourcing can make for a very compelling argument in terms of cost and innovation.



## What to consider when looking at cloud

### Discover what your IT infrastructure consists of, and what it's doing

**The first step** towards determining if cloud is right for your business is to conduct a thorough assessment of your current IT systems. This stage, like all the stages discussed below, is best done with the help of a qualified service provider that has proven expertise in determining what IT components and functions are suited to cloud provision and which are not, and can execute a migration strategy.

The fact is that some IT applications - such as network file sharing and phone switches - are not always ideally suited to external hosting and management because they require either very high bandwidth or very low latency, or both. Compliance can also make moving some parts of a business' IT infrastructure to public cloud challenging, or even out of the question. For example, the customer database of a financial institution, or an online retailer's credit card transaction processing, are subject to regulations such as the Data Protection Act and PCI DSS. This means that outsourcing these types of applications or functions needs careful consideration.

**The next step** is working out what your servers are doing, what IT resources you have and how are they being exploited. This means looking at things like available memory, CPU capacity and storage usage. The potential savings here are enormous. For example, once virtualisation is deployed, a 70% reduction of the number of physical servers is not exceptional amongst our cloud customers.



## Weigh up current costs vs future benefits

**Compare the current state** with the IT resources you would need to support the business's plans, reduce maintenance costs, improve business process efficiency, and so on. We've found that, in almost all cases, businesses could reduce their IT estate and centralise servers in a third-party data centre and still have ample processing power and storage to realise these kinds of ambitions.

**Determine what your current spend on IT.** This is the next stage and is essential to building a business case for migrating to cloud. Unfortunately this is not always a straightforward process. One reason for this is that it requires a more comprehensive picture of the IT infrastructure that takes into account costs for managing the entire IT estate, such as costs for power consumption by servers, time spent on maintenance, hardware upkeep and refreshing, hardware disposal in accordance with WEEE and data protection regulations, and operating system licencing.

For fifteen servers, for example, the total power cost can be around £6,000-£7,000 per year. However this spend is usually hidden in the Facilities budget; this means the project team will need to work closely with Finance and Facilities, among other areas of the business, to get accurate costs.

## Look beyond the numbers

It's important to note that, as stated above, the benefits of cloud are not limited to cost reduction alone. The assessment stage is also an opportunity to look at improving your business's continuity strategy and disaster recovery plan, as moving to cloud can also make your IT services remotely accessible. Such qualitative benefits should also be considered in the project's business case.



## Optimise your network for cloud

It goes without saying that without a network there is no cloud service, yet the network is often an afterthought in cloud projects. If the network isn't optimised for cloud services, then application performance will be marred and in some cases organisations may have to contend with disruptive downtime.

In general, network optimisation and moving to cloud will almost always involve increasing bandwidth and introducing Quality of Service, and therefore increasing a business' spend on connectivity. This isn't the serious hurdle it once was, however, thanks to huge reductions in the price of connectivity. Overall, the importance of the network to cloud services means that a cloud service provider with equal expertise in networking can help keep costs down and can offer added value to a project.

## Overview: migration as a four-step process

To summarise, the table below gives an overview of the above as a four-step process:

Discover	Analyse	Migrate	Consolidate
<ul style="list-style-type: none"> <li>• Discover what your servers are doing and running</li> <li>• Identify servers and applications that should be accessible off-premise</li> <li>• Identify legacy applications that may not be compatible with modern cloud environments</li> <li>• Determine which applications are suitable for a private vs. public cloud service</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse what CPU time is used on each server</li> <li>• Compile a detailed report on the outcomes of moving to virtualised state</li> <li>• Identify potential issues; e.g. which apps won't work remotely</li> </ul>	<ul style="list-style-type: none"> <li>• Produce a migration strategy</li> <li>• Manage the compatibility of applications to virtual environment</li> <li>• Conduct thorough testing</li> <li>• Monitor performance</li> <li>• Manage any issues that arise</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse results of migration</li> <li>• Consolidate: make process improvements, modify hosting allowances</li> <li>• Decommission surplus hardware</li> </ul>



## Every cloud can have a silver lining

The most important factor for a successful cloud project is having the right service provider, so look for one with good references and proof of managing successful migration projects. An ideal partner would also be vendor agnostic, so that it can take advantage of the best technology in the market. In addition, as stated above, a cloud provider with networking expertise as well will help ensure the network element of the cloud service is optimised.

Lastly, pay special attention to the provider's Service Level Agreement(s) (SLA). It should guarantee things that are meaningful to overall business objectives, not just technical requirements. Cloud has huge potential, but as with any migration project, it needs to demonstrate value against business objectives. After all, cloud isn't a panacea for all IT ills; it is simply a means to help businesses get more of what they need from their IT function.



**For more information :**

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