

# Cloud Computing

A Xicon whitepaper on what the Cloud can do for your business



Hybrid Cloud Solutions  
On Premise Virtualisation &  
Storage Solutions  
Technical Support Services





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## Definitions

Due to the current nebulous nature of Cloud computing there is no one set of definitions that is currently accepted by the general community, therefore this chapter is intended to set out the terms that Xicon will use when describing different components of the Cloud as well as the term Cloud itself.

### *Cloud*

Within IT the general definition of a Cloud is a set of flexible resources that can be accessed over a network, these resources can exist within the confines of a company or be delivered through a third party supplier. The fundamental difference between the Cloud and traditional outsourcing is these resources can be easily migrated between suppliers and scaled up and down quickly as demand dictates.

### *Internal Cloud*

This is defined as resources that are delivered from within the geographical confines of the company. It can be spread over a number of locations but the company's IT department has ownership of the entire process. To meet the definitions of Cloud these resources still have to be fluid enough to scale up and down as the business demands as well as being able to migrate to the other forms of Cloud.

### *External Cloud*

This is defined as resources that are delivered from outside the organisation by third party suppliers. They may be used as the sole supplier of the resources or as an overflow to the resources delivered by the companies own Internal Cloud.

### *Private Cloud*

A Private Cloud is a set of resources that are delivered to company users for the express purpose of delivering business; this would include applications such as ERP, CRM and email. While these applications may be available when remote they are not intended to be accessed by the general public. These Private Clouds may use a combination of Internal and External Cloud resources but viewed as if they were within the network confines of the company.

### *Public Cloud*

The Public Cloud delivers resources direct to the general public; an example of this is Salesforce.com or Google apps. While these could also form a combination of internal and external Clouds they currently tend to be delivered from dedicated resource centres built for the sole purpose of delivering these services. Today, Public Clouds are more often modelled on the application as a service deliverable which is described later. This is likely to change as the Cloud becomes more widely adopted and different options become available.

### *Community Cloud*

This is a relatively new definition that is beginning to emerge to meet some specific objections to running business applications on a shared infrastructure. You will see later in this document the general objections to running services within the Cloud are different for each vertical depending on their compliancy, regulatory and security requirements. This can be mitigated by bringing together like minded organisations on to a single platform to deliver economies of scale while managing the requirements for control and security. Currently the biggest interest in this form of Cloud service is being shown from the public sector due to their high regulatory requirements and the need to minimise cost overhead.

### *Services*

While the term Cloud describes where the IT resources are delivered from, Services describe the different types of resources that can be delivered through the Cloud. It is these different services that give the IT departments the choice, control and granularity not traditionally available through other offerings. There are a number of grey areas on how these services are divided so we will define here how Xicon will approach these services.

#### *Infrastructure as a service*

This service is more closely aligned to traditional hosting companies that offer to host a set of physical hardware on behalf of a customer. This can include some or all of the following: Physical Servers, Networking, Storage and Security. Your requirements may be quite general such as “I require Servers with local storage and a cluster behind a Firewall”, to something very specific including Vendor names and even model types.

#### *Platform as a service*

This is where you are offered a compute platform to build your systems on. It is often based on some sort of virtualisation and can include general offerings like machine templates, internetworking, configuration and storage delivery. Additional options include granular charging, fault tolerance, disaster recovery and capacity on demand.

#### *Software as a service*

This is traditionally offered by external Clouds to host your software systems. You still manage the system and often have full administrative control. An example would be, “I need the supplier to host my Exchange server for 50 users mapping into Outlook”. You have specified the software requirements but the resource delivery is down to the supplier. The supplier can later offer to manage the software that was stipulated by you but this is where Service Level Agreements (SLA) become more complicated.

#### *Application as a service*

Unlike Software as a Service, Application as a Service focuses on the end deliverable and not the software that delivers it. For instance if you require a mail and collaboration application. The supplier offers a set of business deliverables usually through a web based interface and structured on a Service Orientated Architecture (SOA). This will lead to the applications used to deliver the service changing over time but the deliverable remaining constant or improving. SLAs and measurement tend to be complicated but the result can be the most flexible

## **Road to the Cloud**

### *Overview*

People’s current perception of Cloud computing is often mistaken as just another name for IT outsourcing or services such as Application Service Provision (ASP). This misconception is leading to some resistance to the Cloud. The fundamental difference between Cloud computing and IT outsourcing is choice and control. Your company’s IT department has total control on how much of its IT function is managed by your IT staff and how much is managed by the Cloud.

Let’s look at the traditional IT outsourcing approach. The CIO of a company decides to outsource the company’s email and collaboration function. To do this they move their physical servers to the outsource datacentre and hand over the responsibility of running that service to the outsourcer. While the responsibility can be handed over to the service supplier

the accountability for that service cannot be outsourced to that supplier. This leads to large and complicated SLAs which are intended to protect both parties but often end up just being used in expensive well publicised lawsuits. Additionally, during the move the relevant IT staff are often TUPE'd over to the supplier and their expertise is lost forever. All this leads to a difficult if not impossible reversal of the initial process.

Now let's see the difference with Cloud computing. Initially the Cloud could start inside the company's IT department where all the resources are owned and controlled by that department. Over time, using virtualisation, some of those resources could be migrated out to an External Cloud but still managed by the internal IT team. If this is a success more resources could be migrated to the External Cloud supplier. When a new supplier becomes available with say a better pricing structure then services could be easily moved to the new supplier and the company always has the ability to move these services back in house if it wishes. This leads to the company having the choice of where to run their services but more importantly the control to manage how it is done.

### *Current situation*

Currently many companies have a combination of both physical as well as virtual servers in their environment, with only a fraction of the server real estate at present virtualised. This is set to increase over coming years which will make migrating to External Cloud infrastructure a real possibility. This only exploits the platform as a service portion of the Cloud but this is where the biggest returns will initially be seen.

A number of hosting companies, including Xicon, are now offering Cloud services around a virtualised platform and the initial drivers for companies moving to the Cloud will be to reduce capital expenditure on new projects as well as budgetary constraints on replacing ageing hardware

### *Migrating to the Cloud*

Depending on the Cloud service you are intending to use i.e. Platform, Software, or Application, will determine the migration path you will use. This document focuses on the Platform as a Service migration path.

Platform as a service relies heavily on virtualisation technologies such as VMware and Hyper-V to deliver the flexibility required to be thought of as a Cloud service. It is also one of the main drivers behind the current Cloud initiative. It is then reasonable to propose that most Clouds are currently internal and are also still in a transition phase between the physical and the virtual. When the majority of companies have virtualised internally we will start to see the blurring of internal and external Clouds to produce a private Cloud that is driven by business requirements and not IT availability.

### *Initial benefits of the Cloud*

Internal virtualised Clouds benefit from the ability to adjust the physical resources that support the virtualised platform to meet the business ebb and flow on an hour by hour basis. If the business can be supported on 50% of the customer's hardware then the other 50% can be closed down to save power and cooling and thus reduce running costs. During times of increased activity more hardware can be switched on to meet the business demands. In addition the abstraction between hardware and applications inherent in virtualisation gives the benefit of being able to upgrade, change or even lease the hardware without affecting the applications that run on it. This gives rise to new ways of controlling capital expenditure and even start the move to an operational expenditure model.

Current Cloud suppliers, including Xicon have identified that if company only require a percentage of their resources at peak times then to offer that capacity on a "per use" basis would remove the CapEx of that additional resource. In addition the company benefits from considerably more capacity than would ordinarily be available within its internal Cloud should they need it.



If this hybrid approach works for the customer then to migrate their Private Cloud entirely to an External Cloud model is a relatively simple matter. This removes the CapEx from the customer's books and moves them over to a flexible OpEx model.

*Objections and challenges to the Cloud*

There are a wide variety of objections to the Cloud which are stifling its mainstream adoption at this stage. Below are a some of the key ones which come up time and time again.

- Data ownership and location
- Security and risk mitigation
- Compliance
- Cloud awareness and misunderstanding
- Legal and political objections
- Networking costs for connecting to the Cloud

There is no doubt that some verticals will have more obstacles to clear than others however it is expected that at time passes the commercial and practical pressures and the abundance of providers will ensure an accelerated adoption through 2011-2012.

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