

CLOUD COMPUTING AND CHARTERED ACCOUNTANTS

INTRODUCTION

Cloud computing which was the earlier jargon of technical persons now has become a common word. It affects people over diverse segments and hence has also become relevant to finance professionals.

Cloud computing actually is a metaphor for something very complicated. The “cloud” is used to denote an abstraction of complex entity in communication system diagrams. In a restricted sense, Cloud computing may be interpreted as **outsourcing of complicated information system functions**. Though we use this technology almost very frequently we do not have an idea that it is called cloud computing. If you have an email account, you are unconsciously using Cloud computing. Though not all email services are Cloud based but Gmail, Yahoo and Hotmail run on cloud computing.



WHY TO USE CLOUD COMPUTING?

When say a company has to maintain a website, obviously for that it has to maintain servers and other infrastructure. When the users/clients of the company increase, the organization should add capacity. Otherwise, users will feel unsatisfied. Thereby, the company could risk the relations with customers. As a result, the company also has to use up office space, deploy many servers, and maintain redundant infrastructure or do other related non-revenue generating tasks. All these are bound to affect the bottom line of the company. Cloud computing presents a solution to the problem. Simply put your website in the cloud and pay a fixed monthly charge, the rest will be taken care of by the cloud service provider.

The this technology is based on a simple logic **“If you want milk, will you buy a buffalo?”**

Let us contemplate another common usage Cloud Computing - Gmail. To access our Gmail account do we maintain servers or ensure that the servers are regularly updated or provide

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adequate backup & redundant infrastructure? The answer is a plain NO. All those are taken care of by Google Inc's team of capable staff; we simply enjoy free & the best email service.

To elucidate cloud computing using a simple example; Using traditional licensed software is like buying a Premium Sedan for a fancy price, you get the car along with a warranty plus other bells and whistles. However it involves paying cash upfront which could disturb short term solvency. Nevertheless, you can also lease a sedan. It has a fixed monthly charge but we need to undergo maintenance expenses. We cannot even modify the sedan as we like. On the contrary, Cloud computing is like having a metered Cab at your disposal. We need not care about the maintenance or any other associated costs. More better we can vary the distance travelled without having to worry about the cost. It is even economical because "You Pay as you go"

CLOUD COMPUTING DEFINED:

Cloud computing simply is the provision of **scalable IT services over a network** (commonly internet) to many external customers.

Cloud computing is not an architecture like Client Server or Peer to Peer. It is a ***style of computing***. It is supported by many architectures, platforms and infrastructures.

KEY FEATURES OF CLOUD COMPUTING

Businesses are often subject to complicated business computing needs. Here is how Cloud Computing can counter many of those problems:

1. **DYNAMISM:** A business operates in a dynamic environment. The IT needs of business keeps on changing. For example during the peak hours we need more servers to cater seamless service. On the other hand during recession/less demand we need to get rid of extra servers. The cloud service can be altered to suit the nature and size of the demand for the concern. We can upscale and downscale based on real time demand **INSTANTLY**. Just inform it to the service provider and it will be configured as per our fluctuating demand.
2. **PLATFORM DEPENDENCE:** Generally, traditional software or apps of a business run based on the platform i.e. Hardware architecture and software framework. The platform may not always be available. Cloud computing is Platform Independent. It can be run virtually on any system with a broadband connection. This happens due to concept of **Virtualization** - the **engine that powers cloud computing**. In Virtualization we **adapt applications to run as virtualized images on a remote server**. It involves packing the

app with everything that is needed to run like middleware, database, OS etc. This will make infrastructure and apps independent. Then the apps will run virtually anywhere.

3. **COMPLEX USER INTERFACE:** Most of softwares have a complicated and hostile user interface. This abstains non-technical persons from interacting with software. In Cloud Computing, the end user interface is very simplified. This can be attributed to concept of **Abstraction**. The Company does not need to worry about the OS or plugins or updates or patches or any security issues. All these chores are taken care by the service provider.
4. **UNDERUTILIZED DEDICATED SERVERS:** Usually companies host on a dedicated server. These servers are often underutilized. Consequently, the company has to incur a lot of standing losses. On the contrary, cloud hosting does not have such demerits. Due to application of **Multi Tenancy**, “**One server can run many apps and One app can be run on many servers.**” As a result there will be optimum capacity utilization. Furthermore by following proper **Resource Sharing**, there will not be any capacity underutilization

TYPES OF CLOUD SERVICE MODELS: These can mainly be divided into 3 stacks/fundamental models:

1. **Infrastructure as a Service (IaaS):** This is the most basic service model of cloud computing. In simple words, an organization outsources the equipment utilized for support operations. The cloud provider accepts responsibility of housing, running and maintaining the data center. To deploy their applications, cloud users then install operating system images on the machines as well as their application software. In this model, it is the cloud user who is responsible for patching and maintaining the operating systems and application software. Typically bill for IaaS services is on a utility computing basis, that is, based on the amount of resources allocated and consumed. IaaS does not refer to a machine, it is a facility provided for business to leverage the idle capacity of data centers.

Let us try to understand **Amazon EC2 (Elastic Compute Cloud)** which is a popular IaaS. On Amazon EC2 the app will be run on virtual machines of our configuration. We can configure the CPU speed, memory, storage and other apps. All the network equipment (routers, firewall, servers, and load balancers) will be maintained by Amazon Inc. The users have to pay for the service on a need basis.

2. **Platform as a Service (PaaS):** In this model cloud provider offers a computing platform, web server and a programming language execution environment. Here organization rents virtualized servers and associated systems to test the developed apps or develop new apps.

The cloud provider provides the required platform. We even do not need to install any software we can consume it through our browser.

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It has 2 layers:

- **Cloud OS** (Ex: Windows Azure)
- **Cloud Middleware** (Ex: Orange Scape)

This is very useful as we need not invest billions of our wealth to get the development software and hardware layers ready for our team of developers.

3. **Software as a Service (SaaS):** SaaS has become a favourite delivery mode to deliver business apps. SaaS is a software distribution model where apps are hosted by vendors or cloud provider and accessed over the network (internet). So cloud users need not install and run applications on the clients own systems. The main feature which is an advantage is Scalability. When there are more users, virtual systems are added to balance the load. When there is minimal usage, the virtual machines are removed and the bill is reduced correspondingly.

CRM, MIS, ERP, HRM and similar business software are run on SaaS model.

A Real life example is **Google Apps**; it is a service which offers independently customizable versions of several Google products under a custom domain name (Like www.malhotrafamily.com). The services include office functionality products including **Gmail, Google Groups, Google Calendar, Talk, Docs and Sites**. It is free (up to 10 members) and thereafter only fees of US\$ 50 per year or US\$ 5 per month are payable. With such a minimum fees the companies need not buy any other software, it just needs to login to Google Apps and utilize all the services available without any CAPEX or other hassles.

BENEFITS OF USING THE CLOUD:

1. **HIGH COST SAVING:** Cloud computing is a very cost efficient method to reap benefits of technology without much inconvenience. It results into lower cash outflow for the company. To enjoy the advantages of technology the company need not maintain much of sophisticated equipment. All the capital expenditure that goes into these servers and other network equipment can be saved and applied in other activities. Even if we buy the servers we need to maintain a large technical team to maintain and run them .Cloud Computing just gets rid of all these headaches. The company just needs to pay a predictable fixed monthly subscription and everything else is taken care of by the cloud provider. These systems and servers are the cloud provider's property so we need not worry about them. It reduces the implementation charges significantly.
2. **INSTANT SCALABILITY:** Normally when we maintain a website on our dedicated server, we need to maintain server properly. Meanwhile, the business has become popular.

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Hence there are more clients for our website. Now to maintain the website, we need to buy more servers (called load balancing) to meet the demand of the customers. But after we bought the servers suddenly if demand diminishes, all the expenditure and investment on the additional servers is wasted. In cloud computing the service is “On Demand” basis. We can scale up and down instantly with relative ease. Unlike the traditional system, Up scaling/Downscaling does not involve incurring huge losses.

3. **LOCATION INDEPENDENT:** The users can be located anywhere and connect to the cloud easily over the internet. Hence the cloud can be accessed on the go. There are no special requirements as cloud is on a common infrastructure.
4. **EASY IMPLEMENTATION AND MAINTAINENCE:** As opposed to ERP implementation, Cloud computing can be implemented effortlessly. The company also does not need to go through non-value adding maintenance activity.

MAJOR CONCERNS

1. **SECURITY:** Security is a major concern in cloud computing. This arises from the uneasiness of public and private enterprises having their security managed by external organizations. The concerns need to select very reliable service providers to manage their data. It is highly likely that criminals will find more ways to exploit vulnerabilities in the system.
2. **PRIVACY:** Most organizations are apprehensive about trusting their data with third parties. The service provider at any time access to the data contained in the cloud. They could intentionally or accidentally delete or alter the data contained on cloud.
3. **ABUSE OF TECHNOLOGY:** Even privately purchased cloud services can be used to conduct illegal activities. In 2009 a banking Trojan used Amazon as a command channel and gave malicious updates to other PCs.

Other issues include a malicious insider, one-sided agreements, data consolidation, recovery, legal issues, outages and Support for Technical glitches.

Cloud computing has its share of pros and cons. If the IT companies invest heavily in risk assessment and other safety protocol, cloud computing could be more reliable and private.

OPPORTUNITIES FOR CHARTERED ACCOUNTANTS:

Cloud computing brings a plethora of opportunities for CAs in this field. However a CA should be armed with commendable grip on the subject of Information Systems to undertake such assignments. Mostly a CA is required for financial consultancy. Organizations form a team of experts which comprises of many experts from IT area and also a CA to act as financial advisor. Specifically, the opportunities for CAs are:

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1. Cost benefit Analysis whether to implement cloud computing or not
2. Interpretation of Tax implications (Direct/Indirect Tax) for cloud service providers involving international tax laws
3. Conducting systems audit of cloud service providers
4. Management consultancy and assistance to management in:
 - a. The process of conversion from traditional computing systems to cloud based
 - b. Training employees regarding the operation of systems under the cloud based system

HOW CAs CAN BENEFIT FROM USE CLOUD COMPUTING:

CAs can even consume the services of cloud computing and move towards paperless offices. Certainly a careful assessment regarding reliability and security of client's data with a third party should be conducted. Implementing cloud computing enables efficient client service and a reduction in overheads. Thereby leading to more profit with a reduced workload. Many Small and Medium Practitioners (SMP) will certainly adopt this pragmatic approach.

CONCLUSION:

Many of Tech Giants specifically **Google, IBM, Microsoft, Yahoo, and Amazon** have entered into the cloud computing market. Certainly cloud computing will be the next big thing in Information Technology (IT) sector. Due to the superiority of cloud computing, many companies will consider its implementation. That would create ample work opportunities not only for technical personnel but also Finance professionals like us. Hence it becomes imperative for Chartered Accountants and students at least to comprehend what cloud computing means. Embracing bigger opportunities in this field, demands rich domain knowledge and other computer skills.