International Academy of Science,
Engineering and Technology
Connecting Researchers; Nurturing Innovations
IASET

# CLOUD COMPUTING AND ITS ROLE IN BUSINESS

*Sameer Narang[1] & Satinder Kumar[2]*

*[1]Research Scholar, NIILM University, Kaithal, Haryana, India*

*[2]Assistant Professor, School of Management Studies, Punjabi University, Punjab, India*

## ABSTRACT

*Cloud computing is defined as the approach of computing where extremely scalable IT-related capabilities are delivered "as a service", using Internet technologies to many customers. There are many definitions of cloud computing, few of which are quoted in this study, but the basic concept remains the same. There are essential characteristics of Cloud Computing, which are mentioned in this study. Cloud Computing is based on technologies, and there are four deployment models in it and architectural layers that are also known as service models. The research paper gives an idea to the readers/audience about basics of Cloud Computing, its application in business and future of Cloud Computing in business and other areas. Further, the advantages and disadvantages of cloud computing have been brought forward. In my viewpoint, I would like to state that, it depends on the organization/individual, how well it makes use of cloud computing so that he/she/organization can take maximum benefit from its advantages while simultaneously delicately handling the risks involved.The nature of this study is qualitative, and the author recommends there are many possible directions of research in cloud computing, which can be helpful for the development of society and the world.*

**KEYWORDS:** *Cloud Computing, Research, Study*

## INTRODUCTION

In 1960s, an "intergalactic computer network" was suggested first by Arif Mohamed, which became Cloud Computing, and in recent years this technology has served to shake up both the Supplier landscape and enterprise IT.

In cloud computing, the word "cloud" is practical as a simile for "the Internet", so the phrase cloud computing implies a sort of Internet-based computing, where diverse services —application, storage and servers — are delivered to an organization's devices and systems through internet.

It is defined as the approach of computing, where extremely scalable IT-related capabilities are delivered "as a service" using Internet technologies to many customers.

Also, Accenture defines Cloud Computing as the dynamic provisioning of IT capabilities, hardware, software and services.

Cloud computing is an application-based software infrastructure that stores data on remote serves, which can be accessed through the internet. The front end enables a user to access data stored in the cloud using an internet browser or cloud computing software.

It is also defined as the utilization of software & hardware to transport a service over a network (classically the Internet). With cloud computing, users can access applications from any system that can access the Internet. An example of a Cloud Computing bringer is Google's Gmail.

It is a type of calculating, that depends on shared calculating resources rather than having or personal devices or local servers to deal with the applications. The services are provided and consumed over the Internet and are paid for by the cloud customer on a pay-per-use or as-needed business model.

It permits businesses and consumers to consume applications, without installation and access their personal files at any system with internet access. Cloud-based services are perfect for businesses that require continous network connectivity and bandwidth.

### Technologies Constituting Cloud Computing

Cloud Computing is a hypothesis that is made up of several stratum of services. These comprise services akin to Storage as a Service, Infrastructure as a Service, Software as a Service and Platform as a Service. Diverse Cloud vendors have developed an assortment of access models to these services. The admittance to these Services are based on standard Internet Protocols in the vein of SOAP, HTTP, XML,REST and the infrastructure lies on extensively used technologies akin to hosting and Virtualization. Cloud Computing is the maturation and coming together of numerous former computing concepts like ASP,Grid Computing,Server Hosting, Virtualization and Utility Computing.

### The Essential Characteristics of Cloud Computing

### ON-Demand Self Service

The punter can provision calculating capabilities, for example network storage & server time, as obligatory automatically without needing human interface with each service's vendor.

### Broad Network Access

Capabilities are obtainable over the network and accessed through standard mechanisms that endorse consumption by client platforms (e.g., PDAs, laptops, and mobile phones).

### Pooling of Resources

The vendor's calculating resources are pooled to address many consumers via a multi-tenant model, with poles apart virtual and physical resources dynamically allocated and reallocated as per consumer demand. A nous of location independence exists because, the customer commonly has no control over or knowledge of the delivered resources' accurate location but may be capable of specifying location at a elevated level of abstraction (e.g. data center,state and country). Examples of resources are memory, storage, processing, virtual machines and network bandwidth.

### Rapid Elasticity

Capabilities can be elastically and swiftly provisioned, in some cases automatically, to promptly scale out and speedily released to hurriedly scale in. To the consumer, the capabilities on hand for provisioning time and again appear boundless and can be bought in any magnitude at any time.

## Measured Service

Cloud systems robotically optimize resource and control use by leveraging a metering competence apt to the form of service (e.g. processing, storage, bandwidth, and full of zip user accounts). The consumer and vendor can control, monitor and report resource consumption, thus delivering transparency of the consumed service.

## The Deployment Models of Cloud Computing

There are four deployment models of cloud computing for users. They are

- Private Cloud
- Community Cloud
- Public Cloud
- Hybrid Cloud

## Private Cloud

The cloud infrastructure is dedicated solely for a company. It may be managed by the third party or the organization and may subsist on same campus as the company or off premise.

## Community Cloud

The cloud infrastructure is pooled by numerous organizations and helps a particular community that has joint concerns (e.g., security requirements, mission, policy, and compliance requirements). It may be managed by a third party or the organizations and may be present on premise or off campus.

## Public Cloud

The cloud infrastructure is offered to the general public or a big industry group and is owned by a party selling cloud services.

## Hybrid Cloud

The cloud infrastructure is a composed of two or more clouds (private, public, or community) that remain matchless entities but are bound together by proprietary or standardized technology that enables application and data portability (e.g., cloud convulsive for load balancing between clouds).

## The Architectural Services Layers/Service Models of Cloud Computing

While the first revolution of the Internet saw the n-tier (or three-tier) model emerge as a common architecture, the usage of virtualization in clouds has shaped a new set of layers: services, applications and infrastructure. These layers don't just incorporate on-demand resources; they also characterize a new application development model. And within each layer of construct, there are heap of business opportunities for defining services that can be provided on a pay-per-use basis.

## Software as a Service (SaaS)

SaaS is at the topmost layer and characteristics, an inclusive application provided as a service on-demand, via multi-tenancy — implication a single instance of the software runs on the vendor's infrastructure and addresses manifold clients. The most far and wide known example of SaaS is Salesforce.com, but there are now countless others, including the Google Apps offering of fundamental business services for instance e-mail. Of course, Salesforce.com's multitenant application

has preceded the description of cloud computing by a small amount of years. On the other hand, reminiscent of scores of other players in cloud computing, Salesforce.com now operates at supplementary than one cloud layer with its release of Force.com, platform as a service or a companion application development environment,

## Platform as a Service (PaaS)

The central layer, or PaaS, is the incorporation of a development surroundings construct and the wrapping of a payload of services. The archetypal payload is a Xen image (component of AWS) containing a fundamental Web stack (for example a Web server, a Linux distro and a coding environment for instance Ruby or Pearl).PaaS offerings can deliver for every period of software development & testing, or they can be focused around a particular field, such as content management. Business examples include Google App Engine, which addresses applications on Google's infrastructure. PaaS services such as these can offer a enormous deal of flexibility but may be inhibited by the capabilities that are available through the vendor.

## Infrastructure as a Service (IaaS)

IaaS is at the most minuscule layer, and is a way of providing indispensable compute and storage capabilities as standardized services over the network. Storage systems, servers, routers, switches and other systems are pooled (through virtualization technology, for instance) to deal with explicit types of workloads — from batch processing to storage/server escalation during peak loads. The best-known business example is AWS, whose S3 and EC2 services put forward bare-bones storage and compute services. Another instance is Joyent, whose key product is a streak of virtualized servers, which offer an exceedingly scalable on-demand infrastructure for operation of Web sites, inclusive of rich Web applications written in PHP, Ruby on Rails, Java and Python.

## OBJECTIVES OF STUDY

- The First objective of the study is to throw light on origin, basic meaning, various definitions and the technologies that constitute Cloud Computing.
- The Second objective of the study is to know more about Essential Characteristics,
- Four deployments models and architectural service layers of Cloud computing.
- The Third objective of the study is to give the audience an idea about the Cloud Application in Business, and further the Advantages of the Cloud Computing and Suggesting a direction for future research in same.

## METHODOLOGY OF STUDY

- The methodology of the research work is derived from the systematic and theoretical analysis of the methods to evaluate correct specific method for application. It constitutes qualitative techniques.
- This study is Qualitative in nature, and is conducted based on the data collected from secondary sources of information such as published reports, journal articles, newspapers and magazines.

## Cloud Computing and Business

In today's economic milieu, as organizations strive to counterbalance and optimize their Information Technology budgets, Cloud computing can be a triumphant strategy to condense the Information Technology operations and management costs and release vital resources and budget for discretionary novel projects.

Classically, organizations have an 80/20 shred in the midst of usual in progress Information Technology operations outflow, which includes software licensing costs, hardware, data center continuance, improvement etc Vs new-fangled outlay for solving crucial commerce requirements, which is decisive for businesses to endure in these testing times. Cloud Computing can have a momentous impact in this, by plummeting the pawmarks of IT operations by drawing out the upfront funds indispensable for software licensing and hardware. It enables a Use what you Need and Pay for what you Use, price tag model. This will assist businesses to endow on ground-breaking solutions that will lend a hand tackle key customer challenges rather than nerve-racking about running details. There is one fad that industry cream of the crop and analysts settle on; Cloud Computing is previously transformative occurrence, and will show the way the technology trends in the market.

As per IDC, outlay on Cloud Services is expected to nurture over many more times than that of time-honoured internal Information Technology. Despite the fact that Information Technology budgets are being slashed, organizations cannot have adequate funds to stop investing in Information Technology, because Information Technology is what aids them accomplish and retain a bloodthirsty gain. The Cloud offerings will rally round organizations to prolong to empower in IT, devoid of having to take up colossal budget and protracted term IT projects. Investment in IT modifications from being a Capital expenses to Operating expenses. Organizations can become nimble and yoke the power of Information Technology to steer unparalleled punter worth.

## ROI of Cloud Computing

The majority analysts have anticipated that cloud computing can bring cost reserves by outsourcing IT operations – many times cheaper than internal data centers & hosted applications. Experts in cloud computing area have come-up with that enterprises fritter a shocking 8 dollars out of every 10 dollars in their Information Technology budgets on sustaining alive systems, rather than on pioneering new-fangled technologies. Topical estimates are that for each 1 dollar enterprises splurge on Systems in the organizations, a supplementary 8 dollar is pre-requisite for administration, upgrades and continuance. Fundamentally on sketchy substantiation from enterprises, the Return on Investment of cloud computing initiatives – from cloud email and storage to SaaS applications – can be noteworthy. Certainly, overheads nest egg have been established both from consuming hosted applications and from less call for in-house IT staffing and resources. An enterprise's cloud computing approach should thus definitely not be an "all or nothing" ploy, with an abrupt "we're in" or "we're staying out of it" judgment. As an alternative, a cloud plan should look to generate "an assortment of cloud resources," combining private, public and hybrid cloud components with the enterprise's legacy systems and assets. Millar Laurence, the ex- Chief Information Officer of the NZ Govt, stated that the outlay Vs control trade-off of public versus private clouds in a wise mode, commenting: "A private cloud is very fine, and at the tick it is likely value paying a price first-class for the control & security that it purportedly offers. Although, it is jeopardy versus price equation, a private cloud will gash the pay out of calculating by 50 percent. Nevertheless, the public cloud will reduce by half that price again". Loads of observers think that what will come into sight are hybrid models, whereby enterprises will coalesce using their own private domestic clouds for operating their task-crucial operations & hosting thin-skinned data with and public clouds for regular work, storage and operations. The key will be to build up decision set of laws to agree on which data & applications should remain internal and which are probable candidates for the cloud. Ultimately, some squabble that the most considerable cost of not changing to bigger consumption of cloud computing is in the time and notice of senior IT and enterprise leadership. "Every infinitesimal worn out on evaluating a Request for Proposal for purchasing a supplementary tranche of servers is a miniature, not staunch to how to consume Information Technology for spirited

commerce lead". "Yet, one test in front of execution of cloud is the plain truth, that as enterprises opt to budge few of their applications and data to the cloud, to some extent than on the trot, a 100 per cent domestic Information Technology operation. This will call for the development of another management front – and supplementary training, time & managerial interest – to overseeing cloud operations.

## Significance of Cloud Computing

- **Flexibility**–There is the ability to update hardware and software quickly to adhere to customer demands and updates in technology.

- **Cost Savings**–There is a reduction of capital expenditures on managing and maintaining the servers, equipments and cost of IT personnel and time to market the applications developed in cloud is decreased and thus the costs.

- **Location & Hardware Independence** – Users can access application from a web browser connected anywhere on the internet.

- **Multi-Tenancy** – Resources and cost are shared among many users, allowing overall cost reduction.

- **Reliability** – Many cloud providers replicate their server environments in multiply data centers around the globe, which accounts for 24*7 business continuity and disaster recovery. In case there are hardware failures, then they do not consequence in loss of data because of backups available on the network.

- **Scalability** – Multiply resources load balance peak load capacity and utilization across multiply hardware platforms in different locations

- **Security** – Centralization of sensitive data improves security by removing data from the users' computers. Cloud vendors; moreover have the personnel resources to sustain all the up-to-the-minute security characteristics to help shield data.

- **Maintenance** – Centralized applications are much easier to maintain than their distributed counter parts. All modifications & updations are made in one centralized server in place of on apiece user's system.

- **Its Greener**

- **Business Agility**

- **Enhanced Collaboration**

## CONCLUSIONS AND FUTURE SCOPE

This research introduces Cloud Computing and technologies that constitute Cloud Computing. Then it discusses essential characteristics, deployment models and architectural service layers of cloud computing. Further, the research paper gives an idea about the application of Cloud Computing in business. This research paper is theoretical in nature and data was collected from secondary sources such as Thesis, research papers, magazines, reports etc. The research concludes that Cloud Computing has definitely revolutionized how digital technologies are applied these days across the Globe in various application areas which include business, government projects like e-governance.Cloud-computing technologies are proliferating across various sectors, such as energy and power, oil and gas, buildings and construction, transport, communication, etc. There are advantages as well as disadvantages of Cloud Computing mentioned in this study. In my viewpoint, I would like to state that it depends on the organization/individual, how well it makes use of cloud computing so that he/she/organization can take maximum benefit from its advantages, while simultaneously delicately handling the risks involved. The research approach followed in this research paper is qualitative. Further scope of research is also there, where the theoretical framework can be proposed and tested by statistical tools and techniques.

## REFERENCES

1. *Soleimanian, F. & Hashemi, S. (2012).Security Challenges in Cloud Computing with More Emphasis on Trust and Privacy. International Journal of Scientific & Technology Research. 1(6), 49-54.*

2. *Qaisar, S. & Khawaja, K.F.(2012).Cloud Computing: Network/Security Threats And Countermeasures. Interdisciplinary journal of con-temporary research in business.*

3. *Safari, H. (2003).Iran's Ministry of Commerce EGovernment Maturity Model Quarterly Journal of Knowledge Management. No. 63, 53-78.*

4. *Tripathi, A.& Parihar, B.(2011).E-governance challenges and cloud benefit.VSRD International Journal of CS & IT. 1 (1), 29-35.*