Application of Cloud Computing Models in Education

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ABSTRACT

The cloud computing is a rapidly developing technology, which has brought significant changes and opportunities to various sectors in India. It is a pervasive computing paradigm that has revolutionized how Information Technology infrastructure and services can be delivered. There is a growing interest around the utilization of cloud computing in the education sector. Education plays an essential role in maintaining the economic growth of a country. Now a days the classroom teaching is changing and students are becoming more technology oriented in his changing environment, it’s critical that we think about the latest technologies to incorporate in the teaching and learning process. The survey identifies and analyses the advantages and dangers that the use of cloud computing may have for the main stakeholders in education.

KEYWORDS: Cloud Computing, Software as a service (SaaS), Platform as a service (PaaS), and Infrastructure as a service (IaaS)

1. INTRODUCTION

Cloud computing is an information technology (IT) paradigm, a model for enabling ubiquitous access to common pools of configurable resources (such as computer networks, servers, storage, applications and Services) which can be rapidly provisioned with minimal management effort, often over the Internet. Cloud computing allows users and enterprises with various computing capabilities to store and process data either in a privately-owned cloud, or on a third-party server posted in a data center - thus making data-accessing mechanisms more efficient and reliable[1]. Cloud computing relies on sharing of resources to achieve coherence and economy of scale, similar to a utility. Advocates note that cloud computing grants companies to avoid or minimize up-front IT infrastructure costs. As well, third-party clouds enable organizations to focus on their core businesses instead of expending resources on computer infrastructure and maintenance. Proponents also claim that cloud computing allows enterprises to get their applications up and running faster, with upgraded accordance and less maintenance, and that it enables IT teams to more rapidly adjust resources to meet fluctuating and unpredictable business demand. Cloud providers typically use a “pay-as-you-go” model. This could lead to unexpectedly high charges if chiefs are not coached with cloud-pricing models. The access of using a network of remote servers hosted on the Internet to store, Manage, and action data, rather than a local server or a personal computer.

PUBLIC CLOUD MODEL

The Public Cloud Model takes systems and services to be easily available to the general public[2]. A public cloud is one placed on the standard cloud computing model, in which a service provider makes resources, such as usage and storage, available to the general public over the Internet.

PRIVATE CLOUD MODEL

The Private Cloud Model accepts systems and services to be accessible within an grouping[3]. Private cloud is characterized by flexibility, flexibility that is achieved by on-demand self-service, ability pooling and a measured service.

HYBRID CLOUD MODEL

The Hybrid Cloud model is a mix of public and private cloud. Non critical activities are acted using public cloud while the analytical activities are acted using private cloud.

CHARACTERISTICS

- On request self-administration - A purchaser can singularly arrangement figuring capacities, for example, server time and system stockpiling, as required naturally without requiring human communication with each specialist co-op.
- Broad system get to - Abilities are open over the system and accessed through standard instruments that advance use by heterogeneous flimsy or thick customer stages.
Resource pooling - The suppliers figuring resources are pooled to serve various buyers utilizing a multi-occupant model, with various physical and virtual resources powerfully allotted and reassigned by shopper request.

Rapid versatility - Capacities can be flexibly provisioned and discharged, now and again as needs be, proportional quickly outward and internal equivalent with demand[5]. To the buyer, the capacities material for provisioning regularly give off an impression of being boundless and can be appropriated in any amount whenever.

Measured administration - Cloud frameworks as needs be control and streamline asset use by utilizing and metering capacity at some degree of deliberation fitting to the kind of administration.

**MAJOR SERVICE PROVIDER**
- Google 101 network
- Microsoft Azure
- Amazon’s Elastic compute cloud Amazon EC2
- IBM’s Cloud Burst

**2. CLOUD COMPUTING IN EDUCATION**

One of the biggest tests that the government faces in providing education is the lack of infrastructure and if accessible, then maintenance of that infrastructure and other issues are procuring and maintaining a wide range of hardware and software [4]. A result to all this issue can be cloud computing. It’s a set-up of computing resources-located just about anywhere-that can be shared.

**ROLE OF CLOUD IN EDUCATION**
The administrator, teacher, student or the parent, now have a great time to examine how cloud based application can use students and institute or university.

**DATA ANALYSIS AND INTERPRETATION**
The data poised for this research were from both primary and secondary sources. The primary expert data were collected using questionnaires, while the secondary source data were gathered from academic journals, publications, the Internet and literature based on cloud computing.

**IMPLEMENTING CLOUD COMPUTING IN EDUCATION SYSTEM**
To device the Cloud on the education we first build the system to create the cloud and upload the documents, files, images, videos on the cloud. Then we can access it from all over. In schools and colleges, students can prepare their own documents and share it with the others.

**BENEFITS**

**Easy access:** Lesson plans, labs, grades, notes, PowerPoint slides – just about anything digital that we use in teaching is quickly uploaded and accessed anytime. Stability: Cloud Computing is now to the point of being a very stable technology that we can rely on.

**Reliability:** With a handled service platform, cloud computing is much more reliable and consistent.

**Manageability:** Cloud Computing provides enhanced and simplified management and maintenance capabilities.

**PRESENT EDUCATION SYSTEM**

Most of the private educational institutions have become highly dependent on message technology to service their requirements. These services are increasingly provided using Internet technologies to faculty and students and accessed from web browsers. The services are offered cheaply or freely to education, often with much higher availability than can be provided by the educational institution[7]. But in most of the government schools and colleges in India IT Plays limited role. Most of the work is done manually form attendance to classroom teaching to examination system.

**SECURITY ISSUES**

Cloud computing is are saving our important and central data in one place and it will be easy for hack. Conservation of data is a major security issue. Educational organization may consider that their data is more protected if it is hosted within the institution. Transferring data to a third party for hosting in a remote data center, not under the control of the institution and the location of which may not be known presents a risk[6]. Another Security issue is Unsolicited advertising in which aloud providers will target users with unsolicited email or advertising.

**SERVICES AVAILABLE TO EDUCATIONAL INSTITUTIONS**

Driving cloud laborers have perceived the significance of altering their registering administrations explicitly to the necessities of instructive establishments. The absolute most comprehensively utilized instructive stage is booked underneath:
- Microsoft Training
- Google Applications for Training
- Amazon Web Administrations for Instruction (AWS)

**CLOUD COMPUTING IN ELEVATED EDUCATION IN THE THIRD GLOBE COUNTRIES**

In most evolving countries, few children graduate from secondary school and many do not even come to an end prime school. In Ghana, for example, only 50 percent of children who are ranked 5, and of those, fewer than half can
understand a simple paragraph. The biggest threat to
universal education is quite simply a lack of funding[8]. Many
of the teachers in third globe countries are Volunteers. surely,
they are great assets and a massive need in third world
countries. There are a variety of educational and technical
harm’s in the least residential countries, especially in Sudan
that occurred in earlier years, to clarify and highlight:

- Weakness of government funding for the education sector
- The lack of infrastructure and buildings suitable for higher education
- Migrations teaching staff
- Lack of educational materials

THE CLOUD COMPUTING TECHNOLOGY (CCT) SERVICE MODELS

Cloud Computing knowledge services are generally regard as
falling into three separate categories, Infrastructure as a Service (IaaS)- The ITinfrastructures like processing storage,
networks and other fundamental computing resources can be
used by the clients as a service, In order to integrate/crumble
physical resources IaaS uses Virtualization extensively.
Platform as a Service (PaaS)- To develop cloud services and
applications PaaS provides an improvement platform
supporting the full-Software lifecycle[9]. PaaS requires
programming surroundings, tools, configuration
management etc., to support the application hosting
environment and Software as a Service (SaaS)- The software
will be willing to move most of their services to the cloud.

The lack of infrastructure and buildings suitable for
education and teaching staff is such a problem in most
countries. There are a variety of educational and technical
countries. There are a variety of educational and technical
organizations. These organizations have always been
interested in software and infrastructure issues and
research papers in this field. However, they need to be
very careful because the cost of software and infrastructure
is not affordable for them.

CLOUD COMPUTING TECHNOLOGY FOR ICT (CCT4ICT)
MODEL IN EDUCATIONAL SYSTEM

Most instructive foundations had turned out to be
exceptionally reliant on data and correspondence innovation
devices to give arrangements and furthermore
administration their necessities. These administrations and
arrangements are logically incase utilizing Internet providers
software and infrastructure issues and
to both instructing non-showing staff and understudies and
got to utilizing Internet browsers. The administrations are
exhibited not efficiently or not uninhibitedly to training,
regularly with the greater part of these instructive
organizations spend a ton on the different assets so as to give
quality administrations to their clients. All the primary clients
of the organization are associated with the CCT. Separate
logins are accommodated every one of the clients for their
individual work.

IMPORTANCE OF CCT4ICT MODEL FOR THE TEACHING AND LEARNING OF ICT

- Independent Learning style
- No extra infrastructure
- No more expensive textbooks and Infrastructure
- No more outdated learning materials
- No more outdated learning materials

ISSUES IN THE USAGE OF THE CCT4ICT MODEL

CCT difficulties have consistently been there. Organizations
and foundations are bit by bit mindful of the business esteem
that CCT brings and are making strides towards
transformation to the cloud. A smooth change submits a
thorough comprehension of the advantages just as difficulties
included. Like any new innovation, the appropriation of
CCT4ICT model isn’t free from issues.

The absolute most significant tests are as per the following.

- Security and Protection
- Service Conveyance and Charging
- Interoperability and Transportability
- Reliability and Accessibility

3. CONCLUSION

The evolution of cloud computing as a feasible result for
several IT services been the rise for the past years. Experts
anticipate cloud computing to go through major adoption in
the education sector in the ensuing years, and many IT rulers
working in the sector think that on campus cloud programs
will be greatly increased in the near future. And when these
efforts turn out to be successful, more and more institutions
will be willing to move most of their services to the cloud.

Though the assistance associated with cloud computing are
real, there are issues pertinent to automation and policies
that are yet to be resolved in order for the service to attain
its ability in full [10]. Large organizations of higher
education are expected to invest in cloud services more than
ever. Universities and colleges strive to provide a wide range
of technology services.

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