



A STUDY OF CLOUD BASED TECHNOLOGY

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Abstract

Cloud computing provides a shared platform of resources required for computing, that can be made available and release on the user's demand to serve a wide and constantly expanding range of information processing needs by considering the necessity and elasticity of demand. Due to the huge benefits of this technology, is growing rapidly and being accepted in various applications such as business, education, government etc. In this paper, we study how cloud computing can benefit professional education in India. We also discuss the cloud computing educational environment and explore how universities and institutions may take advantage of clouds not only in terms of cost but also in terms of efficiency, reliability, portability, flexibility, and security.

Keywords: *Cloud Computing, Web-based Learning, Education System, Professional Education System*



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I. Introduction:

Education is the most important pillar for the developing countries, through which growth of the society can be achieved. Population of India is very large, therefore to providing education to every individual is very difficult in reality. Therefore there is need a paradigm though which we can achieve it. The best paradigm in education is e-learning. It is commonly referred to the intentional use of networked information and communications technology (ICT) in teaching and learning. We can also describe it as a new way of learning through the terms such as online learning, virtual learning, distributed learning, network and web-based learning etc. Last few years we are observing the growing demand in elearning based application many directions. E-learning based education can be useful for both distance education programs and residential campus based education programs. In case of distance education programs, e-learning act as a logical extension of their distance education related activities. And in case of residential campusbased educational organizations, e-learning as a way of improving access to their various programs and also as a path of grabbing the position into growing niche markets.

II. Problems in E-Learning:

The e-learning based education has tremendous opportunity in country like India. Through such educational mode we can provide the similar type of education to all the people of the country. The growth of e-learning applications, are directly connected to the increase in the access of ICT and cost reduction in the education. One of the reasons in the growing interest in elearning is use of multimedia resources for teaching and learning process in ICT. Now a day's most of the teacher is making use of ICT in their teaching sessions. Most of the educational organization provides their programs through this mode, so that they can reach to the maximum students. ICT has provided an opportunity to learn from anywhere and at any time to all the aspirants. In spite of the popularity of e-learning, it has various constraints and limitations. The main obstacle in the growth of e-learning is the access problem due to the poor Infrastructure, without it there can be no elearning. Other limitations are nothing but the cost related to e-learning application which includes software and hardware cost are falling, deployment cost, support and maintenance cost and cost of trained staff.

III. Cloud Computing:

Cloud computing is a fast growing area which attracts many users from various disciplines. Cloud computing has brought the new paradigm shift in the field of education. Cloud computing delivers services separately based on demand of user and provide adequate network access, data resource environment and efficient flexibility. This technology is used for more efficient and cost-effective computing by centralizing storage, memory, computing capacity of PC's and servers. The benefits of cloud computing can support education institutions to resolve some of the common challenges such as cost reduction, quick and effective communication, security, privacy, flexibility and accessibility . The National Institute of Standards and Technology (NIST) defined five essential characteristics for cloud computing which include:

- On-demand Self Service
- Broad Network Access
- Resource Pooling
- Rapid Elasticity
- Measured Services

Cloud Computing based applications provides various services in the field of banking, healthcare and government. Cloud computing services can be provided in through the following service models:

IaaS (Infrastructure as a Service):

Abstraction and virtualization might be provided to utilize the services of an Internet with high scalability, higher throughput, quality of service and high computing power, this is known as Infrastructure as a Service (IaaS).

SaaS (Software as a Service): Cloud computing providers deliver common online services which are accessed on the Internet through a web browser. These services have long been referred to as Software as a Service (SaaS).

PaaS (Platform as a Service): Cloud allows consumers to not only deploy but also design, model, develop and test applications directly on the Cloud. It supports work in groups on collaborative projects where project team members are geographically distributed, this is known as Platform as a Service (PaaS). The cloud can be used by public individuals (public cloud), a single organization (private cloud) or more than one organization that share the same interests and policies (community cloud). It can also be a mixture of public and private clouds (hybrid cloud)

IV. Cloud Based Framework for Education:

The cloud based framework will be the better solution to overcome all the problems which are associated with the e-learning. As per my study I have proposed a architecture model, which can be implemented at University level. It will be beneficial to all Colleges, institutes those are affiliated with the university. This architecture is based on the four Layers (**ISAU for Education**)

I : Implementation Layer

S : Service Layer

A : Access Layer

U : User Layer

Figure – Layers of EDU-CLOUD

A. IMPLEMENTATION LAYER :

In this layer implementation of cloud can be done as per the need of the system. It can be public cloud, private cloud, community cloud or hybrid cloud.

B. SERVICE LAYER :

In this layer service will provided as per the need of the system users. It can be Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS) or Infrastructure-as-a- Service (IaaS).

C. ACCESS LAYER :

In this layer service can be accessed through the devices. These devices can be Desktops, Smart Phones or Laptops.

D. USER LAYER :

This is last but important layer this specifies the user of the cloud. These users can be Students, Teachers, Research Scholars, Management, Principals, Parents, Government or Control bodies.

V. Benefits of Cloud Based

FRAMEWORK:

The following are some of the benefits of successful implementation of EDU-CLOUD model.

- It can help universities keep pace with ever growing resource requirements and energy costs.
- It creates huge opportunities for faster research.
- Faculty can be benefited through efficient access and flexibility when integrating technology into their classes.
- Technology enhancement can be done at single end only.
- Researchers want instant access to high performance computing services, without the responsibility of managing a large server and storage farm.
- Similar kind of education will be available for all students.
- It can provide important gains in offering direct access to a wide range of different academic resources, research applications and educational tools.
- Various user of the system can connect to the campus through their devices.
- Parent can easily check the progress of their wards through this system.
- It also promises to provide a variety of services that will be very useful to faculty, staff and students.
- In addition to this the universities can also open their technology infrastructures to private, public sectors for research advancements.

VI. Conclusion:

Cloud based technology, is growing rapidly and being accepted in various applications such as business, education, government etc. Through this paper we have highlighted the cloud computing educational environment through the EDU-CLOUD Framework and explore how universities and institutions may take advantage of clouds not only in terms of cost but also in terms of efficiency, reliability, portability, flexibility, and security. In conclusion educational

cloud computing environment offers a wide range of services in application, platform, and infrastructure levels to students, faculty, researchers, and academic staff.

VII. References

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