

Cloud Computing in Distance Learning

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ABSTRACT

The advancement in information & communication technologies has led to various new initiatives in the market. Cloud computing is such a new concept that has evolved with the concept of the Internet later which gave birth to cloud computing. Cloud computing is just like hired infrastructure, services and platforms where the user's data, information, files, and applications are stored on remote servers rather storing on local devices or hard drives. It gives relaxation from the tension of storing, caring and backup of the data. So, it makes free the librarians and other staff to have tension about the storing and backup of data and e-resources etc. This paper tells about the distance education and distance learning and possible use of cloud computing in providing distance education.

KEYWORDS: Cloud computing, Distance education and Usage of cloud computing.

1. INTRODUCTION

The advent of cloud computing rests in the advent of Internet and World Wide Web. Internet was started as a project, the Advanced Research Projects Agency (ARPA) in the United States Department of Defense experimented in 1969. Nowadays, Internet refers to the act of two computer networks communicating with one another, is whence we get the word "internet," which we use today. It is a massive collection of separate networks, both big and tiny which are interconnected all over the globe.

Later, Internet has given to the birth to term "cloud" that is referred to anything accessed through the user's computer and accessible on the Internet. The technology used by the cloud service provider is a hybrid of parallel and distributed computing, or it might be several other things. Cloud computing now offers users access to several services that were previously unavailable.

- C – Computing resources,
- L – Location independent,
- O – accessed via Online means,
- U – used as an Utility &
- D – available on Demand

Thus, cloud computing is that computing which is used resources accessed online and is used on demand as location independent.

2. ADVANTAGES AND DISADVANTAGES OF CLOUD COMPUTING

There are various advantages of using cloud computing. Some of them based on (Abramek, 2015) and others are shown in table 1:

Table 1: Advantages and Disadvantages of Cloud Computing

S.N.	Advantages of cloud computing	Disadvantages of cloud computing
1	Availability- – means independence from space and equipment	Security - cloud service providers implement best security standards to store important information, but, one has to be aware while sending all organization's sensitive information to a third party, i.e., a cloud computing service provider
2	Ecology – means it saves electricity	Costs - subscription fees based that is costly
3	Easy in administration	Legal restrictions
4	Easy in implementation	Speed of Internet connection- Low
5	Measurability- it increases the predictability of costs incurred by the company and allows to optimize them in relation to the current needs of the user	Vender in lock - Organizations may face problems when transferring their services from one vendor to another
6	Reliability- absence of failure	Limited Control- Cloud infrastructure is completely owned, managed, and monitored by the service provider, so the cloud users have less control over the function and execution of services within a cloud infrastructure
7	Mobility- Cloud computing allows us to easily access all cloud data via mobile.	-
8	Optimization-reduction in operating costs	-
9	Privacy	-
10	Scalability and flexibility- allow to change the parameters during the on-demand services	-
11	Productivity	-
12	Supervision and helpdesk is available 24/7/365	-

3. DISTANCE EDUCATION

The 1800s saw the beginning of distance education, which is now more commonly referred to as open and distance learning. Distance education, which was once seen to use non-traditional methodologies and delivery methods in comparison to traditional campus-based education, has now become a common form of instruction, expanding its use and popularity in the twenty-first century (Saykl, 2018). It is seen that now a days, correspondence colleges, open universities, distance education departments of traditional universities, and distance education training units of

private sector enterprises all use a variety of teaching and learning methodologies under the umbrella of distance education. Thus, the phrase is used to describe the education of those who opt to study at home rather than attend traditional schools, colleges, or universities for a variety of reasons.

However, there is no direct interaction or face-to-face activity between teacher and student in distance education, but this is made up for by contact or counselling sessions, which sets it apart from the traditional system of education and gives it a distinctive feature similar to formal education (CS). The organising "institutions" promote two-way contact between the teacher and the learner. With the assistance of subject matter experts and specialists, the institution creates self-instructional material (SIM), has it printed, and then distributes it to students (Karak & Adhikari, 2015).

Whatever the definition of distance education is but cloud computing can be used effectively in this field.

4. CLOUD COMPUTING IN DISTANCE EDUCATION

Dhiman & Sharma (2012) have discussed the types and usage of cloud computing in library centres. Later Dhiman, Sharma & Sharma (2014) have discussed role of cloud computing in e-learning. However, Patil (2016) mentions that how well cloud computing services are integrated into systems will determine how important a role practitioners, students, and associations will play in applying the technology. In order to provide on-demand services, cloud computing depends on already-existing technologies like grid computing, virtualization, net services, and the web itself. These technologies ought to coexist peacefully. The three main pillars consisting of IaaS, PaaS and SaaS, on which a university, college or institution will utilise cloud computing.

Infrastructure as a Service (IaaS) enables the use of the cloud as a virtual website where data may be stored and protected. It enables university administrators to more effectively manage their resources at significantly lower costs. Universities will have access to significant processing power, a lot of storage space, networking components, and middleware thanks to IaaS. Platform as a Service (PaaS), however, enables the use of the cloud as a platform wherever access to extra advanced and dedicated apps is created. In fact, PaaS allows users to create new, innovative services that may eventually be housed on the platform itself in addition to allowing consumers to access sophisticated services. Because of this terrible design, cloud computing is incredibly adaptable, allowing users to use it as a launching pad to access alternative services, develop those applications or services, or do both. Users of cloud computing are able to access a wide range of applications and packages online thanks to software as a service.

Thousands of programmes are typically hosted online by the web, some of which are free and others which are not. Software as a Service (SaaS), however, it gives users access to any or all of these. In order to implement cloud computing, academic institutions must first undertake a business analysis, create a business case, find a cloud service provider (CSP), set up the solution, and install it—possibly with the help of a third party system measurement tool. The main concerns during the implementation phase are making sure the cloud satisfies business requirements in terms of practicality and performance, provides the anticipated top quality and benefits, adequately protects institutional data, conforms to statutory and regulatory requirements, and integrates with existing processes and systems.

However, Saykılı (2018) has listed three essential components—virtualization, network intelligence, and a strong ecosystem—which must exist for cloud computing to be used successfully in distance learning. These provide the building blocks for achieving operational effectiveness, security, activity continuation, scalability, and interoperability, which ultimately lead to innovation. Jalgaonkar & Kanojia (2018) has proposed following figure and model for successful implementation of cloud computing in distance education.

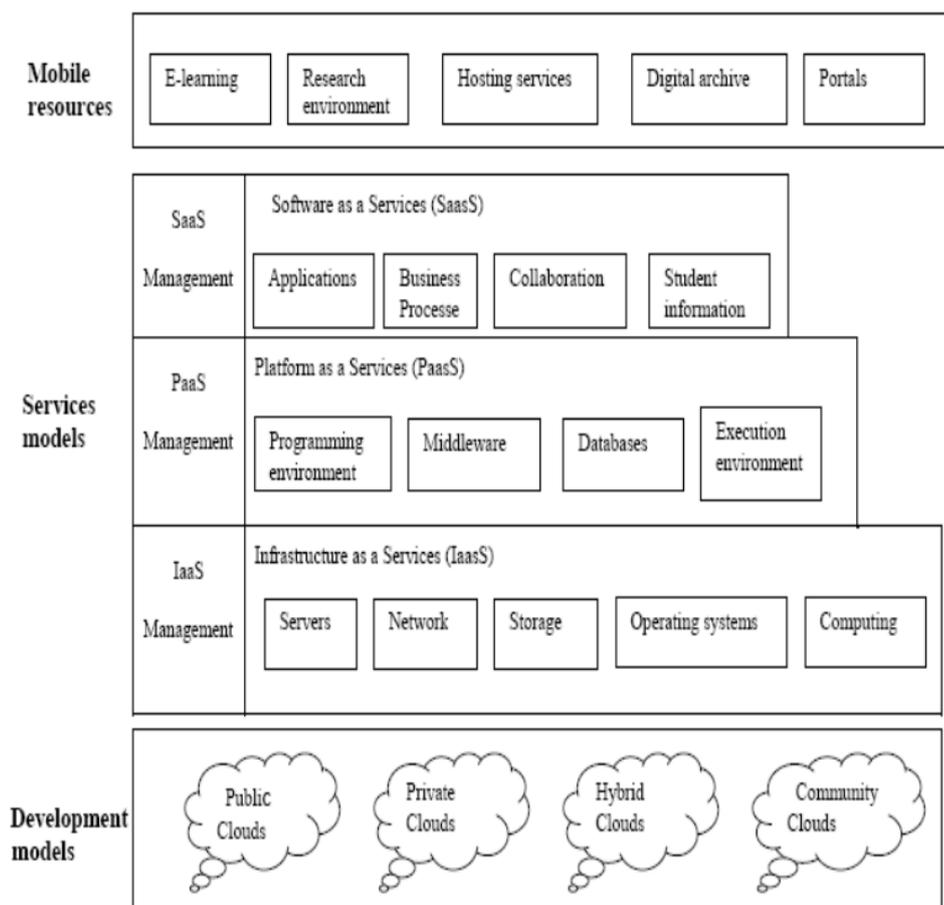


Figure 1: Service Model for Cloud Architecture for Distance Education

CONCLUSION

To sum up, cloud computing is the same thing that has been done in informatics so far, but in a novel approach that allows for the creation of new ideas, applications, and procedures. The older, stationary paradigm of data processing and storage was not impervious to theft, unlawful data access, or natural disasters like fire or flood. This risk is avoided by the cloud computing model.

However, the institutes, colleges and universities must be able to deal with specific challenges of the cloud environment in order to think about, plan for, and work in the cloud. These challenges include ambiguous definitions, privacy, contractual and jurisdictional issues, risk and non-performance, interoperability, network capacity, re-architecting, staff, and perceptions. (Jalgaonkar & Kanojia, 2013). Nevertheless, this is the right time to

include cloud computing in education system, especially in distance education. So, select the type of cloud solution that fits the structure of the instructional activities for your institution and implement it in reality.

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