IMPLEMENTING THE CONCEPT OF CLOUD COMPUTING IN EDUCATIONAL INSTITUTIONS

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Abstract - *Education is the major concern in today's world. It helps to motivate the minds and shape it into intellectuals. Most of the educational institutions today, in order to have an effective and motivated environment in teaching, they are opting new innovative technologies. Cloud computing is one such emerging technology which is very useful in teaching learning process. There are varieties of services which are offered by the cloud computing technology through which an institute can offer quality education by providing latest infrastructure in hardware and software forms. This paper introduces one such method to introduce cloud computing technology in education field to improve the methodology of teaching and learning.*

Keywords: Cloud, Education, Infrastructure, Services, Software.

1. INTRODUCTION

From last two decades there is a huge development in the distributed computing since there is a change in the working of scientific and commercial applications. One such latest development in distributed computing is cloud computing [1]. Cloud computing in simple way is, storing and accessing the data through internet rather through computer hard disk [2]. In other words cloud computing provides shared resources, software and information through Internet as a PAYGO (Pay-as-you-go) basis.

The universities and educational institutions are welcoming cloud computing for studies. It gives a better choice and flexibility to the IT departments by building multipurpose computational infrastructure once and then uses it for several purposes for several times.

Nowadays teaching is not just restricted to classroom. Education system today extended its dependency on information technology. The rate of IT technology is changing and which puts more extra financial burden on institute. It is difficult to upgrade the software and hardware frequently and it may leads to the high cost to maintain them. So the solution for which can be provided by cloud computing. With the help of cloud computing the user uses the platform and application on-campus or off-campus or combination of both depending on the institutions need. It offers services at the least cost to users like student, staff who can acquire it anywhere any time.

1.1 CONCEPT OF CLOUD COMPUTING

Cloud computing is the technology which allows us to use the services provided by other company's network over an internet instead of sitting and working on the hardware or software of a desktop which is in a limit of your company's network. Irrespective of the hardware and software locations, what exactly the service is, the concern is all about we are having something called cloud and it was provided over internet [3].

Cloud computing is a type of distributed computing technology which always deals with sharing of resources which helps in computation instead of having our own devices or local servers in order to use applications. [4].

Cloud computing is one such internet based technology through which many software, shared resources and information are provided in terms of services for which many computers and mobile devices can have an access on demand. The concept of cloud computing is already existed in educational institutions. For some of academic project implementations the learners are using cloud computing which is of low-cost or on free subscription. Some academic professors are using it as a source for publishing their research articles [5].

Here is some Cloud computing services are enlisted Google Drive, Amazon Cloud Drive, Apple iCloud, Microsoft's SkyDrive, Humyo, ZumoDrive. Cloud computing services are categorized into three different levels:

Software as a Service (SaaS):

Applications of this type were designed for end-users and over web they can be delivered. Since SaaS applications facilitates applications accessibility irrespective of place or time to many such devices like laptop, smart phones, laptops or web-based applications for students. By using SaaS applications it's easy to scale the software to more classes or over a campus even if there is increased number of users. Through which it is possible to scale the SaaS application over thousand students together.

Platform as a Service (PaaS):

In order to have a quick and efficient coding and application deployment the collection of development tool and services called PaaS is used. The cloud service of PaaS type allows the

students, teachers or other academicians to develop new application or services since it is a platform independent and made these services to be available to the users over an internet. In order to test, deploy, host and maintain the application it also provides the services.

Infrastructure as a Service (IaaS):

IaaS is the combination of hardware and software that powers it all – servers, storage, networks, operating systems. These applications are called as on demand applications and it provides compute power, memory, and storage, typically priced per hour according to resource consumption. The infrastructure needs of staff, academia's or students are provided by using these applications.

2. PRESENT EDUCATIONAL SYSTEM

Even though education system is based on marks, grades and figures, having practical knowledge about the particular domain is essential for today's competitive world. Moreover practical knowledge has great significance to be in competition nowadays. To impart the practical knowledge in order to have a practical knowledge of such specialised domains, the institutes has to provide the configured laboratories which is having the highest cost in hardware configuration. So having such huge hardware setup in laboratories may leads the institutions to spend more money. Hence there is a need for finding effective solution for this and such solution is nothing but Cloud Computing. So to overcome such problems, the institution can have a subscription to the services provided by cloud service providers on the basis of pay as you go. Another factor is that Institutes are heavily depend upon content management system according to that Institute can also hire a service to store the content on the cloud and any student or staff or any academia's can use that from anywhere and anytime and on any device.

3. CLOUD COMPUTING IMPLEMENTATION IN EDUCATION SECTOR

The following diagrams fig.1 and fig.2 shows how the educational institute is using various services of Education cloud in departing quality education. In an educational institutions students, staff and academicians are the cloud users. For each such user's accessibility to the particular services in a cloud will be given based on the credentials. The teachers can maintain the attendance of students, online Quiz conduction and many more by the software packages which are provided by adopting the SaaS education cloud. As and when educational institutions required organizing any practical sessions, it can be done by adopting PaaS services. Example of PaaS service utilization includes project development like mobile apps, web apps, etc. In order to upload the materials related to the lecture or any other documents related to education can be done by adopting IaaS. The students can have an access to these documents and materials as and when they needed.
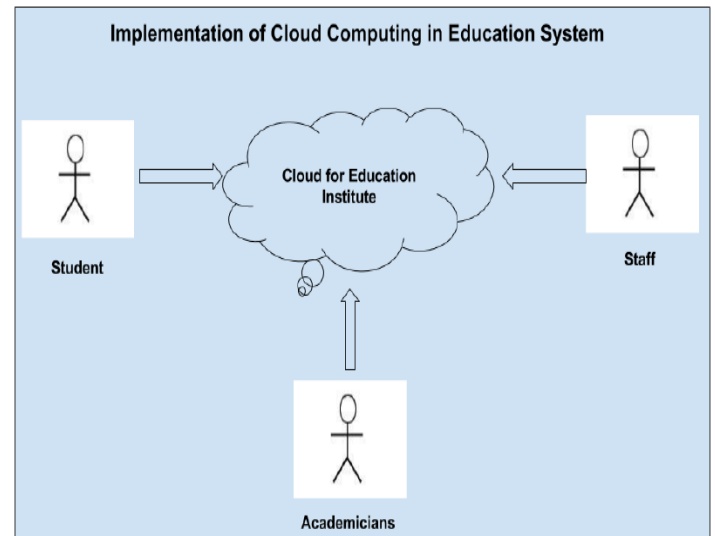

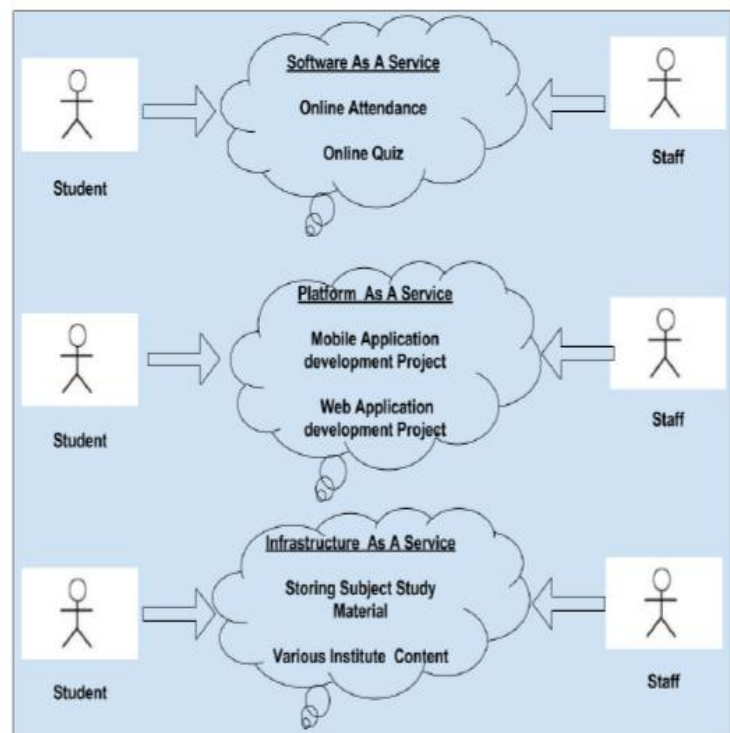Fig. 1: Education Cloud for Different User

Fig. 2: Various Services of Education Cloud

4. HOW CLOUD COMPUTING BENEFITS INSTITUTIONS AND STUDENTS

Instead of storing and carrying the topics what they prepared, the lecture can make their work done by the new applications of web such as Slide share, Lecture Tools etc., which allows storing of data and can access them as and when they needed through developed Educational cloud. Its gives the benefits such as; [7]

- From anywhere one can access the files

- Stop bothering about additional software licenses

- Contents can be shared easily

- Get things done without software hassles

- Support for teaching and learning

- Software free or PAYGO

- 24 X 7 access to infrastructure and content

- Protection of environment by using green technologies

- Increased exposure of new IT technologies to students

- Reduced the cost to update infrastructure

5. CONCLUSIONS

In a present technical world, cloud computing becoming an essential technology which benefits in wide range the staff, students and academicians. Cloud computing provides various reliable service to students and staff through which teaching methodology becomes qualitative and effective. By using the services of education cloud it benefits the educational institutions by reducing the cost of maintaining their laboratories.

The major concern of this paper is to introduce and implement the cloud computing applications in educational institution which will shape a 'revolution' in the education system.

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Mr. Sunil A, working as an assistant professor for the department of computer applications from fast four years and taught various core subjects and guided many academic projects.