INNOVATIVE E-LEARNING THROUGH SCALABLE,ELASTIC AND DYNAMIC CLOUD COMPUTING ARCHITECTURE

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ABSTRACT: *Cloud Computing is a flexible, cost-effective, and proven delivery platform for providing business or consumer IT services over the Internet. Cloud computing takes E-learning to a new level and allows an Education Entity to further reduce costs through improved utilization, reduced administration and infrastructure costs, and faster deployment cycles. In this paper, we emphasis on e-learning concept in today's education system with the use of cloud computing since it enhances the learning to a new direction. E-learning also provides flexibility and cooperative education paradigm.This paper focus on Cloud computing architecture,Deployment models in cloud,e-learning through cloud and benefits of using cloud for e-learning.*

KEY WORDS: *Elearning, Paradigm, infrastructure, Cloud computing, Architecture*

1.INTRODUCTION

Cloud computing is a new computing model which is based on the grid computing, distributed computing, parallel computing and virtualization technologies define the shape of a new technology. It is the core technology of the next generation of network computing platform, especially in the field of education, cloud computing is the basic environment and platform of the future E-learning. Innovation is necessary to ride the inevitable tide of change. Indeed, the success of the transformation of traditional education system to E-learning education system depends on driving the right balance of Accessibility, Manageability, Reusability, Interoperability, collaboration, and innovation to achieve enhanced knowledge and performance.

2. REVIEW OF RELATED LITERATURE

According to Suruchee V.Nandgaonkar et al, Virtualization technology provides good support to achieve aim of cloud computing like higher resource utilization, elasticity, reducing IT cost or capital expenditure to handle temporary loads as well as cloud computing have various flexible service and deployment models which is also one of the main issue of adopting this computing paradigm[1]and V. Spoorthy et al

explains that Data storage in cloud is more advantageous than traditional storage because of its availability, scalability, performance, portability and its functional requirements[2]. T.Swathi et al explains about Virtualization technology which makes cloud computing environment easily to manage the resources. It abstracts and isolates the underlying hardware, and networking resources in a single hosting environment[3].According to C. John Paul, Dr. R. Santhi, an E-learning system is facing challenges of optimizing large-scale resource management and provisioning, due to the huge growth of users, services, education contents and media resources, we have settle the better Cloud Computing solution[4]. A teaching environment can be designed in such a way that the teaching resources are dynamically shared, smooth communication and cross platform operations which integrate of variety of media and new technology features that are executed in E-learning systems[5]. Such as maintains storage capacity, cost effectiveness, software updating and ease of access and all over complete availability.it can be developed and integrated with any other utilizable teaching tools to work more and more for E-learners[6]. Cloud based e-learning has all the provisions like hardware and software resources to enhance the traditional e-learning infrastructure[7].

3.OBJECTIVE

AT present, most of the conventional education forms are becoming not being suitable for requirements of social progress and educational development and not being able to catch up with the changes of learning demand in time, thus computer networks have brought opportunities for it.However, in traditional web-based e-learning mode, system construction and maintenance are located in interior of educational institutions or enterprises, which results in a lot of problems existed, such as a lot of investment needed, but without capital gains to return, without development potential and staying power. Cloud computing is becoming an attractive technology due to its dynamic scalability and effective usage of the resources; it can be utilized under circumstances where the availability of resources is limited.So cloud will will lead to innovative progress in E-learning.

4. CLOUD COMPUTING

Cloud computing is a relatively new concept, first introduced and generally credited to Amazon and the introduction of Amazon EC2 public cloud services in 2006. Although many proprietary and open cloud solutions and services continue to evolve and existing services are recategorized as cloud services (like Google Calendar), there is basic agreement on essential services that comprise a cloud and the three main types of cloud service providers. First, let's review the services.

4.1.Software As A Service

Software as a service (SaaS) was one of the first concepts in cloud computing, and it allows for application hosting by a cloud service provider so that the application can be accessed through the web or a mobile portal (tablet or smart phone). This process typically requires the application developer to integrate an existing application with a cloud kit or to design a new application for the cloud. SaaS replaces applications currently installed locally on workstations or personal computers and might include word processing, mathematical analysis and visualization, or more exotic applications like cyber-physical simulations. The applications might be commercial or developed by educators and the open source community.

4.2Storage As A Service

Most applications require some persistent data storage. As such, most cloud service providers include storage in their cloud kits so that applications can store structured (database) and non-structured data (files and binary large objects [blobs]). This allows the portals used to access SaaS applications to be stateless and therefore much simplified.

4.3 Platform As A Service

The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.

4.4.Infrastructure As A Service

The most general of cloud services is Infrastructure as a service (IaaS), where the cloud service provider offers networking, storage, computing, and IT. Typically, IaaS includes SaaS, storage as a service (STaaS), and PaaS as well as IT and networking.
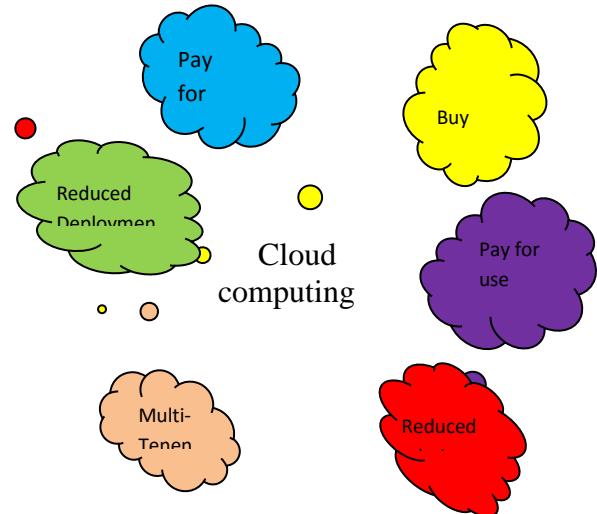

FIG1-Uses of Cloud

5. E-LEARNING : AN INSIGHT

E-learning stands for Electronic Learning. E-learning can be considered as a combination of electronics and other computational devices that work together to achieve a delightful learning experience. Practically, learning by the use of technologies and modern education system, it makes e-learning much more flexible and simple in access. Many other education system also comes under this category such as online education, web based education, virtual classroom etc. E-learning reduces the geographical boundaries [3]. Everyone can get knowledge at his/her own place by the use of e-learning. E-learning provides smooth, fast and easily accessible education.

It gives economic benefits to the learners as well as universities, institutes and school.Compared to distance learning education, e-learning has more benefits. E-learning has the potential to completely transform learning and teaching, and also extends the lifetime involvement in learning

5.1. E-Learning Role

E-learning provides the facility of electronic learning and also provides the simplicity of learning. It gives many benefits on learning which comprises of:

• Virtual classrooms created for e- learning
• In universities, colleges and schools smart classroom are made for e-learning
• For teaching and learning, projectors and other multimedia are in used
• It gives the facility of web based learning
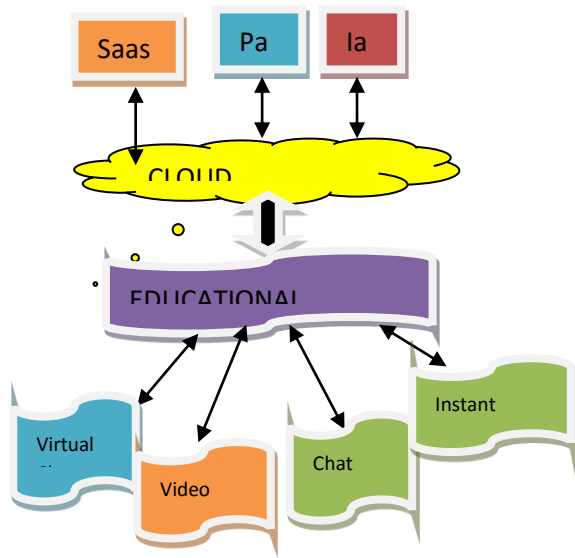• It reduces the time in collection of knowledge

FIG 2- E-Learning Through Cloud

5.2 Benefits Of Cloud Architecture

a) Powerful computing and storage capacity: Cloud based E-learning architecture locates the computing and data in a large number of distributed computers, the sea of clouds in the tens of thousands of computers to provide powerful computing power and huge data storage space, puts the "cloud" as a service available to students via the Internet.

b) High availability:

Through the integration of mass storage and high-performance computing power, this system can provide a higher quality of service. Cloud computing system can automatically detect the node failure and exclude it, do not affect the normal operation of the system.

c) High security:

In the cloud computing model, data is storied intensively. Relying on one or more data center, the managers manage the unified data, allocate the resources, balance load, deploy the software, control security, and do the reliable real time monitoring, thus guarantee the users' data security to the greatest possible degree.

d) Virtualization:

Virtualization is the most important characteristics of this type of architecture. Each application deployment environment and physical platform is not related. It is managed, expensed, migrated, and backup through virtualization platform. It put the underlying hardware, including servers, storage and networking equipment, comprehensive virtualization, in order to build a resources pool of shared, distributed on-demand.

e) The major advantage of the proposal is that it aims at providing easy access to costly software running on high performance processors to rural students at institutions which lack considerable facilities. Considerable investment would be required to implement this architecture, but the benefits would easily justify the cost.

f) In the classic e- learning model, teachers assign teaching tasks, conduct regular lectures, or train students' skills. The students attend the online autonomous learning act and cooperative learning sessions, or accomplish teachers assignments. But in the proposed architecture teachers also answer students' questions and offer essential teaching to major and difficult points. In addition, teachers can also use multimedia to enhance teaching content. Students work out their own learning plans, determining learning methods autonomously. They conduct on-line autonomous learning when they study each unit, finish its test via Internet and do some statistics to the test results. Teachers also encourage students to cooperate with each other to finish simple learning tasks or complex group-based projects.

g) Through cooperative learning, students cannot only acquire knowledge, their team spirit and coordination will also be fostered, skills in dealing with people will be improved and abilities to express themselves will be enhanced. Thus the learning and teaching will be more interactive which is the demand of the age.

6.CONCLUSION

The e-learning cannot completely replace teachers; it is only an updating for technology, concepts and tools, giving new content, concepts and methods for education, so the roles of teachers cannot be replaced. The teachers will still play leading roles and participate in developing and making use of e-learning cloud. The blended learning strategy should improve the educational act. Moreover, the interactive content and virtual collaboration guarantee a high retention factor. On the other hand, E-learning cloud is a migration of cloud computing technology in the field of e-learning, which is a future e-learning infrastructure, including all the

necessary hardware and software computing resources engaging in elearning. After these computing resources are virtualized, they can be afforded in the form of services for educational institutions, students and businesses to rent computing resources

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