Enhancing the Efficiency of Interactive E-Learning using Cloud Computing Efficient Methods

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Enhancing the Efficiency of Interactive E-Learning using Cloud Computing Efficient Methods

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Abstract

E-Learning is the topic related to the virtualized distance learning by means of electronic communication mechanisms, specifically the Internet. E-learning stands for a form of electronically designed, distributed, and facilitated learning activities. It includes instruction delivered via all electronic media, such as the Internet, intranet, satellite broadcasts, audio/video tape and etc. E-learning is empowered in five dimensions: a new tool that incorporates equipment, hardware, and software; a facilitator of interaction; learning; a reduction in distance; and a collaborative enterprise. The primary advantage is that it enables learners to participate in learning activities from anywhere in the world and at any time provided a computer and internet connection are available. An efficient cloud computing technology have changed the way applications are developed and accessed. They are aimed at running applications as services over the Internet on a scalable infrastructure. Now, Cloud computing that introduces efficient scale mechanism can let construction of E-learning system be entrusted to suppliers and provide a new mode for E-learning. Therefore, an E-learning system based on Cloud computing infrastructure is feasible and it can greatly improve the efficiency of investment and the power of management, which can make E-learning system empowerment.

Keywords—Cloud computing, e-learning, electronically, media

I. INTRODUCTION

Enhancing the efficiency of E-Learning is an essential resource for anyone designing or facilitating online learning. It introduces an easy, practical model (R2D2: read, reflect, display, and do) that will illustrate to online educators how to deliver content in efficient ways that benefit all types of learners (visual, auditory, observational, and kinesthetic) from a wide variety of backgrounds and skill levels. Cloud computing has become a research hotspot among modern technologies; researchers pay more attentions to its applications. As concerned as cloud computing applied in the field of education, a lot of problems had been studied, such as the technology for future distance education cloud [1], teaching information system [2] [3] [4], the integration of teaching resources[5], teaching systems development[6].

In integration of e-learning and network, emphasis is placed on building of software and hardware platform of e-learning system, functional structure, network security management and training, information technology integration to teaching[7], campus network environment [8], online education[9], semantic web technologies-based multi-agent system [10] [11].

From the above we can see that until now, scholars have made a lot of researches on the following two aspects: cloud computing used in the field of education, and integration of network and e-learning. The former places the emphasis on distance education, information system application,

instructional system design, information resource development, online course-building, etc. The latter's emphasis is placed on construction of campus e-learning system, e-learning model on campus network, e-learning system based on agent model and e-learning grid and so on.

Development of very large computers and made affordable by the community users, by the existence of these developments create a rich educational content and create a global phenomenon in which information and communication technologies (ICT) that is used for transforming education. In the world of education in its development requires a medium used in dividing the material, communication from the teachers to the students being taught. In the implementation of an e-learning system design requires a good and fast. Therefore, gave rise to a need to redesign education systems that are used to meet those needs better. With the advent of computer technology with advanced software that has allowed solving many complex problems very quickly and at a lower cost. In this paper we focus on the concept of cloud computing and cloud computing platform architecture described by combining the features of E-Learning with a model service orientation architecture (SOA). With the development process requires a model of cloud computing and SOA which further evolved into a cloud computing Service orientation architecture. With these Models can have a system performance is good and fast. In this paper we have tried to discuss efficient system of cloud computing for empowering the e-learning system.

II. CLOUD COMPUTING

Software as a Service (SaaS) opened a flexible attractive door for learners to try early cloud services. The growth of infrastructure and platform as a service (Iaas and PaaS, respectively) has expanded the number of cloud solutions available in the public and private sectors.

Cloud computing has recently emerged as a new paradigm for hosting and delivering services over the Internet. Cloud computing is attractive to business owners as it eliminates the requirement for users to plan ahead for provisioning, and allows enterprises to start from the small and increase resources only when there is a rise in service demand. However, despite the fact that cloud computing offers huge opportunities to the IT industry, the development of cloud computing technology is currently at its infancy, with many issues still to be addressed[12].

Cloud computing technologies although in their early stages, have managed to change the way applications are going to be developed and accessed. These technologies are aimed at running applications as services over the internet on a flexible infrastructure. Microsoft office applications, such as word processing, excel spreadsheet, access database and many more can be accessed through the internet, even though the files and applications are housed in the cloud.

As cloud services increasingly become a de facto part in the field of e-learning system as well as business, we expect data storage to grow exponentially in the coming year. To accomplish this, service providers will bring more data centers online with larger-capacity storage equipment for empowering the e-learning system. Along with the development of the IT world, cloud computing is gradually become the new paradigm of innovation in the IT world, cloud computing is a computing services that can be used through the Internet in accordance with the needs of users with little interaction between service providers and users. Cloud computing technology as well described as a computing resource that provides a highly scalable as external services through the Internet. Therefore, cloud computing can be considered as an alternative to minimize the cost of infrastructure and human resources for development and maintenance process of e-learning systems.
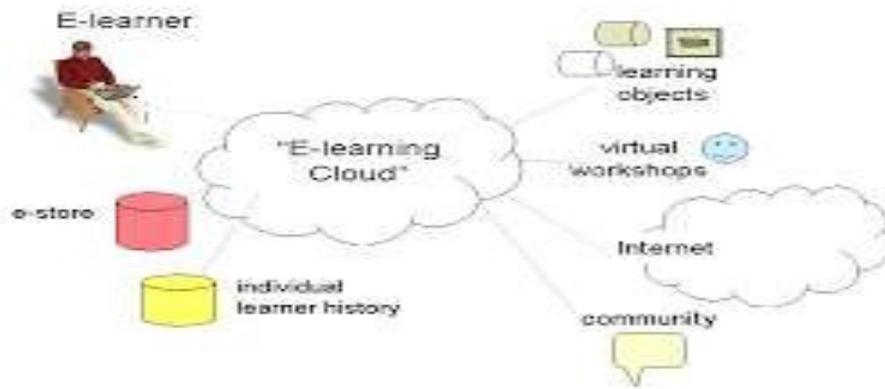
Fig.1 E-learning through cloud

III.   E-learning

E-learning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online. E-learning systems provide processes of delivering the learning contents to learners who have different backgrounds, interests, and locations away from a classroom in order to maximize the effectiveness of learning. Usually, the classical e-learning system is based on client/server architecture thus they lack of the scalability, flexibility and interoperability.

With the development of mobile technology make e-learning is increasingly being used. The use of mobile technology in the implementation of e-learning is commonly known as mobile learning. There are many definitions of mobile learning, one of which is mobile learning defined by Lan & Sie (2010) as a learning model that enables participants to achieve the teaching learning materials anywhere and anytime using mobile technology and the internet. This definition may mean that mobile learning could include mobile phones, smartphones, personal digital assistants (PDAs) and their peripherals. Using mobile learning can help address the issue of accessibility in accessing the e-learning system.

E-learning is the utilization of network technology to achieve the function of passing on knowledge at anytime and anywhere. Any type of learning that uses teaching material not in the conventional paper form and requires the use of electronic equipment can be widely referred to as e-learning [1]. E-learning is otherwise known as electronic learning, web learning, on-line learning and distance education, and refers to interactive teaching and autonomous learning that is not limited to time and space and is completed via the Internet, information technology or media equipment [16].

IV.   Efficient system for empowering E-learning.

The efficient methodology for shifting e-learning systems onto Cloud has the potential to provide empowerment in different aspects for e-learning, they are as follows:

a. Serverless Cloud Computing will bring in more usage and use cases.

Serverless Cloud Computing that allows developers to build, run applications and services without worrying about managing/operating servers, will increase cloud usage, and cloud use cases. In addition to not having to manage any infrastructure, Serverless Cloud Computing also improves efficiency by allowing developers to connect and extend cloud services to easily address their applications and multiple use cases. Serverless Cloud Computing requires less time and effort, and it simplifies the release of new updates.

b. Edge Computing on the Rise

Edge computing, or performing data processing at the edge of the network to optimize cloud computing, will also be on the rise. It is a result of increased usage of internet-connected devices. Edge is necessary and will be on the rise in coming year because it will be required to run the real-time services as it streamlines the flow of traffic from IoT devices and provides real-time local data analysis and analytics.

c. Cloud-Based Container Systems

Cloud containers as a service will become mainstream because it can provide a better infrastructure security. Also, cloud-based container systems are an alternative to virtual machines and allow for apps to be deployed in a quick, reliable, consistent and straightforward manner—allowing for faster releases of new features and software to run reliably. Furthermore, cloud providers can offer hosted container management services as well as differentiate their platforms from one another through cloud container systems.

d. Planning and designing e-learning materials

A fast development of information and communication technology (ICT) together with a rich support of various software (text editors, graphics, voice…) is a constant challenge for each author of e-learning material. Presented guidelines for preparation of learning material could be very helpful for preparing e- learning material for deaf and hard of hearing people as well. But we must be aware of some necessary adaptations. First, the voice records will probably be excluded and we would lay much stress on video shots and other visual ICT.

e. Organizing resources for e-learning environment

The term "learning environment" suggests place and space – a school, a classroom, a library. Creates learning practices, human support and physical environments that will support the teaching and learning skill outcomes. Supports professional learning communities that enable educators to collaborate, share best practices, and integrate skills into classroom practice. Enables students to learn in relevant, real world contexts (e.g., through project-based or other applied work). Allows equitable access to quality learning tools, technologies, and resources. It provides architectural and interior designs for group, team, and individual learning. Supports expanded community and international involvement in learning, both face-to-face and online, Such an environment fosters learning tailored to the needs and wants of the individual.

f. Designing LMS, LCMS and comprehensive authoring systems (e.g., Omni)

Effective training and education creates costs for organizations in terms of direct and indirect costs and employee time. Decision-makers require information on how much and what kind of training is being delivered in their organizations. A variety of applications are available to help organizations manage course and learner administration, content, and key organizational information. Finding a way to organize, present, store and efficiently update these learning experiences is what has promoted the evolution of three enterprise-wide applications:

Content management systems (CMS) ™

Learning management systems (LMS)

Learning content management systems (LCMS)

V. CONCLUSION

Empowering E-Learning is an essential resource for anyone designs or facilitating online learning Development of a technology architecture in an e-learning using service orientated architecture approach using cloud computing. This efficient technology architecture, data architecture and application architecture are the three main pillars of this architecture. All services can be done in a centralized service for easy access, monitoring and maintenance of an e-learning system. Our goal is to empower e learning through the efficient technology of cloud computing.

As cloud computing provides a super-computing power that is extent beyond a single company or enterprise. In this paper, we investigated the issue of how Cloud Computing technology can be employed in e-Learning systems. Cloud computing has recently emerged as a compelling paradigm for managing and delivering services over the internet. The rise of cloud computing is rapidly changing landscape of Information technology and ultimately turning to the long-held promise of utility computing into a reality. Cloud computing can help communities and nations, can transform education. An entire world of knowledge can now be made available to teachers and students through cloud-based services that can be accessed anytime, anywhere, from any device. By helping countries worldwide, lowering the cost and simplifying the delivery of educational services, cloud computing enables students across the globe to acquire the 21st-century skills and training they need to compete and succeed in the global information society.

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