

A Review on E-Learning using Cloud Computing

SRINADH UNNAVA

Assistant Professor
Department of Information Technology,
Sasi Institute of Technology & Engineering, Tadepalligudem,
Jawaharlal Nehru Technological University Kakinada, Andhra Pradesh, India

Abstract: In the current day situation of the training framework it is hard for the instruction foundations/universities to give quality instruction to the understudies. The quantity of expanding foundation and offices are still not gaining a lot of ground because of the incorporated methodology yet with the utilization of data innovation the issues looked by the understudies and the instructive establishments can be explained.

Web now a days is available from most extreme media transmission gadgets like work areas, workstations, tablets, mobiles, Music players, I-Pad, I-Pods and so on making it more dispersed contrast with any incorporated substance. Distributed computing is generally utilized in numerous fields because of its more preferences the administrations gave by the distributed computing can add great effect on instructive establishments by lessening the expense of foundation contrasted with present working framework.

Keywords: Cloud computing, E-learning, distributed system, information technology, telecommunications.

1. INTRODUCTION

Cloud computing refers to applications and services that run on a distributed network using virtualized resources and accessed by common Internet protocols and networking standards. It is distinguished by the notion that resources are virtual and limitless and that details of the physical systems on which software runs are abstracted from the user.

Cloud computing takes the technology, services, and applications that are similar to those on the Internet and turns them into a self-service utility. The use of the word “cloud” makes reference to the two essential concepts.

- **Abstraction:** Cloud computing abstracts the details of system implementation from users and developers. Applications run on physical systems that aren't specified, data is stored in locations that are unknown, administration of systems is outsourced to others, and access by users is ubiquitous.

- **Virtualization:** Cloud computing virtualizes systems by pooling and sharing resources. Systems and storage can be provisioned as needed from a

centralized infrastructure, costs are assessed on a metered basis, multi-tenancy is enabled, and resources are scalable with agility [1].

2. RELATED WORK

The adoption of cloud technology within the instructional environment has the capacity of offering new opportunities for improvement and innovation of the gaining knowledge of process. This paper focuses on deployment, creation, requesting and virtual lab management using cloud computing. Currently, maximum of those activities can be handled by the usage of a few kind of course management machine (course MS), like IBM Tivoli carrier Automation supervisor (TSAM), Microsoft system center 2012, VMware vCloud Suite, or Apache CloudStack.

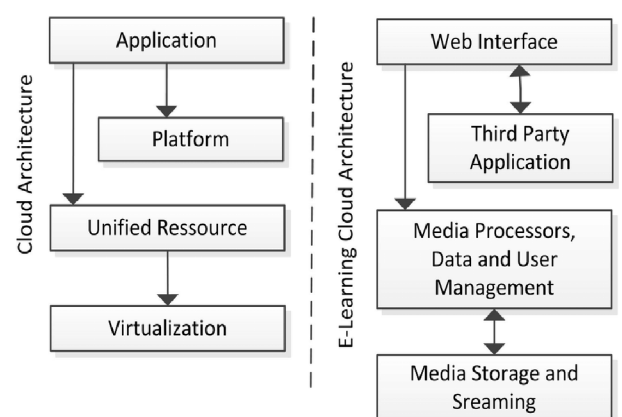


Figure-1: Cloud computing and e-learning

All of those systems were designed to nicely manipulate a Cloud Computing platform on the infrastructure degree, in different words for presenting Infrastructure as a service (IaaS). IaaS represents the maximum primary cloud provider model which generally approaches the supplying of

cloud resources as services, for instance, virtual machines. With using IaaS the extent of technical information required by means of the end consumer is the very best whilst comparing with the opposite fundamental cloud-provider fashions, Platform as a service(PaaS) and software as a service (SaaS).

The Emergence of e-learning: Early attempts to use technology in learning such as in 1924, with the Pressey Testing Machine, and Skinner's Teaching Machine in 1954, met with a weak reception. It was commonly held that the high cost of technology would prevent their ubiquitous uptake as an educational tool. Things started to change with the invention of the personal computer in the 1970s. Then, in the early 1980s Computer Assisted Instruction (CAI) and Computer-based training (CBI) began to emerge. Following this, in the 1990s websites were becoming commonly used to facilitate distance learning and learning management systems (LMS)[2].

Cloud Computing: According to cloud computing can be defined as "a new style of computing in which dynamically scalable and often virtualized resources are provided as a services over the Internet." The National Institute of Standards and Technology (NIST) defined cloud computing as "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction".

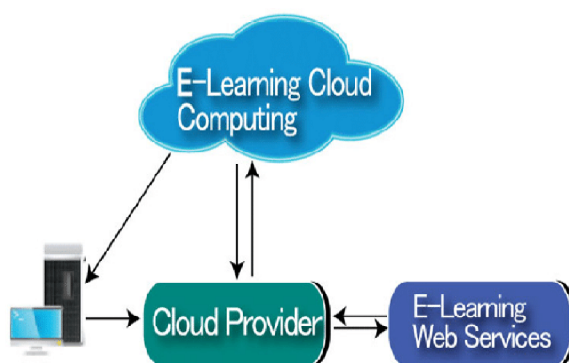


Figure-2: E-learning Process

The cloud can be seen as a large group of interconnected computers. These computers can be personal computers or network servers inside public or private organizations. Therefore, a wide range of end users have access to the applications and data served by the cloud. Access is through the internet and it crosses over different enterprises and platforms. For the end user the technology and

infrastructure behind the cloud is invisible and they aren't able to determine whether cloud services are based on HTTP, HTML, XML, JavaScript, or other protocols.

Cloud Computing and E-learning: Several challenges face the efficient deployment of E-Learning systems, and Dong, Zheng and Aljenaa, Al-Anzi offer some potential solutions that cloud computing offers to overcome many of these as follows: • Lack of a proper infrastructure: Many organizations lack the proper infrastructure for adopting an E-Learning platform. A modern scalable infrastructure is needed as the creation of new content, which is often rich in multimedia, has high resource requirements for aspects such as bandwidth and storage [3].

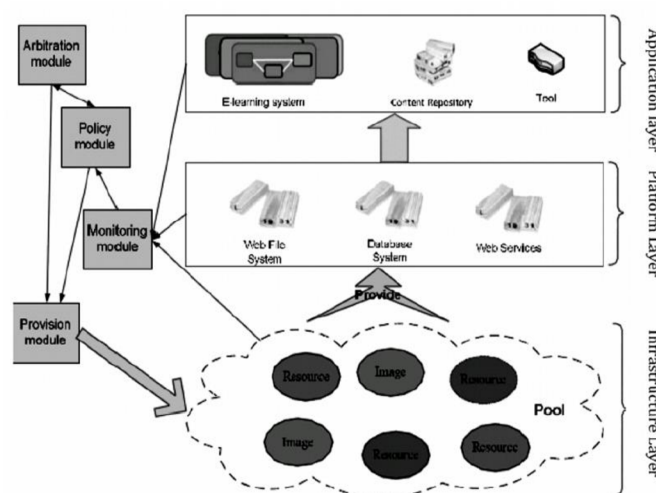


Figure-3: Architecture of an E-Learning Based

Cloud technology can help overcome these challenges as the centralized infrastructure of a cloud system reduces the need to repeat tasks in each and every school where the system is deployed reducing the cost and time needed to build the infrastructure. Secondly, once a cloud is running in an organization, the deployment process is swift across the organization because of lack of technical work to deploy the services in individual schools. The third advantage is the lower cost of hardware infrastructure in individual schools, as often only computers with low specifications, capable of running a browser, can be used [4].

Lack of curriculum: The lack of content that is ready to be imported into the E-Learning system is a common challenge that education institutions often face. Ideally, this needs to be planned up-front along with considerations of the infrastructure that is required. Cloud computing can enhance readiness in two key ways. The first is by providing

an easy to use platform for teachers and students to access from anywhere there is a device with an internet connection. The second advantage is that by lowering operation costs through cloud computing an organization can redirect the saved money toward the development of more in-house content or to purchase content developed by other organizations [5].

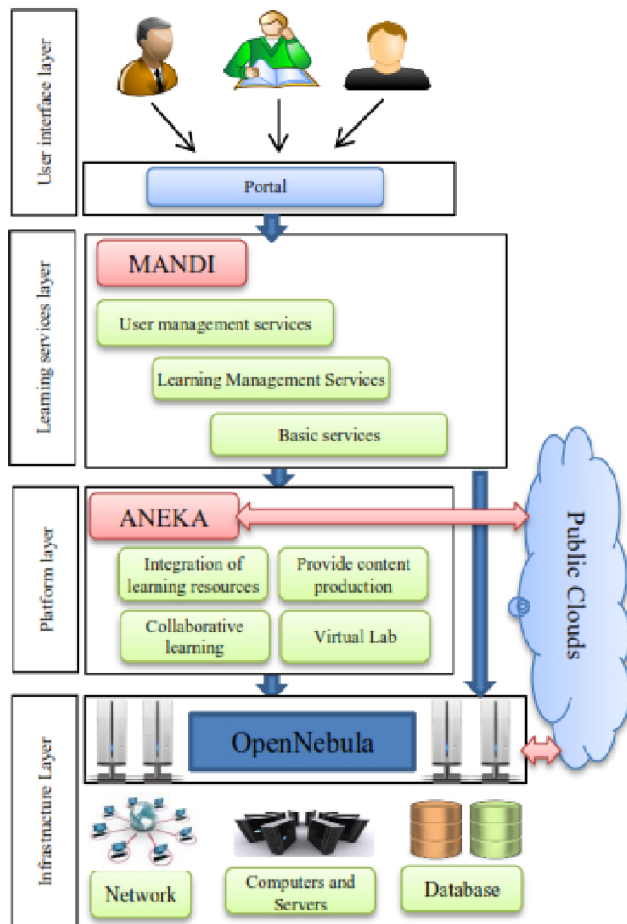


Figure-4: E-learning Architecture

The major players in the field of cloud computing are Google, Microsoft, Amazon, Yahoo and some legacy hardware vendors like IBM and Intel. Many education institutions do not have the resources and infrastructure needed to run top e- learning solution. Moodle the biggest players in the field of e-learning software, have now versions of the base applications that are cloud oriented [6].

E-learning is widely used today on different educational levels: continuous education, company trainings, academic courses, etc. There are various e-learning solutions from open source to commercial. There are at least two entities involved in an e-learning system:

The students and the trainers. The students' actions within an e-learning platform are:

- Taking online course

- Taking exams
- Sending feedback
- Sending homework, projects.

The trainers involved in e-learning solutions are:

- Dealing with content management
- Preparing tests
- Assessing tests, homework, projects taken by students
- Sending feedback
- Communicating with students (forums).

Each of these actions requires a certain degree of security, depending on the importance and data sensitivity.

3. CONCLUSION

In conclusion, technology is being used increasingly by institutions to provide e-learning services. These institutions face a wide range of challenges in implementing these systems such as costs, a lack of technical resources, and resistance by key stakeholders to the implementation of systems.

Cloud-based learning systems are emerging as an attractive method for providing e-learning services. They can reduce costs due to lower requirements of hardware and software, and less need for onsite maintenance. They are also easier to deploy across multiple locations as they are centrally administered. They also offer benefits to end users in terms of accessibility, security, and compatibility. However, the limitations of cloud-based learning systems are that an Internet connection is mandatory, low speed connections reduce the efficiency of the provision of e-learning services, and issues surrounding the security of a cloud remain unclear. As the speed and stability of the Internet are continuing to improve, it seems likely that the popularity of cloud computing for e-learning will increase.

References

- [1]. Deshler, J.D., E. Kiely, Facilitating Adult Learning: Sourcebook & Leader's Guide. 1995: Cornell University", Cornell Instructional Materials Service.
- [2]. Weinberger, L.A., "Commonly held theories of human resource development", Human Resource Development International, 1998. 1(1). pp. 75-93.
- [3]. Cross, J., "An informal history of eLearning. On the Horizon", 2004. 12(3). pp. 103-110.
- [4]. Liu, C.-H., "The comparison of learning effectiveness between traditional face-to-face learning and e-learning among goaloriented users",



in Digital Content, Multimedia Technology and its Applications (IDC), 2010 6th International Conference on. 2010. IEEE.

- [5]. Hamid, A.A., "E-learning: is it the "e" or the learning that matters? The Internet and Higher Education", 2001. 4(3), pp. 311-316

- [6]. PAUL POCATILU, FELICIAN ALECU, MARIUS VETRICI (1990), Measuring the Efficiency of Cloud Computing for E-learning Systems, wseas.us/elibrary/transactions/computers/2010/89-159.pdf.