The Eurasia Proceedings of
Educational & Social Sciences (EPESS)
ISSN: 2587-1730

The Eurasia Proceedings of Educational & Social Sciences (EPESS), 2016

Volume 4, Pages 69-72

ICEMST 2016: International Conference on Education in Mathematics, Science & Technology

ASPECTS OF USING CLOUD TECHNOLOGIES IN VIRTUAL LEARNING ENVIRONMENT

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ABSTRACT: There are increased using the e-Learning technologies at the modern institutions of higher education, which favored to integrate the various instruments in the virtual learning environment. Recently, the cloud technologies have become the most popular, which offer e-Learning internet technologies based dynamical and actual new opportunities to the educational institutions. The cloud technologies provide a high level of the service and they impact on the design of the training courses, offered services and logistics. Although, the cloud technologies include the new risks, at the same time their use for educational institutions and students can get a better service at the lower cost. In the article, it is discussed the comparative analysis of the learning services with the modern LMS systems and the cloud technologies and shown the perspectives of the implementation in the educational organizations.

Key words: E-Learning Technologies, Cloud Technologies, Virtual Learning

INTRODUCTION

Nowadays, higher education organizations actively used on information technology based virtual learning environment. Every day, the possible functions of virtual learning environment gets more important with its information filling degree. For today, we have not exactly cleared meaning of virtual learning environment, because the developing continues, constantly getting the increasing integration with internet and in accordance with a variety of new tools to adapt in their environment. One of the most popular kind of the virtual environment is Learning Management System (LMS) (Kapanadze D....).

LMS systems have specific functions, which implementation is possible on the base of the social networks or on the base of the multiple servers using with the educational programs. This is the opportunity to give the specific content for the closed groups, which learn the concrete course in the certain period. It is important during the formal (traditional) learning a number of reasons:

- The learning institutions may put the investment in the contents development, but its spread by internet may be warning for their marketing condition. But, with the most Universities' opinion open learning projects can get into a source of financial gain. There is a good example, MIT's some learning resource reformed as public;
- Teaching in the "Learning Environment" has its preferences, which depends on the partnership of the group members and existing of the united common objects. During the using of LMS there is blocked unauthorized access to spammers and other destructive approach customers, which is very important;
- If necessary, the educational institution is given the opportunity to control learning environment and its elements, from some legal, ethical and cultural considerations;
- The educational institutions have access of the students in the system. It has possibility to improve the content and the delivery service experience for the improvement of the students' knowledge acquisition.

- Selection and peer-review under responsibility of the Organizing Committee of the conference

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The part of teachers, they use free opportunity during the learning process due to the LMS systems' restrictions. Particularly, they use Web 2.0 technologies based on social networks (Facebook) and various internet outlets blog, wiki and etc., which is available for everyone (Sclater Niall, 2-11). With the giving capabilities to the students they use partnership with the live environment by the usage and sharing own learning material. During the formal learning process, this type of working is impossible with the little group of the students and from the teachers it is very hard, because it depends on the recourses, a lot of time and the high knowledge in the sphere of IT.

At present, e-Learning is becoming an alternative model of the two previous models, which aims to provide educational resources and activities in the form of services. Two companies – Google and Microsoft started the suggestion of the new services to the learning institutions and the students. These services change university systems or their functions filling, they are: e-mail, instant exchange of information, calendar plan, creating and saving personal documents, their joint access, creating web pages. The services of Google Apps for Education and Microsoft Live@edu have a wide set of tools, which is made by adjusting the customers demand, also it is possible to connect them to the kind of the educational institution brand. Moreover, these systems are placed to an external service provider, called "Cloud Computing" or simply in "Cloud".

Cloud Computing in e-Learning

Cloud – this is available and great consolidation of the easily usable virtual resources (as they are: devices, platforms, and/or services). According to the load changes (scalability), it is possible the dynamic reconfiguration of the resources, which gives the possibilities of the used resources optimization. Such kind exploitation of the consolidation, as a rule, based on models – Pay only for what you use (Pay-as-you-go). Within the models, the guarantees of the service define to each specific case by provider, according to the agreement of the service level.

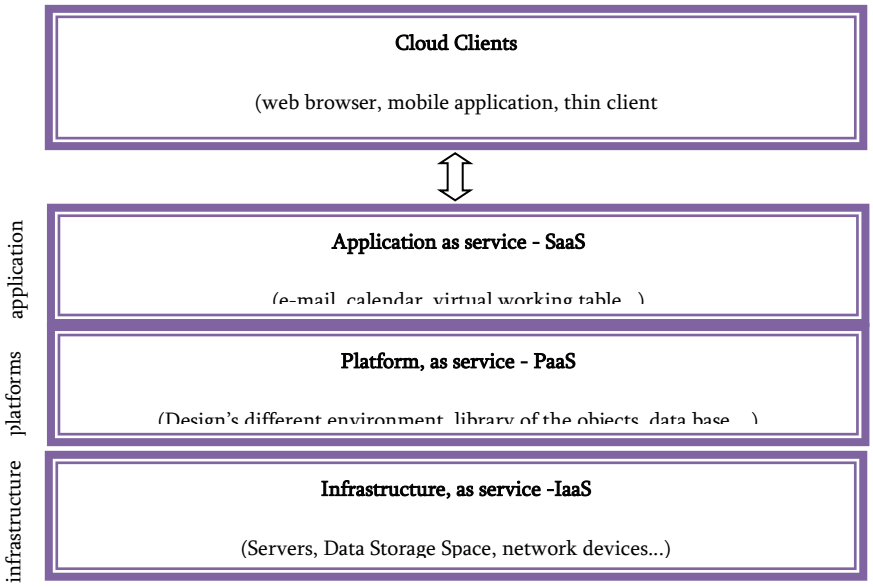

Figure 1. Cloud-Computing Layers

There are three main issues of cloud service category for the distributed infrastructure (Fig. 1). At the lower level there is infrastructure, as service - IaaS (servers, data storage space, network devices and etc…), for example, Amazon's Elastic Compute Cloud (Amazon EC2), which gives the possibilities to the organizations to run their Linux-servers on the virtual machines and if necessary fast loading scalability. On the next level there are the platforms, as service - PaaS (design's different environment, library of the objects, data bases and etc...). At this level, the developers have opportunities to write the applications. At the upper level, there are Cloud computing applications, as service - SaaS (e-mail, calendar and etc.), which introduce the applications in the clouds for the learning organizations. It is possible to access on these services with the web browsers from the different devices (computers, mobiles, thin clients, terminal emulators and etc.) In clouds, not only dates, but applications saving changed computing paradigms for the benefits of the traditional client-server model, according to which there are minimal functions remained to the user's side. Therefore, such functions as: software updates, checking on viruses and other services, depends on the provider of the cloud service. As the system locates on the network and to access on it is possible by internet, therefore it is easier common access, to manage the versions and joint editing.
Arguments for benefit the cloud service using:

- Reduce the costs on resources;
- Possibility of scalability;
- To compare different components and combining possibility, that they were not chained to a computer infrastructure;
- Reduce the costs on staff.

e-Learning Service Migration In Cloud

E-mail is one of the most important catalyst from the universities data centers the migration of the learning services with cloud computing providers. Most of the students do not use by e-mail server, because they have their own accounts on the service servers, such are Microsoft Hotmail or Google Gmail. According to this matter, e-mail server changing by the learning institutions will be overlooked for lots of students. If a student decides to use the university mail, this will be simple, because he will be automatically on the Cloud service. Nowadays, in many universities, among them the universities of Georgia signed the contract with Microsoft or Google to collaborate and to give the students free e-mail with the same domain name, which domain name assigned the university. The arguments to move the mail server in cloud space is more and more stable. There is shown in the table, from LMS systems two mostly popular – comparing blackboard and Moodle functions to cloud services of Microsoft and Google. In mind, that the changes have permanent nature in this sphere and constantly, they add the new capabilities for above systems. As there is shown from the table, there is possible to realize a lot of necessary function for virtual learning environment. The exception is the evaluation tool. For example, there is not necessary instrument for testing such essential tools in an assessment e-system as they have Moodle and Blackboard in Google App. Also, there is not academic assessment journal in Cloud using program This is due to the fact that initially, when the cloud services are being created, there was not education specific. However, Microsoft and Google started collaborating with the educational area and supposedly, not so far from the time when they show to us the created specific educational program apps.

The Transition Risks To The Moving Of Cloud Services

To move e-Learning in cloud space have some risks for the learning educations:
- Service reliance to a single supplier;
- The main changes may get large costs in service working, because they have no access to software code and in the worst case - on the bases;
- software updating risks of Cloud services;
- Storage security and privacy-related risks;
- Different types of seizures caused by delays in the work;
- The risk caused by one of the company's cloud-management services.
- Technical problems caused by the transition to new technology;
- The absence of network which the consumers' computers will remain functionless.

Thus, a highly credible cloud service provider programs for companies within the agreed service levels, can give guarantees to the IT service of learning institutions their products with full compliance on their technical requirements, fault tolerance, unauthorized invasion of strangers, access management and data protection. Learning institutions also will have possibilities, in order to improve the quality of services for monitoring the actions of users. There is started the realization of cloud technologies, for example, the creators of Moodle processed MoodleCloud version and offered it to costumers for free from 2015 (https://moodle.com/cloud/). Complex web-based application is built on the scalable and economical Moodle - hosting platform. About this platform based portal always works Moodle's latest version. There is possible to create the website in MoodleCloud, as the individual teacher as the little schools or organizations.

CONCLUSION

Thus, LMS systems (Blackboard, Moodle and etc.) will realize in near future by cloud technologies, but cloud services (Live@edu, Google Apps for Education and others) will be more usable for e-Learning requirements, but which technologies will choose the learning institutions, at present it is impossible to predict. One thing is clear, that the learning institutions will have great choice during the learning process to implement modern, advanced built technologies.

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