Cloud Computing in Education System

Prof. L. J .Sankpa[1], Ankush Kawalkar[2], Suhas Bhattu[3], Gaurang Parnaik[4], Akash Sagar[5]

Department of Computer Engineering, Sinhgad Academy of Engineering, Pune, Maharashtra, India[1,2,3,4,5]

Abstract: Education system in India is always based on the marks, grades and numbers. But in real life the practical knowledge, profound thinking, and some experience is required to remain in competition. In schools and even in the colleges, the traditional education system is applied which is proved useless many years ago. Because of the technology, it is possible to give the demonstration of the experiments, using presentation and the animation; it is now very easy to imagine the things. One more thing is developed in this new era that is Cloud Computing. Using this technology we can teach to anyone who cannot afford the education or who lives in rural area. By using this we can build the good education system and increase the quality of the system.

Keywords: Cloud Computing, Education system, Cloud architecture etc**.**

I. INTRODUCTION

Indian education system is mainly moving around the books, exams, marks and grades, where the creative learning lies far miles away. Teachers teaches within the syllabus, students studies that part only, gives exams and it's all over! But change is occurred by creative thinking, and deeper thinking. That only occurs when you take your learning seriously but not the exams. So how do you improve it? Technology can be used as primary key in this situation. Now-a-days situation is changed, in many schools and colleges, the internet facility is available and even teachers use power-point presentation for teaching that improves easy understanding. But in India there are many children those are still away from the basic education because of the costly education facilities. That's why there is still so illiteracy in India. So how can technology help us? Cloud computing can be proved the boon in this scenario. Using Cloud Computing we can access any file or any document or even videos from any corner of the world. So it helps to give the basic lessons to those students who cannot afford it. Using the cloud computing, we can give easy and creative learning experience to the people from rural areas and make the country more educated, that's why this new technology is used in worldwide now-a-days.

II. CLOUD COMPUTING

There are many definitions of Cloud Computing but the broad scope of cloud computing is broadly summarized in: *'Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.'*

Cloud Computing architectures can be public or private. A private cloud is hosted within an enterprise, behind its firewall, and intended only to be used by that enterprise. In such cases, the enterprise invests in and manages its own cloud infrastructure, but gains benefits from pooling a smaller number of centrally maintained high-performance computing and storage resources instead of deploying large numbers of lower performance systems.

Various types of services provided by Cloud are:

a. Infrastructure as a Service (IAAS):
In the IAAS the Cloud offers the computers that are physical or virtual machines or any other resource. To deploy their applications, cloud users install operating-system images and their application software on the cloud infrastructure. In this model, the cloud user patches and maintains the operating systems and the application software. Examples of IAAS providers include: Amazon EC2, Google Compute Engine, HP Cloud, Rackspace, and Ready Space Cloud Services.

b. Software as a Service (SAAS):
In the SAAS the cloud provides the platform for running the application software and databases. Therefore we do not need to install and run the application on the cloud user's own computers, Examples of SaaS include: Google Apps, Microsoft Office 365, Petrosoft, Onlive, GT Nexus, Marketo, Casengo, TradeCard, Salesforce and Callidus Cloud.

c. Platform as a Service (PAAS):
In the PAAS the cloud provides the platform for developing the applications. Any developer can develop and run their program on the cloud. Example AWS ElasticBeanstalk, CloudFoundry, Heroku, Force.com, Engi neYard, Mendix, OpenShift.

III. IMPLEMENTATION OF CLOUD COMPUTING IN EDUCATIONAL SYSTEM

To implement the Cloud on the education in urban areas like cities and towns where the internet services are available all time, we first build the system to create the cloud and upload the documents, files, images, videos on the cloud. Then we can access it from anywhere. In schools and colleges, teachers, students can prepare their own documents and share it with the others. Also by creating the dynamic changes in the documents or in the presentations we can show animations or perform experiments on the documents. This will increase the imagination and will make the learning process creative. So here is the class diagram for the system we have to develop:
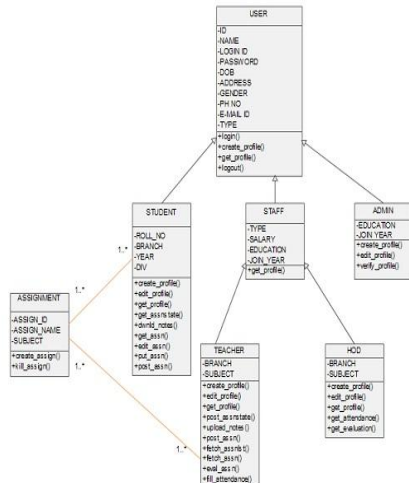
Fig 1: Class Diagram for Cloud System in colleges and schools

By using the above class diagram, any user related to that system can create their account and upload or documents or display any notices to the particular type of the user. And during teaching lessons, all students can connect to the teachers account and teachers can give them the online presentation or change the content of the any image dynamically during teaching. This sounds very tedious but not impossible. This will improve interactive learning. And also the attendance or any exams can also be taken online and declare results immediately. The general overview about cloud and possible users are as follows:
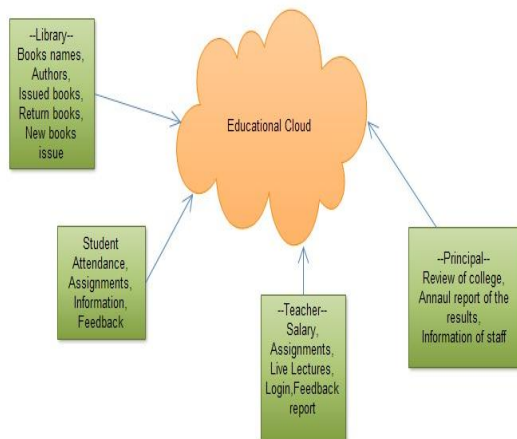

Fig 2: General overview about Cloud in education

IV. IMPLEMENTATION OF CLOUD IN RURAL AREAS

When we are saying we shall change the way of education using College Cloud, there are many children on the other side who still cannot afford education. In villages, where there are no schools, and even if it is there, there are no teachers. So in that case, how children can get the basic education? Cloud Computing can offer one way to teach these children. Instead of the human teacher, the internet connected computer can become their teacher. The idea behind this is that a teacher in urban area can teach a lesson online and these rural children can watch it on the big screen, so we can teach thousands of students simultaneously. We can also record each tutorial and store

it on cloud. So anyone can access it anytime and from anywhere. So this will remove the problem.

V. ADVANTAGES

Following are the advantages of the Cloud in education:
1. By using the cloud, we can access the data stored on the server anytime and anywhere.
2. Many users can access the same data at the same time.
3. Cost is also very less, there's just some computers and internet connection.
4. The whole system is reliable and cloud has its own built security and fault detection and fault recovery strategy.
5. Also by using the private cloud for our system we can save the energy. According to Green Cloud Computing algorithm, per-bit energy consumption and transmission and switching for private cloud is $0.46\mu J/b$. For public cloud, it should be $2.7\mu J/b$.

VI. LIMITATIONS

Following are the limitations of the Cloud in the education:
1. Though the initial cost the system is very low, maintenance cost of the system is high.
2. The security of the cloud is also the important issue need to be considered. Less secured cloud can be attacked from outsiders easily.
3. Not all applications support the cloud structure.
4. Low internet speed is major issue in the rural areas, where internet service provider may or may not have station. So due to less internet speed, the system should not be prove effective.
5. The major problem about rural areas is the load shedding or lack of electricity. Without electricity, this all system is just a big zero.

VII. CONCLUSION

Problem of illiteracy and faulty education system can be solved by the new technology like the Cloud Computing. All we just require is support from all the education institutes and some support from the Indian Government. This technology will helpful for us if we use it properly and make the future India smart and brilliant.

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