

Framework for Educational Data Access Using Cloud Environment

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Abstract

As an emerging technology and business paradigm, Cloud Computing has taken commercial computing by storm. Cloud computing platforms provide easy access to a company's high-performance computing and storage infrastructure through web services. With cloud computing, the aim is to reduce the complex work load for students carrying huge books on their back. By combining new technology's like cloud computing, 3G, Tablet pc student can carry anything to everywhere. for this we are creating a new virtual appliances called Random Access Data (RAD) to get better and fast information from provider. With proposing system Student need to carry only a single tablet pc to any required information for their studies.

Keywords

Cloud Computing, 3G, Tablet PC, Virtual Appliance

I. Introduction

Computers play a prominent role in the educational sector, as well as in business and industry sectors. The availability of high-end software and information rarely matches students need in a typical institution's. Industries expect institutions to turn out well-educated and trained students, so that their own efforts in training can be reduced. In India, the quality of education is not uniformly distributed due to the changes in economical conditions of institutions. With the help of cloud computing the economical conditions of institutions will reduce and the required information for students in different disciplines will place in cloud. The education institutes can access to the cloud for students to get required information for their academic year at very low cost. All the information that is required by the students is placed in cloud. By creating a virtual appliance [6] in the cloud environment Information sharing will be possible to n users.

II. Cloud Computing

Cloud computing gets its name as a metaphor for the Internet. Typically, the Internet is represented in network diagrams as a cloud. Cloud computing promises to cut operational and capital costs and, more importantly, Cloud technology provides computation, software, data access, and storage services that do not require end-user knowledge of the physical location and configuration of the system that delivers the services. Cloud computing is distributed processing, parallel processing and the development of grid computing, or commercial implementations of these concepts of computer science [5]. In the cloud computing model is the basic structure of which, the core part is composed of more than one computer server "cloud." It gathers all the resources together to form large data storage and processing center. Let IT departments focus on strategic projects instead of keeping the datacenter running. Cloud computing [1] provides the most reliable and secure data storage center. Users do not have to worry about data loss, virus attack [5] and other problems. The "cloud" manages information by a professional team. Besides, strict rights management strategy can help to share data.

III. Types of cloud computing

- Public cloud
- Private cloud
- Hybrid cloud

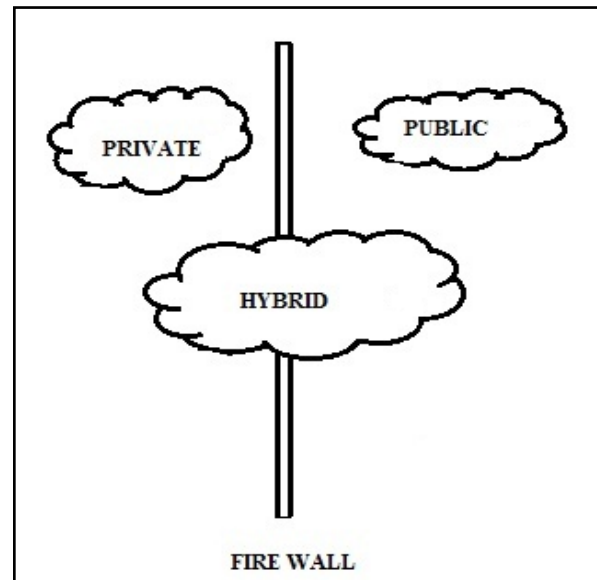


Fig. 1: Types of Cloud

A. Public Cloud

Public cloud is cloud service provided by a third party (vendor). They exist beyond the company firewall, and they are fully hosted and managed by the cloud provider. Public clouds attempt to provide consumers with hassle-free IT elements. Whether it is software, application infrastructure, or physical infrastructure, the cloud provider takes on the responsibilities of installation, management, provisioning, and maintenance. Customers are only charged for the resources they use, so under-utilization is eliminated. Another thing to keep in mind is that since consumers have little control over the infrastructure, processes requiring tight security and regulatory compliance are not always a good fit for public clouds.

B. Private Cloud

Private cloud (also called internal cloud or corporative cloud) provides service within the enterprise. These clouds exist within the company firewall and they are managed by the enterprise. Private clouds offer many of the same benefits that public clouds do with one major difference: the enterprise is in charge of setting up and maintaining this cloud. The difficulty and cost of establishing an internal cloud can sometimes be prohibitive, and the cost of continual operation of the cloud might exceed the cost of using a public cloud [4].

C. Hybrid Cloud

Hybrid cloud is a combination of public and private clouds. These clouds would typically be created by the enterprise, and management responsibilities would be split between the enterprise and public cloud provider. The hybrid cloud [3] provides services

that are in both the public and private space. Services from different sources must be obtained and provisioned as if they originated from a single location, and interactions between private and public components can make the implementation even more complicated. Since this is a relatively new architectural concept in cloud computing, best practices and tools about this pattern continue to emerge, and there could be a general reluctance to adopt this model until more is known.

IV. Types of Cloud Services

In cloud technology the information is shared from clients to the organization through the virtual data centers. This virtual data centers has all the required information.

The cloud technology model includes:

- SaaS (Software as a service)
- PaaS (Platform as a service)
- IaaS (Infrastructure as a service).

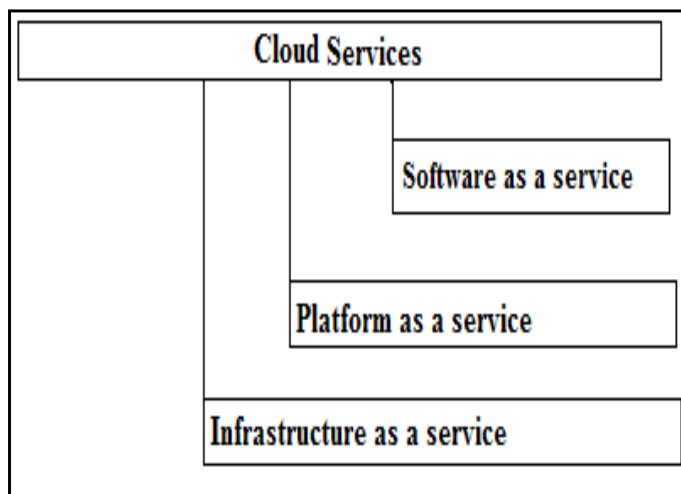


Fig. 2: Cloud Services

A. Software as a Service (SaaS)

SaaS is an application hosted on a remote server and accessed through the internet. In SaaS an application is hosted by a service provider and then accessed via World Wide Web by a client. SaaS [4] offerings feature the biggest cost saving over installed software by eliminating the need for enterprises to install and maintain hardware, pay labor cost, and maintain the applications.

B. Platform as a Service (PaaS)

To follow the heels of SaaS, platform as a service (PaaS) is another application delivery model. PaaS supplies all the resources required to build applications and services completely from the internet without having to download or install software. PaaS services include application design development, testing, deployment, and hosting. It provides infrastructure on which software developers can build new applications or extend existing ones without the cost and complexity of buying and managing the underlying hardware and software and provisioning hosting capabilities.

PaaS [5] generally offers some support to help the creation of user interfaces, and is normally based on HTML or JavaScript.

C. Interface as a Service (IaaS)

This offers remote delivery of an entire computer infrastructure. Managed hosting and development environments are the services included in IaaS. The user can buy the infrastructure according to the requirements at any particular point of time instead of buying the infrastructure that might not be used for months. IaaS [2]

operates on a “Pay as you go” model ensuring that the users pay for only what they are using.

V. 3G

3G is a term used to represent the 3rd generation of mobile telecommunications technology. 3G finds application in wireless voice telephony, mobile Internet access, fixed wireless Internet access, video calls and mobile TV. Data rate for 3G stating in commentary that “it is expected that IMT-2000 will provide higher transmission rates: a minimum data rate of 2 Mbit/s for stationary or walking users, and 384 Kbit/s in a moving vehicle.

VI. Virtual Appliance

A virtual appliance is a virtual machine image file consisting of a preconfigured operating system environment and a single application. The purpose of a virtual appliance is to simplify delivery and operation of the application. To this end, only necessary operating system components are included. Deploying an application as a virtual appliance eliminates problems with installation and configuration, such as software or driver compatibility issues. Users can simply download a single file and run the application. Resources required for maintenance are also reduced. Developers can include a Web interface for custom configurations or delivering patches and updates. A virtual appliance is often deployed as a subset of a virtual machine [6] running on virtualization technology, such as VMware Workstation [6].

VII. Methodology

Now a day's in India education system is developing very fast. To improve education system introducing cloud computing concepts into it. In India many education schools/institutes students are carrying huge bags on their back with weight of 9-12kg. To reduce the weight for the students and to get close to new technology's by carrying a single tab student can carry all the book and everything in it. Tab is connected to the 3G network to provide the data connectivity. By shearing the information with the help of cloud students in different colleges/institutes will also fetch with new developing areas. The information in the cloud is updated only by the head of the schools/institutes. Students of any discipline (any department) any collage can access the information. But the institute of the particular student should be register in cloud to get information for their students. Doing like these all the information for any student of any discipline in India will available in one place. Students can share the information and develop themselves by using cloud computing concepts. By doing like this work load for the student's will reduce and student can focus more on their studies [2].

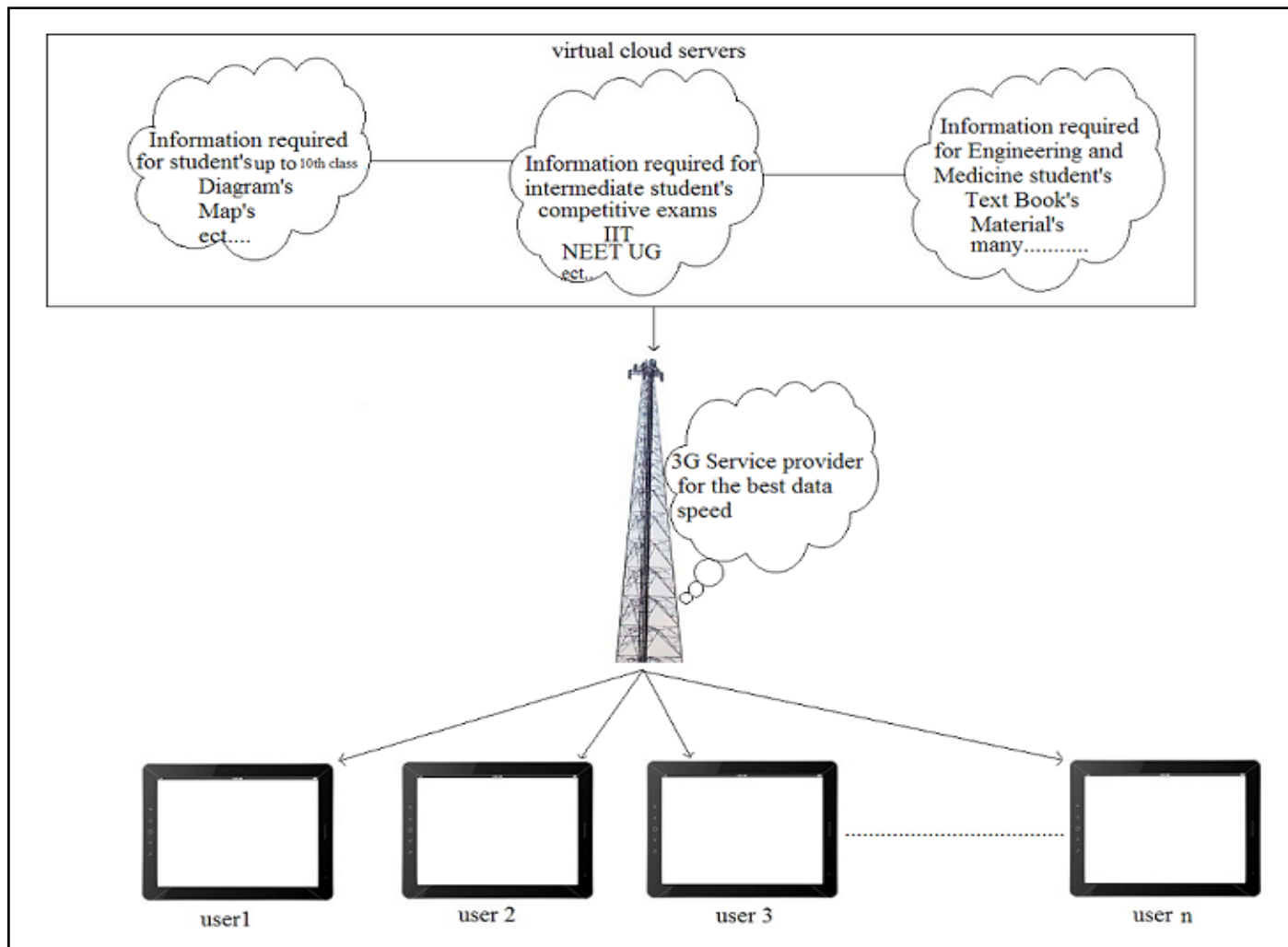


Fig. 3: Deploying Student Information to the Cloud and Retrieving Information from Cloud

VIII. Proposed System

Due to the changes in economical conditions and changes in India the educational system is not uniformly distributed in various areas. so to overcome this situation and to improve the educational standards to meet the industry quality we are making use of cloud computing a festally developing technology through which one can provide better facilities and required information for the students at very low price. The basic requirements for a student to gain access to the data are he should be authorized student of a institution the subscribed for the cloud facilities. Each and every school/institution in the country should subscribed for these cloud services then only every student in the country can gain access for the data in cloud services. It will be helpful in reducing the price of material/book that is required for a student. And can provide more efficient data for the students.

First the education institutes will register in to the cloud. Students of the institutes will get a login name and password for cloud account to get the required information. Students can only read the information in the cloud they cannot change the information in cloud .if any student want to upload any new ideas of him/her will be uploaded by the head of institute (or) head of the department [2]. Doing like these students can share their new idea with others and which will help to do new project in developing areas.

RandomAccessData(RAD) Virtual Appliance

User Name
 Institute Name
 User Id

Fig. 4: Virtual Appliance to get Required Information to Student

IX. Random Access Data (RAD)

In this framework we are proposing a virtual appliance for the student to get the information in their tablet pc. This virtual appliance will help to the student to get required information according to their study level. Fast accessing of data is possible with the help application. Student can also run small software required for their studies by this virtual appliance [6].

X. Conclusion

In this paper, we introduced a cloud computing technology in education system. It is widely used for students and this technology introduces an easy way to get required information, and it will also reduce the workload to students like carrying books by carrying single tab everything will be in their hands. Here, we utilize the existing enhancement of cloud security protocols for authenticating the information. By using cloud computing will reduce the time required for student to search required information about their studies. Cloud computing will create a major impact on education system, and contribute to an overall improvement in its quality. To conclude that if the encrypted information of the students is uploaded to the cloud, only authenticated receivers (students) can decrypt it there by we can enhance the security to the information.

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