

# An Automated Examination System Using Cloud Computing Technology

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**Abstract:** Traditional Exam cell activity mostly includes a lot of manual paper work. The aim of the project is to build a centralized system so that all the examination activities can be done effectively and efficiently for both students and staff. The final system would constitute a computerized module aimed at replicating offline exam cell process. The system is a new concept which came into existence because of a large amount of data being on paper. The automated system for exam cell department will benefit both the students as well as exam cell department staff to easily handle the entire task related to exam cell in contrast to the existing manual system. This system will make the procedure of exam cell in an organized manner. Using this, paperwork and confusions can be reduced and the rate of work done can be increased. This project implemented using the Cloud Computing Technology.

**Keywords:** Automation, Cloud Computing .

**1.Introduction:** This system emphasis on to overcome the drawbacks of traditional paper work for exam form filling by implementing an automated examination system. The centralized automated system is efficient as it overcomes important manual system drawbacks namely speed, precision, and simplicity. This system is like a common bridge between staff and students, thus making the activities convenient for each regarding examination. It is a system that will make the exam cell process much organized. The system can be customized based on the requirement of College. This System allows students to access required information regarding various exam forms, services and notifications of the college and submit the form online thus reducing processing time. Cloud-based system is emerging as an attractive method for providing examination services. It can reduce cost due to lower requirements of hardware and software and

less need for onsite maintenance. The main purpose of this paper is to access the potential value of cloud computing as platform for online examination management in education.

## **2.Challenges in Integrating Online Examination System:**

The various challenges encountered while adopting online examination system pointed out by researchers in their work are as follows. The challenges in integrating ICT in examination system pointed out by [2] and [3] includes: lack of resources, lack of technology knowledge and skills, institutional barriers, attitudes and beliefs towards technology, lack of integrating technology in assessment process, lack of integrating technology in subject culture, lack of user friendly interface, lack of usability that affects the acceptance of e-examination, resistance of teachers to use technology, copy right issues, lack of time to create assessment.

## **3.Proposed Cloud based Examination Management (CEM) Architecture:**

To address the challenges pointed out by researchers in their work in adopting online examination in the educational institutions, Cloud based Examination Management (CEM) architecture is proposed. The proposed architecture is inspired from [4] and [5]. Online

examination cloud is a migration of cloud computing technology in the field of online examination, which provides all the necessary infrastructure, hardware and software computing resources engaging in online examination management. The proposed architecture is comprised of three layers: Exam cloud app user layer, Cloud service delivery layer and Cloud Service deployment layer.

### **3.1 Description of proposed Cloud based Examination Management (CEM) Architecture:**

**3.1.1 Exam Cloud App User Layer:** Examination management application deployed on cloud can be accessed by users through web browser on-per-use-basis. The end-users in an examination usually consist of students, academic staff, administrative staff and Community. The end user use role-based services in the proposed cloud setup. In this layer role of students include: to register online, to fill examination form, to download syllabus, study materials, date sheet, hall tickets, progress report, apply to appear in online examination, attend online test, submit answers, know status of result, view declared results, apply for reevaluation, apply for certificates, submit grievances related to examination etc.

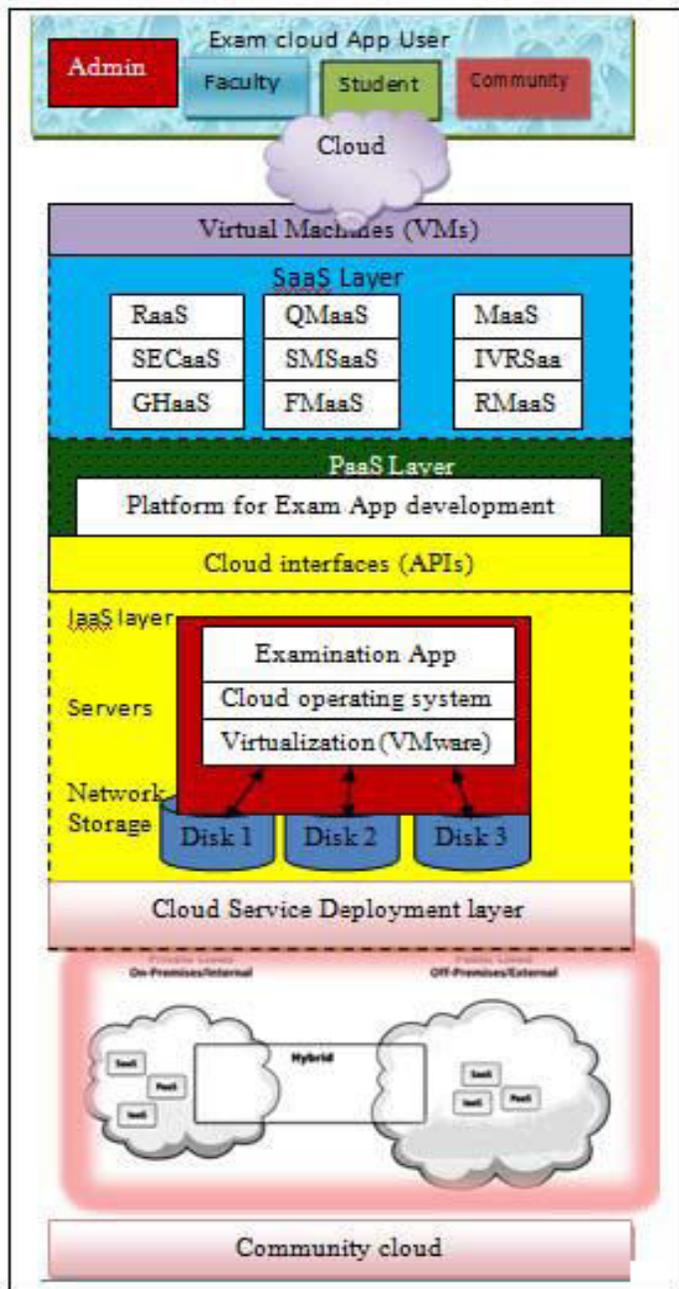
**3.1.2 Cloud service delivery Layer:** This layer consists of various services provided by cloud provider which includes: IaaS (Infrastructure as a service), SaaS (Software as a Service), Platform as a Service (PaaS). SaaS (Software as a Service) is a model layer in which software and associated data are hosted on the cloud and provided to the end users. SaaS (Software as a Service) on cloud provides the various examination management services which include, Security as a service (SECaaS)-provide security solutions against threats, corruption and hacking. Data is provided through structured authentication with specific role and responsibility. It provides virtual network (VPN) for additional security. Registration as a Service (RaaS)-provides registration facility to students, faculty members and assigns unique number to each candidate and faculty members. Question paper Management System as a Service (QMaaS)-provides the facility to teachers to manage questions in Question bank. From the question bank, the questions can be selected randomly and display one by one to the students on the day of examination.

**3.1.3 Cloud service deployment layer** The service deployment models of cloud computing include: 1) Public cloud-the public cloud offers IaaS, PaaS and SaaS as service. A public cloud is the obvious choice when: application is used by

lot of people, the organization don't require high data security measures, need incremental capacity, to test and develop application code, doing collaboration projects, doing ad-hoc software development projects. For examination management in education public cloud can be used for those services where institutions don't require high data security measures. The popular public cloud service provider includes: Amazon EC2, S3, Google App Engine, and Force.com. 2) Private cloud deals the delivery of services to a restricted set of consumers, usually within a single organization. The primary purpose for implementing private cloud is to maximize and utilize existing in-house resources, data privacy and trust of security. Academic institutions build private cloud for examination management when security and data privacy are something of primary concern such as question paper management and evaluation processes. Popular examples of private cloud include Amazon Virtual Private Cloud (Amazon PVC), Eucalyptus platform, IBM Smart Cloud Foundation and Microsoft Private Cloud. 3) Hybrid cloud- is a combination of two or more clouds (private, community or public). The hybrid cloud use public cloud to interact with the clients and keep their data secured within private cloud. The organization use hybrid cloud to employ cloud bursting for scaling across clouds in which application runs in a private cloud and bursts to a

public cloud when the demand for computing capacity increases. 4) Community cloud-It involves sharing of cloud computing infrastructure in between organizations involved in managing examination on cloud of the same community.

**Figure1:** Components of Proposed Cloud based Examination Management (CEM) Architecture



to cloud based online examination management are as follows

- **Optimum utilization of existing infrastructure:** The government has already invested in core ICT infrastructure build-up. The Examination Cloud can initially be built on the existing infrastructure, or by its augmentation. Online examination cloud computing will enable optimum utilization of this infrastructure and reduce duplication of cost and effort.
- **Rapid deployment and reusability:** Applications developed by one entity (e.g. departments at the centre and states and private organizations) can be made available on online exam cloud. These applications can be deployed and re-used by other departments with the required customizations. As a result government departments will have the freedom to focus on their core objectives including

policy, programs and process improvements or new applications development where a similar application does not already exist.

- **Powerful computing and storage capacity:** Cloud based online examination architecture locates the computing and data in a large number of distributed computers, the sea of clouds in the tens of thousands of computers to provide powerful computing power and huge data storage space, puts the “cloud” as a service available to students via the Internet.
- **Virtualization:** Virtualization is the most important characteristics of this type of architecture. Each application deployment environment and physical platform is not related. It is managed, expensed, migrated, and backup through virtualization platform. It put the underlying hardware, including servers, storage and networking equipment, comprehensive virtualization, in order to build a resources pool of shared, distributed on-demand.

## 5.Conclusion:

In this paper, we have proposed and discussed cloud based online examination management (CEM) architecture and also presented guidelines for managing existing resources for online examination adoption on cloud environment using open sources cloud technologies. The application of cloud computing technology to face the challenges encountered in the adoption of online examination system is a new idea and innovation which we have exposed in the educational system. The usage of cloud computing in examination management in education provide several benefits which include economic benefits, run applications on demand, location independent access to data , increased flexibility, elastic scalability, pay-as-you-go, easy to implement, service quality, update software automatically, and no maintenance costs etc. Further studies may look at the implementation of proposed examination management architecture in managing online examination system and security issues associated with the adopting cloud based examination application in a educational institutions.

## Future Enhancement:

The existing system can he enhanced, by giving the different seating arrangements different constraints can be given to get different

arrangements. By internet, automatically timetable has to fetch to the database and that seating should be created according to the particular date and session based on the Cloud Computing Technology. **References:**

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