

# SECURITY IN CLOUD EDUCATION

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## Abstract

*The demand of cloud services in various sectors have been significantly affected with the exponential growth in cloud. From new researches to IT cloud recruiters, all have indicated that technological professionals are unsure of how to get skilled in the growing discipline and opportunities. Significant increase in the educational budget and simultaneous growth in the demand of institutions info-tech services have led to an adaptation of cloud computing strategies to meet the needs in education sector. Still there are challenges with the cloud educational model but the potential benefits appear to be more overweighed. Once the available IT resources are grasped, the education system must know how to effectively use them. The education for associated staff, contractors and other stakeholders needs to obtain the support of cloud computing adoption benefits. Some of the major issues faced were in organizational education, change management, technology transition and organizational transformation, majority security and trust, service level and performance perceptions. This paper relates to the concerned issues and challenges for adopting a new type of cloud educational environment and IT educational workforce working on cloud.*

## Introduction

Cloud computing in emerging countries creates a way of teaching children who would not generally have access to education. ICT has explained a flexible delivery model through cloud computing which has powerful networks and systems with elevated transfer rates (ExcellGroup). It provides distributed resources through software and hardware as well as multi-tenant platforms that have a high degree of scalability (ExcellGroup).

Cloud campus in colleges, universities and other institutions create a low cost option that uses a high concept of computing. Without the use of paper which is costly to the environment, students and teachers share their work virtually on cloud (ExcellGroup). Cloud provider takes care of IT security management, licensing issues and software updates. This removes the load of IT administrators and allows the educational staff to concentrate on the core area and on more productivity (ExcellGroup).

The rising demand for cost-effective and secured software applications to transport services for knowledge and administration has limited the progress of education system. Systems are not capable of being scaled and demand huge capital fund, security issues and technological staff to establish or strengthen as with new evidence or facts in the system. The cloud model has appeared as the most favourable solution to meet the requirements of cost-efficient and scalable systems.

Despite of these benefits, cloud computing has several issues and challenges too—particularly relating to cloud security, which decreases its adoption rate. There should be a bond of trust and privacy between the cloud service provider and the education sector. Security must be viewed as a continuous process to meet the changing needs of a highly-volatile computing environment.

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Security is an active area of research under the concern of cloud computing and cloud education environment. A Cloud enabled system should adapt right security practices to overcome these problems relating to adoption of cloud education so that the users can fully enjoy the benefits of cloud services.

### **Cloud Education Environment**

Cloud computing has been one of the most popular technologies. In the field of education, cloud has been seen as somewhat beneficial. Modern-day education will not be able to keep up with the vitality of the world if it does not exploit of the most up-to-date advancements in the internet and digital technology which includes cloud computing. A responsible education sector will educate the young generation to be well-cultured and be citizens with a progressive outlook.

Cloud computing is the latest innovation used in the education sector. This technology allows the education sector to work more efficiently. The learners under cloud keep themselves updated with the current scenario and technology. It provides the learners access to the most latest technology provided by modern internet amenities. With this, learners learn at a pace unimagined before. Cloud use in an educational sector can help to collate the overall data which increases the performance and help the educators evaluate trends in a classroom and work consequently.

Aravind Sitaraman, president, Inclusive Growth at Cisco says, "The cloud brings a lot of advantages ... " It lowers costs, provides a degree of scalability and keeps the complexity in a central location" (Nandagopal). An integrated hardware-software cloud solution for education, called Cisco Education-Enabled Development (CEED) 2700 code-named *Dwara* was developed, which reduces the cost of implementing cloud solutions to a dollar per child per month (Nandagopal).

NIIT cloud campus has one of the largest implementation records over 150 centres in India. The chief executive of NIIT, G. Raghavan, says that their cloud campus basically addresses the need for flexibility and learning on demand (Nandagopal). "Flexibility will be in terms of when, what and how to learn. This will be different for each person, so we have to get an optimal mix of pedagogy to get learning effectiveness" (Nandagopal).

Cloud computing can be a pillar for Indian education, but adoption is hampered by security issues. Institutions do not accept the cloud technology due to its vulnerabilities related to cloud such as session riding and hijacking, virtual machine escape, insecure cryptography, data protection and portability, auditing and logging, authentication, and authorization.

### **Secure Cloud Educational Environment**

In order to ensure quality in education, the Educator-Learner relationship and cloud technology, with in-built security will play a major role. Cloud security will play an important role in the development of strong educator-learner relationships which helps the learners to progress and raise their standards. The educator-learner bond with the use of secure cloud technology makes it easy to develop the concept of online participation actively.

After undergoing the prior research work of analyzing the cloud prospects and problems through revisiting the cloud issues and challenges one can find the basic cloud security related threats

- Revisiting Cloud Security Issues and Challenges
- Research in Cloud Security: Problems and Prospects
- Cloud Security Related Threats.

### Conclusion

The secure cloud educational environment with strong collaboration and enduring partnership provides advantages like reduction in e-learning implementation costs, increased competitive advantages, increased security at lower costs, market flexibility, increased return on investment, high performance, broad network access and high resources pooling. In this context, the paper argues that cloud educational institutions as well as others should recognize the importance of security. There should be a link of reliance and confidentiality between the service provider and the client. Security has to be a constant process to congregate the changing requirements of a highly impulsive computing atmosphere. Cloud education has issues and challenges too, predominantly recitation to cloud security, which decreases its adoption rate. Cloud should adopt right security practices to prevail over the problems relating to acceptance of cloud so that the users can completely enjoy the benefits of cloud education.

Currently researchers are undertaking investigations on the different known threats faced by cloud and on possible solutions for the same. In spite of these investigations there is an imperative need to further investigate in these areas to come up with the new ideas related to the countermeasures.

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