

Role of Cloud computing security in Education system: A Review

Neha Deswal

Student M.Tech, CSE. Ganga Institute of Technology and Management, Kablana Jhajjar

deswalneha274@gmail.com

Abstract

Cloud computing is considered one of most discussed solutions on education scene. School IT managers & educators know very well that technology changes and potential they create for young learners have been constant & swift. Each new offering brings opportunities for pedagogy & challenges for deployment. Here we discussed cloud computing & some things to consider when deciding if this is right for your school. Whenever we talk of cloud computing, we always talk about its impact on business. We are going to speak on how cloud computing can help in noblest human pursuit of all, education.

[1] INTRODUCTION TO CLOUD COMPUTING

Cloud computing means that instead of all the computer hardware and software you're using sitting on your desktop, or somewhere inside your company's network, it's provided for you as a service by another company and accessed over the Internet, usually in a completely seamless way. Exactly where the hardware and software is located and how it all works doesn't matter to you, the user—it's just somewhere up in the nebulous "cloud" that the Internet represents.

Cloud computing is a buzzword that means different things to different people. For some, it's just another way of describing IT (information technology) "outsourcing"; others use it to mean any computing service provided over the Internet or a similar network; and some define it as any bought-in computer service you use that sits outside your firewall. However we define cloud computing, there's no doubt it makes most sense when we stop talking about abstract definitions and look at some simple, real examples—so let's do just that. Most of us use cloud computing all day long without realizing it. When you sit at your PC and type a query into Google, the computer on your desk isn't playing much part in finding the answers you need: it's no more than a messenger. The words you type are swiftly shuttled over the Net to one of Google's hundreds of thousands of clustered PCs, which dig out your results and send them promptly back to you. When you do a Google search, the real work in finding your answers might

be done by a computer sitting in California, Dublin, Tokyo, or Beijing; you don't know—and most likely you don't care!

The same applies to Web-based email. Once upon a time, email was something you could only send and receive using a program running on your PC (sometimes called a mail client). But then Web-based services such as Hotmail came along and carried email off into the cloud. Now we're all used to the idea that emails can be stored and processed through a server in some remote part of the world, easily accessible from a Web browser, wherever we happen to be. Pushing email off into the cloud makes it supremely convenient for busy people, constantly on the move.

Preparing documents over the Net is a newer example of cloud computing. Simply log on to a web-based service such as Google Documents and you can create a document, spreadsheet, presentation, or whatever you like using Web-based software. Instead of typing your words into a program like Microsoft Word or Open Office, running on your computer, you're using similar software running on a PC at one of Google's world-wide data centers.

[2] TYPES OF CLOUD COMPUTING

IT people talk about three different kinds of cloud computing, where different services are being provided for you. Note that there's a certain amount of vagueness about how these things are defined and some overlap between them.

Infrastructure as a Service (IaaS) means you're buying access to raw computing hardware over the Net, such as servers or storage. Since you buy what you need and pay-as-you-go, this is often referred to as utility computing. Ordinary web hosting is a simple example of IaaS: you pay a monthly subscription or per-megabyte/gigabyte fees to have a hosting company serve up files for your website from their servers.

Software as a Service (SaaS) means you use a complete application running on someone else's system. Web-based email and Google Documents are perhaps the best-known examples. Zoho is another well-known SaaS provider offering a variety of office applications online.

Platform as a Service (PaaS) means you develop applications using Web-based tools so they run on systems software and hardware provided by another company. So, for example, you might develop your own ecommerce website but have the whole thing, including the shopping cart, checkout, and payment mechanism running on a merchant's server. Force.com (from salesforce.com) and the Google App Engine are examples of PaaS.

[3] ADVANTAGES AND DISADVANTAGES OF CLOUD COMPUTING

Advantages

The pros of cloud computing are obvious and compelling. If your business is selling books or repairing shoes, why get involved in the nitty gritty of buying and maintaining a complex computer system? If you run an insurance office, do you really want your sales agents wasting time running anti-virus software, upgrading word-processors, or worrying about hard-drive crashes? Do you really want them cluttering your expensive computers with their personal emails, illegally shared MP3 files, and naughty YouTube videos—when you could leave that responsibility to someone else? Cloud computing allows you to buy in only the services you want, when you want them, cutting the upfront capital costs of computers and peripherals. You avoid equipment going out of date and other familiar IT problems like ensuring system security and reliability. You can add extra services (or take them away) at a moment's notice as your business needs change. It's really quick and easy to add new applications or services to your business

without waiting weeks or months for the new computer (and its software) to arrive.

[4] REVIEW OF LITERATURE

Review of literature constitutes an important section in any research study, which provides a critical overview of various dimensions of any subject, which have been explored over different time frames. This in turn helps to identify the gaps in the literature, which motivates for further research in the area so that such gaps can be filled up with proper justification. The researcher has made an effort to review the existing literature under these main heads:

Exploration of Cloud Computing Adoption for E-Learning in Higher Education

E-learning is a comparatively new concept, even newer is cloud computing. Thus, there is need to increase research on how the two innovations can best work together. This paper explains the challenge within the context of higher education. This paper [1] begins with background literature research on these key concepts before identifying where gaps exist. It then proposes a research by presenting objectives and indicating proposed methods for the investigation.

Empowering IT education in rural India

Education is a basic necessity and a portal for betterment. The use of technology in education has had a positive impact on the students, educators, as well as the educational system as a whole throughout the country. But due to the poor economic condition, many rural areas are not capable of affording the modern innovative education technologies developed by computer systems. This has brought an urban-rural digital divide affecting the student strengths in building their career based objectives.

Towards educational school cloud for India: A case study with Kendriya Vidyalayas

The business enterprises are increasingly adopting cloud computing deployment model due to efficient resource utilization using multi-tenancy, rapid elasticity of resources to meet dynamic demands, network-based access from heterogeneous devices and software licensing through pay-per-use model resulting in significant

cost savings. Similar benefits can be derived if cloud deployment model is extended to education where services are currently hosted based on-premise model. In this paper, we look at how cloud computing approach to education services deployment can benefit schools in the Indian context. We present our cloud deployment experience from the pilot phase of our cloud project connecting 14 Kendriya Vidyalaya schools in three geographic regions.

Cost benefit analysis of cloud computing in education

In the current financial crisis and the growing need for quality education, the educational institutions are under increasing pressure to deliver more for less. Both public as well as private institutions can use the potential benefit of cloud computing to deliver better services even with fewer resources. Application of Cloud Computing in Education not only relieve the educational Institutions from the burden of handling the complex IT Infrastructure management as well as maintenance activities but also lead to huge cost savings. Government of India is having the ambitious plan to raise the present 16 million enrolments in higher education to 42 million by 2020 as well as interconnect electronically India's 572 universities, 25,000 colleges and at least 2,000 polytechnics for enabling e-learning and content sharing across country.

Role of cloud computing in education

Educational Institutions are under increasing pressure to deliver more for less and they need to find ways to offer rich, affordable services and tools. Cloud computing has the potential to provide computation and storage resources as services. Both the public as well as the private institutions can use the cloud computing to deliver better services with limited resources. Around 45 million people will be in the age group of 18 to 20 years by 2020 in India. To make available quality education for them will be challenging task.

[5] PROBLEM STATEMENT

Cloud computing promises new way of provisioning elastic computational resources. This vision is attractive to research and educational groups in many developing countries where even big academic and research institutions are still lacking

resources to sufficiently support their research and education activities. For research and educational groups without adequate computing resources, cloud computing offerings could be a viable solution. However, for their research and teaching activities these groups face not only with common issues in accessing large computational resources and having short time research plans, but also several other constraints in terms of technological infrastructure (e.g., network performance), educational objectives (e.g., mastering advanced technologies developed in developed countries) and economy (e.g., lack of money even for a short research plan). While, from an economic perspective, it seems that cloud computing would be one of the best solutions for such groups, one of the important aspects needs to be considered is what technical and educational factors could impact on the selection of cloud solutions as well as how cloud computing features could be customized to support their adoption by existing groups in developing countries. In this research paper, i will analyze requirements and research issues. Researcher will then present research approaches and study in developing and adopting cloud computing technologies for research and educational groups.

The economies of scale and other features of cloud computing are likely to mean an increasing shift away from institutionally-hosted services. These services are increasingly provided using Internet technologies to staff and students and accessed from web browsers. The services are offered cheaply or freely to education, often with much higher availability than can be provided by the educational institution.

It has the potential to reduce information and communications technology (IT) costs by virtualizing capital assets such as disk storage and processing cycles into a readily available, affordable operating expense.

Are we therefore facing a future where the majority of educational services will be hosted in the cloud and institutions would no longer host their own data centres with expensive hardware, power bills, staff salaries and computing resources which are rarely fully utilized.

Public cloud computing will deliver benefits beyond the major universities. Its advantages may be even more pronounced in small colleges that have not yet achieved high levels of computerization, or do not have and have trouble recruiting people with adequate IT skills, or those worried about their ability to secure and protect data. By contracting with a cloud service provider (perhaps another, larger university), that small college can adopt state-of-the-art applications and services, enabling the college to skip a whole generation of academic computing, thereby bypassing many of the costly and debilitating challenges discussed previously.

[6] OBJECTIVE OF RESEARCH

The proposed study is intended to achieve the following aims and objectives:

1. To study the evolution and growth of cloud computing.
2. The objective is to analyze various initiatives at national and international level. It is done for utilization adoption of cloud computing in education.
3. Other aim is to analyze system of management education in India.
4. Purpose of study is to analyze the awareness and perception of faculty members wrt cloud computing adoption into management education.
5. To conduct comparative analysis of cost benefit associated with various service providers.
6. To analyze various issues, challenges and security aspects in cloud computing adoption.
7. Based on the findings of the study suggest some major value addition in management education system in Delhi-NCR due to cloud computing adoption.

[7] CONCLUSION

Adoption of cloud computing in enhancement of education system especially management education is one such way to spread the awareness about the benefits of the cloud computing in education and business orientated aspects. The present study that aims to explore the factors resulting in adoption/non adoption of cloud computing in management education can prove really beneficial to the entire system of management education and cloud computing business. The outcomes of the study may give an insight to improve upon the management education through the adoption and

implementation of various features of cloud computing which is much easier and faster and which contribute in overall efficiency. It would further help in reducing compute resources required in terms of manpower expertise at source. This study can be extended to a country wide study based on the results of the scope of this study that would be restricted to the National Capital Region of India. In addition, the study would help highlight some potential implications of the findings necessary for policy makers to achieve a successful cloud computing infrastructure for management education system in the country.

REFERENCE

1. Bégin, M., An egee comparative study: Grids and clouds-evolution or revolution, in Enabling Grids for E-Science. 2008, CERN.http://www.sixsq.com/internal/white-papers/cloud/EGEE-Grid-Cloud.pdf/at_download/file (probably the first academic perspective on cloud).
2. M. Vouk. Cloud Computing – Issues, Research and Implementations, Journal of Computing and Information Technology – CIT 16(4), 235 – 246, 2008.
3. <http://loveni.name/clover/Cloud%20Computing%20-%20Issues,%20Research%20and%20Implementations.pdf>
4. L. Vaquero, L. Roderio-Merino, J. Caceres and M. Linder. A Break in the Clouds: Towards a Cloud Definition, ACM SIGCOMM Computer Communication Review 39(1), 50 – 55, January 2009. <http://portal.acm.org/citation.cfm?id=1496100>
5. M. Armbrust, A. Fox, R. Griffith, A. Joseph, R. Katz, A. Konwinski, G. Lee, D. Patterson, A. Rabkin, I. Stoica and M. Zaharia. Above the Clouds: A Berkeley View of Cloud Computing, Technical Report No. UCB/EECS-2009-28, Electrical Engineering and Computer Sciences, University of California at Berkeley, February 2009. <http://www.eecs.berkeley.edu/Pubs/TechRpts/2009/EECS-2009-28.html>
6. R. Buyya, C. Yeo, and S. Venugopal, Market-Oriented Cloud Computing: Vision, Hype, and Reality for Delivering IT Services as Computing Utilities, Keynote Paper, Proceedings of the 10th IEEE International Conference on High Performance Computing and Communi-

- cations (HPCC 2008, IEEE CS Press, Los Alamitos, CA, USA), Sept. 25-27, 2008, Dalian, China.http://www.gridbus.org/papers/hpcc2008_keynote_cloudcomputing.pdf
7. Weiss. Computing in the clouds. netWorker 11, 4 (Dec. 2007), 16-25. <http://doi.acm.org/10.1145/1327512.1327513>.
 8. D. DeWitt and J. Gray. Parallel Database Systems: The Future of High Performance Database Systems. Communications of the ACM 35(6), 85 – 98,1992.<http://portal.acm.org/citation.cfm?id=129888.129894&coll=ACM&dl=ACM&CFID=70064966&CFTOKEN=60946784>
 9. M. Satyanarayanan. A Survey of Distributed File Systems,1989.<http://www.cs.cmu.edu/~satya/docdir/satya89survey.pdf>
 10. Ooi and S. Parthasarathy (eds). Special Issue on Data Management on Cloud Computing Platforms, IEEE Data Engineering Bulletin 32(1), March 2009.<http://sites.computer.org/debull/A09MAR-CD.pdf>