SURVEY ON VARIOUS CLOUD APPLICATION CONTRIBUTIONS IN EDUCATION SECTOR

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Abstract: Education is a key factor in ensuring economic growth, especially for countries with growing economies. Today, students have become more technologically as teaching and learning uses more advance technology day in, day out. My Five Application Are:1)Amazon Cloud Services in Education: Amazon Web---Amazon offers many cloud services, including: Amazon Elastic Compute Cloud.2)Microsoft Education Cloud Computing--Microsoft cloud services give students and researchers the ability to make full use of the same Microsoft technologies in the educational institution.3)Google Applications for Educational Cloud Computing---It provides a range of online tools and services that give secure communication and collaboration capabilities to the institutional schools and let the faculty, researchers and students choose the solutions that suit their unique needs.4)IBM Cloud Services to Education---The IBM Smart Cloud for Education is a set of cloud services and offerings designed to help education systems.5)HP Cloud Computing In Education---HP Cloud computing in education is a way to build, operate, and consume IT that makes educational resources such as the student records, knowledge management, faculty collaboration and etc. Be specific what we are going too discussed?

Index Terms -Cloud Computing, Benefits of Cloud Computing, Challenges of Cloud Computing in Education, Propose System, APPLICATIONS OF CLOUD IN EDUCATION are of Five types, they are 1)Amazon Cloud Services in Education: Amazon Web.2)Microsoft Education Cloud Computing.3)Google Applications for Educational Cloud Computing.4)IBM Cloud Services to Education.5)HP Cloud Computing In Education. RISKS OF CLOUD COMPUTING IN EDUCATION.

INTRODUCTION

Cloud computing has taken major chunk of attention from various communities in society like researches, student, business, consumer and government organization. Cloud Computing, also known as utility computing, delivering the service as software, platform and infrastructure as a service in pay-as-you-go model to consumers. It’s just getting anything for the pay model. Industry surveys says on this services as “Cloud computing, the long held dream of computing as a utility, has the potential to transform a large part of the IT industry, making software even more attractive as a service. System of education has been gradually expanded, and the education object has slowly turned to social staff. Education has evolved from teacher centric to learner centric. With the advent of awareness and modernization of present society, quite a good number of people are receiving education, a series of new problems have emerged. For example: As teaching methods change, the existing teaching-learning methods cannot meet demand and need quite a good amount of infrastructure with high prices and with the constant expansion of education, the existing teaching facilities also need to constantly update, it provides a new solution to establish a unified, open and flexible network teaching platform and reduce the hardware input. Internet is the resource where we can transform cloud computing, it can deliver the most advanced software and educational materials, hardware resources and services to students and educators in even the most impoverished or remote school districts in the state, without the need for advanced IT expertise at those locations. From the example above, the industrial cloud computing solution for the educational institution gave an estimated savings from about $9,774,000 per year to $2,500,000 per year in the ROI for “businesses version” or to zero cost of licensing and equipment in the “educational version”.

Benefits of Cloud Computing

- High return on investment(ROI)
- Reduced implementation and maintenance costs
- Increased mobility for a global workforce
- Scalable and Flexible infrastructures
- Short time to market
- IT department transformation (focus on innovation vs. Maintenance and implementation)
- “Greening” of the data center
- Increased availability of high-performance applications to small/medium-sized businesses
Challenges of Cloud Computing in Education

There are various challenges that come with cloud computing in education. Some of these challenges include security, data privacy, as well as insufficient network. Data handling, as well as privacy laws need not be taken flippantly. Some of the hindrances to the adoption of cloud computing in the education system include:

Security and Privacy

This is a major concern among many institutions of higher learning [21, 22]. Cloud computing calls for the introduction of a third party who is the platform provider hence the privacy and security of data is hard to maintain.

Real Benefits

Most institutions of higher learning are not yet convinced of the benefits that come with cloud computing. Such institutions are more concerned with their conventional IT portfolio and how to make cloud computing part of it. Thus there need to be set indicators for comparing performance and availability versus service level agreements (SLA), utilization, as well as costs.

Service Quality

This is one of the reasons cited by learning institutions for not shifting to cloud computing. They argue that the SLAs stipulated by the providers of cloud services are insufficient when it comes to guarantying performance, availability, as well as scalability.

Lack of adequate network responsiveness

In case bandwidth of the network is not adequate, then it becomes impossible to deliver complex services through it. Most learning institutions lack adequate bandwidth, hence cannot adopt cloud computing effectively.

Integration: Different applications require complex integration as to connect to the available on-premise applications, as well as cloud applications. Thus, there is need to have a quick, cost effective and simple way to connect university systems with cloud applications.

PURPOSE OF RESEARCH

Students’ learning is no longer confined within the classroom in the era of e-learning 2.0[11]. The environment of IT education could be improved to let student access learning resources anywhere. IGNOU (Indira Gandhi national Open University) is the good example of e-learning. The free software can be adopted for constructing the cloud computing service for the environment of IT like OpenOffice.org such as word processing, spreadsheets, and presentations. Only a browser is needed for students to connect to the cloud computing service for learning.

3.1 Example1

ENGINEERING INSTITUTE-Computer Lab

All the colleges have computer labs in which some are fully equipped but there are many colleges with deficiency of infrastructure, platform, and software’s due to many problems which are not to be discussed. So in such situation cloud plays an important role where students from rural areas can get quality education through their virtual machines.

3.2 Example2

AICTE – Microsoft Cloud Adoption Project

All India Council for Technical Education (AICTE) has partnered with Microsoft Corporation India Pvt.Ltd to implement Cloud email offering for all its institutes. As a part of Cloud Adoption all institutes get access to Microsoft Office 365 for Education.O365 for Education, a no-cost suite of communication and collaboration tools includes the following:

Messaging Apps: Exchange online (10 GB inbox per student with 18MB attachment) and Outlook calendar 25 GB online storage space (through Windows Sky Drive) Office web apps – Online companions to Microsoft Word, Excel and PowerPoint and OneNote 24/7 online support for students and administrators.

APPLICATIONS OF CLOUD IN EDUCATION

Educational cloud computing services represent a growing variety of useful services available on the internet, and the most innovative and rapidly developing element of technology and education. It also promises to provide multiple services that will be very useful to the students, faculty and staff. The role of cloud computing in university education should not be underestimated, as it can provide important gains in offering direct access to a wide range of different academic resources,
research applications and educational tools. Educational cloud computing is quickly taking the education community by storm as more platforms, applications and services are being developed for academic cloud computing.

Some of these applications are Microsoft, Google, IBM, HP, Amazon, Sales force, Amanda and Zamanda. A. Amazon Education Cloud Computing to assist educators in providing cloud computing instruction. Amazon Web Services (AWS) offer teaching grants supporting free usage of AWS for students in eligible courses. The grants will provide educators with free usage for each student enrolled in courses with AWS as part of the curriculum. Furthermore, AWS provide a highly scalable cloud computing platform for schools and universities which encompasses high availability, dependability, and the flexibility to enable the faculty, students and researchers to build a wide range of applications. With AWS, students and others can requisition compute power, storage, and other services gaining access to a suite of elastic IT infrastructure services for educational purposes.

The AWS provides some educational services for the students and faculty: _Research grants for academic researchers using AWS in their work._ Access to the available resources27_ _Tutorial and project grants for the student organizations using AWS for self-directed learning._ Teaching Grants for faculty based on AWS_ _Efficiency and cost-effectiveness in the institution’s IT Infrastructure_ As a result, the deployment and reliability for the educational infrastructure are basically managed by AWS.

A) Amazon Cloud Services in Education: Amazon Web

Services represent the most extensive cloud service to date that provides re-sizable compute capacity in the cloud. It is designed to make web scale computing easier for developers.

Fig: Amazon EC2 Services

Amazon offers many cloud services, including: _Amazon Elastic Compute Cloud (AmazonEC2):_ A web service that offers virtual machine and extra CPU cycles for the institutional organization presents the services of Amazon EC2 [39, 54, 42] Amazon Simple Storage Service (Amazon S3): Allows the students, faculty and researchers to store items with a limited size in Amazon’s Virtual storage_ Amazon Simple Queue Service (SQS): Offers different kinds of messages passing API, so that educators can talk to each other_ Amazon Simple DB: A web service for running queries on a structured data set in the cloud in real time_ Amazon Virtual Computing Laboratory (Amazon VCL): A free source implementation of a secure production level on-demand utility computing for accessing a wide-area of computational resources, storage and software.

Fig: Implementation of VCL

B. Microsoft Education Cloud Computing

The Microsoft software and services strategy are about the power of choice a hybrid model of resources that enables the students and researcher to transfer to the cloud. It also lets the researchers to arise workloads across the infrastructures and complement their actual IT assets with Web-based services. Microsoft cloud services give students and researchers the ability to make full use of the same Microsoft technologies in the educational institution.Additionally, all services offer greater financial flexibility to educational institutions and enable lower costs to develop, scale, operate and migrate the systems that are distributed between the cloud and the data center.
Microsoft Live@edu can serve a range of needs. Reduce the costs for IT infrastructure, such as maintenance. Minimize time spent maintaining e-mail systems and on strategic initiatives. Provide flexibility and collaboration with peers and faculty. Reduce the time evaluating risk and help make informed decisions about the use of educational cloud computing. Improve high student expectations, including anywhere access to the latest technology. Free on demand resources. Test and deploy large-scales applications in different environment.

C. Google Applications for Educational Cloud Computing

Google App Education (GAE) as a new generation of cloud computing-based Web application development platform enables its users such as the faculty, researchers and students and so on, to operate Web applications within the Google Infrastructure. GAE is available at no cost to institutions, universities and education community [16]. The teachers, students, and staff can share ideas more rapidly and get things done more adequately they have got an efficient communication and sharing tools. Google Apps Education Edition lets technical administrators provide a collection of Web-based messaging tools such as Google Mail, Google Talk, Google Sites, Google Video and Google Calendar to the faculty, students and staff for free in addition to productivity and collaboration tools such as Google Docs Package.

1) Google Applications For Educational Cloud Computing

GAE provides a range of online tools and services that give secure communication and collaboration capabilities to the institutional schools and let the faculty, researchers and students choose the solutions that suit their unique needs.
Service details

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Table I: GAE Services

2) Google Calendar

Google Calendar is a published, shared, integrated and accessible calendar for scheduling courses. Moreover, the faculty, researchers and students can use the Google calendar to manage their business and organize their work groups.

3) Google Sites

Google Calendar enables the faculty, researchers and students to build create and publish information with Google tools.

4) Google Video

Google Video allows the faculty, researchers and students to share information using secure and private video tools.

5) Google Talk

Google Talk is an Instant Messaging (IM) tool of Google. Colleagues can communicate remotely with limited conservation by IM.

6) Google Mail

Google Mail uses labels and filters to help students, faculty and researchers organize their email, manage the flow of incoming messages and get mail from other email accounts in their Gmail inbox in addition to sending messages from different addresses.

7) Google Docs

It is considered the main task tool of the course, because it allows participants to collaborate synchronously in the same document.

D. IBM Cloud Services to Education

IBM offers a new set of cloud services to deliver programs, computer lab contents and services to the faculty, students and researchers at schools, colleges and universities, without the need for advanced IT expertise at those locations. The IBM Smart Cloud for Education is a set of cloud services and offerings designed to help education systems leverage predictive analytic to get real time insights on educators and institutional performance, enhance researcher effectiveness and alleviate constrained lab resources for learning [10, 24, 25, 46]. By using the IBM Smart Cloud for Education services, schools and higher education institutions can address the significant challenges they face: student achievement, graduation rates, scholarship funding, and demands for IT resources for research.
IBM Cloud Computing Services in Education: Educational institutions, universities and schools face constant demands from the students, staff, faculty and researchers for stable, quick and security rich access to labs and computing resources. However, setting up and maintaining the IT environment for this purpose can affect several challenges such as high costs and lack of scalability to perform fluctuating demand and quality of service challenges despite budget constraints. Cloud computing can assist in addressing these challenges and provide cost-effective access to the resources required to meet the needs [26, 9, 10]. IBM Virtual Computing Lab (VCL) Solutions for Cloud, part of the IBM Smart Cloud for Education, can support open/free source software and a technical infrastructure that serve the needs of educational institutions.

E. HP Cloud Computing In Education

With integrated support and service tools, HP gets the students, faculty and researchers to the cloud and ensures they get the most from the cloud once the educators are there. Services from HP can transform the IT infrastructure and optimize several clouds. HP Cloud computing in education is a way to build, operate, and consume IT that makes educational resources such as the student records, knowledge management, faculty collaboration and etc. available on demand. HP Cloud Computing delivers a comprehensive, integrated cloud solution on one platform, with all the services so prized by service providers in the institutions, and IT professionals.

1) HP Cloud Computing in Education

HP Cloud Computing Curriculum and HP Cloud System courses from HP Education Services help the educators address their cloud needs. With award-winning on-line or face-to-face courses from HP Education Services, the students, faculty and researchers can combine mission critical computing with HP & heterogeneous management of their existing environment with HP Software. The characteristics of a cloud system in HP are as following: a) True Integration, b) Complete management and automation, c) Security, d) Scalability.

2) Cloud Map of HP Education for Cloud Computing

HP Cloud System is the product of HP’s experience in delivering application management, and Converged Infrastructure capabilities. It enables the educational institutions to build and manage cloud services across private, public clouds, and traditional IT environments without having to know about HP Cloud System’s infrastructure.

5. RISKS OF CLOUD COMPUTING IN EDUCATION

There are clearly some major potential benefits to institutions deploying cloud services however; it challenges computing service personnel who may fear the consequences of their roles being outsourced. The universities and schools should consider the challenges and risks prior to transferring to the cloud [32, 45]. Examples of these risks are:
Cloud Service Failure

Insufficiency of financing and immature markets could guide some cloud providers out of business and any loss or deterioration of service delivery performance, as well as a loss of investment, make the universities and schools to the risk of having to perform their own duties and obligations, thus being exposed to contractual or legal liability to their employees, third parties, the students or even the public.

Compliance Regulations

Due to the increasing number of regulations and need for operational transparency, the educational institutions are increasingly adopting consolidated and consistent sets of compliance controls

Data Privacy

The multi-tenancy, reuse of hardware and software profiles, and resiliency due to the redundant nature of cloud means a greater risk of incomplete or unlock deletion or denial of service attacks on institutions’ confidential data.

Assurance to Service Provider

This proposes a dependency on a particular cloud service provider for service preparation, especially when data portability is not supported.

CONCLUSION

This paper we have discussed about the challenges of educational cloud computing and how the universities and institutions are already taking advantage of it, not only in terms of cost but also efficiency, security, reliability and portability. Several general examples of cloud computing in education such as Microsoft, Google App, IBM, Amazon and others were provided and a case study of the applications was presented and explored in more details

REFERENCES