APPLICATIVE USAGE OF CLOUD BASED LEARNING PLATFORM

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Abstract: *The opportunities for online learning have grown tremendously in recent years. Interestingly, there seems to be more ways to participate in active learning. Cloud computing has become one of the most buzz word in today's educational perspective in order to promote operational efficiency in educational institutes. The technology offers a new way to deliver education as an online service accessed from a web browser. This paper throws a light on cloud application development platform. Cloud computing trend is quickly evolving into a premium learning platform for data storage and exchange in educational institutions by using "cloud-based" applications. The paper explores cloud computing benefits being applied particularly at Dept. of Computer Science and Engineering at IIT Kanpur. It elaborates the applicative usage of Arch4Cloud@IIT-K environment for educational purposes with relative advantages and problems inherent in these applications. For 2013 onwards, cloud computing is rapidly growing, yet evolving learning platform.*

Keywords: *Cloud Computing, Cloud Based Learning, Collaborative Learning, Network, Web Browser.*

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1. INTRODUCTION:

Cloud computing technology offers a new way to deliver education as an online service accessed from a web browser. It leaves a significant impact on teaching and learning activities of students by providing cloud based learning platform. Students and teachers have the opportunity to quickly access various applications and resources through virtual classrooms by attending classes anywhere on their own computers [1].

Definition:

Cloud computing is a buzzword in today's digital world. In layman's terms cloud computing may be defined to use web services for our computing needs [2].

Broadly, the cloud computing can be described as delivering the on-demand computing service to anyone with an internet connection. The daily life examples of using cloud services are while using gmail, google docs, flickr, facebook, online shopping etc. In the field of education also cloud computing plays an important role like downloading the required documents from google, doing online course like Oracle certification, Red Hat etc.

The NIST (The National Institute of Standards and Technology) defined that cloud computing is a paradigm to provide ubiquitous, convenient, on-demand network access with shared pool of configurable resources that can be rapidly provisioned and released with minimal management effort or service provider interaction [3].

NIST use three service models named as Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS) and four deployment models which are Private cloud, Community cloud, Public cloud and Hybrid cloud [3].

2. THE CLOUD CAN HELP EDUCATIONAL INSTITUTES:

Cloud computing trend is quickly evolving into a premium learning platform for data storage and exchange in educational institutions by using "cloud-based" applications e.g. email, google apps etc. [4]. Educational institutions are adopting the current cloud based learning platform to provide the effective learning among students and is necessary to staying competitive and retaining students. By adopting Cloud computing applications institutions curtail high expenditures on hardware, software and IT maintenance and integrate information technology to teaching [5].

Cloud based learning platform help educational institutes to store expensive massive data and information that's easily accessible from anywhere. The students easily acquire and

implement the latest software and application updates in clouds [6]. The applicative usage of cloud technology offers many benefits to the educational institutes to store and accesss data online with data security by providing online tools and services. It provided a platform to both the teachers and the students to access and share documents, class calendars, chat messages, lecture notes etc. [7].

Cloud computing platform inject new life into corporate education with a dynamic content and course delivery. Instead of taking weeks or months to create course content, utilize solutions that allow you to develop just-in-time trainings and assessments using rapid authoring tools such as PowerPoint, Chat. Students can participate in trainings as they would in live classrooms, but from the convenience of their home or office. There are various cloud application development platforms provided by the cloud vendors to suit the peculiar needs of the users.

3. CLOUD APPLICATION DEVELOPMENT PLATFORMS:

Cloud Applications are generally deployed by cloud vendors in order to provide highly scalable and elastic services to end users. Some of the cloud application development platform in the PaaS market are Google App Engine, Microsoft Windows Azure, Force.Com, and ManjrasoftAneka etc. [8]. There are various cloud based technologies such as social network tools like Gmail, google groups, Live@edu, Facebook, Yahoo etc. that facilitate the end users. Application development, deployment and runtime management have always been reliant on software development platforms such as Microsoft's.NET, WebSphere, or JBoss etc. which provides a robust eLearning platform to modernize students learning and development initiatives [9]. By implementing a training-delivery system that combines the power of on-demand, self-paced courses with interactive live virtual classrooms, the platform can streamline training delivery, eliminate unnecessary expenditures, and repurpose resources to create efficiency within an organization. One of these applicative usage of cloud based learning platform is Arch4Cloud@IIT-K which work seamlessly on PCs, laptops and desktops, and even mobile devices [10].

4. ARCH4CLOUD@IIT-K: A CASE STUDY:

The paper explores cloud computing benefits being applied at Dept. of Computer Science and Engineering at IIT Kanpur. This section analyzes how cloud computing technology helps educational institutions to support process of teaching and learning. It briefly entails the

applications of cloud computing technology for education in IT courses. We have used Arch4Cloud@IIT-K portal to collect and analyse the interaction patterns and learning activities of students participated in an online course. We assume that students applying within these technology-enhanced learning platform have theoretical knowledge of the cloud based applications and put key principles for knowledge creation and sharing into practice. We rely on information provided on portal for a systematic, practice-based analysis and interpretation of the learning activities and artifacts of students to validate this assumption.

The course website http://www.arch4cloud.in/portal includes a discussion forum where online students discuss questions and being answered by the instructors and by other students. The instructors deal with content management, prepare quizzes, and assess quizzes of students, send feedback and communicate with students on forums. The students enrol in online course participate in chat session, answers quizzes, send homework, send feedback on forum. The instructors generate interesting discussion and discuss unanswered issues in a weekly video. A certificate of accomplishment to the students who successfully completes the course is given by the Continuing Education Program of IIT Kanpur.
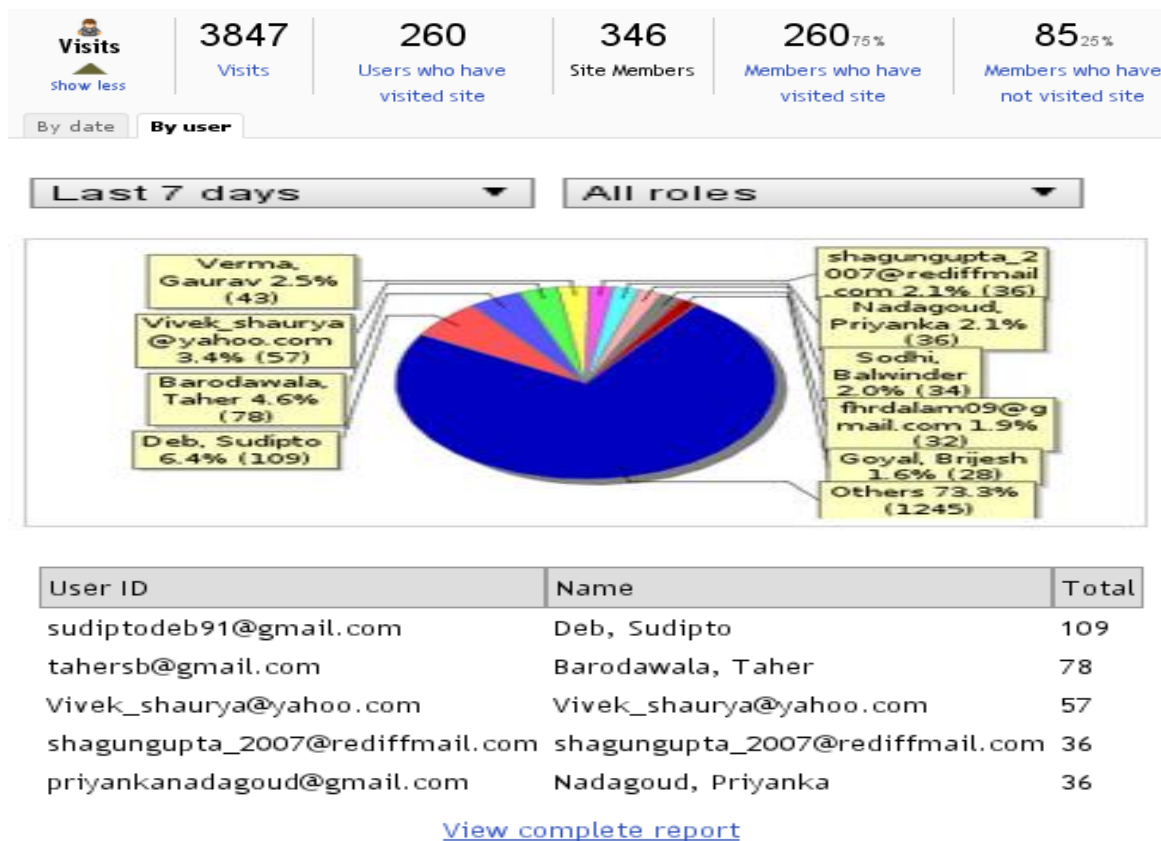

Fig.1: Visits by site members[10]

In the Fig. 1 above the snapshot is shown of visits per members who had and who had not visited the site along with their name and userid and total no. of visits individually.
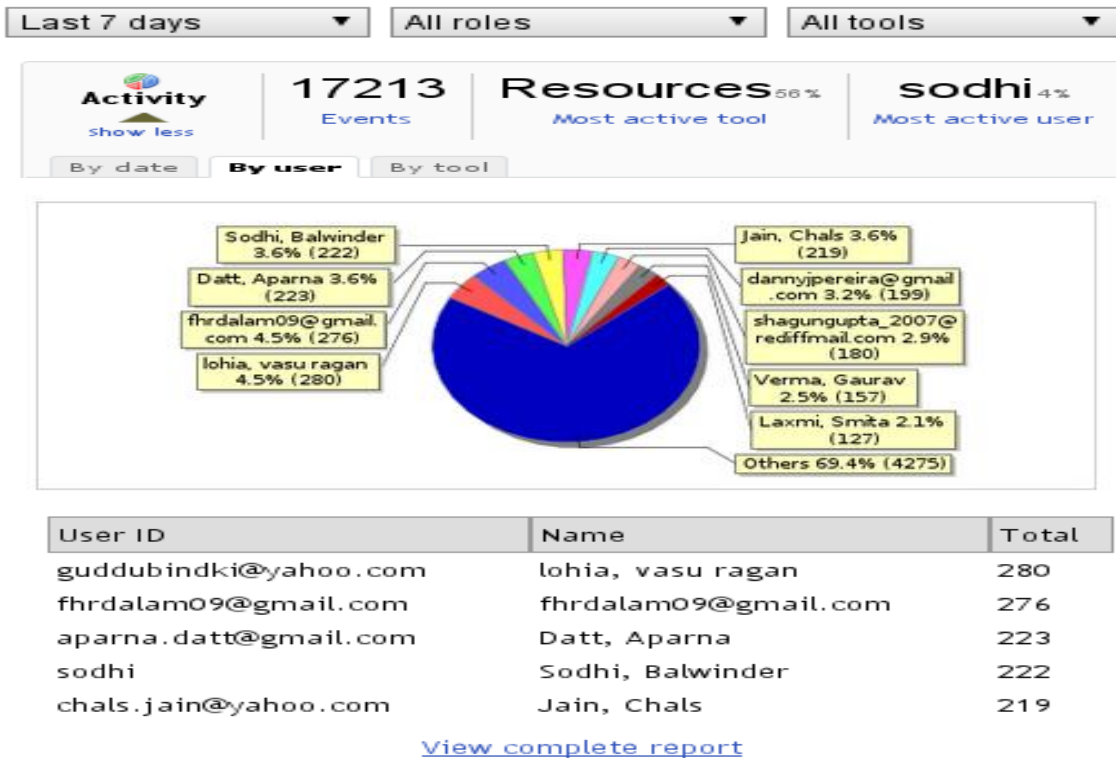

Fig. 2: Users participation in Activity [10]

In the Fig. 2 above the snapshot of online activity by the users to use the resources in order to participate in collaboration with each other.

There are several technical security benefits, and some pros and cons which have been observed during and after the course which explores online learning features and capabilities.

4.1 Technical Security Benefits:

1. Centralized Data.

2. Incident Response.

3. Password Assurance Testing.

4. Logging.

5. Improve the State of Security Software.

6. Secure Builds.

4.2 Advantages:

1. Freedom to attend class any time with flexible work hours.

2. Full support from Instructors.

3. Good place to learn and educate yourself.

4. Helpful in understanding the fundamentals of cloud computing.

5. Given some research directions and collaboration.

4.3 Problems:

Cloud computing has the potential for improving the efficiency, cost and convenience for the educational institutes but it has few problems such as:

1. Time consuming.

2. Need to work hard; course work is tough you need to make choices good.

3. Exposure to some niche fields can be a problem due to lack of expertise in some areas.

4. Risk related to data protection and security and its integrity.

5. Organizational support.

6. Speed and lack of Internet can affect learning [11].

Traditional web-based learning institutes needed significant investment in system construction and maintenance within the educational institutions without capital gains for them which leads to a lot of problems and lack of development potential. On the other hand, cloud-based learning platform introduces scale efficiency mechanism entrusted to cloud computing vendors to deal with problems and provide the solutions. The cloud-based platform supports the creation of new generation collaborative learning systems where learners store their data inside the cloud and are able to run applications on a wide range of software and hardware devices [12].

Despite the marked advantages of the cloud computing technology for the educational institutes [13], there are some problems of cloud based learning environment used by students. The reason of this could be an occasional usage of the environment – only as needed for educational purposes. In this context, we suppose that the environments where students actively communicate and collaborate should be used instead [14]. This idea is also emphasized in a literature: "educational institutions may need to utilize existing social network applications such as Facebook for education" etc. [15].

5. FUTURE PROSPECTS OF CLOUD BASED LEARNING PLATFORMS:

For 2013 onwards, cloud computing is rapidly growing, yet evolving learning platform that offers significant advantages, yet potential problems as well. It is expected that by year 2020

all prominent educational institutions would use cloud based applications and techniques to promote learning among all users[16]. In today's educational perspective cloud computing is a significant alternative to promote learning. Google and Microsoft provide beneficial services to educational institutes like email, chat, portals and online learning for students [17].

6. CONCLUSION:

Cloud computing environment promotes corporate education with a dynamic content and course delivery. It provides highly scalable and elastic services to end users to exploit the cloud computing benefits for active learning. Case study Arch4Cloud@IIT-K exhibits usability of the environment while applying it during learning as well as after its finishing. The most important features identified is collaborative study environment for students and instructors. Students may add much more feathers to their cap by learning this way to gather subject-matter knowledge with a better understanding and confidence to use cloud platform for their own professional career plans. Cloud computing has positioned itself as a technology information deployment system with applicative usage of cloud based learning platform to elite educational institutes.

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