Cloud As A Centralized Repository For Education Institutes

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ABSTRACT:
The increasingly complex infrastructure-environment management, development goals and rapidly changing technology pose new kinds of challenges to education sector.Cloud computing, which offers software, platform, and infrastructure services, focuses on effective use ofshared resources to achieve economies of scale and coherence. Education institutions, both public as well as private can take the potential advantage of cloud computing to make sure high quality service regardless of the marginal resources available. Cloud computing is taking a center stage in education because of its various benefits. Various educational institutions use different cloud-based applications provided by the service providers to make sure that their students and other users can perform both academic as well as business-related tasks.The solutions given by the cloud platformguarantees that the research and development, as well as the teaching is more sustainable and efficient, which positively influence the quality of teaching learning process within educational institutions.Thus, this paper will highlight the benefits associated with the use of cloud computing in education institutions. This has headed to numerouseducation institutions implementing cloud technology as analternative to several technological challenges they face on a daily routine.Universities can also take benefit of available cloud-based applications offered by service providers and enable their ownusers/students to perform business and academic tasks.

KEYWORDS:*Cloud Computing,cloud platform, cloud Services, Learning Institutions, Virtual Learning Environment,*

I. INTRODUCTION

Cloud Computing (CC) began to be deeply involved in educational sector globally, educational institutions adoptCC models in their virtual learning systems not only to take advantage of CC low cost, CC make it easy foradopters to improve their educational experience through the deployment of a lot of services that can be accessedanytime, anywhere with no worries about how the cloud and its services works, or where they are located. [1]

In broad sense, CC have three core deployment models public cloud, private cloud, and hybrid cloud, each model hasits features, as public cloud is available for open use by the general public. One of public cloud advantage isthat, it can be larger than a private cloud, and all the risks removed from customer shoulder to providers. One of consof the public cloud is the security and privacy issues, which is resolved in private cloud; the primary aim of theprivate cloud is giving the institution more control over resources, their data and security, in this model the cloudinfrastructure can be owned and managed by the institution, a third party or combination of them. The hybrid modelsimply is a combination of different private and public clouds, some resources provided in-house and othersprovided through third parties. [1]

Also, CC has three main services models Infrastructure as a service (IaaS), Platform as a service (PaaS),Software as a service (SaaS). IAAS provide on-demand, pay-as-you-use access to infrastructure resources, includingservers, storage or network devices. PaaS besides infrastructure it also provides

operating system for developers (e.g. windows Azure). SaaS provides a software that is provided from a vendor and made it available for public use(e.g., Gmail, and Hotmail), is usually provided through a public cloud provider. [1]Cloud provides lot of services to education sectors [3].

Cloud computing was based on the increased use of electronic devices including laptops, smart phones and tablet PCs. Current studies have indicated that this is among the fastest growing areas within the digital economy.[7]

The use of cloud computing is increasingly become popular in the educational environments because of its low-cost services to students and university staff [2]. However, it is important to consider the individual characteristics of the users and their perceptions about using the cloud computing technology in order to maximize the benefits of its usage. [8]

In this study, various cloud platforms which refers to internet based platform including Google and Microsoft are providing various application and services free of charge to staff and students in different learning institutions. Some examples of this kind of services which is provided free of charge are calendars, emails, social networking, document storage, distributed file systems, contact list, website creation services, structured storage systems like Google Drive, Dropbox (allow users to store, synchronize, and share files) and Evernote (allows users to create text, audio, and video memos)as well as document sharing services. [7]

An investigation into the determinants of educational use of cloud services was studied aiming to identify the impact of security and privacy concerns on usedbehavior. The results of this study may lead to successful understanding for the use of cloud services in educational settings. [6]

The rest of this paper organized as follows: Section 2 discuss need of study. Section 3 presents problem statement. Section 4 presents the Hypothesis. Section 5 presents the comparative study of various cloud platforms available. Section 6 discusses the recommendations. Section 7 gives the conclusion and finally section 8 finishes the paper with future scope.

II.   NEED OF STUDY

Now a day we all are facing the pandemic situation because of COVID 19. As one of the precautionary measure of it is to isolate the people from each other. Which causes a big loses of people education as educational institutes are closed for quiet big duration. In this situation so many educational institutes adapt virtual learning environment. To make virtual learning environment successful Cloud computing plays an important role. Various cloud platforms come forward to provide various free services to educational institute to fulfill the need of virtual learning environment. Some of the examples of cloud platforms are Google, Microsoft, Zoom, Cisco, and Moodleand so on. In this study we are going to discuss the facilities provided by some of these cloud platform.

III.   PROBLEM STATEMENT

Because of pandemic situation educational institutes are facing the problem while fulfilling the educational need of students as well as the teachers. In the beginning the educational institutes are having the big question mark of how to reach the students, how to fulfill the learning needs of students, how to provide learning instructions to student regarding various subjects in the curriculum, how to give live experience of learning to students virtually, how to provide study material to students, how teachers can grade the students work, how the teacher guide the students regarding their project work, how teachers can provide demo presentations regarding practical subjects, how the exams can be conducted.

In spite of all the above so many educational institutes want to avail various accreditations. For this purpose they need to preserve the details of students, teachers and the facilities provided by educational institute in various formats. Which generates the large amount of data, which needs to be stored centrally so that it can be accessed anywhere anytime.

IV.　　HYPOTHESIS

To fulfill the need of virtual learning and to facilitate the students by providing various virtual learning toolswhich avails them aid for attending the lectures, giving exams, give presentations to teacher of their project work, sending their work regarding curriculum to teachers. As well as to provide teachers the facility to store student work, accordingly grade them; preserve student details for various purposes. It can be suggested that the institutes can actively participate in developing their own cloud so that they can have center point of all teaching learning facility in their own rights and control.

V.　　RESEARCHMETHODOLOGY

Here we are doing comparative study of various cloud platform and the facilities provided by them.

a. **Zoom ConferenceApp**: Founded by former Webex executive Eric Yuan in 2011 and officially launched in 2013, Zoom's aim is to make videoconferencing easy and accessible.The platform's basic plan is free and allows up to 100 users per call. (At the start of the pandemic, Zoom waived the 40-minute call limit for users of its free plan. That time limit is now backing in place.) Although there are workarounds, there is also nothing to stop meeting participants from ending one video call and jumping straight onto another 40-minute one.Zoom is a web-based video conferencing tool with a local, desktop client and a mobile app that allows users to meet online, with or without video. Zoom users can choose to record sessions, collaborate on projects, and share or annotate on one another's screens, all with one easy-to-use platform. Zoom offers quality video, audio, and a wireless screen-sharing performance across Windows, Mac, Linux, iOS, Android, Blackberry, Zoom Rooms, and H.323/SIP room systems.

b. **Reliance JioMeet Conference App:**It is encrypted and password protected. Launched on July 2, 2020. The features are:

i. Delivers amazing features, includes screen sharing, meeting-scheduling features, and many more.

ii. It gives the options of host control and allows record logs of audio and video calls.

iii. Featured at Google Play Store, JioMeet proposes comfortable to sign up either with mobile number or e-mail ID.

iv. It enables the making of instant meetings and starts calls/chats *at a single click.*

v. The video quality can be scheduled earlier where meeting details are bestowed with invitees.

vi. As the meetings are password-protected, the host can facilitate *"Waiting Room"* to make sure no single participants can join the meeting without approval.

vii. It offers *"Safe Driving Mode"* while driving and endures login to multi-device up to five devices and consistent swapping of devices from one to another while on a call.

viii. The app also provides nationwide and worldwide seminars/workshops and entertaining cultural and social events.

c. **Cisco WebEx:** Cisco WebEx Meetings is an enterprise-oriented video conferencing app with a very professional look and feel and is completely browser-based. Background noise detection, AR capabilities, and video call back features ensure top-quality meeting experiences, while essential tools like application and screen sharing and in-app whiteboarding help people around the world collaborate together as if they're in the same room. With the enterprise version, you could meet up to 1000 people. Webex meetings don't offer a free version although you could try a 30-day trial. The base pricing starts at $13.5 for the beginner version with a limit of 50 people and 5GB of cloud storage.

d. **Google app Education Edition :**

Google Apps Education Edition is a free suite of hosted communication and collaboration applications designed for schools and universities. Google Apps includes **Gmail** (webmail services)10 GBs (and counting) of email storage and search tools that help your school find information fast and instant messaging from right inside your inbox., Google **Calendar** (shared calendaring)Educators and students can organize their schedules and share events and calendars with others, Google **Docs** (online document, spreadsheet, presentation, form creation and sharing)Share

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documents, spreadsheets, and presentations. Collaborate in real-time with your team or with your whole school. You can publish final documents to the entire world, too, Google **Video** (secure and private video sharing – 10GB free)A video hosting and sharing solution that enables schools and other organizations to use video as an effective medium for internal communication and collaboration. 10 GB included free for every school domain and Google **Sites** (team website creation with videos, imagesWork together to keep related documents, web content and other information in one place, on one site, gadgets and documents integration), as well as administrative tools, customer support, and access to APIs to integrate Google Apps with existing IT systems.

e. **MicrosoftTeam for remote learning:** Microsoft Teams is a digital hub that brings conversations, content, assignments, and apps together in one place, letting educators create vibrant learning environments. Build collaborative classrooms, join in professional learning groups, and connect with colleagues – all from a single experience.
Within Teams, teachers can quickly converse with students, share files and websites, create an OneNote Class Notebook, and distribute and grade assignments. Built-in OneNote Class Notebooks and end-to-end assignment management allow teachers to organize interactive lessons and provide effective and timely feedback. Educational institute administrators and staff can stay up-to-date and work together using Staff Teams for announcements and topical conversations. Teachers can share instructional material using Professional Learning Communities.

f. **Moodle Learning Management System (LMS):** Moodle stands for Modular Object-Oriented Dynamic Learning Environment. Founded and developed by Martin Dougiamas in 2002, Moodle was designed to provide educators, administrators, and learners with an open, robust, secure and free platform to create and deliver personalized learning environments. Moodle is a user-friendly Learning Management System (LMS) that supports learning and training needs for a wide range of institutions and organizations across the globe.
Moodle has many **built-in features** ranging from the basics such as file upload, assignments, quizzes, notifications and advanced features such as forums, quiz, wikis etc that can be used by learners. It also has many easy-to-install plugins such as attendance, reminders, analytics etc. to supplement these features.Freely available for all users, Moodle can be self-hosted.
Moodle also allows for remote learning and easy access to courses and eLearning content anywhere, anytime, and even when offline through the Moodle Mobile app (which is available for both core Moodle and Moodle Workplace).
Available for both Apple iOS and Android-based devices, Moodle Mobile allows learners to access course content; upload images, videos, and other files; receive notifications; send messages to fellow classmates and educators; attempt quizzes; participate in forums and muchmore all from their mobile devices.

g. **Go toWebinar:**GoToWebinar is a platform for businesses and sole proprietors, helping them create and deliver online and video conferences with their customers, colleagues, stockholders, and so on. The applications of GoToWebinar are vast and wide. This software is an excellent option for professionals and companies that want to further extend their reach to their target audience, provide training through online and audio conferencing, and conduct speaking engagements to participants without having to interact with them physically.
Boasting a simple and intuitive interface and a user-friendly platform, GoToWebinar is the top self-service webinar application for many individuals and companies. Setup is a breeze and does not require IT support. Its simplicity has helped companies and individuals generate high value, more qualified marketing leads for less cost. And it is compatible with PC or Mac, making it easy for participants to enter a webinar and not worry about system requirements.
After discussion on all above mentioned cloud platforms the study is trying to compare these platforms as per the features expected in virtual learning environment. The table below shows the comparison

Table 1The Comparison between the VLE Products

Product Name / Tools	Zoom Conference App	Reliance JioMeet Conference App	Cisco WebEx	Google App Education Edition	Microsoft Team For Remote Learning	Moodle Learning Management System	Go to Webinar
Cloud Platform	Y	Y	Y	Y	Y	Y	Y
Compatibility	Y	Y	Y	Y	Y	Y	Y
Internet Connectivity	Y	Y	Y	Y	Y	Y	Y
Easy to Install	Y	Y	Y	Y	Y	Y	Y
Authentication	Y	Y	Y	Y	Y	Y	Y
Integration	Y	Y	Y	Y	Y	Y	Y
Look & Feel	Y	Y	Y	Y	Y	Y	Y
Video Service	Y	Y	Y	Y	Y	Y	Y
Calendar	Y	N	Y	Y	Y	Y	N
Discussion Forum	Y	Y	Y	Y	Y	Y	Y
Content Sharing	Y	Y	Y	Y	Y	Y	Y
File Upload	N	N	Y	Y	Y	Y	N
Attendance Record	Y	Y	N	Y	Y	Y	Y
Quizzes	N	N	N	Y	Y	Y	N
Assignments	N	N	N	Y	Y	Y	N
Online Grading	N	N	N	Y	Y	Y	N

White Board	N	N	Y	Y	Y	N	N
No. of Users	100	100	1000	100	250	N	3000
Time Limit (mins)	40	N	N	N	N	N	N

VI.   RECOMMENDATIONS

From the discussion of above table we can say that though there are number of cloud platform are available for virtual learning environment. But no one is fulfilling the requirement of education institute in complete. Some are having limited features, some may include cost, and some are having time limitations. In spite of all these if we adopt the readily available cloud platform then there is a big question on security and privacy of data. For example if we follow Google app for virtual learning purpose we used to keep data on Google Drive which we want to share but we don't know how much secure it is. Similarly if we go for Zoom Conference App we have to face Zoom bombing. Jio meet conference app is less comfortable with Windows phones and Blackberry OS10 phones. Moodle is more comfortable with Linux / Unix Operating system, so and so forth.

So the study will recommend that rather than using readily available cloud platform for virtual learning environment. The educational organizations can try to develop their own cloud platform which can accomplish their requirement. The proposed structure for institutional cloud platform is given below:
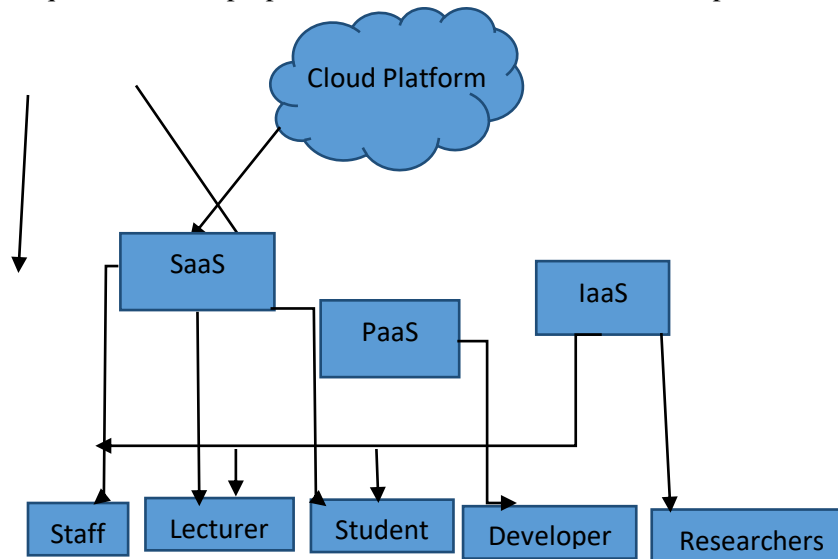

Figure 1 Propose structure for institutional cloud platform

VII.   CONCLUSION

Cloud computing is an exciting development in today's education system. It offers students and administrative staff to an avenue to access different applications and resources easily, at minimal costs and quickly. Cloud computing creates a universal platform with simplified scalability. Therefore it will be vital for institutes and individuals to shift to the cloud, to experience the cheap and convenient avenue to information and technological services, especially the benefits and abilities, such as access to complex applications, minimal costs of cloud data storage, scalability and flexibility of an virtual learning platform that is cloud computing enabled.

The above discussion capture the situation currently created in the world of education
where cloud technology is widely used in every order and degree but it is critical from the point ofview of security.

The above discussion has shed a light on the adoption process of cloud computing into the education sector with deployment guidelines. The few challenges that are likely to be experienced can be resolved by new and better policies and techniques.

This paper has made a comparative study of various VLE systems, and this was based on Comparison of features.

VIII.   FUTURE SCOPE

From this paper, we aimed to discover thebest and most suitable choice of VLE systems thatwould meet the requirements of educational institutes. Several limitations of our study should be addressed by futureresearch. It isalso our hope that through the study of these factors, researchersare able to identify points of leverage that can be used to improvethe state of technology use for users and organizations alike.Initially, there will be a survey forobtaining information directly from different sources,including participants.The study will analyze the impactof every VLE on the continuance use of CC, and their significance will be validatedAs a future work, we need to validate this model and investigate different security   aspects   in   order   to   implement   it   for   learning   institutions.

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