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ОБЛАЧНЫЕ ВЫЧИСЛЕНИЯ В ЭЛЕКТРОННОМ ОБУЧЕНИИ

Аннотация: Автор данной статьи рассматривает электронное обучение как тему, идентифицируемую с виртуализированным раздельным обучением методами для систем электронной переписки через Интернет. Автор отмечает, что состояние «Облачных вычислений» поднимается как характерный этап, чтобы предложить помощь рамкам электронного обучения, а также для использования методов интеллектуального анализа информации, которые позволяют исследовать огромные базы данных, созданные в результате предыдущей процедуры, чтобы удалить врожденную информацию, так как она имеет тенденцию к постепенной корректировке путем предоставления адаптируемых рамок к изменяющимся потребностям с течением времени. В этом обязательстве автор приводит диаграмму нынешнего состояния структуры облачных вычислений для приложений электронного обучения. Автор приводит тонкости наиболее широко признанных рамок, которые были созданы для такой структуры, и, наконец, мы представляем несколько примеров подходов к электронному обучению для облачных вычислений.

Ключевые слова: Облачные вычисления, электронное обучение, архитектура, SaaS, PaaS, IaaS.

Abstract: The author of this article considers e-learning as a topic identified with virtualized separate learning methods for electronic communication systems via Internet. The author notes that the state of Cloud Computing is being raised as a characteristic

stage to offer assistance to e-learning frameworks, as well as to use intelligent information analysis methods that allow research into the huge databases created by the previous procedure to remove congenital information, as it tends to gradually adjust by providing adaptable frameworks to changing needs over time. In this commitment, the author provides a diagram of the current state of the cloud computing structure for e-learning applications. The author gives the subtleties of the most widely accepted framework that has been created for such a framework, and finally, we present a few examples of approaches to e-learning for cloud computing applications.

Keywords: Cloud computing, e-learning, architecture, SaaS, PaaS, IaaS.

1. Introduction

The Electronic Adapting, otherwise called E-Learning [1], is characterized as Web empowered learning. Segments of e-Learning can incorporate the substance of various configurations, the executives of the learning experience, and an online network of students, content engineers, and specialists. The investigation condensed the principal points of interest, which incorporate adaptability, comfort, simple availability, consistency, and repeatability. With Data Innovations (IT), there is a developing pattern in regards to the examination and abuse of this sort of e-Learning stage. There exist a few activities at various educative levels, from which a few models are the KhanAcademy1, the Virtual Learning Focal point of Granada College (CEVUG-UGR), the Open College of Catalonia, the MIT Open Courseware, or the "Free online course" of the Stanford College.

Cloud computing.

Cloud computing is an innovation that uses the web and focal remote servers to keep up information and applications. Cloud computing permits customers and organizations to utilize applications without establishment and access their own documents at any PC with web get to. This innovation takes into consideration

considerably more productive registering by bringing together information stockpiling, preparing, and transfer speed.

Cloud computing is the utilization of processing assets (equipment and programming) that are conveyed as help over a system (normally the Web). The name originates from the utilization of a cloud-molded image as a reflection for the mind-boggling foundation it contains in framework graphs. Cloud computing depends on remote administrations with a client's information, programming, and calculation As indicated by the official NIST (National Foundation of Principles and Innovation) definition, "cloud computing is a model for empowering omnipresent, helpful, on-request organize access to a common pool of configurable registering assets (e.g., systems, servers, stockpiling, applications, and administrations) that can be quickly provisioned and discharged with insignificant administration exertion or specialist organization association." The NIST definition records five basic qualities of cloud computing: on-request self-administration, wide system get to, asset pooling, quick flexibility or extension, and estimated administration. It additionally records three "administration models" (programming, stage, and framework), and four "sending models" (private, network, open and cross breed) that together sort approaches to convey cloud administrations. The definition is expected to fill in as methods for expansive correlations of cloud administrations and sending techniques, and to give a pattern to discourse based on what is cloud computing to how to best utilize cloud computing. Cloud computing utilizes a help driven plan of action. Cloud offers benefits that can be gathered into the accompanying classes:

A. Cloud Services:

1) Infrastructure as a service (IaaS): Equipment assets, (for example, stockpiling) and figuring power (CPU and memory) are offered as administrations to clients. This empowers organizations to lease these assets as opposed to going through cash to purchase devoted servers and systems administration hardware. As models in this class,

Amazon1 offers S3 for capacity, EC2 for registering force, and SQS for organize correspondence for independent ventures and individual customers;

2) Software as a service (SaaS): In this model, programming applications are offered as administrations on the Web instead of as programming bundles to be acquired by singular clients. One of the spearheading suppliers in this class is Salesforce.com offering its CRM application as an assistance. Different models incorporate Google online office applications (word processors, spreadsheets, and so forth);

3) Platform as a service (PaaS): This refers to giving offices to help the whole application advancement lifecycle including structure, execution, investigating, testing, sending, activity and backing of rich Web applications and administrations on the Web. Regularly Web programs are utilized as the improvement condition. Instances of stages in this classification are Microsoft Purplish blue Administrations platform6, Google Application Engine7, Salesforce.com Web Applicationю

Advancement platform8 and Bungee Associate platform9. PaaS empowers SaaS clients to create additional items, and furthermore create independent Electronic applications, reuse different administrations and grow cooperatively in a group [8].
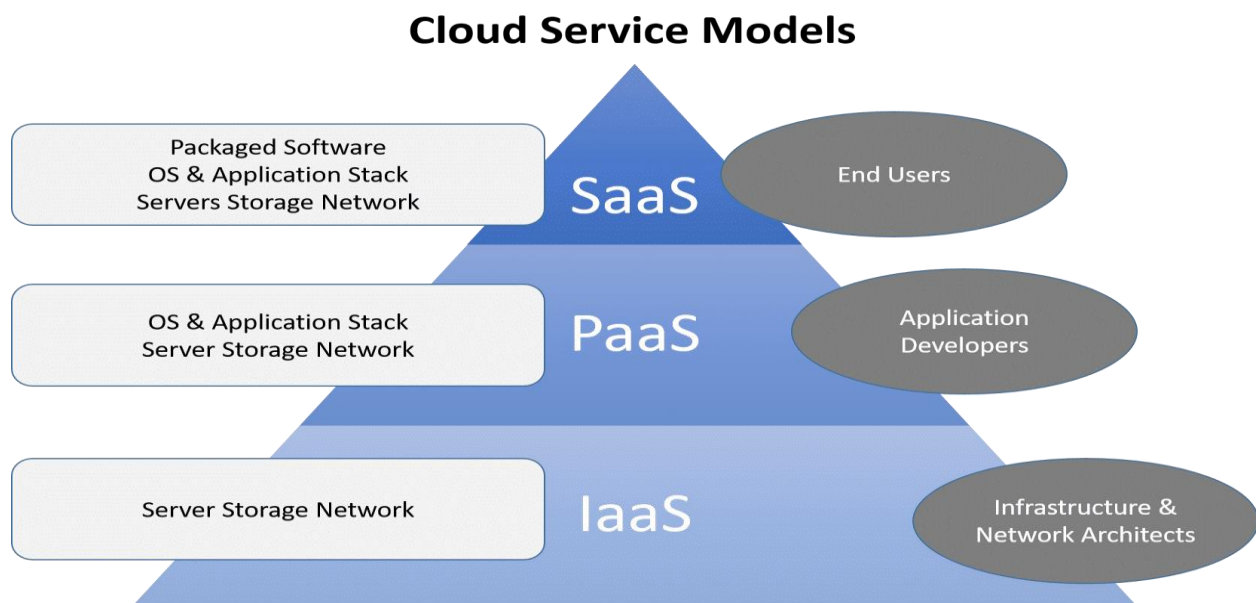

Fig. 1 Illustration of the layers for the Services Oriented Architecture

B. Models of Cloud

1) Private Cloud: The cloud foundation is provisioned for elite use by a solitary association involving different shoppers (e.g., specialty units). It might be possessed, overseen, and worked by the association, an outsider, or a blend of them, and it might exist on or off-premises.

2) public Cloud: Open cloud applications, stockpiling, and different assets are made accessible to the overall population by a help supplier. These administrations are free or offered on a compensation for each utilization model. By and large, open cloud specialist co-ops like Amazon AWS, Microsoft and Google possess and work the foundation and offer access just by means of Web (direct network isn't advertised).

3) Community Cloud: Community cloud shares infrastructure between several organizations from a specific community with common concerns (security, compliance, jurisdiction, etc.), whether managed internally or by a third-party and hosted internally or externally. The costs are spread over fewer users than a public cloud (but more than a private cloud), so only some of the cost savings potential of cloud computing are realized.

4) Hybrid cloud: Hybrid cloud is a composition of two or more clouds (private, community or public) that remain unique entities but are bound together, offering the benefits of multiple deployment models

2. Applications of cloud computing for E-Learning.

We should focus attention on the need of setting the reason for an instructive data foundation to reduce the issues listed in the past segment. As we brought up along this commitment, cloud computing may advance another period of picking up exploiting facilitating the e-Learning applications on a cloud and following its virtualization highlights of the equipment, it decreases the development and upkeep cost of the learning assets.

At present, the mix of cloud advancements and e-learning has been hardly investigated. Some pertinent endeavors to utilize IaaS cloud advances in instruction

centers around the booking of Virtual Machines to understudies for a particular time frame [2].

Another case of use that can be found in the specific writing is BlueSky [3], whose design has a few parts focused on the productive arrangement and the board of the e-Learning administrations, having the option to pre-plan assets for the hot substance and applications before they are really required, to shield the presentation in simultaneous access, albeit no subtleties have been found with respect to how this is accomplished. Then again, CloudIA [4] is a structure that gives on-request creation and arranging of VM pictures with the goal that the understudies can have their very own Java servlet condition for experimentation, containing MySQL, Tomcat, PHP, and Apache webserver. With this methodology, understudies can concentrate more on creating, sending and testing their applications in a servlet holder.

In [5], the authors present a new service model that enhances the efficiency within a virtual personalized learning environment. This system is intended for sub-scribing the selected learning resources as well as creating a personalized virtual classroom, and allows the learning content providers to register their applications in the server and the learners integrate other internet learning resources to their learning application pools. Other proposals for personal and virtual learning interact with services that rely on the cloud, such as YouTube or GoogleDocs [6]. Finally, we may find some cloud-related works for performing a comparison of the efficiency of online models versus traditional models [7]. The most representative work is this area is developed in, where the authors focused on the impact of supporting technologies or the perceived ease of use and acceleration of the learning process. Furthermore, they analyze the appropriate level of abstraction (i.e., IaaS or PaaS) that should be delivered to students to enable them to focus on the course topics.
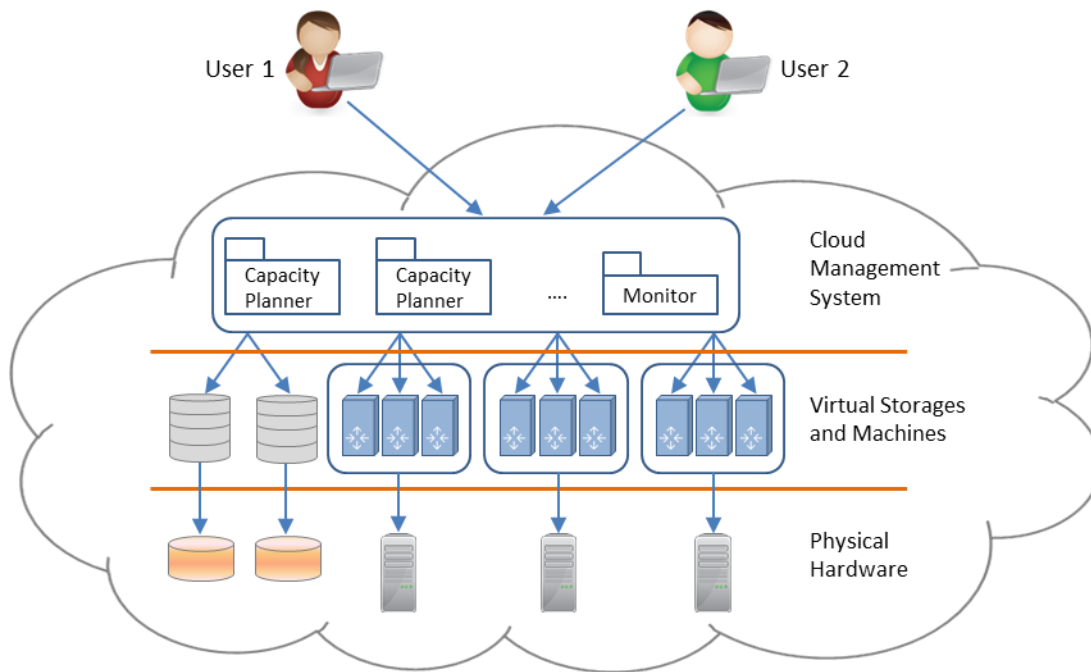
Fig. 2 Overview of a cloud architecture for e-Learning

3. Conclusion comments this work we have uncovered the primary segments of e-Picking up, concentrating on the adaptability, accommodation, simple openness, consistency and repeatability of this sort of framework. As such, an E-learning framework is confronting difficulties of streamlining huge scale asset the executives and provisioning, as per the gigantic development of clients, administrations, instruction substance, and media assets. We have settled the integrity of a Cloud computing arrangement. The highlights of the Cloud computing stage are very proper for the movement of this learning framework with the goal that we can completely abuse the potential outcomes offered by the production of an effective learning condition that offers customized content and simple adjustment to the present training model. In particular, the advantages considering the incorporation of an e-Learning framework into the cloud can be featured as acceptable adaptability and versatility for the assets, including capacity, computational prerequisites, and system get to; together with a lower cost considering the compensation per-use charging design and the spare in new equipment and machines and programming licenses for instructive projects. At last, we

have listed a few methodologies that have been as of now proposed for tending to e-Learning on Cloud computing, portraying these models and how they exploit this condition to improve the highlights of the instructive framework. In any case, we should pressure that these are simply starting strides towards an open line for research and misuse of e-learning and cloud computing stages.

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