INTERNATIONAL CONFERENCE

ENGINEERING & TECHNOLOGY DEVELOPMENT

UBL ICETD

2013

The Second International Conference on Engineering and Technology Development

2nd ICETD 2013

27, 28, 29 August 2013, Bandar Lampung, Indonesia

PROCEEDINGS

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Faculty of Engineering and Faculty of Computer Science,
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2ⁿᵈICETD 2013

The Second International Conference On Engineering And Technology Development

28 -30 January 2013
Bandar Lampung University (UBL)
Lampung, Indonesia

PROCEEDINGS

Organized by:

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PREFACE

The Activities of the International Conference is in line and very appropriate with the vision and mission of Bandar Lampung University (UBL) to promote training and education as well as research in these areas.

On behalf of the Second International Conference on Engineering and Technology Development (2ⁿᵈ ICETD 2013) organizing committee, we are very pleased with the very good response especially from the keynote speaker and from the participans. It is noteworthy to point out that about 80 technical papers were received for this conference.

The participants of the conference come from many well known universities, among others : University Kebangsaan Malaysia – Malaysia, APTIKOM – Indonesia, Institut Teknologi sepuluh November – Indonesia, Surya Institute – Indonesia, International Islamic University – Malaysia, STMIK Mitra Lampung – lampung, Bandung Institut of Technology – Bandung, Lecture of The Malahayati University, B2TP – BPPT Researcher – lampung, Starch Technology Center – Lampung, Universitas Islam Indonesia – Indonesia, Politeknik Negeri Malang – Malang,University of Kitakyushu – Japan, Gadjah Mada University – Indonesia, Universitas Malahayati – Lampung, Lampung University – lampung, Starch Technology Center – Lampung, Universitas Riau – Riau, Hasanuddin University – Indonesia, Diponegoro University – Indonesia, King Abdulaziz University – Saudi Arabia, Parahyangan Catholic University – Indonesia , National Taiwan University– Taiwan, Surakarta Christian University – Indonesia, Sugijapranata Catholic University – Indonesia, Semarang University – Indonesia, University of Brawijaya – Indonesia, PPKIA Tarakanita Rahmawati – Indonesia, Kyushu University, Fukuoka – Japan, Science and Technology Beijing – China, Institut Teknologi Sepuluh Nopember – Surabaya, Researcher of Starch Technology Center, Universitas Muhammadiyah Metro – Metro, National University of Malaysia – Malaysia.

I would like to express my deepest gratitude to the International Advisory Board members, sponsor and also to all keynote speakers and all participants. I am also gratefull to all organizing committee and all of the reviewers who contribute to the high standard of the conference. Also I would like to express my deepest gratitude to the Rector of Bandar Lampung University (UBL) who give us endless support to these activities, so that the conference can be administrated on time

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Towards Indonesian Cloud Campus

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Abstract- Nowadays, Cloud Computing is most discussed term in business and academic environment.
Cloud campus has many benefits such as accessing the file storages, e-mails, databases, educational resources, research applications and tools anywhere for faculty, administrators, staff, students and other users in university, on demand. Furthermore, cloud campus reduces universities' IT complexity and cost.

This paper discuss the implementation of Indonesian cloud campus and various opportunies and benefits of cloud services for universities. And suggested cloud infrastructure prototype towards cloud campus

Keywords— cloud computing, information technology, cloud campus, infrastructure.

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Introduction

The concept of cloud computing dates back to 1960, when John McCarthy opined that "computation may someday be organized as a public utility". The term 'cloud computing' is confusion to many people as the term can be used to mean almost anything. 'Cloud' is used as a metaphor for Internet and its main objective is customization and user defined experience. In other words cloud computing provides shared resources, software and information through Internet as a PAYGO (Pay-as-you-go) basis [2].

In the recent years, where educational institutes, campus, universities, industries are giving their full contribution in transforming the society and entire world economy. Various researches are carried out to update the present IT infrastructure especially in the area of education. Cloud computing can be a welcomed optioned in the universities, campus and educational institutes for higher studies. It gives a better choice and flexibility to the IT departments by building multipurpose computational infrastructure once and then uses it for several purposes for several times.
Google is one of the most famous cloud computing providers. Many people are using the google's cloud services, such as Gmail, Docs, Maps, and so on. With the help of cloud computing the platform and application the user uses can be on-campus or off-campus or combination of both depending on the institutions need.

At present, as many campuses are trying to update their IT infrastructure and data, but they are facing few challenges which can be solved by cloud computing. The challenges are [8];

1) **Cost**: choose the subscription or PAYGO plan.

2) **Flexibility**: cloud computing allows to dynamically scale the investment in infrastructures as demand fluctuate.
3) **Accessibility**: making the data and services available publicly without losing the sensitive information

As [4] explained, Cloud computing refers to those the applications delivered as services over the Internet and the hardware and system software in the data centres that provide the services. The data centres hardware and software is what called the cloud.

In Deployment models there are:

1.Private Cloud 2.Community Cloud 3.Public Cloud 4.Hybrid Cloud.

VII. SERVICES OF CLOUD

To use the cloud services the campuses or universities and the institutions has to first define their requirements and has to take a special attention for the privacy and critical issues. There are several cloud services as follows; [5]

1) **Infrastructure as a Service (IaaS):** can be used to satisfy the infrastructure needs of the students, faculties or researcher globally or locally with some specific hardware configuration for a specific task.
2) **Platform as a Service (PaaS):** certain providers are opening up application platforms to permit customers to build their own application without the cost and complexity of buying and managing the underlying hardware and software layers.
3) **Software as a Service (SaaS):** the application service provider is hosting the application which runs and interacts through web browser, hosted desktop or remote client. It eliminates the need to install and run

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the application on customer own computer and simplifying maintenance and support.

4) **Computing as a Service (CaaS):** providers offer access to raw computing power on virtual server such as Amazons, EC2 service.

Following the figure shows the university using the services of cloud computing, [6]
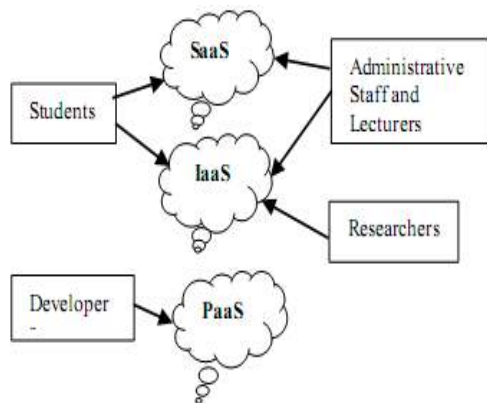

Fig.1 University using the services of cloud computing

VIII.   CLOUD CAMPUS ARCHITECTURE

Due to higher accessibility, availability, and efficiency of cloud services many campuses, business are trying to make use of these services. Today's cloud computing providers are offering higher education, the opportunity to substitute their data and information in the cloud for campus/universities with existing data centers, servers, and application replacing these traditional campus machines.
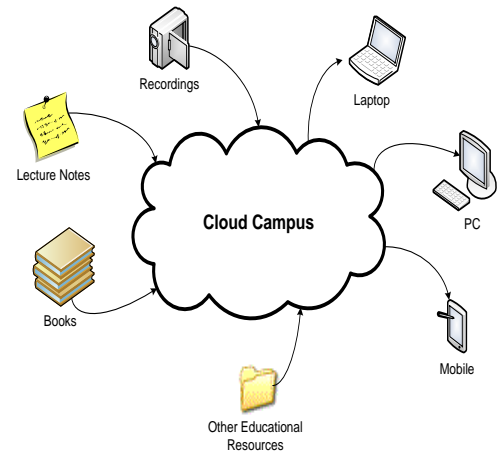

Fig.2. (a) Cloud Campus Stuff

The Cloud Computing trend of replacing software traditionally installed on campus computers (and the computers themselves) with applications delivered via the internet is driven by aims of reducing universities' IT complexity and cost [9]. Cloud Computing could be a technological innovation that both reduces IT costs for the college and eliminates many of the time-related constraints for students, making learning tools accessible for a larger number of students. There are many benefits of cloud computing for educational institute and below are listed a few of them [1];

1) With cloud computing, universities can open their technology infrastructures to businesses and industries for research advancements.
2) The efficiencies of cloud computing can help universities keep pace with ever-growing resource requirements and energy costs.
3) The extended reach of cloud computing enables institutions to teach students in new, different ways and help them manage projects and massive workloads.
4) When students enter the global workforce they will better understand the value of new technologies [16].
5) Cloud computing allows students and lecturer to use applications without

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installing them on their computers and also allows access to saved files from any computer with an Internet connection [17].
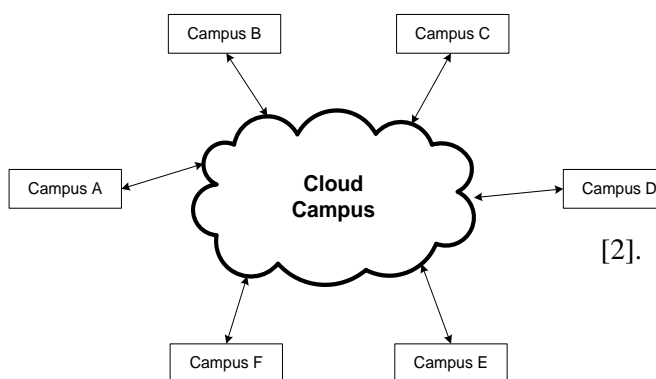

Fig.2. (b) Cloud Campus Architecture

Fig. 2. (a) and (b) shows the cloud stuff and cloud campus architecture. Universities can develop their own cloud by making use of their existing resources or multiple universities can come together and can develop cloud campus, in which they can share all the resources from the various universities.

IX. CONCLUSIONS

Cloud computing is an emerging computing paradigm and next generation platform that can provide tremendouz value of information of any size. The shift towards cloud campus would enable the universities and educational institutions to save maney and take benefit of the developing technology. Furthermore, using cloud campus could be share and distribute the educational resources such as books, lecture notes, and other educational resources to any kind of devices and platforms. This means that, the students able to access to the cloud content by using computer tablet, smartphone, computer notebook, etc.
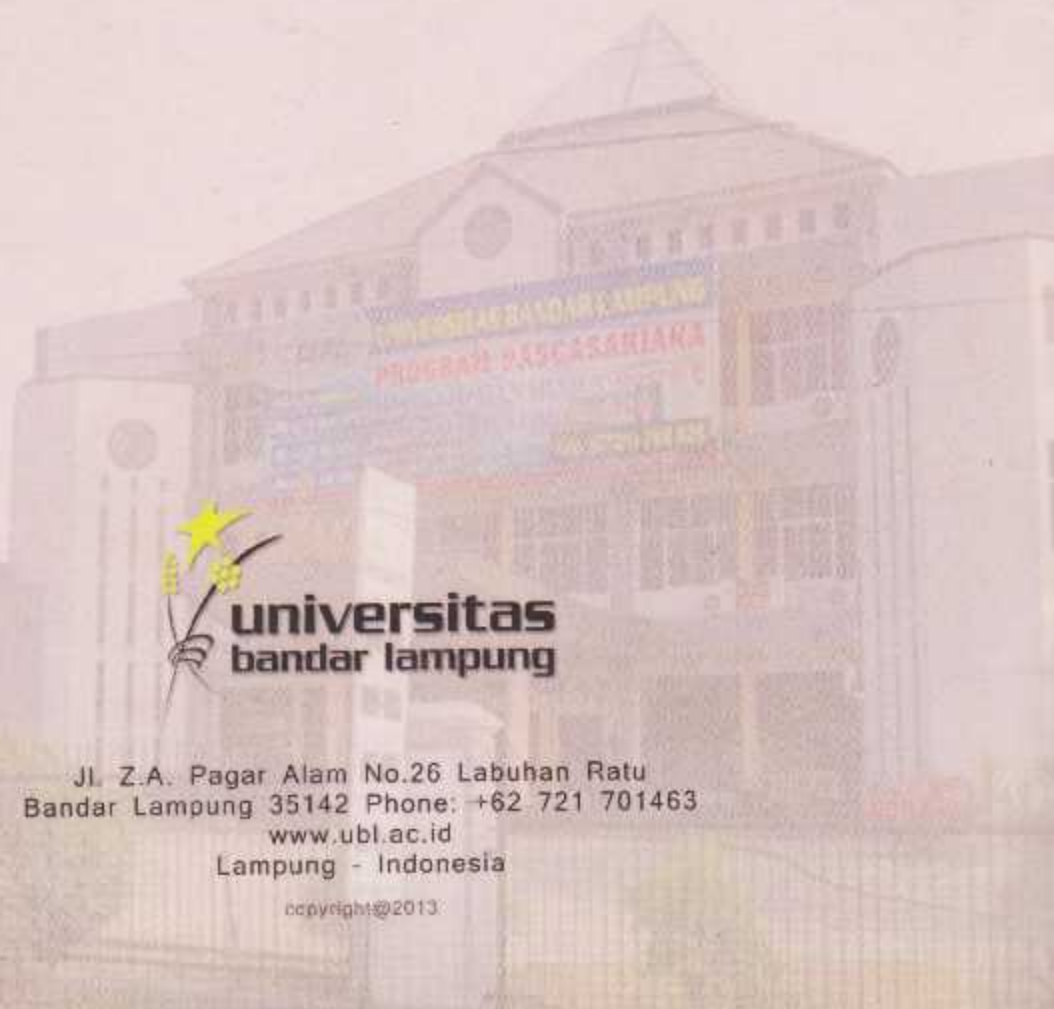
The main objective of this paper was to identify the essensial of cloud campus which can be considered as a new era to the campus education and has the full potential to make a revolution in the field of education and technology in Indonesia.

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