REMINISCING CLOUD COMPUTING TECHNOLOGY

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Abstract

Beauty of Cloud Computing is its Simplicity. A lot of visions exist for Cloud computing terminology. Here is a re-collection of facts about cloud computing. Basic approach for understanding CC technology Interview of cloud technology as well as proposal for further empirical work in modeling cloud computing technologies

Index Terms: *Parameters; Models; Privacy; Maintenance; Protected cloud*

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1. INTRODUCTION

Cloud Computing technology is On-demand network access to a shared pool of computing resources. This access is provided when online from a web-browser. The motive of such access is to provide user a convenient work-place. Cloud computing is a technology introduced to reduce 'Headache' on user-side.

Cloud computing is combination of two terms: Cloud & Computing. Cloud is the Network. A network is a bulk of thousands of users. These users may or may not be connected. If they are connected, there will be one of model formed, discussed further. The cloud also consists of Server & a Database. Server is also known as Cloud-Provider; while Database is a collection of user-details and applications to be worked upon by users. Computing is the term used for services of cloud.

Another main defining characteristic of cloud computing technology is concluded in a phrase as

"User pays what he need"

2. OBJECTIVES

Our main objectives for the research are as follows:

- To understand the current state of knowledge in a research area
  - What is known/generally accepted
  - What questions remain unanswered
  - Where do conflicting results exist
- To show how the current research project is linked to previous research (cumulative tradition).
- To summarize and synthesize previous research
- To critically analyze previous research: strengths and weaknesses
- To learn from others and stimulate ideas

3. UNDERSTANDING ORIGIN OF CC

It is observed that Peer-to-peer computing cloud not be introduced in Grid computing. So, Cluster computing was collaborated with Client-Server computing, resulting into emerging Cloud Computing.
Cloud computing components are infrastructure, softwares, applications, business and humans (server/client). In other words,

CC → Components + Services

Services provided are Easy-to-use, Fast-to-use and Ready-to-use.

4. KEY FEATURES OF CC

A. No efforts from user side.

Installation, configuration, testing, running, securing, updating are cloud provider headache not users'.

B. Zero Maintenance for Client.

Web-store i.e. CC applications are maintained by cloud-provider.

C. Open browser → login → customize application → start using service

D. Least investment.

Enterprise pays for infrastructure and environment set up.

E. Reliable network.

F. Customizations preserved during upgrades

G. Flexibility in data manipulation

H. Fast application deployment.

I. Built-in security provided.

5. BASIC PARAMETERS TO ESTABLISH CC

Before establishing cloud computing, some parameters are decided to be covered. Above of all is empowering basic customizations and integrations. Cloud computing should also support Real-time reporting of failures. The technology is categorized into sharing models.

As the cloud users exist globally, so multiple languages and currency payments facility must also available.
Finally, comes the part of Security and Privacy. It is managed by several strategies. It is the most basic property of cloud computing technology, as success of large Database storage establishment relies on security and privacy rule-book only.

Ease-of-use decides level of cloud provided by any enterprise.

6. CONCLUDING DEFINITIONS FOR CC

On-demand Self-service
It is stated that decisions for automated payments, resources procured and disposed of by customer himself.

Resource Pooling
By using *Virtualization* technique, cloud provider pools the computing resources. It is the best way to attract clients towards particular cloud.

Broad network access
Some interfaces are standardized so as to make services available over the network.

Calculated Services
Customer payment mode is available, which is based on criteria of *Pay-per-use.*

7. MODELLING OF CLOUD COMPUTING

After years of debates, the resulted models categorized for cloud technology are:

1) Delivery Models

a) *Software-As-A-Service (SAAS)*

b) *Platform-As-A-Service (PAAS)*

c) *Interface-As-A-Service (IAAS)*

- *SAAS is a model where user can control some of application configurations only.*
- *PAAS model is defined when user can control deployment platform & some environment configuration.*
- *IAAS model is where user can control Operating System, storage and some networking components.*

2) Development Models

d) *Commercial cloud*

e) *Scientific cloud*

f) *Business cloud*

- *Commercial cloud* is established where individual use per cloud exists.
- *Scientific cloud* is based on *Use* of cloud for particular field.
- *Business cloud* as per by name, relies only for business strategies and development purposes.

There are more development models being categorized day by day.

3) Deployment Models

g) *Public cloud*

h) *Private cloud*

i) *Community cloud*

j) *Hybrid cloud*

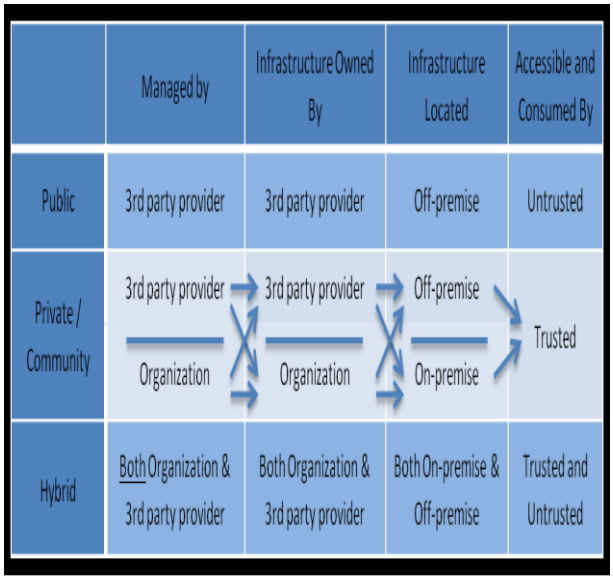
This is better way to categorize development models, as these are based on Client-categorization.

Characteristics describing deployment models are:
who manages, who owns, where located & who accesses.Table 1 shows a summary for 4 primary cloud deployment models. This summary is not a categorization, it is for initial modeling purposes.

- *Public clouds* are defined over very large scale. As per by name shows, it is for general public so such clouds are considered to be *Untrusted.* The users are not meant to be member of organization providing cloud.

- *Private clouds* are established for single enterprise. Here the users are considered to be trusted as they are tied into some contractual agreement done before being member. "The physical infrastructure may be owned by and/or physically located in the organization's datacenters (on-premise) or that of a designated service provider (off-premise) with an extension of management and security control planes controlled by the organization or designated service provider respectively" (Bardin, Callas, Chaput et al. 2009)
- *Community clouds* have deployment characteristics similar to Private clouds. Its users are also considered to be trusted. But the difference come where the clients are divided into some *Specific groups* called Communities.

- *Hybrid clouds* are combinations of public, private or/and community clouds. These are connected to each other



	Managed by	Infrastructure Owned By	Infrastructure Located	Accessible and Consumed By
Public	3rd party provider	3rd party provider	Off-premise	Untrusted
Private / Community	3rd party provider → Organization	3rd party provider → Organization	Off-premise → On-premise	Trusted
Hybrid	Both Organization & 3rd party provider	Both Organization & 3rd party provider	Both On-premise & Off-premise	Trusted and Untrusted

Table 1: Cloud Deployment Models (Bardin et al. 2009)

through gateway. The highlight feature of hybrid is that untrusted access to resources is strictly prohibited.

8. EXPLORING CLOUD COMPUTING TOOLS AND PRODUCTS

Although Cloud computing technology is provided by almost all corporate enterprises, still some of them are listed as below:

IBM Blue-cloud Platform
Microsoft Live Meeting
Microsoft Share Point Online
TPlatform (TFS
Hadoop, VMWare, Eucalyptus
GoogleFileSystem (GFS)
KosmosFS
...and many more.

The reputed companies which provide online facility of cloud computing are:

Google, Yahoo, IBM, Oracle, HP, HCL, TCS, Hitachi, Netmagic, Novell VMWare, Ramco, Cognizant, CRMOrbit, ZOHO.

TrendMicro, CSS and ZScaler are famous industries to provide Cloud Security environment.

Amazon is one of leading company in Cloud Computing providers. Amazon offers Virtual Private Clouds, that use public cloud infrastructure in a private manner, connecting the public cloud resources to the organizations internal network (Amazon 2009b).

CONCLUSIONS

This paper gives a conclusion of our Review work on Cloud Computing. CC is the latest technology used to provide reliable platform for customers. No need to invest huge money in setting up infrastructure. Enterprise and companies pay for services based on client Usage. It's kind of 'money-back-guarantees'. User has no worry about Resource Management. Flexibility in data manipulation is available. Collaboratively working on common projects. Privacy and security satisfaction

Cloud computing preserves all customizations even during Upgrades. Cloud Computing technology has one primary demerit, it is that the OFFLINE access for CC is still not possible.

FUTURE WORK

The paper gave brief view about all sorts of Cloud Models. In future, deployment models can be introduces on basis of Enhancement in Security of Database or Networks.

A proposal for 'Protected Cloud' is being introduced here. Next publication will be on the Protected Cloud Framework by the same concerned Authors.

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REFERENCES:

A list of all references is given as below. No citation number is provided throughout this paper because each line is concluded from these references.

[1] Dr. W. Pieters and Dr. P. H. Hartel "Cloud comuting and confidentiality" thesis in Capgemini, Guido Kok, May 24, 2010.
[2] Workshop on Cloud computing at IIT Madras, Chennai, India on August 18-20, 2010 by IEEE.
[3] Amazon. (2009b). Amazon Virtual Private Cloud (Amazon VPC). Retrieved December 28, 2009.
[4] AIS. (2009b). Journal of the Association for Information Systems. Retrieved July 27, 2009.
[5] Kesh, S. and Ratnasingam, P. (2007). A knowledge architecture for IT security. *Communications of the ACM*.
[6] The Benefits of Cloud Computing by IBM, July, 2009.

[7] NIST. (2004a). FIPS 199: Standards for Security Categorization of Federal Information and Information Systems. Retrieved August 28, 2009.
[8] NIST. (2009). National Institute of Standards and Technology, main website. From http://www.nist.gov.

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