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CLOUD COMPUTING:

concepts and overview

Ms. Sapna V. Ambadkar
M.E.(Computer science and Engg.(F.T.) Ist year)
Prof. Ram Meghe Institute Technology and Research
sapnaambadkar@gmail.com
Contact +91 9860588953

Dr. G.R Bamnote
H.O.D Computer science and Engg. Dept.
Prof. Ram Meghe Institute Technology and Research
grbamnote@rediffmail.com

Abstract:

Cloud Computing denotes the latest trend in application development for Internet services, relying on clouds of servers to handle tasks that used to be managed by individual machines. It is a relatively recent term, builds on decades of research in virtualization, distributed computing, utility computing, and more recently networking, web and software services. With Cloud Computing, developers take important services, such as email, calendars, and word processing, and host them entirely online, powered by a vast array (or cloud) of interdependent commodity servers. Cloud Computing presents advantages for organizations seeking to centralize the management of software and data storage, with guarantees on reliability and security for their users. It implies a service oriented architecture, reduced information technology overhead for the end-user, great flexibility, reduced total cost of ownership, on-demand services and many other things. Cloud Computing presents advantages for organizations seeking to centralize the management of software and data storage, with guarantees on reliability and security for their users.

This paper discusses the concept of Cloud computing, how it works, overview, applications, security and Cloud implementation available today.

Keywords: Cloud ,computing,Social media cloud computing service network(SMCCSN).

I.INTRODUCTION

What is cloud computing exactly?
As a beginning here is a definition
"An emerging computer paradigm where data and services reside in massively scalable data centers in the cloud and can be accessed from any connected devices over the internet".

you would need only an Internet connection, which would hook you up to a central supercomputer that would host all your programs and files [1].

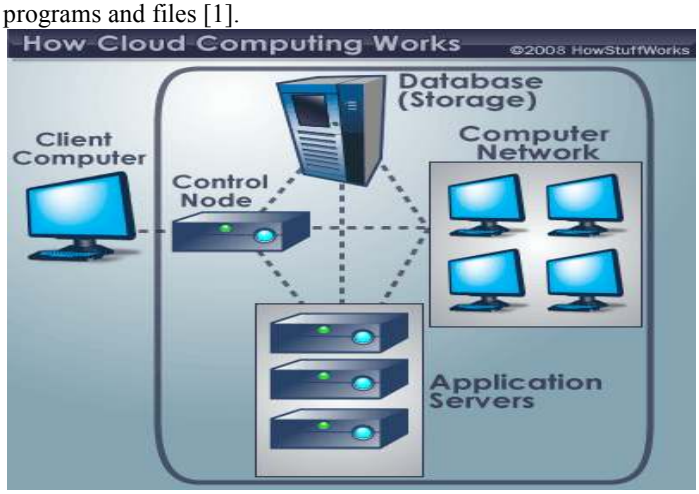

Fig 1 How cloud computing works?

Cloud Computing," to put it simply, means "Internet Computing" The Internet is commonly visualized as clouds; hence the term "cloud computing" for computation done through the Internet. Cloud computing is unlike grid computing, utility computing, or autonomic computing. In fact, it is a very independent platform in terms of computing. The best example of cloud computing is Google Apps where any application can

be accessed using a browser and it can be deployed on thousands of computer through the Internet.
How the cloud computing works??

Fig 1.1 describes that, cloud computing could allow you to a hard drive or a CD/DVD drive. Instead, this presents and advantage to both storage and security issues. Hardware have only a small computer, inexpensive computer, processor and monitor in front of you. You would have no need for and software demands on the user's side decrease. The only thing the user's computer needs to be able to run is the cloud computing system's interface software, which can be as simple as a Web browser, and the cloud's network takes care of the rest.

Cloud computing can be visualised as a pyramid consisting of three sections:

1. *Cloud Application*

This is the apex of the cloud pyramid, where applications are run and interacted with via a web browser, hosted desktop or remote client. A hallmark of commercial cloud computing applications is that users never need to purchase expensive software licenses themselves. Instead, the cost is incorporated into the subscription fee. A cloud application eliminates the need to install and run the application on the customer's own computer, thus removing the burden of software maintenance, ongoing operation and support.

2. *Cloud Platform*

The middle layer of the cloud pyramid, which provides a computing platform or framework as a service. A cloud computing platform dynamically provisions, configures, reconfigures and de-provisions servers as needed to cope with increases or decreases in demand. This in reality is a distributed computing model, where many services pull together to deliver an application or infrastructure request.

3. *Cloud Infrastructure*

The foundation of the cloud pyramid is the delivery of IT infrastructure through virtualisation. Virtualisation allows the splitting of a single physical piece of hardware into independent, self governed environments, which can be scaled in terms of CPU, RAM, Disk and other elements. The infrastructure includes servers, networks and other hardware appliances delivered as either Infrastructure “Web Services”, “farms” or "cloud centres". These are then interlinked with others for resilience and additional capacity [2].

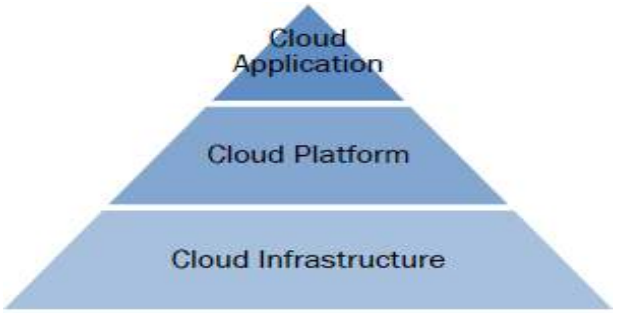

Fig 2 section of cloud computing

The rest of the paper is organized as follows. Section 2 briefly introduces an overview of Social media cloud computing. In the next section its application Section 4 discusses cloud computing architecture. Section 5 discusses cloud computing environment. Section 6 discusses security. In the last section, we conclude our paper and present the directions of future work.

II. OVERVIEW OF SOCIAL MEDIA CLOUD COMPUTING

There is a new concept of cloud computing service platform that is SMCCSE (Social Media Cloud Computing Service Environment) for SNS (social networking site). The main contribution of SMCCSE is to support development environments for SNS based on social media using enabling cloud computing techniques and elastic computing resources on cloud computing environment. Especially, designed and implemented functional social media (audio, videos and images) conversion modules that are the most important functions for trans coding and transmoding in our SMCCSE[3].

- CHOOSING A CLOUD PROVIDER

Each provider serves a specific function, giving users more or less control over their cloud depending on the type.

There are three types of cloud providers that you can subscribe to: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) as shown in fig 2.1

1. SOFTWARE AS A SERVICE - A SaaS provider gives subscribers access to both resources and applications. SaaS makes it unnecessary for you to have a physical copy of software to install on your devices. SaaS also makes it easier to have the same software on all of your devices at once by accessing it on the cloud. In SaaS agreement, you have the least control over the cloud.

2. PLATFORM AS A SERVICE - A PaaS system goes a level above the Software as a Service setup. A PaaS provider gives subscribers access to the components that they require to develop and operate applications over the internet.

3. INFRASTRUCTURE AS A SERVICE - An IaaS agreement, as the name states, deals primarily with computational infrastructure. In an IaaS agreement, the subscriber completely outsources the storage and resources, such as hardware and software that they need [4].

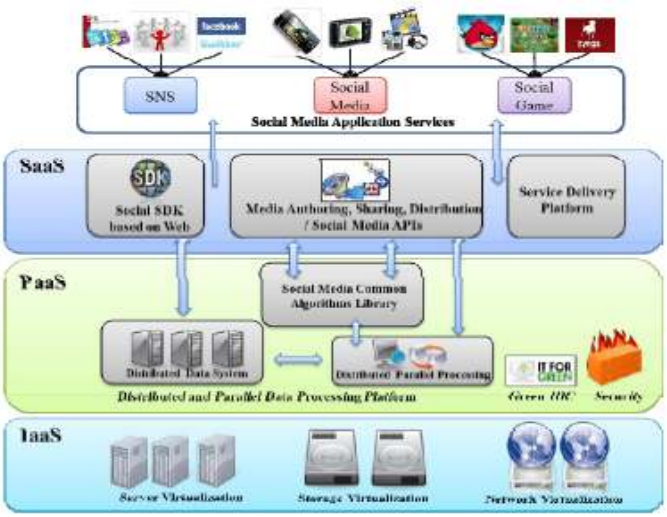

Fig 3 Social media cloud computing service model

III. APPLICATION

Social Media Cloud Computing Service Model (SMCCSM) [5,6,7] Our service model is multiple service models combining with cloud computing that supports to develop SNSs such as Twitter and Facebook, social media service such as YouTube and social game service like the social network game of Facebook. Firstly, our service model offers social media APIs, social SDK based on Web and service delivery platform to easily develop SNS as the form of SaaS. Secondly, in order to provide social media data with reliable services to users, it also presents distributed and parallel data processing platform that deals with large social data (audio, video, and picture) for storing, distributing and en/decoding them as the form of PaaS. Lastly, it provides IaaS based on virtualization to reduce the cost associated with building computing resources such as server, storage and so on.

IV. CLOUD COMPUTING ARCHITECTURE

Cloud computing architecture is categorized into two main sections: Front End and Back End. Front End can be end user or client or any application (i.e. web browser etc.) which is using cloud services. In particular, lots of service providers and developers related with web-based services like portal service, web searching service and Social Networking Services (SNS) are tending to apply cloud computing environments to their fields. The reason why they make an effort to take advantage of cloud computing is that they handle large amounts of media data such as audio, images and videos. Social Networking Services (SNS) standing in the center of this era produce a huge amount of social data including media data daily. Back End is the network of servers with any computer program and data storage system. It is usually assumed that cloud contains infinite storage capacity for any software available in market. Cloud has different applications that are hosted on their own dedicated server farms. Cloud has centralized server administration system. Centralized server administers the system, balances client supply, adjusts demands, monitors traffic and avoids congestion. This server follows protocols, commonly known as middleware. Middleware controls the communication of cloud network among them. Cloud Architecture runs on a very important assumption, which is mostly true. The assumption is that the demand for resources is not always consistent from client to cloud. Because of this reason the servers of cloud are unable to run at their full capacity [8, 9].

V. TYPES OF CLOUD COMPUTING ENVIRONMENTS

The cloud computing environment can consist of multiple types of clouds based on their deployment and usage.

1. Public cloud:

Public cloud or external cloud describes cloud computing in the traditional mainstream sense, whereby resources are dynamically provisioned on
a fine-grained, self-service basis over the Internet, via web applications/web services, from an off-site third-party provider who shares resources. This environment can be used by the general public. This includes individuals, corporations and other types of organizations. Typically, public clouds are administrated by third parties or vendors over the Internet, and services are offered on pay-per-use basis. These are also called provider clouds. Business models like SaaS (Software-as-a-Service) and public clouds complement each other and enable companies to leverage shared IT resources and services.

2. Private cloud:

This cloud computing environment resides within the boundaries of an organization and is used exclusively for the organization's benefits. These are also called internal clouds. They are built primarily by IT departments within enterprises who seek to optimize utilization of infrastructure resources within the enterprise by provisioning the infrastructure with applications using the concepts of grid and virtualization.

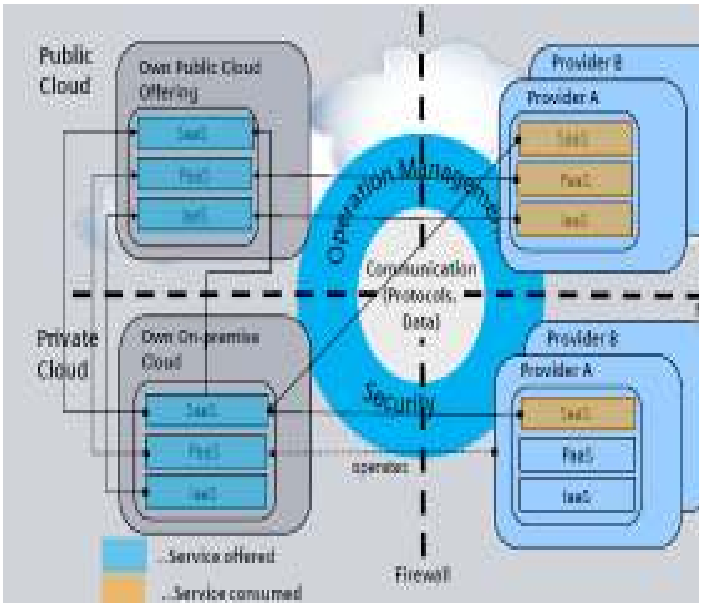

Fig 4 Hybrid cloud architecture model

3. Hybrid cloud:

A hybrid cloud environment consisting of multiple internal and/or external providers that means hybrid cloud is a combination of both private (internal) and public (external) cloud computing environments [10, 11].

VI .SECURITY

The information housed on the cloud is often seen as valuable to individuals with malicious intent. There is a lot of personal information and potentially secure data that people store on their computers, and this information is now being transferred to the cloud. This makes it critical for you to understand the security measures that cloud provider has in place, and it is equally important to take personal precautions to secure your data [12].

As cloud computing is achieving increased popularity, concerns are being voiced about the security issues introduced through adoption of this new model. The effectiveness and efficiency of traditional protection mechanisms are being reconsidered as the characteristics of this innovative deployment model can differ widely from those of traditional architectures. The relative security of cloud computing services is a contentious issue that may be delaying its adoption .Solutions to various cloud security issues vary, from cryptography, particularly public key infrastructure (PKI), to use of multiple cloud providers, standardization of APIs, and improving virtual machine support and legal support.

a. Confidentiality refers to keeping data private. Privacy is of that amount of data leaves the borders of the organization. Not only must internal secrets and sensitive personal data be safeguarded, but metadata and transactional data can also leak important details about firms or individuals. Confidentiality is supported by, among other things, technical tools such as encryption and access control, as well as legal protections.

b. Integrity is a degree confidence that the data in the cloud is what is supposed to be there, and is protected against accidental or intentional alteration without authorization. It also extends to the hundreds of synchronizing multiple databases.

c .Availability means being able to use the system as anticipated.

d. Accountability maps actions in the system to responsible parties. Inside the cloud, actions must be traced uniquely back to an entity, allowing for integration into organizational processes, conflict resolution.

e. Assurance refers that the cloud provider provides what the client has specified.

f. Resilience in a system allows it to cope with security threats, rather than failing critically [13].

ADVANTAGES:

- Reducing the number of hardware components and replacing them with cloud computing systems reduces energy costs for running hardware
- Moving applications to the cloud can potentially reduce energy costs for running and cooling hardware.
- The terminal could include a monitor, input devices like a keyboard and mouse and just enough processing power to run the middleware necessary to connect to the cloud
- If the cloud computing system's back end is a grid computing system, then the client could take advantage of the entire network's processing power.
- The cloud system would tap into the processing power of all available computers on the back end significantly speeding up the calculation

VII. THE COMPUTING OF TOMORROW

It is no secret that the world is shifting to a more mobile, efficient, and manageable world. Cloud computing is the exact definition of where the world is heading in terms of the utilization of computers. Cloud computing is global, mobile, and safe. It allows an employee in China to have access to the same documents as an employee in the United States. Cloud Computing allows have a globally controllable network [15].

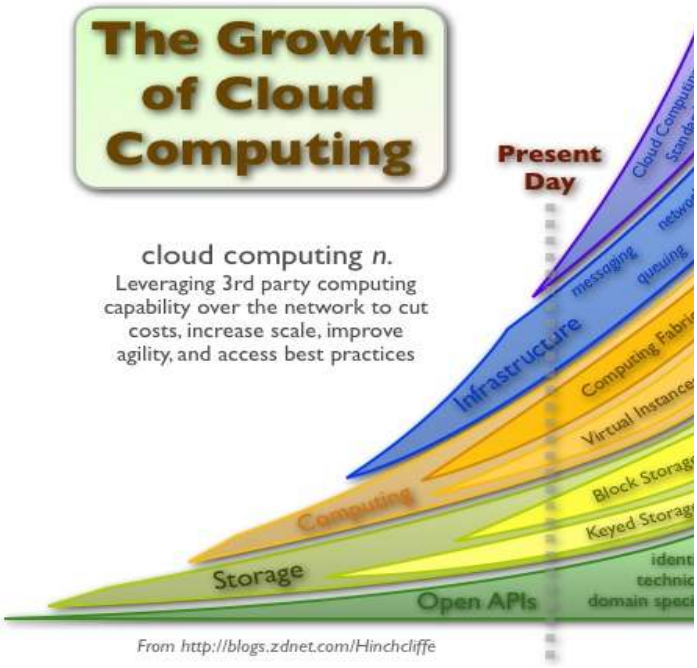

Fig 5 The growth of cloud computing

CONCLUSION:

In this way the cloud computing helps in increasing performance, scalability, and portability. So, for increasing future applications and demands the cloud technology is going to play the torch bearing role. So, one can hope that in nearer future all the reputed firms worldwide are going for cloud computing and new era of computing will be established.
Identity in the Age of Cloud Computing: The next generation Internet's impact on business, governance and social interaction Our prediction is that it is the beginning to the end of the dominance of desktop computing such as that with the Windows. It is also the beginning of **a new Internet based service economy**: the Internet centric, Web based, on demand, Cloud applications and computing economy. we can say that in next few years this technology will replace whole market and the next era will be called as "Cloud Era".

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