RESEARCH ARTICLE

Implementing & Developing Cloud Computing on Web Application

Anisha Tandon
Assistant Professor, JIMS Vasant Kunj
84.anisha@gmail.com

ABSTRACT

This paper introduces internet-based cloud computing, its characteristics, service models, and deployment models in use today. We also discussed the benefits and challenges of cloud computing and the significance of flexibility and scalability in a cloud-based environment. In this paper we also focus on issues and advantages for web and cloud based applications; we also point out the various difficulties associated with dynamic updates for such applications, present and layout directions for future work.

I INTRODUCTION

Cloud Computing [1] is evolving as a paradigm for hosting Internet-scale applications in huge computing infrastructures. In particular, IT services are migrating from enterprise-scale computing infrastructures to cloud computing infrastructures that is pay-for-service huge data-centers with thousands of machines. Cloud computing refers to those services and applications that will be delivered in the internet cloud, and the main fact is that, in many cases, the devices that are used to access such services and applications which do not require any special applications.

II CHARACTERISTICS

Cloud computing [2] contains the following characteristics:-

• **Shared Infrastructure** — Cloud computing uses a virtualized software model that enables sharing of physical devices, services, networking and storage capabilities.

• **Network Access** — Cloud computing can be accessed over the internet from a broad scale of devices such as laptops, PCs and mobile devices, using some standards APIs.

• **Managed Metering** — Cloud computing uses metering for managing and optimizing the services and to provide billing and reporting information. Consumers are also billed for thus services in fulfillment of how much they have actually used such services during the billing period.

• **Dynamic Provisioning** — It allows for the provision of services that is based on recent demand requirements. It is done automatically while using software automation that enables the expansion and contraction of service capability, as it is required. This dynamic scaling is required to be done while maintaining high levels of security and reliability.

Cloud computing also allows you to share and scalable deployment of services, as it when required, from any position, and for this customer can be billed also that is based on usage which is actually done by the consumer.

III SERVICE MODELS

Once a cloud is established [3], Services of cloud computing are deployed on the basis of business models that can differ depending on requirements. The service models being deployed are commonly known as(figure 1):

1). Software as a Service (SaaS) — Application runs on the Cloud, doing away with client-side installations; instead access is via various thin client interfaces such as a web browser from a variety of devices

2). Platform as a Service (PaaS) — Enables the development and deployment of applications without the cost and complexity of purchasing and managing the underlying hardware and software stack

3). Infrastructure as a Service (IaaS) — The Cloud infrastructure is used to deliver a virtualization platform. Examples of IaaS are Amazon EC2 and S3, Windows Live Skydrive etc.
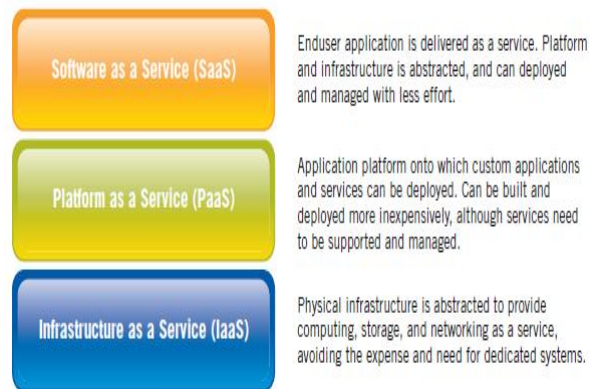

Figure 1: Service Model Types

IV DEPLOYMENT MODELS

Deploying cloud computing[4] models can differ depending on the requirements. So, the deploying models are as follows:

• **Private Cloud** — The cloud infrastructure is designed, deployed, maintained and operated for a specific organization. It has full control on hardware and software environment

• **Community Cloud** — The cloud infrastructure is used and managed by participating organizations with similar interests and requirements. E.g. are Healthcare, Education etc.

• **Public Cloud** — The cloud model is used by the service provider and is available on a commercial basis to the public. Computing infrastructure is designed, hosted, maintained and operated by a cloud service provider that is available on a shared basis to number of subscribers over the Internet.

• **Hybrid Cloud** — The cloud infrastructure contains number of clouds of any type, but has an ability to extend the infrastructure to the Public Cloud when it is required.
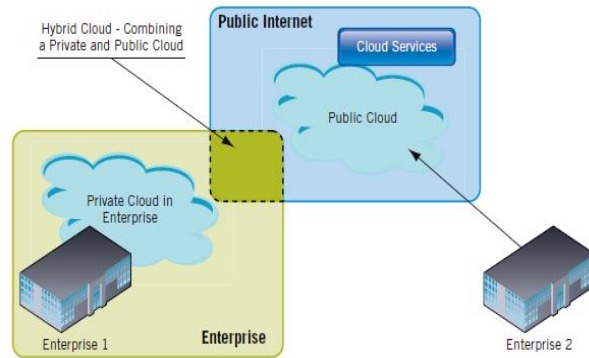
Figure 2: Public, Private, and Hybrid Cloud Deployment Example

V Communications in the Cloud

Making services [5] by service developers are available in the cloud that depends on the type of service that are being used to access it. The process is very simple as user clicks on the desired web page, or may also involve an application of API i.e. accessing the different services of the cloud. Telcos are starting point to use clouds to release their own services.

Using the Communications Services

In the cloud system, communications services can extend their capabilities and provide new interactivity capabilities to the current services. Cloud-based services enable business enterprises to embed communications capabilities into business applications such as Customer Relationship Management (CRM) systems Enterprise Resource Planning (ERP) systems. For "on the move" business people can accessed through a smartphone, is supporting to increased productivity while away from the office.

In terms of social networking, cloud computing provides click-to-call capabilities from social networking sites, and also access to video communications and Instant Messaging systems that can connect the peoples within the social circle.

Accessing through Web APIs

Accessing communications [6] capabilities is achieved through APIs in a cloud that is Web 2.0 APIs which allows application development to get advantage of the communication infrastructure within it outside the cloud (see Figure 3).
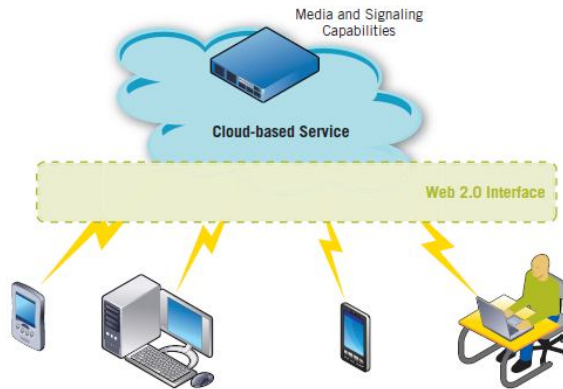

Figure 3: Web 2.0 Interfaces to the Cloud

These APIs provides a wide range of communications capabilities for cloud-based services that are limited by the media and signaling capabilities within the cloud. Today's services of the media are allowed for communications and management of voice and video over a complex range of codecs. APIs also enable communication of other services that provides latest opportunities and helping to drive Average Revenue per User (ARPU) and attachment rates, especially for Telcos.

VI WEB APPLICATION AND CLOUD COMPUTING

The services of cloud are accessible [7] all over the world is used as a single point of access for all computing needs of consumers. Some recent advances in processors, disk storage, broadband internet access, virtualization technology and inexpensive, fast servers all have combined to make cloud computing as a compelling paradigm. Cloud computing allows companies and users to pay and use the software and storage that they need. This type of software deployment is referred to as Software as a Service (SaaS).

The components excluding human resources are

- i) infrastructure resources
- ii) software resources,
- iii) business processes
- iv) application resources and

The components in the cloud computing paradigm are dealed as services and are in the "cloud. Infrastructure resources are treated as storage, computing power etc. can take the advantage of already existing technologies like grid computing[8]. In the software resources include application servers, IDE, database servers etc.. The business process resources can also be defined as a set of common business utilities which are given as services to the clients. Example are ERP software like SAP and Oracle providing some standard business workflows in the cloud. Some of the major companies that provides cloud services in cloud computing are Google, IBM, Amazon, Microsoft, SalesForce etc. Current cloud computing services are spam filtering, storage services, performing applications in high level programming languages such as Java or the use of some kind of database. Google has released Google App Engine in 2008, which is a cloud-based platform that is used for running applications for both individuals as well as businesses. Microsoft has also released Windows Azure which is known as a cloud-based system for the Community technology Preview.

VII ISSUES & ADVANTAGES RELATED TO CLOUD COMPUTING FOR WEB APPLICATION

Price: It is ease to start-up enterprise companies that do not have to invest huge amount of money into setting up the infrastructure such as data servers, database administrators, application servers, people resources for managing such critical systems including backup and recovery, etc.

Simplicity: Cloud computing applications are easy to use and can also set up all the services without having to worry about resource management.

Reliability: Data and Network access are guaranteed to be reliably maintained over the service provides that are experts in maintaining the infrastructure and such reliability is backed by some kind of "money back guarantees" or penalties for the providers in the event if they have a down time.

Flexibility: Consumers may have the flexibility to "outsource" parts of the infrastructure and can still maintained to some of the extent proprietary data at their own site.

Collaboration: All the applications on the cloud become a natural fit for consumers to collaborate effectively on a common project or application. There are number of issues that are related to cloud computing and some of them are presented here.

Privacy and Security
Services of cloud computing allows users to add services, capacities and software patches, some organizations will be hesitant to put their data on a public-access cloud.

According to security and privacy point of view, the more restricted to access to the data that is easier to protect it. In order to ensure that the fast access to data stored and to prevent the loss of data in case of failure of one data center, the users data may be mirrored on two or more sites, making it even more vulnerable. On the other side, grouping such a massive amount of data in one physical location makes it prone to damage. To prevent large-scale failures, the data should be stored on sites that are geographically far apart.

VIII CONCLUSION

Cloud computing is gaining popularity as an inexpensive way of providing software and storage. A newly paradigm of computing has started to evolve is referred to as cloud computing. As wireless broadband connection options grow, the cloud computing allows users and companies to pay to and use the software and storage as it when required. A cloud can be a collection of computers that are located on the server side. Technologies like grid computing, peer-to-peer computing have a direct contribution to cloud computing. We have also given an importance to the connection between cloud computing as well as the web applications. We have also listed and highlighted various challenges and issues with cloud computing. As Web 2.0 and cloud services are also gaining popularity, the computing paradigm is shifting from large monolithic applications to thick clients, solution-stack based servers, and cloud-based computation and storage services. Many companies are moving towards with the intention if building it is easy to use clouds. There is a tremendous potential for consumers to exploit the cloud computing technology. This paper contains an introduction to the technology and also discussed the various advantages as well as the challenges associated with it.

ACKNOWLEDGMENT

REFERENCES

[1] Pamela Bhattacharya & Iulian Neamtiu, "*Dynamic Updates for Web and Cloud Applications*"

[2] Larry Ellison, "*Cloud Computing Basics*" , 2008

[3] *Introduction to Cloud Computing*, White Paper

[4] Liladhar R. Rewatkar & Ujwal A. Lanjewar, *Implementation of Cloud Computing on Web Application*", International Journal of Computer Applications (0975 – 8887) Volume 2 – No.8, June 2010

[5] Sadhana rana, pramod kumar joshi, " Risk *analysis in web applications by using cloud computing*", International Journal of Multidisciplinary Research Vol.2 Issue 1, January 2012, ISSN 2231 5780

[6] Christian Vecchiola, Suraj Pandey, and Rajkumar Buyya, "*High-Performance Cloud Computing: A View of Scientific Applications*"

[7] Peter Mell Timothy Grance, "*The NIST Definition of Cloud Computing*" NIST Special Publication 800-145

[8] Ezer Osei Yeboah-Boateng, Stephen Cudjoe-Seshie, "*Cloud Computing: The Emergence of Application Service Providers (ASPs) in Developing Economies*", International Journal of Emerging Technology and Advanced Engineering Website: www.ijetae.com (ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 3, Issue 5, May 2013)