Cloud Computing for Business Development

Subin T. Sunil[1], Suraj Khadri[2], K. T. Sachin[3]

1,2,3UG Student, Dept. of Industrial Engineering, Sir M. Visvesvaraya Institute of Technology, Bangalore, India

Abstract: **Cloud computing is an on-demand service model which is based on virtualization and distributed computing technologies for IT provision. It has played a most important role in solving the inefficiencies problem of business organizations and also increases the development of business organizations to keep on competitive in the current field. Cloud computing Technologies were used by many business organizations such as micro, Small Medium Businesses (SMBs) and Small Medium Enterprises (SMEs). Public services connected with Cloud Computing have grown from $9 billion to $40 billion more than the last five years. Business organizations need to be aware against the attacks to their cloud storage. Benefits and challenges of the implementing a cloud computing for business organizations will be discovered in this paper and also how it influences business development will be explored from various research literatures.**

Keywords: **Architecture, Cloud computing, Deployment models, Risks, Service models, Service providers.**

1. Introduction

Cloud computing is a way of computing that has as central base sharing computing resources instead of having local servers or personal devices to gives a right of entries to all the applications. It is also known as Internet Based Computing, where services are distributed to business organizations with the aid of the internet. [1]. It is built by relating one or more datacenters, a collection of desktop PC's, workstations and servers. 97% of business organizations use cloud services today. Cloud computing providers offer different types of services to their users based on the main three types of service models: Software as a service (SaaS), Platform as a service (PaaS) and Infrastructure as service (IaaS). Cloud computing has been classified as four types of deployment models: public cloud, private cloud, community cloud and hybrid cloud [3].
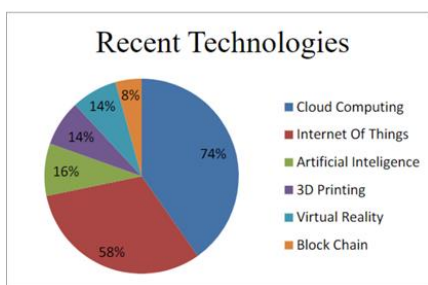

Fig. 1. Recent technologies

Each of the models has its own scope of services offered to the users. The ways of Cloud Computing deployment will be based on different factors, such as customization capabilities, cloud services sharing, security requirements and location the services hosted [4]. 74% of technology chief financial officers (CFO) declared that cloud computing will be providing the most measurable impact on recent business technologies in 2017. Source was taken from 2017 BDO Technology Outlook Survey and displayed in figure 1.
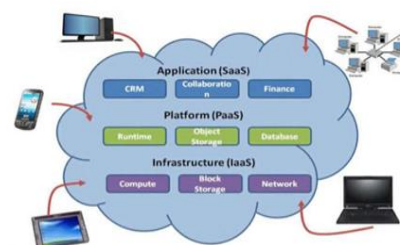
2. Cloud computing architecture

Fig. 2. Cloud computing architecture

Cloud computing architecture was shown in figure 1. The core middleware is running the physical infrastructure, which has as intentions an appropriate runtime for the applications and to utilized the resources as good as possible. Virtual technologies as used to present an exact runtime, application isolation, quality of service. The distributed infrastructure as a group of virtual machines is unprotected because of the hypervisors. The user requirements and applications are fulfilled by using the virtual machines, because they allow splitting the hardware resources, CPU and memory to virtualize some devices. The application that can be found in the cloud can be developed with specific programming languages. The core middleware functions with the help of infrastructure management and also support the capabilities like admission control, billing, accounting, negotiation of quality of service

3. Cloud computing service models

- Software as a service (SaaS) is software offered by a third-party provider, available on demand, usually via the Internet configurable remotely. Service providers will install their software applications which operated by them for the users to use as a service. The users can rent it on a subscription or pay-per use model and access the software applications without the concerns of installation and maintenance. Examples include online word processing and spreadsheet

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tools, CRM services and web content delivery services (Salesforce CRM, Google Docs).

- Platform as a service (PaaS) has allows customers to develop new applications using APIs deployed and configurable remotely. A platform has combined together with software, hardware, operating system, server, configuration management, deployment platforms, development tool and database will be provided by service providers. PaaS provides a full "Software Lifecycle" and allows the application developers to implement on the cloud. Examples are Microsoft Azure, Force and Google App engine.

- Infrastructure as service (IaaS) has provides virtual machines and other abstracted hardware and operating systems which may be controlled through a service API. The main concept of IaaS is virtualization. Examples include Amazon EC2 and S3, Terre mark Enterprise Cloud, Windows Live SkyDrive and Rackspace Cloud [8]. Figure 2 shows the cloud computing service models usage in the period of 2016 to 2021 and Infrastructure as service is used by many business organizations. Source was taken from 451 Research's Market Monitor. Cloud Computing. November 2017.
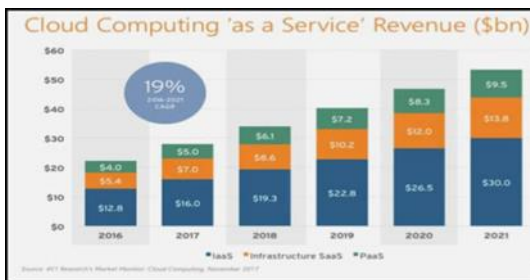

Fig. 3. Cloud computing service models

4. Cloud computing deployment models

- Public clouds service is for everyone can have access to the cloud in general public over Internet. More than one user uses a public cloud service. The cost of the public cloud will be lowered. These services are provided to share with other organizations by third party service providers who have their own policy, value, costing and charging model.

- Private cloud service is for organization usage. Private cloud will provide higher security because it is only accessible by the trusted users in the organization. Business organization uses private cloud services to share their customer data to other branches. Benefits of a private cloud are the information about the customers is better protected then the public cloud.

- Hybrid cloud service is the composition of two or more clouds, public, private or community. Physical hardware and server instances jointly to provide by Hybrid cloud service. it is easier to hold data security alarms by saving the organizations' sensitive data in private storage. Usually this type of cloud service is used for backup purpose.

- Community cloud service is located between public and private cloud. These cloud services specially designed for an industry need. Various Organizations such as media industry, healthcare industry, energy and other core industries, public sector, scientific research were used Community cloud service. The resources are shared among the organizations that have similar missions and needs. Figure 4 shows the enterprise cloud deployment models usage report was collected from various business organizations in 2016. 53% of hybrid cloud service, 18% of public cloud service and 22% of private cloud service were used.
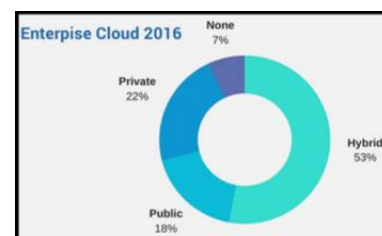

Fig. 4. Enterprise cloud deployment models

5. Benefits of cloud computing

Micro businesses, Small Medium Businesses (SMBs) and Small Medium Enterprises (SMEs) were getting more benefits through cloud computing. Benefits are given below

- *Flexibility:* Cloud-based services can rapidly meet the business demand of any organization by providing various services.

- *Increased collaboration:* Cloud computing upsurges collaboration by allowing all employees to synchronize upend work on documents and shared applications simultaneously from their own place. Automatic software updates: Cloud service providers do the server maintenance including software upgrades, security updates, freeing up their customers' time and resources for different other tasks.

- *Security:* Businesses storing everything in the cloud, can access the data even anything happened to the machine.

- *Work from anywhere:* Cloud computing allows employees to work from anywhere. This elasticity confidently affects acquaintance of workers' work-life balance and production.

- *Environmentally friendly:* Businesses adopting cloud computing uses only the server space needed, so it decreases their carbon footprint and saves the environment.

- *Disaster recovery:* When companies start trusting on cloud-based services, they need not have to device complex disaster recovery plans, because cloud service providers take care of most issues in a very fast manner.

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- *Competitiveness:* The cloud technologies grant SMEs access to enterprise-class technology by providing various ERP solutions. Small and medium businesses to be active faster than traditional competitors.

6. Cloud service providers

IDC analysts has calculated the growth of global datasphere as 175 zettabytes in 2025. Most of the businesses are changing their important IT infrastructure and data to be stored in the cloud, and also allows them to access resources from any location via the internet connections. Three major cloud storage services such as Public cloud service, Private cloud service and Hybrid cloud service were used by many business organizations. Public cloud storage is the most widely adopted storage resolution by the enterprises as both hardware and network maintenance. There are many leading cloud service providers in the global cloud storage service market, but the four primary ones are Amazon Web Services (AWS), Microsoft, Google and IBM with different range of storage options. According to the North America Enterprise survey has held on Nov 2014 was described in figure 5. Infonetics asked an open-ended question like whom they considered to be the top 3 cloud service providers to the enterprises. Above 40% respondents were carried by Microsoft and IBM. Above 20% respondents were carried by Amazon and Google. Source was taken from Infonetics Research, Cloud Service Strategies, North America Enterprise survey: November 2014.
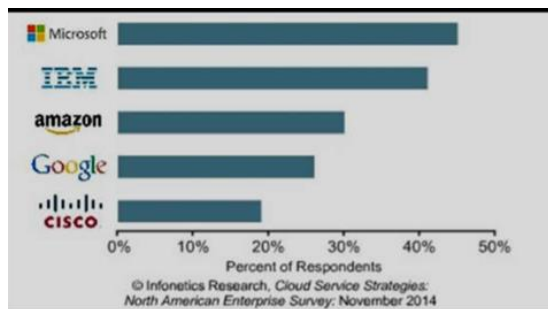

Fig. 5. Top 3 cloud service providers

7. Conclusion

Cloud computing has become one of the renovated technologies that is massively essential to conduct a progress of doing business. As discussed in this paper, Cloud computing providers offers three main types of service models and four types of deployment models. 83% of organizations store sensitive data in public cloud.69% of organizations trust the public cloud to keep sensitive data to be more secure. Cloud computing brings conveniences and benefits to the organizations such as Flexibility, Increased collaboration, Automatic software updates, Security, environmentally friendly and Disaster recovery.61% personal customer information world wide data will be stored in public cloud. Still,

like all other technologies, there are several concerns with cloud computing. The biggest problem in cloud is data breaches. More organizations will be willing to approve cloud computing only if the concerns are solved.

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