3/26/2019

Cloud Computing in Small Business

**Astha Dhakal**

CIST 3000 ADVANCED COMPOSITION

uNIVERSITY OF NEBRAKSA AT OMAHA

**Introduction**

According to official definition by National Institute of Technology(NIST), "cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grance, 2011). In simple words, Cloud Computing is a practice of using a network of remote servers hosted on the internet to store, manage and process data. The servers where resources are stored are hosted by third party service providers. To access the data on cloud from a device, the device must be connected to the Internet.

Cloud Computing is the future of computing. The growth of cloud computing has been rapidly increasing since few years. In 2013 business saw usage by up to 43% of all-American small business with a total economic weight of about twenty-four billion dollars. (“Cloud Computing in small business.”). Major tech companies like Google Drive, OneDrive, Dropbox, iCloud and Box have started to provide cloud storage for free of cost for basic uses. Anyone can conveniently store and share their photos and documents without having to email them to the designated people. Services like this have been extremely efficient in group projects and online backup. Some of the giant companies like Microsoft, Google, Amazon and Apache have been providing Cloud Computing as different services.

Although Cloud Computing is being adapted by the companies of all shapes and sizes, the primary audience for the report is the manager at Tobacco Road Discounts which is located at 1414 S Saddle Creek Rd, Omaha, Nebraska. Cloud computing helps business owners and managers to conveniently share the business decisions, statistics and data among each other. Also, owners or employees can work from outside the business locations, they can gain access to the data via their cloud computing enabled devices. Cloud computing helps business to store data and information in very convenient and organized way. Independently owned franchise business like Pizza Ranch and Wingstop are some of the business chains that can be benefitted from cloud computing.

Applications run through cloud are cheaper as well since the companies do not have to worry about arrangement and maintenance of those applications. Besides providing scalable, reliable and more secure service, upgrades are periodically completed by cloud service providers to update the features, security, performance enhancements automatically (Devasena, 2014).

**History of Cloud Computing** :

The use of cloud computing has been increased rapidly over the few decades. However, the concept of cloud computing started in mid-19th century. The concept of cloud computing and technology began from Mainframe Computing, which was developed in the 1950s. Due to advancement in technological field it allowed mainframe computing and the internet to expand in power and scope until the invention and appearance of what we would recognize as the ‘baby version’ of our modern internet. In mid- 1990s both personal and business computers were connected to internet. Eventually computers and a wired internet connection became cheaper and cheaper until the average household could have one without financial difficulty. The arrival of Salesforce.com in 1999, which initiated the concept of delivering enterprise applications by incorporating it a simple website is considered to be one of the early achievements in the history of Cloud Computing (Mohamed, n. d.). By 2006, ‘the Cloud’ was officially there and people started to talk about it openly.

This section needs a further development. I have included a very short history. I am trying to elaborate and go really in depth. I would expand this heading a little more.

**Understanding Cloud Computing:**

Several features and services make Cloud Computing one of the kinds. To understand cloud computing in depth it is very important to understand about its characteristics, deployment models and service models. The brief description of each of them are discussed below:

**Characteristics of Cloud Computing** :

National Institute of Standards and Technology (NIST) is an agency under the scope of US Department of Commerce. NIST is responsible for defining standards in Science and Technology. NIST has defined following five essential and exclusive features of cloud computing which stands out cloud computing as one of the major computing services.

1. On-demand Self-Service

One of the main characters of cloud computing is ON-demand Self-service. The resource and information are provided by cloud computing on demand i.e. when user demands for it. The available service is easily modifiable by company/clients/employees without contacting the host/It department. Apple, Microsoft and Box are some of the example of host. Host is a server that provides services to different clients. On-demand self-service computing needs a very high level of planning. For example, a cloud consumer can request a new virtual machine at any time and expects to have it working in a couple of minutes. The original hardware, however, might take 90 days to get delivered to the provider. It is therefore necessary to monitor trends in resource usage and plan for future circumstances well in advance (Sinnema, n.d).

1. Broad Network Access

Broad network Access refers to the resources available in network that are accessible from various devices such as mobile phones, tablets etc. Communication Devices should be able to connect to the host and access/modify the services through the network. To make the connection to host and access the services internet is a must. Broad network access benefits companies to obtain maximum market access by providing the opportunity to implement added services that can be retrieved from variety of devices from anywhere and anytime around the world. Standardized mechanisms should be followed to access the cloud services. From the network level, up to the client access and presentation level, accessibility would be reduced to limited devices and broad network access would be hard to achieve if use of standards were not fundamental to this (Harding, 2011).

1. Rapid Elasticity:

Rapid Elasticity is a term used to describe accessible provisioning, or the ability to provide accessible services. Experts believe rapid elasticity is one of the major five fundamental characteristics of cloud computing. Rapid elasticity allows users to automatically request more space in the cloud. The capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time (Mell & Grance, 2011). The three major features of elasticity are discussed below.

1. Linear scaling: The performance or size of service is same for every individual. For example, performance experienced by one user is the same as that by a thousand users (Harding, 2011).
2. On-demand utilization: Virtual resources allocation follows the profile of demand exactly meaning that the user appears to have complete utilization of the service (Harding, 2011). On-demand utilization users tends to have 100% utilization of the service.
3. Pay-as-you-go: The payment is to be made on a per-use basis. The payment is done using the OPEX( Operating expenses) style charging principle. The ownership of the assets is within the cloud service provider and the user pays for units of resources that are consumed. Logical units of the resources are initially defined by the service provider (Harding, 2011).

The buyers ought to have the information of estimating of various use levels and versatility as the valuing changes by providers and can be mind boggling. Additionally, pricing also depends on several other factors such as transactions, number of users, data quantity, infrastructure consumed, size of the virtual machine, and memory and disc size and network usage (Harding, 2011).

1. Resources Pooling

Resource Pooling is described as the process of sharing of computing capabilities which leads to increased resources utilization rates. Resource Pooling helps to save cost and provide flexibility on the supplier side. For example, when resources are not fully used by one customer it can be used by another customer, instead of letting the resources sit idle. This gives providers the ability to provide service for many more customers. One of the advantages of resource-pooling is the multi-tenancy. It means that multiple client organizations (known as the tenants) are served by a single instance of a computing resource by providing a separate environment for each tenant (Harding, 2011). Platform, software, application, storage, processing and bandwidth of the network are some of the examples of resources.

1. Measured Services :

Measured service is another important and unique character of cloud computing. Measured service means the resource usage is automatically metered and pay based on the usage. Resource usage can be metered, control and report to the providers. Resource usage provides transparency for both the service provider and the consumer and can be monitored, controlled and reported (Mell & Grance, 2011). Measured service also helps for the transparency for the provider and customer as the usage can be monitored and controlled

**Service Models of Cloud Computing** :

National Institute of Technology (NIST) has divided the service models of cloud computing into three models which are described below:

1. Software as a service. (SaaS) :

It is a software distribution model where a consumer can use application like Microsoft Word and Excel over the internet. It is one of the prevalent service models used today. SaaS already has an environment where application can be installed and run. The applications can be accessible through customer devices using web browser or browser-less interface. SaaS model are also very easier to administer and compatible to all kinds of users.

1. Platform as a service. (PaaS)

Platform as a service provides a platform like software development kits that are available in the “cloud” to create application. Application can be created using a programming language, tools and services provided by the provider even though client cannot manage the cloud infrastructure such as networks, servers, storage and operating systems. Cloud provider distribute both hardware and software tools to create an application. Some of the main characteristics of PaaS are security, redundancy and scalability.

1. Infrastructure as a service. (IaaS):

Consumer or clients is provided with services like processing, networks, storage and other fundamental infrastructures where the consumer can deploy and run arbitrary software, which can include operating systems and applications (Mell & Grance, 2011). The client can manage operating systems, storage but does not have control over original cloud infrastructure. Some of the characteristics of IaaS includes dynamic scaling, desktop virtualization and other policy-based services.

**Deployment Models of Cloud Computing:**

A deployment model can be understood as a “configuration” of certain cloud. It represents a specific type of cloud environment. The cloud environment is basically distinguished based on the parameters like storage, ownership and access. NIST has defined four deployment models : Private, Public, Hybrid and Community.

1. Private Cloud

It is a cloud model where a certain cloud environment is designated for a dedicated use for a single organization. It is provided to single client or organization. Private cloud is control and managed by internal resources. Benefits of private cloud includes higher security and privacy, more control and cost and energy efficiency. VMware is an example of software that provides a service of private cloud.

1. Public Cloud

Public cloud can be defined as a cloud services available over the public internet who wants to use or buy them. Public does not mean its free of cost, it means the data is visible and available for a customer to purchase it. Public Cloud are controlled and managed by one or more organization. Some of the benefits of public cloud includes cost savings, security and reliability. Windows Azure Service Platform and GoogleApp Engine are some of the example of public cloud.

1. Hybrid Cloud

It is a deployment model where one or more cloud models are mixed together. It is a collection of one or more infrastructures. Using both private and public model while computing in the data environment means you are using hybrid cloud. The connected cloud interacts through an encrypted connection (Raja, 2016).

1. Community Cloud

Community Cloud is also known as shared cloud. They can be owned, managed and operated by one or more organizations in the community, a third party, or the combination of all, and it may exist on or off premises (Mell & Grance, 2011).

Community cloud is provided to specific groups, community and organizations who have same goals or concerns.

**Cloud Computing in small business**

Cloud computing is adapted by many big organizations, but it is also very ideal for small scale business. Cloud Computing is the next best thing after the invention of stapler. Cloud Computing provides access to advanced technology that were not reached by small businesses. Cloud Computing helps small business owners to start storing their expenses and income along with financial sheet in cloud. They do not have to worry about losing the data or any one tearing up their financial sheet written in a paper. Only for $10/month business owners can use cloud-based starter packages which is provided by Zoho or FreshBooks for their business use. It is suitable for freelancers and individually owned business which includes invoicing, expense tracking, and simple reporting (Ward, 2018). Cloud computing is a great way where business owners can save their money, time, energy and efforts. Some of the few benefits of cloud computing for small business includes cost reduction, less risky, easy to collaborate and saves time and efforts.

This section needs a further development. I have included few benefits and the reasons for choosing a cloud computing which can be elaborated more.

**Advantages of cloud computing:**

Cloud adoption is accelerating faster than it used to be before. Cloud computing is also having a measurable impact on business, both large and small scale.Cloud computing provides many benefits to both business and also for a personal use. Some of the advantages of cloud computing are described below:

1. Flexible cost

Comparing to traditional method of computing cloud computing is very cheaper and flexible. The cost of cloud computing depends on the use of infrastructure and doesn’t have to be paid at first.

1. Flexible capacity

Cloud computing can be used in every way you want to. It can be turned up, down or off according to client demand. Capacity can be increased or decreases as per the client wants.

1. Works from anywhere

Cloud computing can be accessed from any part of the world. It allows clients to work outside of business locations. Cloud computing helps to provide a balance in work life and create productivity.

1. Data security and privacy.

Most of the business organizations and even individual has issues with security and privacy. Cloud computing guarantee that the data or information is securely stored and handled. Cloud computing provide many advanced features which keeps the data safe and private.

1. Data Recovery

Data backup and recovery of data in crucial time is one of the major problems that occurs in business organization. Cloud infrastructure help to store the data in cloud which will be accessible easily any time you want. Even though your laptop or desktop is damaged if you have saved your file in cloud, you can recover it within few minutes.

1. Smooth operation

Monitoring and trying to keep records of data in business is time consuming. Cloud computing provide service for monitoring and keeping the data safe. Cloud service providers can provide creative and practical solutions to address the needs and expectations to keep IT infrastructure working efficiently (“Advantages of cloud computing”).

1. Control

Cloud computing let clients to see their data and control them. They can easily decide what level of access to what data is needed for them. Clients can also choose users and let them have access to the data. This help in more collaborative works.

**Disadvantages of Cloud Computing**

As everything has its pros and cons there are some of the disadvantages of cloud computing. Some of the downside of cloud computing are discussed below:

1. Network Connection

In order to use cloud computing you must always have internet connection which might not be possible sometime. To send file over the cloud and to retrieve them there must be a network connection. If a person loses his/her network connection due to storm or any other hazards cloud computing makes no sense at that time.

1. Trust/ loss of control

It is very hard to let third party control your data. Trust and mutual respect is must as confidential information are controlled and maintain by third party. You have to have trust that the third party are compliant and would keep your data secure which is a hard thing to do sometime.

1. Technical Issues

If you have any technical issue if you have to call your cloud provider as it is impossible for anyone to figure it out. You cannot fix your cloud issue and some of the providers doesn’t provide 24\*7 customer services. So, if you have problem sometime in late afternoon and your provider doesn’t give service after noon you might end up with trouble (Mata, 2014).

1. Privacy and Security Concerns

Though cloud computing can be trusted with securing data .and information there are some cloud hacking cases. One of the major drawbacks of cloud computing is you don’t know which cloud service provider to trust fully. Privacy and lack of security is always an issue when a third party is responsible for keeping the information safe and any kind of security breach is can topple down company’s reputation (Techie, 2011).

1. Vulnerability

Comparing many other drawbacks Vulnerability is also one of the major drawbacks of cloud computing. As all information is saved and shared over the cloud all it takes is one component to be exposed to threat and everything can be gone with one click. Exposing one vulnerability opens doors for many threats and potential data loss. Communicating with a publicly accessible communication system increases the risk of eavesdroppers and hackers tapping the communication line and stealing or corrupting data or stealing it from the storage (Devasena, 2014).

1. Data Management

Data Management in cloud can be hassle for anyone who doesn’t have proper and enough knowledge about cloud. As the data are stored in a structure or system, the structure sometime may not well properly with the client’s choice or requirement.

**Future of cloud computing**

Cloud Computing has been one of the most talked topics in 2019. There has been a lot of talking about cloud and cloud storage like Microsoft Azure, Amazon web services etc. Though cloud computing is still a research topic one can easily see the future of how popular its going to get. Almost everything now is connected to Cloud and Storage one way or another. “A decade from now, every business will be operating primarily from the cloud, making way for more flexible — yet more productive and efficient — ways of working. Hardware won’t be the problem in a decade — software will.” (Riley, n.d).

Microsoft International President Jean-Philippe Courtois said the company would be spending 90 per cent of its $9.6 billion research and development budget on cloud strategy (“Microsoft says to,” 2011). The possibilities of Cloud Computing are beginning to form as the it is being nurtured. As talked by many other techs genius cloud computing would be one of the services which would reshape the way of storing and keeping information.

References

Advantages of Cloud Computing. (n. d.). Rackspace. Retrieved from

https://www.rackspace.com/en-us/cloud/cloud-computing/advantages

Devasena, C. L. (2014). Impact study Cloud Computing on business development.

Operations Research and Applications: An International Journal (ORAJ), 1(1),1-7

Retrieved from http://airccse.com/oraj/papers/1114oraj01.pdf

Harding, C. (2011). Cloud Computing for business: The Open Group guide. Retrieved

from

http://www.opengroup.org/sites/default/files/contentimages/Press/Excerpts/first\_3 0\_pages.pdf.

Mata, W. ( 2014, December 22). 5 Cloud Computing Disadvantages. Retrieved form

https://centretechnologies.com/5-cloud-computing-disadvantages/

Mell, P., & Grance, T. (2011). The NIST definition of Cloud Computing.

Retrieved from

http://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-145.pdf

Mohamed, A. (n. d.). A history of cloud computing. ComputerWeekly.com. Retrieved

from http://www.computerweekly.com/feature/A-history-of-cloud-computing.

Raja, A. (2016, August 02). Understanding Hybrid Cloud, with Examples. Retrieved from

https://www.atlantic.net/hipaa-data-centers/ashburn-virginia-hosting/understanding-hybrid-cloud-examples/

Riley, S. (n.d).What’s the future of cloud computing? Retrieved from

https://www.futureofeverything.io/future-of-cloud-computing/

Techie, C. (2011, June 4). Top 5 disadvantages of Cloud Computing. Cloud Computing

Techie. Retrieved from http://www.cloudcomputingtechie.com/top-5disadvantages/.

Ward , S. ( 2018, December 08.) Why Cloud Computing Is Ideal for Small Business.

Retrieved form

https://www.thebalancesmb.com/why-cloud-computing-is-ideal-for-small-businesses-2948273

Wittmann, A. (2010). What Cloud Computing Really Means. Retrieved from

http://search.ebscohost.com.leo.lib.unomaha.edu/login.aspx?direct=true&db=a9h&AN=5