Cloud Computing's Impact on Cost & Security Facet of Small Business Enterprise in India

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Abstract: Innovations are quintessential to affect the inevitable change of tide. Most of enterprises & companies are consistently striving and struggling to reduce their computing cost through the means of virtualization or allied steps. This certain demand of bringing down thecost of computing has pushed for the innovation of Cloud Computing. Cloud Computing enables better computing through improved utilization and reduced administrative and infrastructure costs involved thereof. Cloud Computing is the sum of Software as a Service (SaaS) and Utility Computing. Cloud Computing is still at its very nascent stage and a relatively a very new technology for the companies and small & mid-sized enterprises (SMEs). Therefore, most of the SMEs are not very confident to adopt it given the cost dynamics and lack of first-hand knowledge. This research paper tackles this issue for small & medium level enterprises in terms of cost and security. In this paper I discuss the benefits and drawbacks that a small & medium level enterprise can have while they adopt Cloud Computing in terms of Cost and Security. In the end, concluding that Cloud Computing is better for medium and small sized enterprises as compared to large enterprises in terms of both cost and data security.
Keywords: Cloud computing, cloud service, cloud security, small & medium enterprises, computer networks, security, SMEs

1. Introduction

Cloud Computing has transformed to one of the most talked about technologies in recent times to which history is a testament and has been pouring attention from media as well as analysts because of the opportunities it is offering. Market research and analysis by various research firms suggests that the market for Cloud Computing services would see magnanimous growth from $42 billion in 2012 to $70 billion/year by 2017, which is further expected to touch $ 100 billion an annum mark by 2020. (Gleeson, 2014, KPMG 2015).

It has been estimated that the cost advantages of Cloud Computing to be three to five times for business applications and more than five times for consumer applications (Lynch, 2015). According to a Gartner's claim Cloud Computing is destined to embark a new era by transforming storage concept and will be equally important as e-commerce/business in today's world.

The key challenge of enterprises has been to reduction in computing costs and for that reason most of them start consolidating their IT operations and later using virtualization technologies. For the benefit of the enterprises there is a new technology to help them in this i.e. Cloud Computing. Cloud Computing claims to take enterprises search to a new level and allows them to further reduce costs through improved utilization, reduced administration and infrastructure cost and faster deployment cycles (Boss et al., 2010).

Cloud Computing is a term which fits to describe both a platform and type of application. As a platform it supplies, configures and reconfigures servers, while the servers can be physical machines or virtual machines. On the other hand, Cloud Computing describes applications that are extended to be accessible through the internet and for this purpose large data centers and powerful servers are used to host the web applications and web services (Boss et al., 2010)

1. BACKGROUND OF THE STUDY

1.1 Research Question

As Cloud Computing has transformed to one of the most talked about technologies now days and it has gained great importance for small & medium level enterprises because of the cost and computational promises it offers. I will conduct the research on the issue of Cloud Computing and Enterprises. enincon consulting llp is a Delhi based enterprise which is using Cloud Computing and I will study them to answer my research question which is: "What are the perceived benefits and drawback regarding cost and data security for Small & Medium Enterprises to adopt Cloud Computing?"

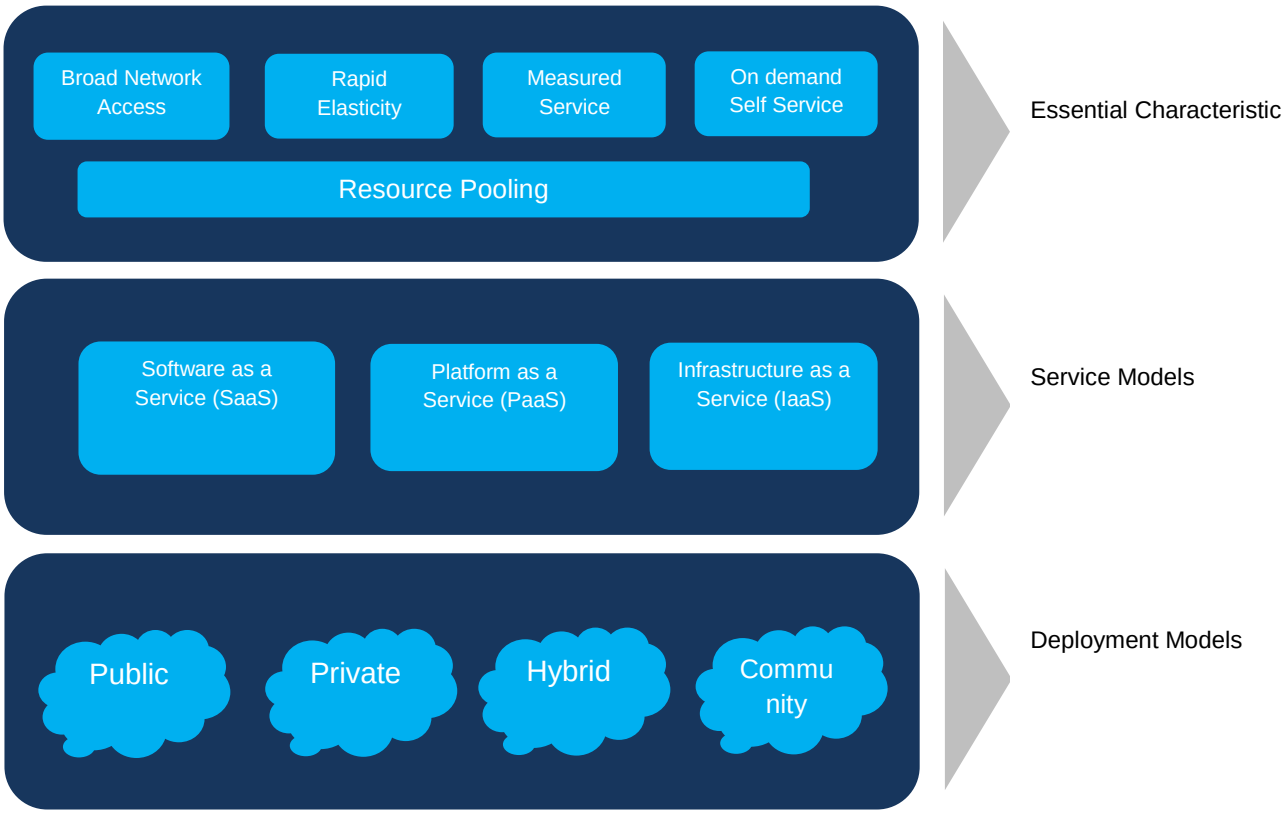
2. Cloud Computing Architecture

Cloud Computing Architecture

NIST (National Institute of Standards and Technology) is a well-accepted institution all over the world for their work in the field of Information Technology. I shall present the working definition provided by NIST of Cloud Computing. NIST defines the Cloud Computing architecture by describing five essential characteristics, three

cloud services models and four cloud deployment models.

Exhibit 1: Visual Mode of NIST Working Definition of Cloud Computing



Source: Cloud Security Alliance, 2009

3. Empirical Study

In this part of the thesis I have talked about the empirical study I carried out and its findings. I conducted my empirical study keeping in mind the main research question i.e. what are the perceived benefits and drawback regarding cost and data security for Small & medium Level Enterprises to adopt Cloud Computing in India? To answer this question the most suitable and appropriate contacts were the enterprises which are using Cloud Computing and the Cloud Computing providers for these enterprises.

3.1 Interviews

I found enincon consulting llp, in Delhi, a SME enterprise which is using Cloud Computing and can give answers of what benefits and drawbacks they are obtaining by adopting Cloud Computing. I conducted couple of interviews there with an employee responsible for Cloud Computing. As I mentioned before the reason to choose enincon consulting llp was easy and difficult at the same time because I do have primary contacts in the organisation, which resulted in easier access to the contact person and information but also getting biased and over through some critical information. However, I tried to maintain the balance as I know how important it is for research. On the other hand, I was also successful in finding a Cloud Computing provider named Netmagic Cloud Services.

I conducted the interview with them about the benefits and drawbacks they think small & medium level enterprises can achieve with their adoption of Cloud Computing.

3.1.1 Cloud Computing and Cost

The first interview was conducted with an employee of enincon consulting llp Mr. Vishal. The purpose for this first interview was to get to know about the company and its work. This interview was targeted to the cost effect (benefits and drawbacks) of Cloud Computing in enterprise. Mr. Vishal is an IT team leader and responsible for the developer team. In his developer team they are responsible for developing database services on one side and

on the other side so called acquisition engine, which is a server that hosted landing pages and record statistics. He described enincon consulting as a segment leader in research & knowledge base services, advisory and support services, offering more of the benefits to consumers and business partners than anyone else in the segment.

Further he elaborated that enincon consulting llp is a leading provider of research, analytics and advisory services in the energy and infrastructure space to different stakeholders across the globe. enincon blends extensive knowledge of all aspects of the energy and infrastructure industry to provide unmatched analytical insights, innovative strategies, and measurable value creation for its clients. It's a medium sized enterprise.

According to the interviewee, enincon consulting started using Cloud Computing with acquisition of database engine project. It was developed by an external software company and the company chose to deploy it in the Amazon cloud and it was the requirement from their strategy. However, the decision to put the application in cloud was of enincon consulting llp. It was from the beginning of the project deployed in the cloud. The interviewee defined the Cloud Computing as "As a flexible way to allocate resources out of a pool, enabling to consume processing power according to your needs. It makes easy to set up and decommission server instances, allowing the size of your infrastructure to grow when you need to address peaks while saving costs when you do not need the extra power anymore. The global usage of a cloud leads to the optimization of resources so that in the end it makes them cheaper for everybody involved". For this project the enincon consulting llp is using IaaS (Infrastructure as a Service) because this is the model that fits best to their needs. They use the cloud as an infrastructure where they deploy their own application. They are using IaaS from Amazon which is being managed by a third party company named Net Magic. When asked about the reason to choose the specific cloud provider the interview replied that Amazon is a major player on this market, so it makes it obviously a candidate. It has benefited from its own internal needs for scalability and infrastructure flexibility and they continually extend their offer.

In regards with the procedure to start working with Cloud Computing and the contract and legal issues, the interviewee was of the view that it is fairly straightforward to create an account and set up a server. There is plenty of ready to use server images that covers the need for different setups like Web, Application or databases Server. That said, the team that created the infrastructure had to write a fairly amount of scripts to tailor the environment.

Before the adoption of Cloud Computing enincon consulting llp had exclusively been using the services of a classical data center. Mr. Vishal was of the view that the location of data and the security requirements around them are obviously important issues and data center standard compliances and SLAs address them. Of course, deploying in the cloud kind of emphasizes the question about data security. But cloud does not mean automatically security problems. We are in the first place responsible for making our application secure. That said, we need sometimes some standardized compliances at enterprise level.

Because we plan to deploy more in the cloud in the future, we are discussing an enterprise agreement with Amazon. When asked about how they were catering the daily demand before moving to cloud, the response was quite straight forward as it is a new application and it's their first experience.

Along with testing, cost was one of the main factors for enincon consulting llp to move to cloud. However, at the same time the interviewee told that cost was not the first factor to adopt Cloud Computing. The first reason was to give the team a complete autonomy on their deployment needs, allowing controlling the whole lifecycle of their activities. Cloud computing is definitely more cost effective but costs were not the biggest reason in this case. The motivation in the first place was a new way to work for the team, a process to make them independent especially regarding their deployment and scalability needs. Enincon pay for every hour per machine, hence they follow "pay as you go" model and they are happy with it. According to interviewee it's quite beneficial for them as it provides them flexibility.

He was also of the view that they will not go for a private cloud, in the sense of setting up a cloud infrastructure on their own as he didn't expect saving costs that way. However, they might go for something like a virtual private cloud to connect their cloud setup to their classical infrastructure via a virtual private network. Mr. Vishal defined elasticity as capacity up and down. The obvious advantage of this is on the cost side; when we need more resources for a limited period of time, we only have to pay for the extra power in this limited period of time. He stated it as one of the advantages and one of the reasons for adopting Cloud Computing.

4. CONCLUSION

In this research work, I tackled the effects of Cloud Computing in the small & medium enterprises. The specific areas I researched during my study were cost and security. I have found that Cloud Computing is a very hot topic now days and many enterprises are interested in it. Most of the enterprises have idea about it but still there is confusion about the real definition of Cloud Computing. This is understandable as this technology is in its infant stage however, as it evolved from Grid Computing therefore, most of the enterprises which have used Grid Computing are better able to understand the term Cloud Computing.

There is a confusion or disagreement about the boundaries of Cloud Computing as many enterprises and even cloud providers believe that private cloud is a part of Cloud Computing. However, in my research I have found that Cloud Computing is the sum of Software as a Service (SaaS) and Utility Computing, but does not include Private Clouds. The enterprises which are in the process of making a decision to adopt Cloud Computing face real dilemma as they hear different (positive and negative) views from different sources. The first characteristic that tends enterprises to think about Cloud Computing is the cost effect. I have done a thorough research about the cost effect on small & medium enterprises.

There are many factors or characteristics which affect the cost of Cloud Computing for Small & Medium enterprises. These factors include elasticity, flexibility, data center cost, pricing models and administrative costs. The elasticity is the biggest factor to make Cloud Computing cost effective for enterprises and most of the enterprises move to cloud because of this characteristic of Cloud Computing. I have concluded that enterprises save their capital by not building their data center and not hiring employees for managing them. Along with that flexibility and different pricing models makes Cloud Computing more cost effective for enterprises. However, an important finding is that these benefits are only for medium sized or small enterprises. The large enterprises can save their cost by building big data center due their demand and capital they have. In other words, private cloud is something perfect for the large enterprises.

In my empirical study, I also managed results about the second part of my research question i.e. security in Cloud Computing for enterprises. Here I would like to mention the first response of my interview with the employee of enincon consulting llp. He clearly stated that security benefit is not the added value of Cloud Computing. I have concluded that Cloud Computing have many security issues for enterprises.

These issues include no control over physical data, web browser security, and distributed denial of service attacks, loss of encryption keys, legal risks, network problems and natural disasters. However, along with these drawbacks there are some also some benefits for enterprises. These benefits are of scale, standard interface, logging, risk management, and effective updates and defaults. However, in my empirical study, I have concluded that these benefits do not overcome the security issues of Cloud Computing. Hence, enterprises should not adopt Cloud Computing because of better security for their data.

In a nutshell, I will conclude that Cloud Computing is emerging as a big and beneficial technology of present day and future. Much of work is being put in it and one can expect more progress in Cloud Computing technology. However, for enterprises the most important factor to adopt Cloud Computing will stay cost till today and security is still not the added value of Cloud Computing for enterprises despite its benefits. The most important finding is that the Cloud Computing is ideal for medium and small sized enterprises both in terms of cost benefits. However, in terms of security, it is not so beneficial for medium and small enterprises to adopt Cloud Computing. For large enterprises it is more effective to adopt private cloud because with private cloud they can save cost and have better security.

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