# Cloud Computing Effect on Enterprises in Terms of Cost

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***Abstract***

*Innovation is necessary for any technological change. Many companies want to reduce processing costs through virtualization. So to reduce the cost of computing, there's a new technology called cloud computing. Cloud computing has reduced costs by reducing administration and infrastructure costs and improved utilization. Cloud computing is known as the sum of SAAS (software as a service) and utility computing. Cloud computing is in its early stages and is a very new technology for companies, so many companies have doubts about the adoption of cloud computing. This paper presents the cost problem for companies. In this paper, I present the advantages and disadvantages of cloud computing in terms of cost for companies. In the end, I discovered that cloud computing is better for small and medium-sized businesses in terms of cost than large companies.*

**Keywords** — *Cloud Computing, SAAS, Virtualization, Hypervisor.*

## I. INTRODUCTION

Cloud computing has become one of the most discussed technologies in recent times and has a lot of attention media, as well as analysts because of the opportunities is offering. The cloud is a metaphor for the Internet and so it is an abstraction for the complex infrastructure that hides. Hardware and software in the data centers that supply those services. The services themselves have been addressed for a long time as software as a service (SAAS). The data center hardware and software is what we will call cloud. When there is a cloud available prepaid to the public and the cloud is called a public cloud; the service that is sold is Calculation utility. We use the term private cloud to refer to internal data center of a company or other organization, no therefore made available to the public, cloud Computer science is the sum of SAAS and utility computing, but does not include private cloud.

Cloud computing is one of the most discussed and promising IT innovations in the current technology market. It is very interesting for organizations because of the potential it offers, such as greater efficiency and cost savings. It constitutes a fundamental change in the way organizations receive IT resources [1]. The provision is moving from computing as a product to computing as a service [2], since this change is inevitable and irreversible [3]. This technology is evolving and growing very fast. According to the research firm IDC, the global revenues of public IT cloud services exceeded $ 21.5 billion in 2010 and will reach $ 72.9 billion in 2015. Many IT operators, such as Google, Amazon, Microsoft, etc. ., they are involved in the development and offer of services in the cloud. Cloud computing is in its infant stage of life, but in 10-15 years it will be completely different [4]. Cloud computing has changed the way organizations use computers and the Internet. This change refers mainly to the way in which the information and applications used are stored. In cloud computing they are stored in the "cloud" instead of desktop computers. The cloud is "a blurry set of computers and servers accessible through the Internet." It provides users with access to all their data, documents and applications when they do so. They are connected to the internet. Users are no longer tied to their desktop computers and it is easier for them to collaborate from different locations.

Organizations aim to reduce processing costs. Many of them start doing this by consolidating their IT operations and implementing virtualization technology, which optimizes the ability of servers to store and process data by hosting servers on their own local. Thanks to cloud computing, organizations can further reduce costs by improving utilization, reducing infrastructure and administration costs and accelerating distribution cycles. It provides high availability, virtualization and dynamic pool of resources. The term "Cloud Computing" is used to describe both a platform and an application type. The data of users and organizations are stored in the cloud on servers that can be physical or virtual machines. These servers are provided, configured and reconfigured by the cloud computing platform. The term is also used for applications that can be accessed through the Internet. Cloud applications are stored in

large data centers on powerful servers that host web applications and web services.

Cloud computing allows organizations to use their hardware and software investments more efficiently. This is achieved by overcoming the physical barriers of isolated systems and automatically managing a group of systems as a single unit. This technology is considered a virtualized system that is a natural evolution of data centers.

The purpose of this research is to explore the benefits and risks of cloud computing for organizations in term of cost. Its purpose is not to provide exact enumerations or measures for particular benefits and risks. On the contrary, the objective is to create a detailed and complete picture of the cost and impact of cloud computing, identifying all the advantages and risks that exist. Therefore, the document aims to fill the gap that exists in existing research, which is the lack of research on cost risks and safety benefits. Therefore, the objective of this research does not involve the generation of numerical data and a rigorous quantitative analysis. Rather, it assumes results based on the subjective evaluation of opinions. Thus, the qualitative approach was taken in this investigation. In accordance with the design and approach adopted, this research examines the existing literature and uses it together with the empirical data collected from the interviews for data analysis [5].

## II. Cloud Computing Evolution

There has always been a debate about the evolution of Cloud Computing and the most important point in that is Grid Computing. Some people call Cloud Computing and Grid Computing the same phenomena while others call Cloud Computing an extension of Grid computing. So Cloud Computing is an evolution from the Grid Computing

| Grid Computing | Cloud Computing |
|---|---|
| Allocation of multiple servers onto a single task or jobs | Virtualization of servers; one server to compute several tasks concurrently |
| Typically used for job execution, i.e. the execution of a program for a limited time | More frequently used to support long-running services |
| job Expose high level of detail | Provide higher-level Abstractions |

## III. CLOUD COMPUTING COST AND BENEFITS

In a "Cloud Relocation: A Contextual investigation of Moving an Undertaking IT Framework to IaaS", [7] discussed the outsider cloud foundation .As indicated by them on the off chance that the outsider cloud framework is presented, at that point it presents numerous open doors for ventures to improve the administration of salary and outgoings for both fund staff and clients. It likewise enables the facilitating of money to stream the board for account stuff as the cloud evaluating model has insignificant forthright expense and month to month charging and it additionally reduces the fluctuation of consumption on power. These are the advantages contrasting with the in-house server farm, as it very well may be exorbitant to purchase equipment and income can likewise be moderate and troublesome from customers. Alongside that vitality costs will likewise go down as you are not running your very own server farm and outsider cloud will be in charge of that. The Cloud framework is likewise useful for the money branch of the organization to decrease the regulatory weight. Outsider cloud foundation arrangements offer new estimating models, which help in overseeing pay for clients, deals and showcasing staff [8] reasoned that Distributed computing is a problematic innovation that is set to change how IT frameworks in undertakings are conveyed on account of its shabby, straightforward and adaptable nature. Distributed computing can be fundamentally less expensive in contrast with purchasing and keeping up in-house server farm as it wipes out the help related issues in light of the fact that there is no physical framework to keep up. [9] Be that as it may, there are numerous social-specialized issues which endeavors need to consider before moving to Cloud .In any undertaking, the low dimension regulatory expenses can be very high as the divisions are dissipated through in the structure, regularly far more noteworthy than crude equipment costs. By the assistance of cloud, undertakings can offload three sorts of low dimension organization. First is framework foundation which incorporates equipment [10] support, save parts, including new machines and foundation programming is taken consideration by cloud. Second, when the undertakings characterize the reinforcement approach, cloud supplier is capable to execute it. Finally, a solitary application is introduced once and ends up accessible to every single approved client. Despite the fact that the administration of the application for example application support, overhaul issues and client the executives is excluded as moving to cloud does not change much in these assignments. Note that the low

dimension expenses can be some of the time higher than the all-out expense for the cloud administration In traditional frameworks, framework asset usage is low, assessed at 15– 20 % for server farms; different appraisals are lower .There are numerous purposes behind low use as directors normally will in general purchase for close pinnacle and future burdens and hence don't utilize the entire limit [11] constantly the time. While to help in this issue Distributed computing smoothed these impacts crosswise over numerous clients and today may achieve 40 % usage. Server control is costly a result of procedures like cooling and other overhead power utilizations. Whenever consolidated together, they can be equivalent to the expense of one commonplace server utilized today. Cloud provider can complete much superior to anything normal server focuses because of the better administration of voltage changes, cooler atmospheres and better cooling, and lower power rates (cloud sellers will in general bunch close hydropower). Cloud providers are additionally generally found where land is untidy. Rosenthal et al. in their article "Distributed computing: another business worldview for biomedical data sharing", examined about the three noteworthy cost drivers of biomedical endeavors and how these are influenced by the Distributed computing innovation. They incorporate framework organization, inactive limit, and power use and offices.

## IV. Data Collection And Analysis

For the purposes of this research a collection of empirical data was conducted. Collecting empirical data is integral part of qualitative research. The empirical data is a data, which is collected for the first time and is based on people`s experience (Kothari, 2004). Following the recommendations made by Kothari (2004), interviews were used in this research for empirical data collection. Conducting an interview as an empirical data source has both advantages and disadvantages. Its advantage is that it helps the researcher in answering the research question through providing a reliable, accurate and relevant data. The disadvantage is that it needs better preparation and is more time-consuming than questionnaires. The most time-consuming part of it is connecting with interviewees and synchronizing the time schedule.

For this examination seven meetings were led. Four out of seven were with IT organizations as one of them was a distributed computing supplier. The rest were unified with a college, one with a provincial advancement framework, and one with an exchanging organization. All associations are arranged in Sweden. Two of the meetings were directed by telephone, and the rest were up close and personal. Among the interviewees were IT chiefs, college agents, facilitators, experts and designers. They were picked because of their jobs inside the associations. Every one of them were IT experts at various dimensions in the authoritative structure. This infers top to bottom view because of distributed computing over their associations as far as expense and security just as bits of knowledge of how to keep away from the potential risks. The distributed computing supplier was picked as to demonstrate both the client's what's more, supplier's viewpoint on the examination theme. The rundown with the talked with associations, their fundamental exercises, the respondent's job, the length of the meetings and their sort is appeared in Table 1. For the meetings a semi-organized methodology was utilized, permitting new inquiries to develop as per reactions given. A meeting guide was created containing the fundamental subjects that were an object of investigation. The term of the meetings was somewhere in the range of 30 and 50 minutes. They were recorded and translated as to empower a progressively careful examination of the experimental material.

| Organization | Main activity | Respondent`srole | Duration | Type |
|---|---|---|---|---|
| University (A) | | IT Strategy chief | 52 min | Face-to-face |
| Regional Innovation System (B) | Process and engineering ICT companies, industries and universities | Project coordinator | 49 min | Face-to-face |
| Company (C) | Publishing news and Events | IT procurement manager | 30 min | Phone |
| Company (D) | Providing software solutions for enterprises | System requirement consultant | 35 min | Face-to-face |
| Company (E) | Providing network equipment and services | Technology business manager | 40 min | Face-to-face |
| Company (F) | Providing web services, trading | Web developer | 45 min | Face-to-face |
| Company (G) | Cloud services provider | Service manager | 37 min | Phone |

## V. RESULTS

The empirical findings obtained from the interviews. It contains opinions of interviewed IT professionals on the benefits and risks of cloud computing in terms of cost and security. It also includes their opinions on how the identified risks can be avoided. The interviewees` opinions regarding cost benefits of cloud computing are presented in a tabular form below:

| Interviewee | Opinions in terms of cost benefits of Cloud Computing |
|---|---|
| A | Cost reductions are the key driver for a cloud computing implementation. A big role for the cost reductions within organizations plays elasticity of cloud services. The major part of cost reductions currently comes from reducing the staff, unlike as it used to be in the past when it used to come from the hardware and software. “The cost nowadays is not so much about the hardware, it isabout staffing. The better stable system you have that can be run andmaintained by fewer staff that can be shared between each other, the cheaper itwould be for everybody”. Also, running some complex applications in the cloud is cheaper than developing the same by a university. “At least half of the costcould be saved by outsourcing in the cloud for each application.” Cost savings from software licenses are more important for private organizations as they pay three times more for licenses than universities. Unlike large organizations, the small- and medium-sized gain more benefits as they do not have to invest in infrastructure and applications. |
| B | Cloud computing is highly beneficial for the companies “as they no more need to invest huge amount of money for powerful servers in order to do their calculations.” Also, it leads to cost savings through significantly reducing thestaff needed for support and monitoring. The investments for building a private cloud are justified only when it comes to large companies, which can afford it and actually need it because of their high power needs. |

| | |
|---|---|
| c | Cloud computing is cost-effective for organizations because it reduces the costs for initial investments. Also, it does not require customers to have their own servers in order to do business operations. “Instead of purchasing computingpower and software, you can use the applications you need directly in thecloud.” Moreover, the lack of internal servers allows customers to significantly reduce their costs for maintenance. Thanks to reliability and accessibility of cloud services companies get more competitive on the market. It is important for small and medium organizations to use cloud services in order to manage their operations and keep server and hosting costs at lower levels. “Our company is using outsourced servers. It doesn’t own any”. |
| D | When it comes to the cost savings, cloud computing is a very good option thanks to its flexible cost model. “The good thing with the cloud is that insteadof paying for computing resources that we don`t use, we can pay only for thetime and scale we have used.” Customer does not have to pay all the time in order to use up-to-date software |
| E | What makes cloud computing attractive for organizations is reducing the costs in terms of equipment and resources. “Since we started using cloud services,the time of services and financial commitments are much lower.” It also reduces operational costs as many of the business operations are shifted to the cloud. The implementation of Cloud Computing is suitable in different extent for different organizations. “For small and medium size business more useful is athird-party cloud solution and an in-house solution for big enterprisebusiness.” |
| F | Increased stability, accountability, and predictability of cloud services stimulate the organizations` cost-effectiveness, making them more competitive. “Atpresent, we are satisfied with what our provider offers. For the same price youget more storage space, you have lower costs and maintenance, sharing with agreater audience is easier, and it is accessible from anywhere. The ratio of costper GB stored is great too.” The point of utilizing cloud services depends on things such as kind of industry, company size, geographical spread of the company, data type, purpose of data, confidentiality, legal obligations, etc. “But in general, I would say thatcloud computing is most beneficial for small and starting businesses. That`sbecause they do not need servers and an IT department to do their operations.All computing resources they need are in the cloud.” |
| G | Cloud computing drives to decreasing the staff in organizations, resulting in cost savings. “Cloud services reduce the administrative and operation costs. Italso reduces warranty costs and the lead times both delivery and support.” Another benefit that reflects on cost is that the deployment of software updates is easy. “Our company provides SaaS because the solutions we provide areaccessible through a web browser by multiple clients, mostly small businesses.” In order to make a profit, the cloud provider has to do significant investments that are not affordable for small-sized companies. If a small company has enough capital, the best cloud service model is IaaS as it offers the entire spectrum of cloud services: storage, networks, processing, and applications. |

## VI. CONCLUSION

In this research work, I deal with the effects of Cloud Computing in the enterprises. The specific areas I researched during my study were cost. 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 reasonable as this technology is in its newborn 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 deviation about the limitations 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 Cloud’s. However, an important finding is that these benefits are 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 rather perfect for the large enterprises.

## VII. LIMITATIONS

This research is limited in that it includes a small number of organizations and only one provider of cloud services. It lacks more large-sized organizations as it is more difficult to get in touch with them and conduct an interview. Also, the research is conducted within the boundaries of one single country, which due to the ubiquitous character of cloud computing constitutes a limitation. Therefore, it can offer only a partial view on the impact of cloud computing on organizations in terms of cost and security. Hence, further research is needed which will explore more deeply the impact of cloud computing on organizations from a provider`s perspective. This concerns especially the security issue both in its legal and technical aspects.

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