

# PERSPECTIVES OF CLOUD COMPUTING IN SMALL BUSINESS

## *Opportunities & Challenges*

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**Abstract:** Cloud computing is the latest and greatest thing in IT Industry. It is comparatively new technology buzzword. It is often cost effective and advantageous for small companies to migrate to cloud computing instead of having own IT infrastructure and data centre. Cloud computing benefits as well as challenges or risks involved in cloud adoption are presented in this paper.

**Keywords:** Cloud computing; Cloud computing for small businesses; Benefits of Cloud Computing.

## 1. INTRODUCTION

The applications known as services over the internet and the hardware and software across numerous data centers used to deliver these services combine to form Cloud Computing[1].

In this model, computation, storage, software and platforms are distributed on request to the user base over the net. This access is scalable and can vary in order to meet the demands. The users are charged on a pay-per-use model by the cloud computing providers[2].

Cloud computing proposes an all new method to obtain and manage information resources on a big scale and it is very attractive to small companies because it saves them money as well as time[3].

Cloud offers unlimited storage capacity. It helps companies purchase computing power and storage facilities as per their usage. Also, a backup of data is made in numerous servers all over the world so that the hardware malfunction and maintenance cost is minimized. Nowadays, businesses are continuously trying to beat the competition, so the idea of cloud computing is becoming popular and gaining pace. Various smaller companies are now employing cloud

computing services to increase performance and credibility.

This paper focuses on the various benefits of cloud computing, its potential usage, opportunities, the various issues it currently faces in the implementation process and the resources required for the successful migration from other technologies to cloud computing.

## 2. BACKGROUND

### A. What is Cloud Computing?

“The NIST Definition of 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. This cloud model is composed of five essential characteristics, three service models, and four deployment models. [4].”

Cloud is actually a collection of huge number of servers owned by cloud service providers. It is a big hardware and software resource that cloud companies own and provide to their clients on “pay as you use” basis.

## B. Need to Upgrade

To cater to ever changing business needs, organizations need to invest time and budget to install and upgrade their IT infrastructure frequently that includes hardware, software applications and trained manpower. Whenever updated features were supplemented to the existing software, the companies needed to upgrade for staying in the competition and to stay updated to newer technologies. Ever increasing and evolving software demanded higher computing power. Therefore the hardware also needed to be upgraded for supporting more advanced features of software.

Due to deficiency of resources small organizations never upgraded over the time. Large companies with suitable and required resources kept developing and expanding while small companies were left behind in the competition. But the software applications that were earlier distributed as products can now be accessed via cloud services. Customers can easily use these resources through browsers. Everyone can use it by proper validation using a login and password. Each time some new updates are added, it is made accessible to all the customers all over the world without any extra cost. Users can use the storage facilities on the cloud platform using the same procedure.

## C. Ease of Use

Over the years, using innovative technologies, all customers can access the software on cloud from internet connected mobile device across the globe at all times. Thus the cloud services help various businesses to gain as much as possible by utilizing fewer resources. They don't have to worry about data backups, IT support and compliance or dealing with multiple technology vendors. So for small companies, cloud computing is an excellent tool that can help their businesses by meeting their requirements and fulfilling their needs with fewer investments[5].

CC helps in streamlining of software and hardware, resulting in reduction of IT related problems and costs.

## D. Cloud Computing Services

Using cloud computing, organizations and clients can directly access software applications from anywhere

around the world using a web browser. We can think of a cloud as a virtual computer system that contains all services and software that are needed by the company[5].

In cloud computing model, processing and data backup facilities are situated at remote servers/data centres belonging to cloud providers and they provide services to clients over the web.

Three important services that can be offered by the cloud are:

**Infrastructure:** Services offered by Cloud computing include providing complete IT solutions and infrastructure remotely such as servers, data centres, storage devices etc[5].

**Platform:** Cloud provides the working framework and environment eg web servers, database to the company[5].

**Software:** Software applications are available on Cloud. Instead of users actually installing them on their personal computers, they access them through the Internet. This kind of cloud services offer a complete software solution including client relationship administration or undertaking asset management[5].

## 3. DISCUSSION AND RELATED WORK

Small organizations assume an imperative role in our economy, particularly in the recession times. They help to decrease the unemployment rate and enhance value of products and services for general public. Nevertheless, small organizations have limited assets and resources (labour, budget, investment budget and infrastructure)[5].

It is critical for small companies to stay focused and aggressive in today's business world. To remain competitive in current business sector, they have to incorporate the most recent advancements in technology, techniques, systems, infrastructure and so forth to deliver exceptional products and services [3].

Small businesses face many problems in setting up and maintaining their IT framework. After e-business models have become prevalent which need 24X7

operations, it was even more arduous for these businesses to maintain and acquire the IT infrastructure and staff to manage reliable data centres and systems [6]. In cloud computing framework, cloud providers rent the important assets/services and software to small organizations. This gives an opportunity to small businesses to acquire high quality IT infrastructure without the cost of building and maintaining it themselves [6].

There is division of views on profitability of the cloud - as indicated by one, the cloud is cost saving, while others find it to be more expensive[3].

### A. Benefits and Opportunities

Cloud computing has turned out to be more dependable, adaptable and more affordable to small organizations. So they are benefitted in considerable measure by cloud computing. The worth and innovation of cloud lies in the fact that cloud computing offers services/software and IT resources in a practical, economical and flexible way, that is advantageous and appealing to small businesses [2].

Cloud services are utilised and billed on a pay-per-use basis.

Few Cloud features which are more beneficial for small businesses are - Initial budget or expenses are not very high during inception or migration to the cloud computing [3]. Companies do not have to spend in purchase or installation of own servers. They do not need professionals to manage in house IT infrastructure. Rather, companies have to pay only for the services they utilized for whatever duration. These advantages are very significant for any company, but prove to be more crucial for small companies with less assets and constrained budget. Decision to implement cloud computing services in small businesses saves time and capital thus making them function in more effective, economical and efficient manner[5]. Cloud based online applications run on internet or remote servers so powerful PCs are not required at client's end. Not only that, It actually helps in boosting the performance and efficiency of local PCs[8].

Cloud computing implementation advantages: (a) saves the initial huge expenditure on hardware,

software and infrastructure (b) cuts down regular expenses on operations, upgrades and maintenance of systems (c) hardware/software and network capacity as well as related expenses are tailored according to need (d) resources are available and accessible to users in better ways and (e) provides access to variety of software and applications. As compared to in-house solutions, these features of cloud computing are quite beneficial to small businesses [1][2].

It gives opportunity to employees to work from any place, any time. Cloud computing services are maintenance and management free for clients. Resources are held in the cloud's virtual and remote servers which are managed by cloud providers and clients are free from these expensive and time consuming responsibilities[1] [5].

Disaster recovery planning is done by keeping copies of data in different places. The danger of loss of data is very less because it is copied and stored in servers which are physically at different locations[3].

There are contending cloud providers in this field and a company can anytime migrate to any provider offering efficient services and lower cost[5].

### B. Challenges

There is great potential of CC, yet it has less number of takers at present, because of some challenges in its big scale migration, for example, security, reliability and economic viability [3]. Small organizations will likewise may face some potential difficulties on migrating to cloud computing. There are considerable apprehensions about data privacy, dependability and security. As private data of companies is transferred to shared public cloud, it poses major concerns about data security. Sometimes customers don't even know where and how the data is stored and how it is shared, raising issues about data integrity, protection and intellectual property management. [3],[5],[9].

For those companies who deploy applications on cloud, operability is a major issue—different servers respond to a large number of client requests and client request data is also managed by number of servers. In this scenario, managing software and other resources

in a such a way that the system keeps running smoothly even as the number of client requests grow, is a big challenge [7].

Another challenge of moving software applications to the cloud is to deal with different programming languages and operation environments on client side, backend and middle level[7].

There is likelihood of company data lock-in in case of outages and data availability issues if cloud supplier goes out of business. Also company's data needs to be protected from unauthorized access, misuse, loss and cyber attacks in public cloud[3].

#### 4. CONCLUSION

We conclude that cloud computing has many benefits with few drawbacks. Large number of small businesses are migrating towards cloud computing for saving money and improving their business value. It is a revolution in how computing power is delivered to businesses.

Using cloud computing small industries need not worry about hardware failures, maintenance costs, installation and management of costly servers and software. It reduces capital expenditure because the cloud services are subscription based – pay as much as you use. They have access to more business applications which usually big businesses could afford. Employees can access advanced apps from different devices that are connected by internet. Cost saving is directly measurable as huge investment made on IT infrastructure and support staff is not required. Companies do not have to worry about constant upgrades. All IT support, expertise and services are available to small companies at reasonable and affordable costs. Travel time and money can be saved because employees can work from home or anywhere with internet being connected. Cloud computing offers its customers the services needed to be successful and in step with their competition. But small businesses

should examine all risks associated with implementing new technologies such as cloud computing [3],[8],[9].

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