Cloud Computing Business Advantages for IT Sector

Dr. Prerna Gaur
Associate Professor: Instrumentation and Control Engineering
B.Tech, M.E., Ph.D., SMIEEE, LMISTE
Netaji Subhas Institute of Technology
Delhi, India
prernagaur@yahoo.com

Mayank Bajaj
Research Scholar: B.Tech 4th year (Computer Science)
Maharaja Surajmal Institute of Technology (GGSIPU), Delhi, India
mayank_bajaj94@yahoo.in

ABSTRACT:

Cloud computing is an efficacious technology to perform massive-scale and complex computing on the go. It terminates the need to maintain immoderate computing hardware, dedicated space, and software. This paper also explains, in detail, how data is stored on a cloud. The crucial application advantages and two major potential problems of cloud computing have also been discussed. All the three services of cloud computing have also been mentioned. Special emphasis has been laid upon the business benefits of cloud computing. Immense growth in the scale of data or big data generated through cloud computing has been observed. The rise of big data in cloud computing is considered in this study.

Keywords- Cloud, Computing, Data Storage, Business Advantages for IT Sector, Big Data

INTRODUCTION

Much of the great leverage of using computers, these days, is using them not just for computationally intensive tasks but using them as a window in communication intensive tasks. Never ever has there been anything more powerful than computation combined with this network. Almost a decade ago, all of us used to manage our storage on our computers. Let's say backed up our data. All of us have encountered computer crashes, wherein we ended up losing some of our data. In the late 1990s, organisations were able to take all of their personal data, or 'home directories' as we call them, off from their local machines and put them on a server. Since the server had a lot of RAM on it, in some cases it became even faster to get stuff from the server than to get stuff from one's local hard disk. Now, what was really remarkable was that the organisation could hire a professional person to back up that server and could afford to spend a little more on the server so that it could have redundant disk drives. It then became extremely viable to access the data from multiple locations by simply logging in.

Now, what accelerated the process was the incoming of Gigabyte Internet. With Gigabyte Internet, it was faster in every case to fetch data from the server than the local hard disk.

We have a lot of stuff – applications, files, videos, music, e-books and so on. And we constantly have been facing the problem of buying space for all of it. Well, no longer. What once existed in only science fiction has become reality. The solution is CLOUD COMPUTING.

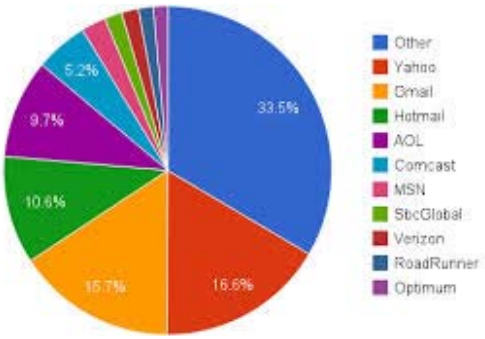
CLOUD COMPUTING

WHAT IS CLOUD COMPUTING?

Cloud computing is the storing of data and applications on remote servers, and accessing them via the Internet rather than saving or installing them on our personal or office computers. The term CLOUD is used because the data is stored on a cloud or collection of web servers and computers owned by a third party somewhere else. The cloud can be accessed using the cloud computing interface which is as simple as using a web based server which hosts all the applications and files that we might require for our work. The cloud is used not just to store data, but also as an Inexpensive, Efficient and Flexible ALTERNATIVE to purchasing, running and maintaining in house computing equipments and software. Moreover, the cloud gives us the flexibility to access our files anywhere and anytime because our information is always at our fingertips.

E-MAIL ACCOUNT

A basic example of cloud computing would be an online e-mail account. We login to our e-mail accounts through a web browser but the storage of our account doesn't exist on our hard disks. It exists on the cloud of our e-mail provider.



THE VIRTUAL OFFICE

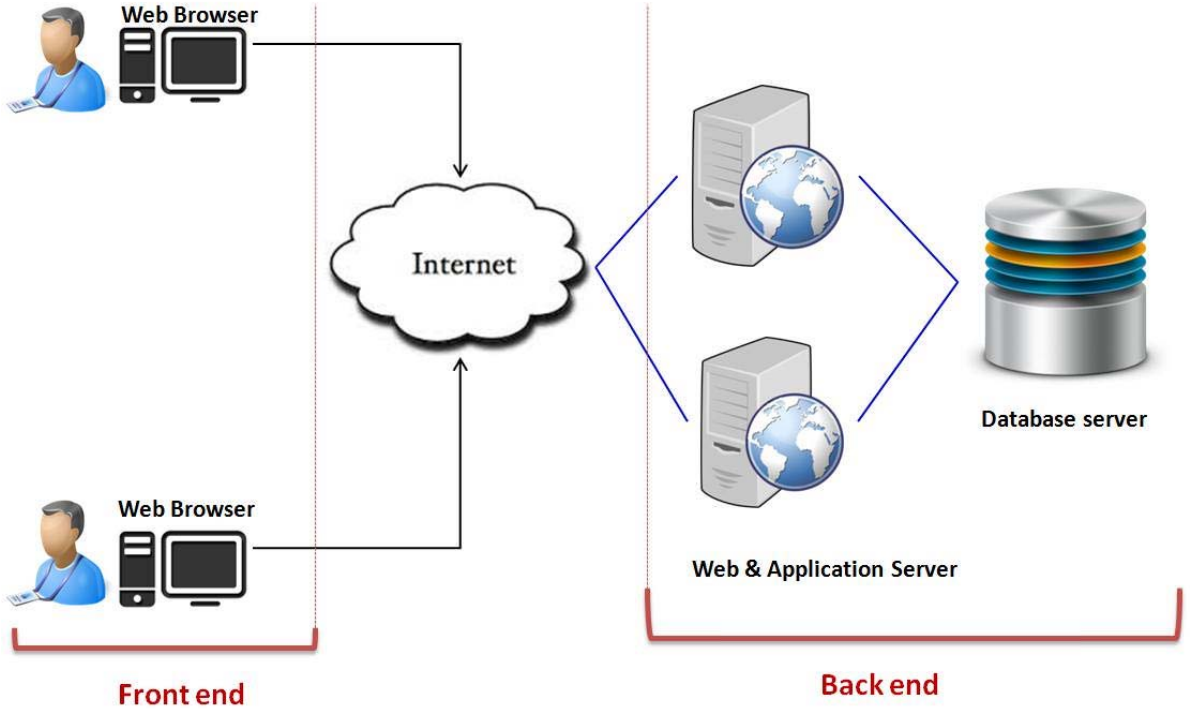
Probably the most sought after use of the cloud computing is to enable business owners to "rent" software instead of buying it. Google Docs is the most popular suite for executing a virtual office. There are also lots of other solutions available such as ThinkFree and Microsoft Office Live.

The main advantage of using virtual office applications is that we will not overload your computers with loads of heavy programs, but instead transfer most of the work online. Other benefits that come with using virtual office suites include improved accessibility, options for collaboration and secure cloud storage space.

HOW IS OUR STUFF STORED?

Let us, for our convenience, divide the cloud computing architecture into two parts CONNECTED via Internet

- The Front End
- The Back End



The Front End refers to the computer that we as a client see. It requires us to access the cloud computing system. Gaining access can be as simple as using an Internet browser or a little complex by using a unique software that lets us access the cloud.

The Back End of this architecture comprises of computers, servers and data storage systems that store all our files and information. This is the part that does all the work. There is a central server that administers the system – managing traffic and the clients so as to ensure that everything works smoothly. In addition, this central server

follows a set of rules called the Protocols. It also employs a software called 'Middleware' that allows the networked computers to communicate with each other.

CENTRAL SERVER: MIDDLEWARE

Amount of storage space with the cloud: Naturally, the cloud computing companies build in with redundancy, when they save multiple backup copies of our work. However, the more clients they have, the more storage space they need. So, cloud computing companies require at least twice the number of storage devices to store its entire information.

ADVANTAGES: LIMITLESS APPLICATIONS

Using Cloud Computing allows us to use our data from anywhere. As long as we can link the cloud with the internet, none of our data is confined to a single hard drive or location.

With the movement of our files to the web, we no longer have to pay for expensive computers. We simply need a device, powerful enough to run the Middleware needed to connect to the cloud system.

In a companywide setting, we can use the cloud for employers and need not to buy a software or software licensing for everyone. Instead, we can pay a fee to a cloud computing company that lets the employees to access software online.

Servers and digital storage takes up physical space, which we may have to rent. Cloud computing companies store our data on their hardware and therefore no physical space is needed at the front end.

Streamlining the software would significantly reduce IT problems and cost.

The cloud computing system's back end is a network of computers. We may be able to take advantage of the network's combined processing power to speed up operations.

POTENTIAL PROBLEMS

The two biggest concerns with cloud computing technologies are:

- Security
- Privacy

It is to be noted that we are handing over our important data to another company to watch. Also, since we have the pleasure of accessing our accounts from anywhere, its possible that our privacy could be compromised. And yes! The websites in cloud computing services can get hacked.

But there is still hope. Cloud computing companies live and die by their reputation and reliability. This makes them do everything possible to secure our files.

THE THREE WAYS TO CLOUD COMPUTING

The three building blocks of cloud computing are:

- SaaS: Software as a Service

  Allows users to run existing online applications

  Applications: -

  1. Office Productivity
  2. Customer Relationship Management
  3. Social Networking
- PaaS: Platform as a Service

  Allows users to create their own cloud applications using supplier-specific tools and languages

  Applications: -

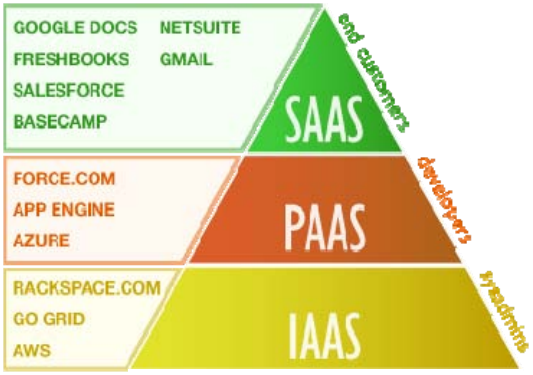
  1. RackSpace
  2. Amazon Web Services
  3. OpSource
- IaaS: Infrastructure as a Service

  Allows users to run any applications they please on cloud hardware of their own choice

  Applications: -

  1. Windows Azure
  2. Google AppEngine

All of these allow users to run applications and store data online. However, each offers a different level of user flexibility and control.



BUSINESS BENFITS

Cloud computing is a revolution in how computing power is delivered to business. It has been made possible by connecting very large data centres with high speed- low cost broadband networks. Today's users require 24*7 access to more business applications as well as devices wherever they are. Demands on IT are skyrocketing. It's absolutely no wonder why traditional computer facilities are struggling to keep up. Gone are the IT buffer nets ie. No more waiting. Gone are the rooms full of servers and data storage, firewalls and routers and the team of supporters. Gone is the need to constantly invest in upgrades and re-builds. Instead, by plugging a simple cable into the wall, we can access exactly what our business needs including all the support, expertise and advice.

ANALOGY: History reveals that a similar shift occurred in the way business used power at the turn of the century. In the late 1890s, every factory or business had in its basement, its very own smoke emitting, and fuel consuming power generator. When things worked, they worked nicely. But when they did not, which happened pretty often, the machines came to a halt.

In Chicago, 1900, the Edison power company developed the turbine station which could generate and distribute large scale power to business. This provided cheaper, more reliable and clear power than any factory or businesses could themselves generate. By 1920, most businesses had made a switch. Businesses now accessed power by simply plugging into the wall. In house power generation no longer made sense. Today, we virtually take unlimited power for granted. We can't imagine it any other way.

On similar lines, a parallel revolution has occurred in IT: Cloud Computing.

Businesses, all over the globe, now don't need to buy, build and manage costly computer facilities on site. Just as business learnt that power provided by specialized power companies improves reliability and quality, cloud computing has proven to be more secure, more reliable, more scalable and more affordable than the traditional IT services. This is why most new online applications and services are deployed online. Just as electricity, 100 years ago, a business can now access all he cloud computing infrastructure it requires as a service for all the devices they use, wherever they are, whatever they use. This is called IaaS. The applications, however, remain the same, but running on a more reliable cloud infrastructure. This is where most businesses start to use cloud. Applications are migrated as existing in house infrastructure reaches the end of its life. IaaS is the PowerStation at the core of all cloud computing models.

PaaS or Platform as a Service builds on the power of IaaS as a platform to make it easier to collaborate and develop software. SaaS or Software as a Service is the icing on the cake, fully serviced software running on fully serviced infrastructure. Gone are the upfront investments for new business applications packages.

CLOUD COMPUTING FOR SMALL SCALE BUSINESSES

- ACCESS

Cloud computing technologies give small businesses and their employees a way to work while on the road, work from home or wherever they are.

Small business can benefit from having smaller square footage of actual office space. Good practice would have them report to a physical location occasionally, and as long as they are producing and helping business grow, having access from anywhere is brilliant.

- FILE SHARING PROGRAMS

Cloud computing assists in expanding the pool of employees that are required to have access to shared documents, videos, programs, etc. One can create groups or share with whomever you need to share to when you need to share them. It is not necessary to set up a network or get involved with providing a virtual private network. All one needs is an Internet connection and a cloud service provider.

- ONLINE DATA STORAGE

It is imperative for small business to have and maintain their data. It provides a cost effective way to take advantage while not having expensive servers and networks; or the costly overhead of database employees to maintain the equipment and software related to warehousing the data. The cloud is ultimately more reliable because it is less susceptible to corruption, failure, or loss of data.

- DOCUMENT COLLABORATION

Cloud computing is a seamless option for working on files or documents. It is always updated and synched to everyone the files are shared with. Once a file is uploaded (even the large files), one can access, view update, edit, review and chat with others in real time about "collaborating" on the same project.

BIG DATA ON CLOUD COMPUTING

BIG DATA: The one that is really going to be a master industry of the future is BIG DATA. More and more companies, today, are relying on the data that they gather from their systems as well as open source information to be able to analyse how customers operate and what eir approach is.

Big data is all about analysing data from various sources. Its big because it comprises of billions and trillions of GBs of data. Now, what is happening is that users leave behind a 'Digital Shadow' attributing to various forums like e-mails, Facebook and Twitter. These shadows are the traces of our files that we store on our computers, server logs, Fb logs and Twitter feeds too.

	Google	**Microsoft**
Big data storage	Google cloud services	Azure
MapReduce	AppEngine	Hadoop on Azure
Big data analytics	BigQuery	Hadoop on Azure
Relational database	Cloud SQL	SQL Azure

Conclusion and Discussion

With a constant increase in the data, more and more companies are shifting their base to the cloud based storage. The cloud provides not only an efficient and reliable assistance, but is also commercially a viable option. Tons and tons of data on the cloud would mean a complement package at a place. This would actually revolutionize the E-commerce industry. Each of the online vendors would now have an unbiased access to the entire requirements list of the customer. This would enable them to prepare their business strategies in consonance with the data on the cloud. This would actually be sharing of immensely valuable resources at a huge scale. This would further lead to aggrandizement of job opportunities in management as well as the IT sector. With the augmentation of metadata, it will make cloud, an indispensable technology. Therefore, Big Data is all about the cloud. However, the vice-versa may not be indubitable.

REFERENCES

[1] "Cloud Computing" Available at: https://en.wikipedia.org/wiki/Cloud_computing
[2] Cloud Computing Architecture: https://support.rightscale.com/12-Guides/Designers_Guide/Cloud_Solution_Architectures/Cloud_Computing_System_Architecture_Diagrams/
[3] Benefits of Cloud Computing: http://www.thoughtsoncloud.com/2014/02/top-7-most-common-uses-of-cloud-computing/
[4] Businesses and Cloud Computing: http://www.salesforce.com/
[5] Big Data on Cloud Computing: http://www.sciencedirect.com/science/article/pii/S0306437914001288
[6] Big Data on Cloud Computing: http://www.infoworld.com/article/2905917/big-data/big-data-is-all-about-the-cloud.html