**ABSTRACT OF WORK DONE**

In recent years , cloud computing has emerged as one of the most important computer models in the IT industry . Machines involved in cloud computing host data in a scalable manner. They provide efficient computing by centralising storage , processing and bandwith . Adopting cloud computing reduces costs drastically, but although it is improving , data security remains a concern

This paper presents a study about cloud computing , its history, major developments , its advantages and also the disadvantages that are threats to data or data security . The paper also looks at situations where switching to a cloud based model has increased efficiency , reduced costs and increased the main of use and how we can improve cloud based services

**INTRODUCTION\**

Cloud computing is the next stage in the Internet's evolution, providing the means through which everything from computing power to computing infrastructure, applications, business processes to personal collaboration can be delivered to you as a service wherever and whenever you need. Cloud computing has increased efficiency of data hosting all over the world .For example accessing files on multiple devices have been made very easy by the advent of services like Google drive and Microsoft office cloud also , the cost of services is also reduced . Cloud computing has served the ever growing storage and data processing needs, however it has also given rise to a number of risks. The risks arise due to the various factors such as the location of the data centres, data segregation, data integrity, infrastructure and lack of knowledge about the governing policies.

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**What is cloud computing and it’s history**

Cloud Computing is a technology that uses the internet and central remote servers to maintain data and applications. Cloud computing allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access. This technology allows for much more efficient computing by centralizing data storage, processing and bandwidth.

The lines between local computing and cloud computing sometimes get very, very blurry. That's because the cloud is part of almost everything on our computers these days. You can easily have a local piece of software (for instance, Microsoft Office 365, one of the versions of Office 2013) that utilizes a form of cloud computing for storage (Microsoft Skydrive in the case of Office). That said, Microsoft also offers a set of Web apps that are close versions of Word, Excel, PowerPoint, and OneNote that you can access via your Web browser without installing anything.

Cloud computing is broken down into three segments: "application" "storage" and "connectivity." Each segment serves a different purpose and offers different products for businesses and individuals around the world.

Cloud computing has gone through many phases in its history like grid and utility computing ASP(application service provision) and SAAS(software as a service ) , SAAS is the most prevalent form in today’s times . The idea of an "intergalactic computer network" was introduced in the sixties by J.C.R. Licklider, who was responsible for enabling the development of ARPANET (Advanced Research Projects Agency Network) in 1969.

Other experts credit the cloud service concept to computer scientist John McCarthy who proposed the idea of computation being delivered as a public utility, similar to the service bureaus which date back to the sixties.

Cloud computing has developed along a number of phases, with Web 2.0 being the most recent phase . However, since the internet only started to offer faster bandwidth in the nineties, cloud computing for the masses has been something of a late developer.

One of the first milestones for cloud computing was the arrival of Salesforce.com in 1999, which pioneered the concept of delivering enterprise applications via a simple website The services firm paved the way for both specialist and mainstream software firms to deliver applications over the internet. The next development was Amazon Web Services in 2002, which provided a suite of cloud-based services including storage, computation and even human intelligence through the Amazon Mechanical Turk. Then in 2006, Amazon launched its Elastic Compute cloud (EC2) as a commercial web service that allows small companies and individuals to rent computers on which to run their own computer applications Amazon EC2/S3 was the first widely accessible cloud computing infrastructure service . Another big milestone came in 2009, as Web 2.0 hit its stride, and Google and others started to offer browser-based enterprise applications, though services such as Google Apps.

**Cloud architecture**

The two most significant components of the cloud computing architecture are the front end and the back end. The front end includes the client’s computer and the application required to access the cloud computing system. All the cloud computing systems do not provide the same user interface. Web services like electronic mail programs control some existing web browsers such as Firefox, Microsoft’s internet explorer or safari. Other type of systems has some unique application which provides the network access to its clients. The back end of the cloud computing architecture consists of the various servers, computers and the data storage devices, in other terms this network of interconnected devices constitute ‘the cloud’. Cloud computing components can be further typified as the cloud infrastructure, cloud platform and cloud application. Cloud infrastructure consists of various cloud services such as computational resources (Virtual Machines), data storage and communication networks such as Amazon’s Elastic Compute Cloud. The cloud platform provides well-defined APIs for interaction with the cloud application such as the Google’s App Engine or Salesforce.com. Finally the cloud application being the web service that runs on top of the cloud platform or the infrastructure. These are the commonly used public interface applications such as the Google’s Google Docs.

**Why switch to cloud computing**

 **Cost Efficient**

Cloud computing is probably the most cost efficient method to use, maintain and upgrade. Traditional desktop software costs companies a lot in terms of finance. Adding up the licensing fees for multiple users can prove to be very expensive for the establishment concerned. The cloud, on the other hand, is available at much cheaper rates and hence, can significantly lower the company’s IT expenses. Besides, there are many one-time-payment, pay-as-you-go and other scalable options available, which makes it very reasonable for the company in question.

 **Almost Unlimited Storage**

Storing information in the cloud gives you almost unlimited storage capacity. Hence, you no more need to worry about running out of storage space or increasing your current storage space availability.

 **Backup and Recovery**

Since all your data is stored in the cloud, backing it up and restoring the same is relatively much easier than storing the same on a physical device. Furthermore, most cloud service providers are usually competent enough to handle recovery of information. Hence, this makes the entire process of backup and recovery much simpler than other traditional methods of data storage.

 **Automatic Software Integration**

In the cloud, software integration is usually something that occurs automatically. This means that you do not need to take additional efforts to customize and integrate your applications as per your preferences. This aspect usually takes care of itself. Not only that, cloud computing allows you to customize your options with great ease. Hence, you can handpick just those services and software applications that you think will best suit your particular enterprise.

 **Easy Access to Information**

Once you register yourself in the cloud, you can access the information from anywhere, where there is an Internet connection. This convenient feature lets you move beyond time zone and geographic location issues.

 **Quick Deployment**

Lastly and most importantly, cloud computing gives you the advantage of quick deployment. Once you opt for this method of functioning, your entire system can be fully functional in a matter of a few minutes. Of course, the amount of time taken here will depend on the exact kind of technology that you need for your business

**To further explain the positive effect of cloud computing we study a case in Orlando ,Florida where cloud computing proved to be an excellent choice**

About three years ago Orlando was faced with a difficult question , how to replace the age old and no longer viable e mail system for the city employees . The city tried a lot but just couldn’t improve the e mail system to the desired effect .

“The hardware was getting old, and the features that we needed were not available for the product that we had,” said Orlando CIO Rosa Akhtarkhavari.

This is where cloud computing came to the rescue. Orlando started looking at other alternatives. After creating a list of desired features, the city shopped around and chose Google Apps and Google Postini Services, a cloud solution that met Orlando’s need for new features and saved money. Google Apps provides software as a service. It includes applications such as Google Mail (Gmail) and other collaborative tools, like Google Docs. Google Apps includes video and voice chat, and users can even create internal wikis and websites. Orlando worked with Google partner Infosys to implement Google Apps in late 2009; the migration from their prior system took just over two months. The new solution not only gave the city more functionality and better security for its e-mail system, but over the last year, the use of the Google applications has evolved to include a host of collaborative tools that allow Orlando to conduct business more efficiently

and save money. And because Google Apps runs in Google’s secure data centers, the city doesn’t have to worry about maintaining the system or upgrading it as new features become available. Since these applications require no hardware replacement or system maintenance,

Orlando will save $200,000 annually over the next few years, said Akhtarkhavari.“We moved from capital costs, especially at the point where we needed to replace our system, to an operational cost,” Akhtarkhavari said. “The skills needed to maintain the system are much lower, so we are able to meet our customers’ demands much faster.”

**The effect of switching to a cloud**

Orlando has realized a great deal of efficiency since implementing Gmail as its e-mail system. Many important security and filtering features were also included in the package, saving the city money. Previously fire and police personnel — 50 percent of Orlando’s e-mail users — didn’t have access to the full e-mail client. Thus their mailboxes were only 200 MB, and they often spent valuable time cleaning up their mailboxes. With Gmail, each Orlando employee gets 25 GB of e-mail storage, more than a 100-fold increase for public safety employees. Gmail provides a number of features that Orlando employees like using, such as autosave for e-mails. The autosave feature automatically saves an e-mail as a draft in case a browser unexpectedly closes before a message is sent. Akhtarkhavari said Orlando was initially concerned about e-mail threading cluttering employee mailboxes with unnecessary messages, but Google lets the city turn e-mail threading off or on as it chooses. Another Gmail feature that Orlando employees like is the priority inbox, which automatically sorts messages by importance to a particular employee, said Akhtarkhavari. Gmail’s internal filter enables it to recognize common senders and give messages priority based on that and other factors. “So we like getting all those features, and what we like most is that Google does talk to us and listens,” Akhtarkhavari said. “And we see those changes coming in much faster than we would have been able to do with an internally maintained system.” Google Apps also provides mobile access to e-mail and securely supports multiple devices, such as smartphones. Mobile access is a great advantage for public safety workers, allowing them to check messages while in the field. Gregory Hoggatt, deputy chief of the city’s Fire Support Service Bureau, said Gmail has made access to e-mail, documents and calendars easier. “We have been able to make our own groups for specialty workers and have the ability to edit these groups as needed,” Hoggatt said. “Gmail has also simplified the e-mail program. Each person uses the same program, therefore no special training is required.”

Google Apps also includes Google Postini Services, which provides e-mail security and content filtering support. Postini enables IT to turn on transport layer security, which securely

exchanges e-mail communications over the Internet, allowing secure remote access for mobile or telecommuting employees. Postini’s e-mail reporting feature helps maintain IT compliance by providing content filtering and monitoring tools. Postini’s spam filtering capabilities also allowed the city to do away with its two existing spam filtering appliances, saving Orlando the time and money previously spent maintaining those appliances. Orlando’s Active Directory manages employee access to Gmail and Postini, which is helpful because the city has been consolidating Active Directories.

**The addons**

Besides providing an efficient way to manage e-mail, Google Apps includes several collaborative features, such as Google Docs and the ability to create internal websites. These tools are changing the way employees communicate with one another in Orlando. Akhtarkhavari said Orlando is seeing an increase in the creation of internal sites and the use of collaboration tools. The city’s Minority and Women Business Enterprise program uses its website to post board meetings online. The Orlando Police and Fire departments are creating their own sites and posting video for internal use. Officers can now easily share visual information via video and also post comments. Using Docs as a way to correspond between departments has made communication much smoother. Akhtarkhavari said her own IT department uses Docs to create questionnaires. Once recipients fill in their responses on their computer, the information is automatically captured in a spreadsheet for easy review. Employees are also using Google instant messaging to communicate more efficiently. “I meet with police and fire every other week, but I get to chat online with the deputy chief three or four times a day with quick questions,” Akhtarkhavari said. “It just saves us the phone call, the e-mail or waiting for a meeting.” Implementing Google Apps has transformed the way business is conducted within Orlando. Not only has the city found a cost-effective way to manage e-mail and security, Google’s collaborative tools also have increased Orlando’s efficiency. “Everyone is coming in with their ideas and contributing to make things work better,” said Akhtarkhavari. “It’s just opening up more collaboration, and innovative ideas are coming from everywhere.”

**The inference**