**//I’ve left formatting blank for HTML editing purposes, all please feel free to edit/critique/ completely change this document as this is the first draft and It would be good to have outside editing to check my work. – Jason Walstab**

What Does it Do?

Cloud computing is basically the act of accessing another computer system over the internet and using this remote computers resources for you own purpose. There are many different outcomes of this and what exactly cloud computing does changes depending on who the user is.

For a home user, a common cloud computing service would be a simple file storage repository that can be accessed from anywhere, for example Microsoft OneDrive or Dropbox. By uploading files onto the OneDrive or Dropbox ‘cloud’, the cloud is acting as an extra hard drive for your local computer, with the advantage being that you could also access this same hard drive from any other computer so long as you logged onto your cloud service account.

For a small business, a common cloud computing service could be a cloud email/file server. Instead of having a local server that runs an email server and file server, this server will be run on the cloud. One advantage of this is cost reduction, especially for a small business. A small business server running in an office requires equipment, maintenance, a cold server room, backup management and procedures for physical tapes as well as staff members to maintain all this bulky IT infrastructure.

A small business server running on the cloud however can solve many of these problems, as no physical server or server room is needed, backups can be handled by the cloud and due to the simplicity of many modern cloud services, IT staff may not even be required. Another advantage is that of scaling, for example a small company has 350 staff members but suddenly merges with another company that has 200 staff members, in which they will all move into the same building.

What the cloud service will do for the small business is allow quick scaling of required computer power/services, whereas if handled inhouse, expensive IT infrastructure changes may possibly be required to accommodate the larger company.

A full-stack developer may have other uses for cloud computing services, making use of virtual online servers. Instead of requiring a server at home to run a web application from, cloud computing services offer the ability to rent servers from online. This can be incredibly useful to the lone full-stack developer, especially regarding scaling. Say a developer creates a website that stores user details in a database and suddenly finds themselves on a front news story with hundreds of new users pouring in every minute. Without a cloud service, this would result in server crashes, database capacity being reached etc. However, using cloud services, scaling up to thousands or even millions of users can be done in minutes by increasing the amount of backend servers using simple sliders.

The pay as you go method is the most popular used by developers, meaning if the app is only temporarily popular, they can also scale their web application platform back down to a reasonable cost if the user count suddenly drops off again.

Other advantages involve the easy cloning of Linux servers to quickly mass produce new web applications with minor changes, alongside easy backup and built in security. Yet another use cloud services have for the full-stack developer is cloud services providing public IP’s to use, so straight away they can have their web applications ready and available on the internet without having to register expensive public IP services from their local internet service provider.

Cloud computing is often broken down into three categories for use, those being: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). Infrastructure as a Service (IaaS) is the cloud service company providing basic servers as the product. Platform as a Service (PaaS) gives a more basic sever setup where patching, networking and other basic server tasks are managed by the cloud company itself. Software as a Service (SaaS) is where the cloud company provides a front facing software package where all behind the scenes maintenance is managed by the cloud service company.

What is the likely impact?

Cloud infrastructure will be fuelling the development of ‘smart cities’ and six billion people are predicted to be living in cities by the year 2045 [1]. Cloud infrastructure will be the solid foundations supporting this mega urbanization and allowing the city to imbed technology in everyday city life to help with this increase in urbanization, with the use of smart traffic lights and automated cars to relieve traffic congestion relying heavily on cloud technology, the impact being smarter and safer roads. Automated cars will need to rely on the cloud to process the huge amounts of data coming in from the automated cars sensors and video feeds [2].

Cloud technology will also have a great impact on healthcare, with many hospitals relying on cloud services to process larger amounts of patients, cloud supported machine learning AI to help diagnose patients and larger data storage capacities to keep up with the ever growing data needs of hospitals and clinics[3]. It has been predicted that at the end of 2020, work will generally no longer be done on standalone workstations or personal computers. Instead all work will be done using web cloud apps such as Microsoft Office Online and google docs. The idea of installing software on a local machine is also going to be a thing of the past, as most major software suites move onto the cloud as their preferred method of distribution [4].

Large companies are still much less likely to move all their data to the cloud due to privacy and security concerns, as to use cloud services they may be inadvertently giving sensitive data to competing companies. [4]

Another impact of cloud computing will be the increased use and acceptance of open source software. Most of the cloud now is fuelled with open source software, and it looks like the current trend of cloud technology is that it will continue to drive open source software into the mainstream as cloud technology grows. [5]

How this will Affect you? (300)

The effect on myself, friends and family personally are already being felt. Most of us now no longer purchase software and install it on our local machines, but rather use software that is hosted on the cloud. Alongside this is the day to day use of the cloud for file sharing, photo sharing, music sharing and the use of social media which relies heavily on cloud technology. With this I believe will also entail huge privacy concerns in the future as it is common for people to store their entire personal lives on the cloud, from important documents to baby photos. How companies will use our personal cloud data will have a huge impact and effect on the lives of myself, friends and family.

A huge effect this has on me is as someone who programs, cloud technology gives an incredibly easy, cheap and flexible way to start creating and hosting web apps that previously would not have been possible to start without huge personal investment. As cloud technology matures, more and more easily accessible server configurations are available to the everyday user. These include the ability to quickly start web applications with pre-built ‘snapshots’ of common Linux configurations, considerably cutting down work time for myself and other people who need to create web applications.

Microsoft and Amazon both offer an incredible amount of easy to use libraries, modules and prebuilt servers to build any kind of application you would want and be able to scale it to your needs for very low start-up costs. Some advanced modules such as artificial intelligence will allow the everyday website entrepreneur to create world class web applications without the need for huge budgets and dedicated research. As these advanced cloud artificial intelligence modules grow in both size and complexity, complicated projects will be much easier for myself and other developers to use.

[1]"World’s population increasingly urban with more than half living in urban areas | UN DESA | United Nations Department of Economic and Social Affairs", *Un.org*, 2020. [Online]. Available: https://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html. [Accessed: 06- Jan- 2020].

[2]"Cloud Computing Is Crucial To The Future Of Our Societies -- Here's Why", *Forbes.com*, 2020. [Online]. Available: https://www.forbes.com/sites/joytan/2018/02/25/cloud-computing-is-the-foundation-of-tomorrows-intelligent-world/#2ffab2a54073. [Accessed: 06- Jan- 2020].

[3]Impact of Cloud Computing on Healthcare, *Omg.org*, 2020. [Online]. Available: https://www.omg.org/cloud/deliverables/CSCC-Impact-of-Cloud-Computing-on-Healthcare.pdf. [Accessed: 06- Jan- 2020].

[4]*Elon.edu*, 2020. [Online]. Available: http://www.elon.edu/docs/e-web/predictions/expertsurveys/2010survey/PIP\_Future\_of\_internet\_2010\_cloud.pdf. [Accessed: 06- Jan- 2020].

[5]"Cloud computing in 2020: Predictions about security, AI, Kubernetes, more", *TechRepublic*, 2020. [Online]. Available: https://www.techrepublic.com/article/cloud-computing-in-2020-predictions-about-security-ai-kubernetes-more/. [Accessed: 06- Jan- 2020].