IT Technologies: Clouds, Services, Servers

# **What Does it Do?**

Cloud computing cannot be limited or defined by a single technology, but rather many different technologies that come together to form a functional computing environment that the world itself can plug into.

However, despite the various technologies and resources that the cloud draws upon to make it what it is, cloud computing can generally be viewed in three main components, being Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS).

Each component plays its own part and can be utilised at any given level by the user depending on their own requirements.

## What is the state of the art of this new technology?

Two main advantages of users wanting to use IaaS technology are cost effectiveness and flexibility.

IaaS eliminates the need for building your own physical server room or data center for your business which can be a significant expense. Users can however, through the use of an IaaS provider, essentially “lease” their own server/storage space as needed or required. This creates flexibility for the user to configure or segment various systems or operations within their business.

PaaS could be described as the area within the cloud environment from which most developers operate to produce outputs or services for the end user. PaaS providers provide the framework for this to happen by offering developers/users the ability to configure operating systems and utilise development tools, database management and analytics for such tasks. Many of these frameworks also provide flexibility with inbuilt components that developers can use to save time and money and launch products or services sooner.

Finally, we are left with SaaS providers that provide what we generally see and consume over the internet today. Involving hosted applications/apps that are designed for making our lives easier or more enjoyable range from free personal applications such as many email providers, to paid business solutions and entertainment options such as Netflix.

## What can be done now?

The flexibility and cost effectiveness that is awarded to users to choose what they need the cloud for, provides an opportunity to be creative and innovative within the cloud environment without fear of detrimental loss should something like a hardware failure occur.

There is, however, a caveat to users of cloud technologies. User’s will generally relinquish control of what they can do or achieve with such technologies depending on the level at which they enter.

For example, a SaaS user has no impact or control over what they are consuming should problems arise at the platform or infrastructure levels.

Likewise, PaaS users also have no impact or control over problems arising at the infrastructure level.

## What is likely to be able to do be done soon (say in the next 3 years)?

Cloud computing is not new, and any ‘real’ improvements within the cloud and all it encompasses, would be better considered as developments of existing technologies within this space.

The increasing development and integration of Artificial Intelligence and Machine Learning technologies will most likely have the biggest impact on the cloud in years to come.

As these technologies continue to be improved and integrated within the infrastructure and platform levels of the cloud, we may see more SaaS solutions coming onto the market that are increasingly, or more readily able to be personalised for the end user as a result.

## What technological or other developments make this possible?

Data Centers are the key variable in cloud technologies. It is the ability for a data center to accommodate the influx of data and future-proof enterprise infrastructures that are the main concern.

AI and ML require much more computing power or bandwidth than other technologies supported within the cloud, and data center designs are needing to incorporate more complex architectures like super-spine and super-leaf networks over a standard spine and leaf network which is no longer suitable.

# **What is the likely impact?**

## What is the potential impact of this development?

As artificial intelligence and machine learning technologies develop, we are likely to see improved efficiencies in many areas of our lives whether its from a business or personal perspective.

As a result, we will continue to see more personalised technologies to come onto the market for consumption or use which may even support further innovation as we become accustomed to using data in more efficient ways and methods.

## What is likely to change?

The way we interpret, and use data will be the most significant change in how we use and manage AI and ML systems.

AI and ML is considered to mimic human behaviours and responses and therefore must be trained to do so before being implemented. So, depending on who is responsible for training these systems and how, will largely affect the outcome and the impacts whether they be negative or positive for the end user.

## Which people will be most affected and how?

Artificial intelligence and machine learning technologies, if properly trained, are be able to produce certain outputs depending on the inputs it receives and analyses for use.

Tasks with higher repetitive behaviours are most likely more susceptible to automation with the use of these technologies such as many manufacturing tasks, or administration/clerical tasks as primary examples.

## Will this create, replace or make redundant any current jobs or technologies?

Optimistically, a study outlined in the ‘The Future of Jobs Report 2018’ produced by the World Economic Forum suggests that whilst automation through the use of AI/ ML may cause the displacement of up to 75 million jobs by the year 2022, up to 133 million jobs may also be generated concurrently, thereby far outweighing the negative employment impact.

Opposingly, an online survey conducted by Gallup and Northeastern University, suggests that over 60% of respondents believe AI will eliminate more jobs than it creates.

## **How will this affect you?**

## In your daily life, how will this affect you?

My current employment cannot be automated and always requires a constant and direct human input to complete tasks. Therefore, from an employment point of view, my job will remain secure as there is no correlation between the two.

The only real affect Artificial Intelligence and Machine Learning will have on me, is through the indirect development of applications from developers incorporating these technologies to produce something that is beneficial (or at least perceived as beneficial) for me to become a user.

## What will be different for you?

There is no immediate difference or direct influence that cloud technologies and their applications have on me other than the applications I already use as a SaaS user. I do, however, have an interest in cloud computing and wanting to discover more as my study progresses in the field of IT.

This interest is aligned with my ideal job in cloud architecture which I can hopefully use in time to develop my own applications and solutions for the end user.

## How might this affect members of your family or your friends?

Cloud technologies along with AI and ML will affect almost everyone in the years to come.

Some friends and family members who have positions in higher susceptible areas of employment subject to automation may need to retrain sooner rather than later. The risk here mostly lies with age and the ability or willingness to pursue something new.

Users of the cloud and associated technologies do not need to understand every fundamental aspect of how the cloud works, but just from within the level that they want to operate in. As discussed earlier within the three major components of the cloud, there may be many translatable skills to which the older generation can utilise and build their own systems and solutions from the platform or software levels.

The cloud offers an almost infinite set of possibilities for those wanting to participate.