

How IBM is changing the world with Cloud Computing

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ABSTRACT

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With increase in need for intelligent systems supporting the world's businesses, Cloud Computing has emerged as one of the dominant trends to provide a dynamic infrastructure to make such scientific miracle possible. First, we need to introduced that why we need cloud and how it was evolved. Secondly, we need to analyze the value of cloud computing and how to apply it to make it useful for everyone. And then maybe, we may be able to predict the future of cloud in our smarter planet.[1]. Now there is one question which people asked frequently What exactly is Cloud Computing, now to understand this we first have to learn about the architecture, we have to know what were the initial steps of our ancestors that lead us to this. We have to take a deeper dive to learn of all this. As this is one of the hottest selling technologies of today's world and the demand will be definitely increasing in future. Many big know MNCs such as Amazon, Microsoft, Google, IBM are using this to maintain their data and also providing cloud for the public also and some money rates.

Keywords : Cloud Computing, Encryption, Homomorphic Encryption, Fully Homomorphic Encryption, Parallel Computing, Parallel Processing, Partitioning.

I. INTRODUCTION

Now the first question, what is Cloud Computing? It is explained as a place unknown that can store the huge amount of data for us and we can access it anywhere, anytime. Though it's still an incomplete definition of it. In The Greek Myths recount animals culled from the outside of the Earth and cherished as star groupings in the night sky. Something comparative is going on today in the realm of figuring, if we talk it in respect of cloud computing. All of our data whether personal or professional and

all of our programs are being transferred from our desktop PCs and being stored on a corporate server rooms and introduced in "the process cloud." Whether it's called distributed computing or on-request registering, programming as an assistance, or the Internet as stage, the basic component is a move in the language of calculation. At the point when you make a spreadsheet with the Google Docs administration, significant parts of the product dwell on inconspicuous PCs, whereabouts obscure, conceivably dispersed across continents.[2] Now there must be something exceptional in this, so that

companies like Google and Amazon are using it and also providing it to people for their personal use. In this we will be focusing on the cloud used by IBM and how IBM does Cloud Computing.

IBM Cloud:

Before diving deep into the IBM Cloud let's know how generally a cloud works.

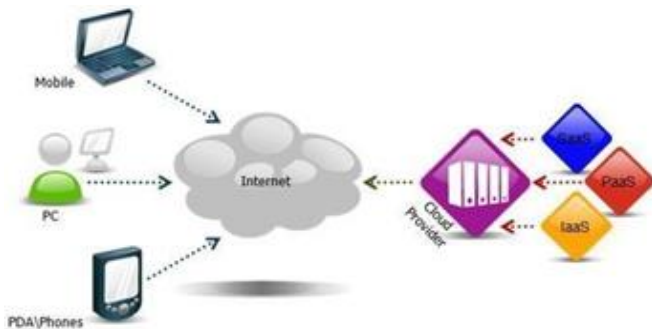


Fig.1

Basically, this is the crux of how cloud actually works. There are some terminologies such as SaaS, PaaS, IaaS. They are the type of service that are provided to public by different providers and IBM provides all of them. The IBM Cloud brand provides cloud services via three different models named- Infrastructure as a Service (IaaS), Software as a Service (SaaS) and Platform as a Service (PaaS). These services are offered through public, private and hybrid cloud delivery models. IBM places these offerings under three categories: Cloud Foundation, Cloud Services and Cloud Solutions. IBM cloud is also known as the SmartCloud. SmartCloud. Foundation contains the foundation, equipment, provisioning, the executives, joining and security that goes under as the underpinnings of a private or half and half cloud. By building those fundamental parts, PaaS, IaaS and reinforcement administrations makes SmartCloud. Otherwise called SmartCloud Services. Since these administrations are running on this cloud stage and foundation, it contains various joint efforts, examination and promoting SaaS applications. IBM cloud benefits likewise fabricated and give client a cloud domain that may not really on the SmartCloud

Platform. For instance, highlights of the SmartCloud stage, for example, Tivoli the executives programming or IBM Systems Director virtualization— can be coordinated independently as a feature of a non- IBM cloud stage. The SmartCloud stage comprises exclusively of IBM equipment, programming, administrations and practices. IBM offers cloud conveyance choices including somebody having its independent private cloud, solo open cloud, and varieties in the middle. Private, open and half and half mists are not carefully particular, as IBM permits the alternative to manufacture a modified cloud out of a mix of open cloud and private cloud components. Organizations that want to keep all information and procedures behind their own firewall can utilize private cloud administrations oversaw by their own IT staff. An organization may likewise pick pay-more only as costs arise evaluating. Half breed cloud choices take into consideration a few procedures to be facilitated and overseen by IBM, while others are kept on a private cloud or on a VPN or VLAN. IBM likewise offers arranging and conference all through the sending procedure. IBM offers five cloud arrangement models:

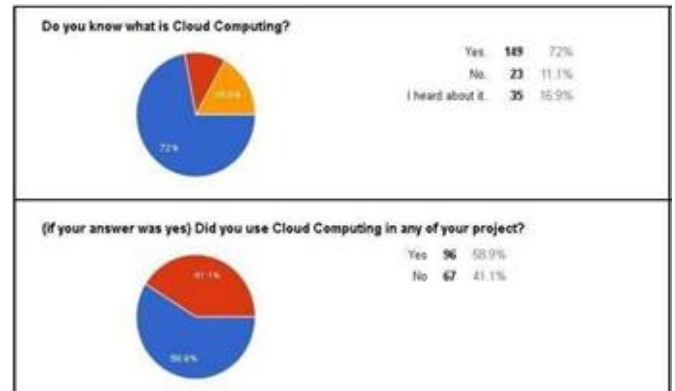
- Private cloud, claimed and worked by the client.
- Private cloud, claimed by the client, yet worked by IBM (or another supplier).
- Private cloud, claimed and worked by IBM (or another supplier).
- Virtual private cloud administrations (in view of multi-rented support for singular endeavors).
- Public cloud administrations (in light of the arrangement of capacities to people).

II. How IBM is changing the world via Cloud

As the technology is increasing rapidly, the need of space of people is getting bigger, they want their work to get complete within the fraction of minutes or in seconds for the best. And we do have evolved in

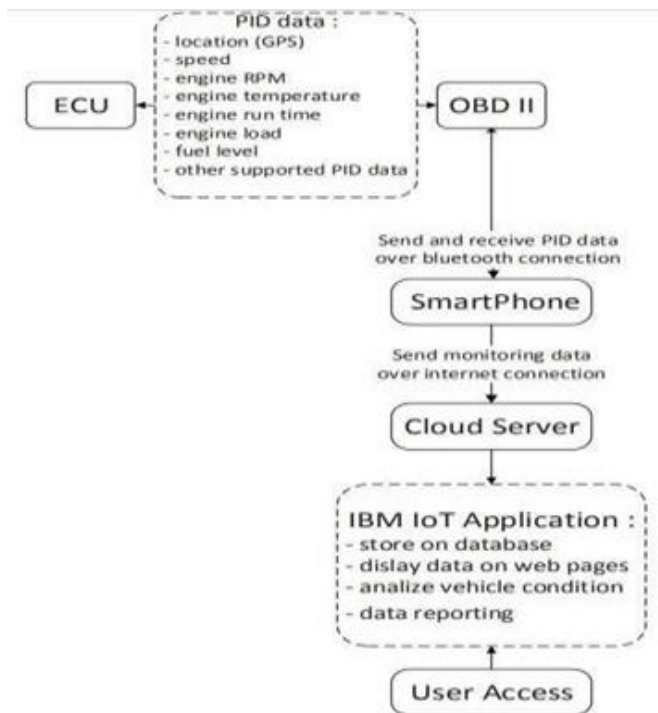
many things as well. One of the biggest examples of it is our smartphone. We started from the letters, then telephones came and after that we keep on evolving and now, we have come to smartphones. Similarly, before data were used to store in physical memory but after cloud came all that changes. We can also take the example of self-driven car. As we discussed earlier IBM uses cloud and provides it to people also. It has some of the functions in through which can anyone can easily develop their own model. This type of service providing is known as IaaS. As for knowing IBM, it is one of the reputed companies around the globe. There is a review of inquired about IBM site and if the individuals visited it previously, 75% said they didn't visit the site and 25% said they did, from 25% who visited the site, 30.2% found the data that they we're searching for in a short time or something like that, while 9.5% said they didn't find what they were looking for and the reasons that they didn't found the data, differ from get exhausted of looking, the site was mind boggling to utilize, or over-burden of data on the site. The reaction when inquired about distributed computing, 149 out of 208 individuals said they do comprehend what is distributed computing, and 35 individuals said they had caught wind of distributed computing, while 23 individuals said they don't have the foggiest idea what is distributed computing. Likewise, the review shows that the level of individuals who had utilized cloud processing and who doesn't are not excessively extraordinary, about 60% utilized distributed computing while nearly 40% didn't utilize it. [8] This information is from Saudi Arabia and how they began utilizing IBM cloud. There is a pictorial data for the above in Fig2.

Car Monitoring:



One of the popular advancements from IBM cloud is IBM Bluemix. There is a venture of observing and supervision of vehicle. This venture goes under IoT. We need to make a framework to follow the vehicle's development. Particularly, this IoT framework is intended to show and record the present vehicle condition, for example, the situation of vehicle through GPS, vehicle speed, level of gas, the temperature of motor and the other state of the vehicle driven, so the information can be checked and the vehicle can be dealt with rapidly if any glitch or abnormality happened, for example there will be an admonition when fuel in running out or if the motor is too hot and a brief break if necessary on the vehicle, so the motor won't be overheat that could cause the vehicle broken down.[4]. This all should be possible by cloud and this was made in IBM cloud with an apparatus name IBM Bluemix.

A harsh delineation of IoT IBM Application on Cloud in Fig3 underneath.



Chatbot with Watson:

IBM is working on various technologies and all are interdependent on each other. IBM has its own Artificial Intelligence bot named as IBM Watson. And whatever you do inside that comes under Cloud of IBM. Here, it's working as a IaaS. They provide you the infrastructure and you can develop and deploy your own product. Recently I have made a chatbot named Flower Shop Chatbot. Its working on Watson assistant on Cloud. We are making different intents, Slots and Utterances to train We train Watson with our chatbot. To make it more user friendly and to answer more generally we use slots, so that it can have dynamic values. There was illustration of IBM Watson works in Fig-4.

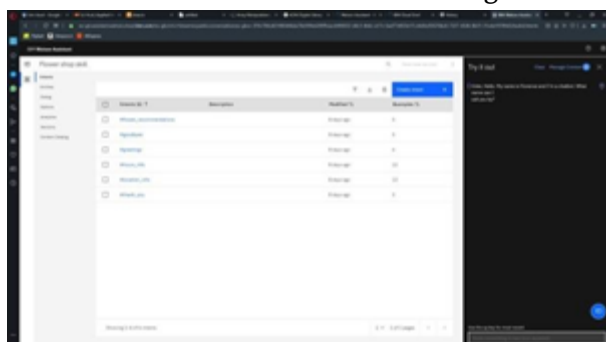


Fig-2

The six on the left are known as Intents, inside these there are entities and slots also come under them. Inside these intents, there are entities as I mentioned above also. With these entities there are some associated Utterances. We can learn entities like in how many ways can user ask any question. But you can not ask anything and your bot is not that trained that its able to answer any question. For ex- You have entered the location of New York in America and the user ask about the location of California in America. Here your bot will not be able to answer the query. Since Watson is a smart assistant and IBM cloud has given us many different ways to make it more useful. Here is the part where the slots kicks in. You can enter different slot values according to your need and the bot will train itself to become more understandable. IBM cloud has given the multi value option by which we use slots. There is a coginitiveclass.ai website. You can learn to make a easy version of chatbot from there and its using IBM cloud as its backend. We have also learned about this from there.[5].

III. IBM Cloud Security

Distributed computing has become an innovation that empowers a framework to have simple and adaptable access to assets as it is the following degree of lattice figuring. It is autonomous of the physical area of assets henceforth empowering quick distribution and reallocation of assets dependent on the requests of the client. The assets that should be dispensed are for all intents and purposes accessible and can be preoccupied. The centre of the distributed computing speaks to the autonomy of the destinations and the to be apportioned assets can be shared proficiently with different clients. Distributed computing is a disseminated innovation for example it trusts on dissemination of assets to accomplish economies of scale. The minimum requirement of a system bears a cloud of IBM in in the table below.

(Fig 5).[6] If we generally talk about the cloud, it's quite secure because we don't know where we are storing our data and we can do or know much about it because there is the involvement of third party.

IBM
System Information
Hardware:
Processor: Intel Xeon E52660 0 @ 2.19GHz (1 Core)
Memory: 512 MB + 256 MB
Disk: 31GB Virtual Disk + 21GB V Disk
Software:
OS: Ubuntu 14.04
Kernel: 3.13.0-27-generic (x86_64)
File-System: ext4
System Layer: IBM Hyper-V
Server Core Count: 1
Thread Count: 1
Cache Size: 20480 KB
Extensions: SSE 4.2 + AVX AES
Encryption: YES
Disk Scheduler: DEADLINE
Disk Mount Opt: ordered, discard, relatime ,rw

Since IBM goes under one of the presumed organizations all around the globe. Distributed computing security is one of its necessities. Cloud security consolidates a wide game plan of methodologies, advances, applications, and controls used to guarantee virtualized IP, data, applications, organizations, and the related establishment of circulated figuring. It is a sub-space of PC security, compose security, and, even more extensively information security. Security concerns related with dispersed figuring fall into two general orders: security issues looked by cloud providers (affiliations giving programming, stage, or establishment as-an organization by methods for the cloud) and security issues looked by their customers (associations or affiliations who have applications or store data on the cloud). The commitment is shared, regardless. The provider must ensure that their establishment is secure and that their clients' data and applications are

guaranteed, while the customer must take measures to support their application and use strong passwords and affirmation measures. [7]. Since there are many ways to hack into the cloud as well as many ways to prevent it also. IBM servers are very hard to penetrate. There are many others ways to secure cloud also like making it public and all also. So, we can say that our data is in safe hands.

IV. CONCLUSION

The main purpose of this research paper is to know about the Cloud platform provided by IBM. We see there are lot of companies which are providing the cloud services. In this paper we discuss about the cloud, cloud computing, how IBM is doing it, How IBM is changing the world through it, what differences services and types of services and cloud are provided by IBM, what new can be done by using the resources provided by this wonderful cloud. We can make many projects of IoT, Artificial Intelligence etc. It can all be done without using any physical memory. IBM cloud will store and do every necessity for us. We don't have to worry for the resources and management of those resources. We also discussed a little about cloud security and how much secure is IBM cloud. IBM is providing one of the finest clouds providing platform all over the world computing powering a smarter planet. In IEEE International Conference on Cloud Computing (pp. 621-625). Springer, Berlin, Heidelberg.

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