IoT and Cloud Computing Are Inseparable

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Abstract

The cloud is a huge, interconnected network of powerful servers that performs services for businesses and people. The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IoT has evolved with the greater generation of data. Internet of Things Cloud Service creates excessive communication between inexpensive sensors in the IoT which means even greater connectivity. Billions of connected devices and machines will soon join human-users. IoT generates lots of data while on the other hand, cloud computing paves way for this data to travel. In this paper we try to focus on cloud providers who take advantage of this to provide a pay-as-you-use model where customers pay for the specific resources used. Also, cloud hosting as a service adds value to IoT startups by providing economies of scale to reduce their overall cost structure.

Keywords: Cloud computing, IoT, Future computing.

I Introduction

The IOT is generating an unprecedented amount of data, which in turn puts a tremendous strain on the Internet infrastructure. As a result, companies are working to find ways to alleviate that pressure and solve the data problem. Cloud computing will be a connected devices work together. But there are some significant differences between cloud computing and the Internet of Things that will When you have hundreds, thousands, of ever millions of sensors, putting large amounts of computational power on each sensor would be extremely expensive and energy intensive. Instead, data can be passed to the cloud from all these sensors and processed there in aggregate.

The Internet of Things entered in daily life. For instance, Take smart homing. People can start their cooling devices remotely through their mobile phones. This earlier used to be possible via an SMS, but today the internet has made it easier.

play out in the coming years as we generate more and more data. Using the cloud is important for aggregating data and drawing insights from that data. For instance, a smart agriculture company would be able to compare soil moisture sensors from Kansas and Colorado after planting the same seeds. Without the cloud, comparing data across wider areas is much more difficult. Using the cloud also allows for high scalability.

Apart from providing smarter solutions for homes and housing communities, IoT has also been used as a tool in business environments across various industries. However, with the amount of big data that is generated by IoT, a lot of strain is put on the internet infrastructure. This has made business and organization look for an option that would reduce this load.

Enter cloud computing an on demand delivery of computing power, database storage, applications and IT resources, like a virtual machine (VM)

instead of building a computing infrastructure on premise. Today, cloud computing has more or less penetrated mainstreams IT and its infrastructure. Many tech biggies such as Amazon, Google and Oracle are building machine learning tools with the help of cloud technology to offer a wide range of solutions to businesses worldwide. This article aims to inform you of the role of cloud computing in IoT and why IoT and cloud computing are inseparable.

II. How IoT and Cloud Complement Each Other

Cloud computing, as well as IoT, work towards increasing the efficiency of everyday tasks and both have a complementary relationship. On one hand, IoT generates lots of data while on the other hand, cloud computing paves way for this data to travel. There are many cloud providers who take advantage of this to provide a pay-as-you-use model where customers pay for the specific resources used. Also, cloud hosting as a service adds value to IoT startups by providing economies of scale to reduce their overall cost structure.

In addition to this, cloud computing also enables better collaboration for developers, which is the order of the day in the IoT space. By facilitating developers to store as well as access data remotely, the cloud allows developers to implement projects without delay. Also, by storing data in the cloud, IoT companies can access a huge amount of Big Data. So, in a bid to lay down the relationship between IoT and cloud, here is a table that will let you know how they fit into each other like a glove.

III. Need Of Cloud For IoT

Sensor networks:

With cloud provides a new opportunity in collecting sensor data it also hinders the progress because of security and privacy issues. Sensor networks have amplified the benefits of IoT. These networks have allowed users to measure, infer and understand delicate indicators from the environment. However, timely processing of a large amount of this sensor data has been a major challenge.

Enables inter-device communication:

Cloud Cache and Dropstr are enabled by cloud communications, allowing easy linking to smart phones. This eases devices to talk to each other

and not just us, which essentially is the tenet of IoT cloud. It would be fair to say that cloud can accelerate the growth of IoT. However, deploying cloud technology also has certain challenges and shortcomings. Not because the cloud is flawed as a technology but the combination of IoT cloud can burden users with some obstacles. If you ever go ahead with an IoT cloud solution, it is better if you know the kind of challenges you may face in advance.

Remote processing power Provider

Cloud technology allows IoT to move beyond regular appliances such as air conditioners, refrigerators etc. This is because the cloud has such a vast storage that it takes away dependencies on on-premise infrastructure. With the rise of miniaturization and transition of 4G to higher internet speeds, the cloud will allow developers to offload fast computing processes.

Networking and communication protocols:

Cloud and IoT allows machine-to-machine communications among many different types of devices having various protocols. Managing this kind of a variation could be tough since a majority of application areas do not involve mobility. As of now WiFi and Bluetooth are used as a stop-gap solution to facilitate mobility to a certain extent.

IV. IoT And Cloud Computing For Future

The term of Future Internet is a collection of data communication network technologies in the future. The Internet of thing (IoT) is the most important concept of Future Internet for providing a common global IT Platform to combine seamless networks and networked things. In the future Internet, people will be connected Anytime, Anyplace, with anything and anyone, and appropriately utilizing any network and Any Service. In other words, the IoT addresses the Convergence, Content, Collections, Computing, Communication, and Connectivity between people and things. On the other hand, Cloud Computing is regarded as the backend solution for processing huge data streams and computations while facing the challenges of everything will be connected with seamless networks in the future. Cloud technologies can provide a virtual, scalable, efficient, and flexible data centre for context-aware computing and online service to enable IoT.

Both the IoT and Cloud Computing are the trends of Future Internet. However, the developments of IoT technology are diversity and are not interoperable. That results the service providers and operators have no definite specification to follow. On the other hand, the cloud computing solutions are depended on service providers. Since many international organizations are devoted to work out their specifications for providing a common architecture of networks and software. Thus, we regard the IP Multimedia Subsystem (IMS) is the ideal solution for fulfilling the requirements. However, there are still many challenges for IMS being the network and software fabric between IoT and Cloud. In this paper, we discuss the open challenges and propose the possible solutions for Future Internet. Finally, we construct an early IoT bootstrap platform to provide the discussion of those open challenges and solutions for deploying IoT in Future Internet.

V. Conclusion

The Internet of Things is a broad field and includes an incredible variety of applications. The cloud infrastructure is a good architectural fit for IoT, IoT can benefit from the unlimited capabilities and resources of cloud computing, as cloud has the scalable capacities. There is no one-size-fits-all solution so IoT companies need to consider their specific application when deciding whether the cloud makes sense for them. Moreover, the cloud infrastructure can be accessed anytime and anywhere, and has lower capital expenditure and operational expenditure. Finally we conclude that Internet of things, big data and cloud computing leverage a new horizon of decision support system. And also the combination of the IoT, big data and cloud computing can provide new opportunities and applications in all the sectors.

VI. References

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