CLOUD COMPUTING AND IOT

[1]S. SELVAKUMARI, [2]S. RANICHANDRA, [3]S.SUBATHRA

[1][2][3]ASSISTANT PROFESSOR IN COMPUTER SCIENCE,

Dhanalakshmi Srinivasan College of Arts and Science for Women (Autonomous)

Perambalur

ABSTRACT

The cloud may be a huge, interconnected network of powerful servers that performs services for businesses and other people . the web of Things (IoT) may be a system of interrelated computing devices, mechanical and digital machines, objects, animals or folks that are given unique identifiers and therefore the Ability to transfer data over a network without the need for human-to-human or human-to-computer communication. IoT has evolved with the greater generation of knowledge . Internet of Things Cloud Service creates excessive communication between inexpensive sensors within the IoT which suggests even greater connectivity.IoT generates many data while on the opposite hand, cloud computing paves way for this data to travel. during this paper we attempt to specialise in cloud providers who cash in of this to supply a pay-as-you-use model where customers buy the precise resources used. Also, cloud hosting as a service adds value to IoT startups by providing economies of scale to scale back their overall cost structure.

Keywords : Cloud computing, IoT, Future computing.

I. INTRODUCTION

The IoT is generating an unprecedented amount of knowledge , which successively puts an incredible strain on the web infrastructure. As a result, companies are working to seek out ways to alleviate that pressure and solve the info problem. Cloud computing are going to be a serious a part of that, especially by making all of the connected devices work together. But there are some significant differences between cloud computing and therefore the Internet of Things which will play call at the approaching years as we generate more and more data.

Using the cloud is vital for aggregating data and drawing insights from that data. as an example , a sensible agriculture company would be ready to compare soil moisture sensors from Kansas and Colorado after planting an equivalent seeds. Without the cloud, comparing data across wider areas is far more difficult.

Using the cloud also allows for top scalability. once you have hundreds, thousands, or maybe many sensors, putting large amounts of computational power on each sensor would be extremely expensive and energy intensive. Instead, data are often passed to the cloud from of these sensors and processed there in aggregate.

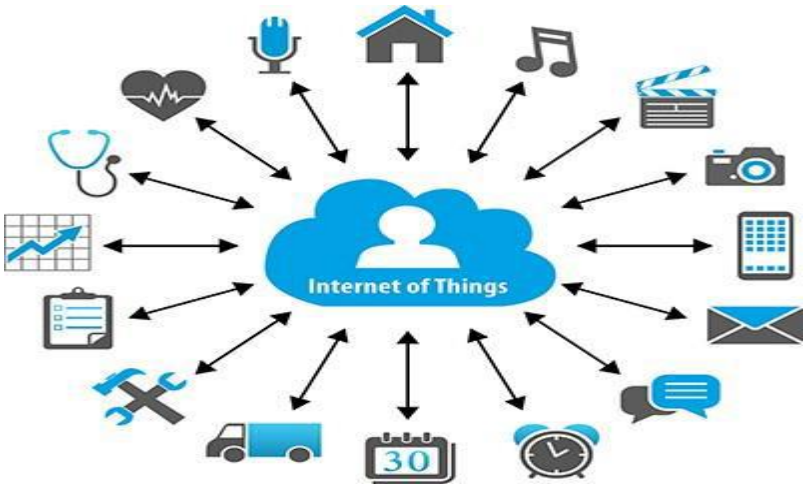
The Internet of Things entered in lifestyle . as an example , Take smart homing. People can start their cooling devices remotely with their mobile phones. This earlier wont to be possible via an SMS, but today the web has made it easier. aside from providing smarter solutions for homes and housing communities, IoT has also been used as a tool in business environments across various industries[3]. However, with the quantity of massive data that's generated by IoT, tons of strain is placed on the web infrastructure. This has made businesses and organizations search for an option that might reduce this load. Enter cloud computing - customizing the supply of computer power, database storage, applications and information technology resources.

It enables organizations to consume a compute resource, sort of a virtual machine (VM) rather than building a computing infrastructure on premise. Today, cloud computing has more or less penetrated the major information technology and its infrastructure.

Many tech biggies like Amazon, Alibaba, Google and Oracle are building machine learning tools with the assistance of cloud technology to supply a good range of solutions to businesses worldwide. this text aims to tell you of the role of cloud computing in IoT and why IoT and cloud computing are inseparable.

II. ROLE OF CLOUD COMPUTING IN IOT

Cloud computing and IoT work both to enhance the performance of everyday tasks and have a complementary relationship. IoT generates many data while on the opposite hand, cloud computing provides how for this data to travel. There are many cloud providers who cash in of this to supply a pay-as-you-use model where customers buy the precise resources used. Also, cloud hosting as a service adds value to IoT startups by providing economies of scale to scale back their overall cost structure[4]. Cloud computing also enables better collaboration for developers, which is that the order of the day within the IoT area. By simplifying developers to store also as access data remotely, the cloud allows developers to implement projects at once . Also, by storing data within the cloud, IoT companies can access an enormous amount of massive Data.



IoT in several environments

When a business uses thousands of sensors for data collection, each of these sensors is loaded with large amounts of computational power.

This demands huge amount of energy and is expensive at an equivalent time. during this situation, data are often passed to the cloud from these sensors and processed there in total.It are often

said that the cloud is ‘the brain’ for much of the IoT, as most collected data is in any case processed and analysed within the cloud.

III. NEED OF CLOUD FOR IOT

Sensor networks:

With cloud provides a replacement opportunity in collecting sensor data it also hinders the progress due to security and privacy issues. Sensor networks have amplified the advantages of IoT. These networks have allowed users to live , infer and understand delicate indicators from the environment. However, timely processing of an outsized amount of this sensor data has been a serious challenge.

Enables inter-device communication:

Cloud Cache and Dropstore are powered by cloud communications, which allow them to easily connect to smartphones.This eases devices to speak to every other and not just us, which essentially is that the tenet of IoT cloud. it might be fair to mention that cloud can accelerate the expansion of IoT. However, the use of cloud technology has some challenges and drawbacks. Not because the cloud is flawed as a technology but the mixture of IoT cloud can burden users with some obstacles. If you ever plow ahead with an IoT cloud solution, it's better if you recognize the type of challenges you'll face beforehand .

Remote processing power Provider

Cloud technology allows IoT to man-Ever beyond regular appliances like air conditioners, refrigerators etc. this is often because the cloud has such a huge storage that it takes away dependencies on on-premise infrastructure. With the increase of miniaturization and transition of 4G to higher internet speeds, the cloud will allow developers to dump fast computing processes.

Networking and communication protocols:

Cloud and IoT allows machine-to-machine communications among many various sorts of devices having various protocols. Managing this type of a variation might be tough since a majority of application areas don't involve mobility. As of now WiFi and Bluetooth are used as a stop-gap solution to facilitate mobility to a particular extent.

IV. IOT AND CLOUD COMPUTING FOR FUTURE

In the near future, the mixture of IoT and Cloud Computing will inevitably boost the expansion of the IoT systems and cloud-based services. Most of the industries have understood and accepted the importance of lining up robust cloud services because the backend to several IoT projects. additionally , most of those organisations have already started line up the 2 technologies and are taking advantage of it. IoT and cloud computing features a complementary relationship. While IoT generates large amounts of knowledge , many cloud providers allow data transfer via the web , meaning facilitates how to navigate the info . during a cloud infrastructure, you'll deploy applications to process and analyze data quickly and make decisions as soon as possible.

IoT devices which utilize common APIs and back-end infrastructure can receive important security updates instantly through Cloud as soon as any security breach happens within the infrastructure. This IoT and Cloud computing combined feature may be a vital parameter for user security and privacy. Cloud computing helps to collaborate in IoT development. Using Cloud platform, IoT developers can store the info remotely and access easily.

Public cloud services can easily help the IoT area by providing third-party access to infrastructure.Hence, the mixing can help IoT data or computational components operating over IoT devices. Increased Scalability: IoT devices need tons of storage to share information for valuable purposes. Iot in cloud, just like the Cloud hook up with Microsoft Azure can provide customers with greater space which may increase as per the users demand. Helping to resolve the storage needs of consumers.

Increased Performance: the massive amounts of knowledge produced by IoT devices need extreme performance to interact and connect with each other. Iot in cloud provides the connectivity which is important to share information between the devices and make meaning from it at a quick pace.

Pay-as-you-go: Internet Cloud Computing infrastructures help IoT to offer aiming to the greater amount of knowledge generated. Users haven't any worry of shopping for greater or less storage. they will easily scale the storage because the data generated increases and buy the quantity of storage they consume with Internet Cloud Computing.

V. CONCLUSION

The Internet of Things may be a broad field and includes a fantastic sort of applications. The cloud infrastructure may be a good architectural fit IoT , . IoT can enjoy the unlimited capabilities and resources of cloud computing, as cloud has the scalable capacities. there's no one-size-fits-all solution so IoT companies got to consider their specific application when deciding whether the cloud is sensible for them. Moreover, the cloud in frastructure are often accessed anytime and anywhere, and has lower cost and operational expenditure. Finally we conclude that Internet of things, big data and cloud computing leverage a replacement horizon of decision network . And also the mixture of the IoT, big data and cloud computing can provide new opportunities and applications altogether the sectors.

VI. REFERENCES

[1]. K. Zheng, Z. Yang, K. Zhang, P. Chatzimisios, W. Xiang and K. Yang, "Big data driven optimization for mobile networks towards 5G," IEEE Netw., vol. 30, no. 1, pp. 44-51, Jan. 2016.

[2]. J. Swetina, G. Lu, P. Jacobs, F. Ennesser and J. Song, "Toward a standardized common M2M service layer platform: introduction to oneM2M," IEEE Wireless Commun., vol. 21, no. 3, pp. 20-26, Jun. 2016.

[3]. L. Lei, Y. Kuang, N. Cheng, X. Shen, Z. Zhong and C. Lin, "Delay-optimal dynamic mode selection and resource allocation in device-to-device communications - part II: Practical algorithm," IEEE Trans. Veh. Technol., vol. 65, no. 5, pp. 3491-3505, Jun. 2015.

[4]. M. Aazam, "Cloud of Things: Integrating Internet of Things and cloud computing and the issues involved", Applied Sciences and Technology (IBCAST), 2014 11th International Bhurban Conference on IEEE, (2014).

[5]. H. Z. Wang, "Management of Big Data in the Internet of Things in Agriculture Based on Cloud Computing", Applied Mechanics and Materials, vol. 548, (2014).

[6]. H. J. Ding, "Traffic Flow Data Collection and Signal Control System Based on Internet of Things and Cloud Computing", Advanced Materials Research, vol. 846, (2014), pp. 1608-1611.