Chapter 1
Genesis of Cloud-Based IoT Systems for Smart Generation

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ABSTRACT

Internet of Things (IoT) and Cloud computing are exceptionally different innovations that have become the backbone of the smart world. This paradigm where IoT and Cloud are integrated is anticipated as an empowering influence to an extensive number of smart applications. In this chapter, the integration of Cloud and IoT is explored. This chapter also provides a picture of the integration of Cloud IoT applications. Finally, some future open issues are described.

1. INTRODUCTION

In telecommunication fields there is a new technology called IoT which means "the network of physical objects, buildings, devices, vehicles and other things which could be embedded with software, electronics, sensors and network connectivity and permits these objects to gather and interchange data". IoT technology is at the boom in the new technology advancement sector which ultimately will produce a major changes in the business to get smart. In the next generation networks, millions of devices will be connected and located at different sites and perform

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their functions to provide information to the decision making devices. This new idea will not only effect the business era but also on the several aspects of the everyday life and behavior of potential users. This IoT will transform individuals and organizations to get connected with customers, partners, suppliers and other individuals. The significant test for associating sensors, actuators and devices to a system was the primary test. In any case, equipment advancements like Raspberry Pi are making it quicker, simpler and less expensive and furthermore help to grow new gadgets organizing guidelines for low power systems. LoRaWAn or Sigfox, make new open doors for interfacing little gadgets to a system new benchmarks. These are being created particularly for IoT utilize cases, as MQTT for informing, or OMA Lightweight M2M for gadget administration. Lastly, a ton of upgrades in information stockpiling, information examination, and occasion preparing are making it conceivable to help the measure of information produced in expansive scale IoT arrangements.

The Cloud computing collects the data from the IoT sensors and compute it according to different requirements. Integration of IoT along with Cloud computing is another worldview which stretch out the degree to manage true things. It can help for conveying new administrations in countless life situations. From one viewpoint, IoT can benefit by the practically boundless abilities and assets of Cloud to remunerate its innovative limitations (e.g., capacity, handling, and vitality). In particular, these two paradigms i.e. IoT and Cloud are altogether different from each other. Such complementarily is the principle motivation behind why numerous specialists have proposed and are proposing their incorporation, for the most part to acquire benefits in particular application situations.

2. CLOUD COMPUTING

Cloud computing provides four different services as follows:

1. **SaaS:** In this, service application can work over the internet and customer can use it on the basis of utilization. Here customer need not to store the data and keep that data on the hard disk. The customer has to pay as he use.
2. **PaaS:** In this service the cloud server gives a platform and toolboxes where different applications can be designed.
3. **NaaS:** It is a totally virtual network for customers. Here, customers can get different quantities of systems as required, with wanted division and approach authorization.
4. **IaaS:** This service gives calculation and capacity benefits on leasing premise. Rather than buying costly machines, servers, and capacity devices,