

# Internet of Things (IoT) Secure integration

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**ABSTRACT:** *Cloud computing is a new technology which refers to an infrastructure where both data storage and data processing operate outside of the mobile device. Another recent technology is Internet of Things. Internet of Things is a new technology which is growing rapidly in the field of telecommunications. More specifically, IoT related with wireless telecommunications. The main goal of the interaction and cooperation between things and objects which sent through the wireless networks is to fulfill the objective set to them as a combined entity. In addition, there is a rapid development of both technologies, Cloud Computing and Internet of Things, regard the field of wireless communications. In this paper, we present a survey of IoT and Cloud Computing with a focus on the security issues of both technologies. Specifically, we combine the two aforementioned technologies (i.e. Cloud Computing and IoT) in order to examine the common features, and in order to discover the benefits of their integration. Concluding, we present the contribution of Cloud Computing to the IoT technology. Thus, it shows how the Cloud Computing technology improves the function of the IoT. Finally, we survey the security challenges of the integration of IoT and Cloud Computing.*

**KEYWORDS:** *Cloud Computing, Internet of Things (IoT), Secure integration, Transmission wireless telecommunications*

## INTRODUCTION

In telecommunication fields there is a new technology called Internet of Things (IoT). The Internet of Things (IoT) is “the network of physical objects, devices, vehicles, buildings and other items which are embedded with electronics, software, sensors, and network connectivity, permitting these objects to gather and interchange data” IoT technology is the next major step in the new technology sector, but with the great difference that it carries massive changes in business functionality. Over the next years, a flare in the number of connected devices as well as located sites, and the functions they will perform, is expected. In addition, the main strength of the IoT idea is the high impact that it will have on several aspects of the everyday-life and behavior of potential users. The most obvious effects of the Internet of Things, as a private user could observe, would be visible in both domestic and working fields. In the first case, some examples of the possible application scenarios in which the new paradigm, that is the Internet of Things, will play a leading role in the near future are demotics, e-health, assisted living, and enhanced learning.

In the second case, business users could observe the similar consequences which are traceable in some fields such as logistics, intelligent transportation of people and goods, automation and industrial manufacturing, and business/process management[1]. Throughout the following years, a flare in the quantity of associated gadgets just as found locales, and the capacities they will perform, is normal. Furthermore, the principle strength of the IoT thought is the high effect that it will have on a few angles of the regular day to day existence and conduct of likely clients. The most evident impacts of the Web of Things, as a private client could notice, would be obvious in both homegrown and working fields[2]. In the principal case, a few instances of the conceivable application situations wherein the new worldview, that is the Web of things, will assume a main part soon are demotics, e-wellbeing, helped living, and upgraded learning. In the subsequent case, business clients could notice the comparative outcomes which are recognizable in certain fields, for example, coordination’s, shrewd transportation of individuals and merchandise, robotization and modern assembling, and business/measure the board[3]. The Web of Things is made out of three primary parts:

1. The "things" (objects).
2. The correspondence networks that interface them.
3. The PC frameworks utilizing information spilling from and to objects.

For instance, home security frameworks as of now permit you to check distantly the locks on your entryways, also, indoor regulators in the house. However, consider the possibility that it was conceivable to act proactively for your benefit. Envision you opened the windows to ventilate your

home prior to showing up, in light of your own inclinations, climate conditions, and the separation from your home. To sum up, the Web of Things is a sort of organization of some actual articles or things which, inserted with programming, hardware, sensors and availability that empowers them, accomplishes more noteworthy worth also, administration by trading information with producers, administrators and some other associated gadgets. Consequently, the concentrated calculations and the mass stockpiling, which are upheld by mists, are regularly wasteful[4].

A few models incorporate the constraints of capacity, correspondence abilities, energy and handling. Such failures inspire us to join the innovation of Portable Distributed computing (MCC) and the Web of Things. As an arising innovation, Portable Distributed computing coordinates different innovations for augmenting limit and execution of the current framework. Secure mix of IoT and Distributed computing[5]. Additionally, there is another innovation, called Versatile Distributed computing (MCC), which improved through the new years by another age of administrations which is shown up, in view of the idea of the "cloud computing" which expects to give admittance to the data and the information from anyplace whenever by confining or disposing of the requirement for equipment gear. More in particular, Versatile distributed computing is characterized as a joining of distributed computing innovation and cell phones to make cell phones clever as far as computational force, memory, capacity, energy, and setting mindfulness. Likewise, Portable cloud can be characterized as a contemporary methodology to creative administrations for firms and foundations. Versatile distributed computing is the result of interdisciplinary methodologies, which comprises of portable registering and distributed computing[6]. The term portable cloud is by and large alluded to in two viewpoints:

- (a) foundation based,
- (b) specially appointed versatile cloud.

In foundation based portable cloud, the equipment framework stays static, and gives administrations to the versatile clients. Because of the activities of Distributed computing, it very well may be utilized as helpful bases for both Web of Things and Video Reconnaissance advances and could give enhancements on their capacities[7]. The remainder of the paper is coordinated as follows. In segment 2 there is an audit of the connected examination which manages the innovation of Web of Things and Distributed computing and their mix. Area 3 talks about in detail the innovation of the internet of Things and a portion of its fundamental capacities.

## DISCUSSION

### *1. Internet of Things:*

The Internet of Things is a network of devices that transmit, share, and use data from the physical environment to provide services to individuals, corporations, and society. The objects-things function either individually or in connection with other objects or individuals, and have unique IDs (identifiers). Also, the Internet of Things has different applications in health, transport, environment, energy or types of devices: sensors, devices worn/carried (wearable), e.g. watch, glasses, home automation (domotics).

### *Internet of Things: Advantages of the data:*

Opportunities where the streaming data will create new markets in order to inspire positive change or to enhance existing services are examined by businesses. Some examples of sectors that are at the heart of these developments are listed below:

- a) *Smart solution in the bucket of transport:* Smart solutions in the bucket of transport, achieve a reduction of traffic on the roads, reduce fuel consumption, set priorities in vehicle repair programs, and save lives.

b) *Smart power grids incorporating more renewable*: Smart power grids incorporating more renewables improve system reliability, and reduce the charges consumers, thus providing cheaper electricity.

c) *Remote monitoring of patients*: Remote monitoring of patients provides easy access to health care, improves the quality of services, increases the number of people served, and saves money.

d) *Sensors in homes and airports*: Sensors in homes and airports, or even in your shoes or doors, improve safety by sending signals when left unused for a certain period of time or when used in the wrong time.

e) *Engine monitoring sensors that detect & predict maintenance issues*: Engine monitoring sensors that detect and predict maintenance issues, improve inventory replenishment, and even define priorities in scheduling maintenance work, repairs, and regional operations.

## 2. Internet of Things Security:

IoT security is the zone of try worried about shielding associated gadgets and organizations in the Web of things. The Web of Things includes the expanding commonness of items and substances referred to, in this setting as things - gave extraordinary identifiers and the capacity to naturally move information over an organization[8]. A significant part of the expansion in IoT correspondence comes from registering gadgets and installed sensor frameworks utilized in mechanical machine-to-machine (M2M) correspondence, shrewd energy networks, home and building mechanization, vehicle to vehicle correspondence and wearable figuring gadgets. The fundamental issue is that on the grounds that systems administration apparatuses and different articles are generally new, security has not generally been considered in the item plan. IoT items are frequently sold with old also, unpatched implanted working frameworks and programming. Besides, buyers regularly neglect to change the default passwords on shrewd gadgets - or on the off chance that they do transform them, neglect to choose adequately solid passwords. To improve security, an IoT gadget that should be straightforwardly available over the Web, ought to be sectioned into its own organization and have network access confined. The organization fragment should then be observed to recognize likely peculiar traffic, and move ought to be made if there is an issue. Security specialists have cautioned of the possible danger of enormous quantities of unstable gadgets interfacing with the Web since the IoT idea was first proposed in the last part of the 1990s. In December of 2013, an analyst at Proof point, a venture security firm, found the principal IoT botnet. Agreeing to Proof point, in excess of 25 percent of the botnet was composed of gadgets other than PCs, counting shrewd televisions, child screens and other family unit apparatuses.

## CONCLUSION

The Cloud Computing technology offers many possibilities, but also places several limitations as well. Cloud Computing refers to an infrastructure where both the data storage and the data processing happen outside of the mobile device. In this paper, we present a survey of Internet of Things Technology, with an explanation of its operation and use. Moreover, we present the main features of the Cloud Computing and its tradeoffs. Cloud Computing refers to an infrastructure where both data storage and data processing happen outside of the mobile device. Also, the Internet of Things is a new technology which is growing rapidly in the field of telecommunications, and especially in the modern field of wireless telecommunications. The main goal of the interaction and cooperation between things and objects sent through the wireless networks is to fulfil the objective set to them as a combined entity. In addition, based on the technology of wireless networks, both the technologies of Cloud Computing and Internet of Things develop rapidly. In this paper, we present a survey of IoT and Cloud Computing with a focus on the security issues of both technologies. Specifically, we combine the two aforementioned technologies (i.e Cloud Computing and IoT) in order to examine the common features, and in order to discover the benefits of their integration. Concluding, the contribution of Cloud Computing to the technology IoT, and it shows how the Cloud Computing technology improves the function of the IoT was presented. At the end, the security challenges of the integration of IoT and Cloud Computing were surveyed through the proposed algorithm model, and also there is a presentation of how the two encryption algorithms which were used contributes in the integration of

IoT and Cloud Computing. This can be the field of future research on the integration of those two technologies. Regarding the rapid development of both technologies the security issue must be solved or reduced to a minimum in order to have a better integration model. These security challenges that surveyed in this paper could be the sector for further research as a case study, with the goal of minimizing them.

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