Chapter 1
Intelligent Devices, Device Management, and Device Security for Cloud Platforms

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ABSTRACT

The phrase "intelligent device" refers to a package that contains either a full measurement system or a component inside a measurement system that includes a digital processor. The processing of measurement sensor output to adjust for flaws inherent in the measurement process results in significant gains in measurement accuracy. Intelligent device management is a technique used in corporate software applications to monitor and manage distant equipment, systems, and goods through the Internet. Device security in cloud platforms will be made using proactive attack surface management and improved protection against ransomware and other sophisticated threats safeguarding data and devices. Cloud security is a set of processes and technologies that are meant to handle both external and internal risks to enterprise security. This chapter explains about intelligent devices, the need for security and management of intelligent devices in cloud platforms, and finally ends with challenges associated with this.

INTRODUCTION

The prefixes SMART and INTELLIGENT are frequently misunderstood in today's connected world and are used interchangeably by inexperienced users. Most people think it will be the same thing, but it's not. The functioning of the two is significantly dissimilar. The SMART gadget operates autonomously, doing tasks according to an internal algorithm that has been pre-programmed. On the other hand, intelligent gadgets carry out tasks based on algorithms that have evolved through time as a result of prior learning and human input. To put it another way, SMART devices adhere to the pre-established operational rules, but INTELLIGENT devices learn and develop together with the user which was discussed by Kumar et al. (2019), Kaur et al. (2018) and Parast et al. (2022).

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Normal Device: To alter the temperature setting and turn the device on or off, the user must physically be present.

Smart Device: The user may enter a schedule for temperature and on/off switching. Without user input, the smart gadget will follow the timetable. The gadget may also be controlled remotely through the internet.

Intelligent Devices: A whole different degree of capacity is being discussed when we talk about intelligent devices, including artificial intelligence (AI).

- An intelligent air conditioner could be able to do things like turn on at a certain time and control the temperature depending on prior learning about user behavior.
- Alternatively, it may learn from the user's previous behaviors and automatically modify the temperature based on the temperature and humidity outside.

It can be accepted that intelligent devices may also be referred to as smart devices with understanding and adaptation capabilities based on the description and examples provided above. Therefore, it is clear that intelligent gadgets are "smarter" than smart ones and which was given by Walia et al., (2022). A machine, instrument, piece of equipment, or any other item having inbuilt processing capacity is referred to as an intelligent device. Currently, there are a wide variety of intelligent products on the market, including laptop and handheld computers, automobiles, household appliances, geological equipment, medical devices, airplanes, weapons, and cameras. As a result, managing IoT devices in such a complexed infrastructure will be a crucial task that addresses crucial FCAPS (fault, configuration, responsibility, performance, and security) concerns (Al-Ali et al., 2017)

An intelligent device's connectivity is its capacity to join a data network. Intelligent devices cannot be autonomous or context-aware if they are not connected. A key component of the internet of things is network connection, which allows a device to participate in the network. A network can have wired or wireless connection (Rimal, 2009). Users can finish computer activities utilizing services made available through the Internet thanks to cloud computing. The usage of intelligent devices in connection with cloud platforms has evolved into a sort of catalyst: cloud computing and intelligent devices are now interconnected. These are genuine future technologies that will have several advantages, Figure 1 depicts the overview of intelligent devices.