Abstract

In the age of the Internet of Things, Bluetooth Low Energy (BLE) has emerged as a critical enabling technology for low-power, short-range wireless communication (IoT). With its ability to provide dependable and energy-efficient connectivity, Bluetooth Low Energy (BLE) has become the foundation of a wide range of applications, from wearables and healthcare devices to smart homes and industrial automation. This paper provides a thorough examination of BLE technology, delving into its key features, performance characteristics, and security concerns. We begin by providing an overview of the Bluetooth Low Energy protocol stack, emphasizing its low power consumption and adaptive frequency hopping mechanisms. Following that, we compare BLE's data throughput, range, and latency to other low-power wireless communication technologies such as ZigBee and Wi-Fi.

The requirements of Communications infrastructures are diverse and depend on the application.

The focus is on :

- reliability

- power consumption

- coverage

- safety

- latency and/or price

BLE(Bluetooth Low Energy)

Bluetooth v4.0 known as Bluetooth Low Energy is ideal for applications requiring sporadic or periodic transfer of small amounts of data.

BLE is preferred for sensors, actuators, and other small devices requiring low power consumption.

It provides the same range as classic Bluetooth while consuming less power.

A newer Bluetooth 5.0 provides more speed and greater range

References

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