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The Internet of Things (IoT) plays a critical role in the digitalization of numerous industries, enabling increased automation, connectivity, and data collection in areas such as manufacturing, healthcare, transportation, and smart cities. This paper introduces a power-aware method for IoT networks using mobile stations and a dynamic power management strategy. The proposed method aims to improve power consumption and total packets received compared to the static-station balanced data traffic method. The proposed method uses a mobile station to dynamically adapt its transmission power based on the network conditions and the strength of the received signal. Furthermore, a dynamic power management strategy is employed to further decrease the power usage of the network by adjusting the power state of each station and IoT node according to its level of activity, data traffic, and communication requirements. Simulation results showed that the proposed method reduced power consumption by up to 64%, increased total packets received by 72%, and, as a result, increased network coverage and lifetime compared to the balanced data traffic method with static stations. This method can be employed in various IoT applications to improve power efficiency and increase network reliability.

2	Lightweight Security for IoT	Saurabh, Sharma, C., Khan, S., (...), Alabduallah, B.I., Ansari, A.A.	2023	Journal of Intelligent and Fuzzy Systems 45(4), pp. 5423-5439	0

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With the ever-increasing demand for IoT Devices which enable all objects to connect and exchange information in applications such as healthcare applications, Industry 4.0, smart cities and smart homes, etc. IoT devices play a crucial role in our day-to-day life like homes, offices, healthcare, wearable, and agriculture. With the development of IoT devices, securing device-to-device communication has attracted more and more attention and we need to ensure the privacy and security of data amongst these IoT devices. User authentication has emerged as a major security concern while connecting IoT devices and the cloud. Many authentication schemes like mutual authentication, group authentication have been proposed to ensure only authenticated users and with very high confidence we can rely on the decision-making process. Symmetric key based as well as Asymmetric key-based solutions have been proposed but due to the resource constraint nature of the IoT devices designing lightweight, robust, provably secure authentication schemes is a big challenge. This paper discusses the various authentication techniques designed for low-powered IoT devices and proposes a lightweight authentication scheme for IoT.

3	Blockwise Joint Detection of Physical Cell Identity and Carrier Frequency Offset for Narrowband IoT Applications *Open Access*	You, Y.-H., Jung, Y.-A., Lee, S.-H., Hwang, I.	2023	Mathematics 11(18),3812	0

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This paper presents a novel formulation for detecting the secondary synchronization signal in a narrowband Internet of Things communication system. The proposed approach is supported by a noncoherent algorithm that eliminates the need for channel information. A robust joint synchronization scheme is developed by decoupling the estimations of the physical cell identity and the carrier frequency offset. We derive the detection probability of the proposed physical cell identity detector and the mean squared error of the carrier frequency offset estimator, demonstrating their accuracy through simulation results. The performance of the proposed detection scheme is compared with that of existing detection schemes in terms of both estimation accuracy and computational complexity. Experimental results confirm that the proposed synchronization method exhibits superior performance while maintaining relatively lower complexity compared with benchmark methods.