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Towards building a secure NB-IoT environment on 5G Networks: A user and device access control system review

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Abstract

Narrowband Internet of Things (NB-IoT) provides low cost, low complexity, long battery life, increased coverage area, and increased density of connections per cell making it suitable for various use cases such as smart metering and smart cities. Billions of Internet of Things (IoT) devices were connected as of 2020 and the ever-growing need to urgently deploy NB-IoT solutions on 5G networks has led to the improvement of security aspects of the NB-IoT deployments on 5G receiving close attention. Network access security of NB-IoT on the Fifth Generation (5G) network was investigated by analysing the methods, strengths, and weaknesses of existing Internet of Things (IoT) security solutions. In addition, NB-IoT and 5G functional architectures were presented in this paper, as well as attacks faced by IoT devices at different layers. It was found that the current security solutions do not entirely offer robust access rights management of IoT users and devices. Thus, a holistic Access Control System (ACS) needs to be developed.