Ransomware: A Framework for Security Challenges in Internet of Things

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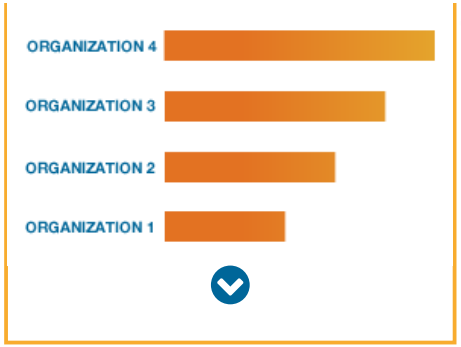

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Abstract:
With the increasing volume of smartphones, computers, and sensors in the Internet of Things (IoT) model, enhancing security and preventing ransom attacks have become a major concern. Traditional security mechanisms are no longer applicable due to the involvement of devices with limited resources, which require more computing power and resources. Ransomware is comparatively a new and cruel malware in cyberspace with higher rates of attacks around the world. Ransomware could encrypt entire data to make users unable to access their files and important information. In some cases, the system has been hostage completely by the hackers, and the user may receive a demand for ransom money using different resources o access of his/her own data/system. One of the problems associated with the Internet of Things is how to keep your smartphones secure and keep your data safe as most of the antivirus solutions are not useful in this case. This research concludes the impact of ransomware on the IoT, malware processes, and work on detecting and monitoring smartphone infections. The paper also discusses ransomware awareness to end-user with strategy to defeat it.

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Contents

I. Introduction

The recent rapid development in the Internet of Things (IoT) and its ability to provide different types of services have made it the one of the fastest-growing technologies with a major impact on social life and business environments [1]–[3]. The Internet of Things has increasingly entered all areas of modern human life, such as education, health care, and the business world, with storing confidential personal and business information, financial data transactions, brand development, and marketing. The widespread proliferation of connected devices in IoT has increased the demand for robust safety in response to the growing worldwide demand of connected devices and services [4]. The threats on IoT are increasing every day and there is a growth in the number and intensity of attacks. In addition to the increasing number of potential attackers and the size of networks, the tools available to potential attackers have become more advanced, efficient and effective [5]. Protection against threats and vulnerabilities is therefore necessary for the IoT to achieve its full potential [6]–[9]. Protection is characterized as a mechanism for protecting an object from physical damage, unauthorized access, theft or destruction, preserving high security and integrity of the object's data, and providing information about the object at any time [10]. Digital technology awareness and information techniques have helped cybercriminals to give constant and emerging threats to the computer users.

Authors

Figures

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Keywords