IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 3, Issue 2, April 2023
Impact Factor: 7.301

Exploring the Dark Side of IoT: A Survey on Blackhole Attacks

I. Dwaraka Srihith[1]
[1]Alliance University, Bangalore
A. David Donald[2], **T. Aditya Sai Srinivas**[2], **G. Thippanna**[2]
[2]Ashoka Women's Engineering College, Kurnool
D. Anjali[3]
[3]G. Pulla Reddy Engineering College, Kurnool

Abstract: *The Internet of Things (IoT) is rapidly growing and becoming an integral part of our daily lives. However, the increasing use of IoT devices also raises significant security concerns. One of the most pressing threats to IoT security is the blackhole attack, where an attacker can selectively drop or discard packets to disrupt communication between IoT devices. In this paper, we conduct a comprehensive survey on blackhole attacks in IoT networks. We explore the types of blackhole attacks, the methods attackers use to exploit vulnerabilities in IoT devices, and the potential impact of these attacks. We also review existing solutions and strategies for mitigating the effects of blackhole attacks in IoT networks. Through our survey, we provide a deeper understanding of the blackhole attack's nature and the potential implications for the security and reliability of IoT networks. Ultimately, our findings highlight the need for increased awareness of this type of attack and the implementation of robust security measures to protect IoT devices and networks.*

Keywords: Internet of Things (IoT), blackhole.

REFERENCES

[1]. L. J. Mhamane and A. V. Wadkar. (2018). "A survey on blackhole attack in Internet of Things (IoT) networks." 2018 4th International Conference on Computing Communication Control and Automation (ICCUBEA), Pune, India, pp. 1-6. doi: 10.1109/ICCUBEA.2018.8697378.

[2]. J. M. Mukras and A. M. Al-Nahari. (2021). "Blackhole Attack Detection in Internet of Things." Journal of Physics: Conference Series, Vol. 1849, No. 1. doi: 10.1088/1742-6596/1849/1/012019.

[3]. J. Lin, W. T. Tsai, and J. Li. (2018). "A Novel Hybrid Intrusion Detection System for Blackhole Attack in Internet of Things." IEEE Access, Vol. 6, pp. 11729-11737. doi: 10.1109/ACCESS.2018.2809045.

[4]. S. A. Alzahrani, S. A. M. Elshawi, and M. A. Baset. (2020). "Blackhole Attacks in Internet of Things: Taxonomy, Challenges, and Future Directions." IEEE Access, Vol. 8, pp. 187997-188017. doi: 10.1109/ACCESS.2020.3037075.

[5]. Mahalaxmi, G., R. Varaprasad, and T. Aditya Sai Srinivas. "Blockchain Solutions for IoT Devices Against DDoS Attacks: A Review." IUP Journal of Information Technology 18, no. 4 (2022): 25-46.

[6]. Y. Zhang, L. Wu, and X. Yang. (2019). "Detecting Blackhole Attacks in Internet of Things Using Deep Learning." 2019 18th IEEE International Conference on Cognitive Informatics & Cognitive Computing (ICCI*CC), Milan, Italy, pp. 121-128. doi: 10.1109/ICCI-CC.2019.8860497.

[7]. A. D. Donald and G. Murali, "Selective ensemble of Internet traffic classifiers for improving malware detection," 2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS), Chennai, India, 2017, pp. 3548-3551, doi: 10.1109/ICECDS.2017.8390121.

[8]. V. Jain and N. Goyal. (2018). "Blackhole attack detection and prevention mechanism for IoT networks." 2018 International Conference on Advances in Computing, Communications and Informatics (ICACCI), Bangalore, India, pp. 2567-2572. doi: 10.1109/ICACCI.2018.8554689.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 3, Issue 2, April 2023
Impact Factor: 7.301

[9]. N. R. Ferreira, A. C. Loureiro, and L. B. Oliveira. (2019). "A lightweight intrusion detection system for blackhole attacks in IoT networks." Journal of Network and Computer Applications, Vol. 139, pp. 24-37. doi: 10.1016/j.jnca.2019.03.019.

[10]. Donald, A. David, T. Aditya Sai Srinivas, K. Rekha, D. Anjali, and I. Dwaraka Srihith. "The Data Revolution: A Comprehensive Survey on Datafication."

[11]. S. Gautam, D. P. Sharma, and A. K. Solanki. (2020). "A survey on blackhole attacks in IoT-based smart city applications." Journal of Ambient Intelligence and Humanized Computing, Vol. 11, pp. 3631-3644. doi: 10.1007/s12652-019-01480-9.

[12]. H. P. Dhakal, P. Nepal, and R. K. Jha. (2019). "Securing IoT against blackhole attack using machine learning-based intrusion detection system." 2019 16th IEEE Annual Consumer Communications & Networking Conference (CCNC), Las Vegas, NV, USA, pp. 1-6. doi: 10.1109/CCNC.2019.8651723.

[13]. T. Zhang, M. Gao, and X. Li. (2021). "A lightweight detection scheme against blackhole attacks in IoT networks."

[14]. Ramasubbareddy, Somula, Evakattu Swetha, Ashish Kumar Luhach, and T. Aditya Sai Srinivas. "A multi-objective genetic algorithm-based resource scheduling in mobile cloud computing." International Journal of Cognitive Informatics and Natural Intelligence (IJCINI) 15, no. 3 (2021): 58-73.

[15]. T. Zhang, M. Gao, and X. Li. (2021). "A lightweight detection scheme against blackhole attacks in IoT networks." IEEE Internet of Things Journal, Vol. 8, No. 5, pp. 3739-3751. doi: 10.1109/JIOT.2020.3040004.

[16]. S. S. Sahu and S. S. Das. (2021). "A Comparative Study of Security Attacks in IoT Networks." 2021 7th International Conference on Computing Communication and Automation (ICCCA), Greater Noida, India, pp. 1-6. doi: 10.1109/ICCCA51230.2021.9456565.

[17]. N. A. Khan, A. Gani, A. Wahab, M. A. Imran, and M. A. Al-Qaness. (2020). "An Improved Detection Mechanism for Blackhole Attack in Internet of Things." IEEE Internet of Things Journal, Vol. 7, No. 7, pp. 6266-6281. doi: 10.1109/JIOT.2020.2997991.

[18]. Srinivas, T. Aditya Sai, A. David Donald, I. Dwaraka Srihith, D. Anjali, and A. Chandana. "The Rise of Secure IoT: How Blockchain is Enhancing IoT Security."

[19]. M. A. Al-Qaness, A. Gani, N. A. Khan, M. A. Imran, and M. A. H. Akhand. (2021). "Deep Learning Based Blackhole Attack Detection in Internet of Things." Journal of Network and Computer Applications, Vol. 178, pp. 102967. doi: 10.1016/j.jnca.2021.102967.

[20]. D. Chouhan and A. Kumar. (2020). "Security in IoT: A Review of Attack Types and Security Mechanisms." 2020 4th International Conference on Intelligent Computing and Control Systems (ICICCS), Madurai, India, pp. 217-221. doi: 10.1109/ICCONS48307.2020.9190962.

[21]. S. K. Shukla, S. K. Singh, and S. K. Patel. (2019). "Blackhole Detection and Prevention Mechanism for IoT Networks: A Survey." 2019 6th International Conference on Signal Processing and Integrated Networks (SPIN), Noida, India, pp. 535-540. doi: 10.1109/SPIN.2019.8711753.

[22]. Varaprasad, R., and G. Mahalaxmi. "Applications and Techniques of Natural Language Processing: An Overview." IUP Journal of Computer Sciences 16, no. 3 (2022): 7-21.