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Securing IoT Environments Using ZeroTier and OPNsense

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Abstract—The proliferation of Internet of Things (IoT) devices has revolutionized various domains, ranging from healthcare to industrial automation, by enabling seamless connectivity and data exchange. However, the exponential growth of IoT devices has unveiled significant security challenges, prompting the urgent need for robust security solutions. To address these challenges, this paper proposes the integration of Software-Defined Networking (SDN) technology to establish simulated private networks with end-to-end encryption tailored for IoT deployments. SDN enables centralized management and dynamic allocation of network resources, facilitating the implementation of customized security policies. Moreover, by virtualizing network infrastructure, SDN mitigates the scalability issues associated with traditional security solutions, making it adaptable to the dynamic nature of IoT environments.

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