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### A Proposal for Dynamic and Secure Authentication in IoT Architectures Based on SDN

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#### Abstract

The connectivity of private resources on public infrastructure, user mobility, and the advent of new technologies have added new client and server-side security requirements. Security is the major element of the Internet of Things (IoT) that will certainly reinforce an even greater acceptance of IoT by citizens and companies. Security is critical in this context given the underlying stakes. This paper aims to advance the thinking on authentication of connected objects by proposing an authentication mechanism that meets the needs of IoT systems in terms of security and performance. It is based on SDN (Software-Defined Networking), which refers to a set of advanced technologies that allow for centralized control of network resources. OTP (One-Time Password) is a type of authentication that could be useful in connected object environments and smart cities. This research work extends the principle of OTP and proposes a lightweight

authentication method using a new approach to OTP generation that relies on two parameters (Two-Factor Authentication, 2FA) to ensure the security of underlying systems. Subsequently, we leverage the combination of SDN and the 2FA algorithm to propose an adaptive authentication and authorization solution in the IoT network.

Please refer to PDF download for the full paper.

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