Which SOTA cloud testing approaches can smart grid penetration and performance testing benefit from? A systematic literature review.

Wildermuth Salome
Department of Informatics
University of Zurich
Zurich, Switzerland
salome.wildermuth@uzh.ch

***Index Terms*—Smart grid, IoT, Cloud testing, Cloud computing**

***Abstract*—The present document contains a review on the topic of cloud testing approaches that have been used in the domain of smart grid testing so far. Intelligent electrical supply systems represent an emerging field of research especially the related risks of cyber security attacks and processing high data volumes. This review emphasizes scientific papers from 2018 - 2023 about penetration and performance testing of cloud-based IoT devices, like smart meters, and metering infrastructure, like communication networks or data management systems. (https://www.blackridgeresearch.com/blog/what-is-a-smart-grid-what-are-the-major-smart-grid-technologies))**

I. Introduction

Smart grids have gained increased interest due to being a substantial part of smart cities evolving all around the globe. Smart grids are electrical grids that replace manual by automated, i.e. digital monitoring, controlling and steering mechanisms. While smart grids open doors to unprecedented possibilities, like many technological achievements, they have some downsides. Being part of a high-risk infrastructure, they are exposed to over-average number of attacks which, if they are successful, can cause huge damage on electrical infrastructure and in the end human beings.

deep vulnerabilities This review emphasizes scientific papers from 2018-2023 about penetration and performance testing of IoT devices, especially measuring instruments, like smart meters, can be performed in the cloud.

II. Related Work

... Test reference: [1]

III. Research Methodology

This document is a model and instructions for LaTeX. This and the IEEEtran.cls file define the components of your paper [title, text, heads, etc.]. *CRITICAL: Do Not Use Symbols, Special Characters, Footnotes, or Math in Paper Title or Abstract.

References

Testreference: [2]

References

[1] A. Bertolino, G. D. Angelis, M. Gallego, B. García, F. Gortázar, F. Lonetti, and E. Marchetti, "A systematic review on cloud testing," *ACM Computing Surveys (CSUR)*, vol. 52, no. 5, pp. 1–42, 2019.

[2] A. A. Smadi, B. T. Ajao, B. K. Johnson, H. Lei, Y. Chakhchoukh, and Q. Abu Al-Haija, "A comprehensive survey on cyber-physical smart grid testbed architectures: Requirements and challenges," *Electronics*, vol. 10, no. 9, 2021. [Online]. Available: https://www.mdpi.com/2079-9292/10/9/1043