

Strengthening Smart Grid Security Posture through Capability Hardware Enhanced RISC Instructions (CHERI) Architecture

With the increasing digitization of energy infrastructure, the vulnerability of critical systems to cyber threats has become a paramount concern. This work explores the application of Capability Hardware Enhanced RISC Instructions (CHERI) architecture to fortify the security posture of Smart Grid systems. CHERI, an extension of the RISC-V instruction set architecture, provides a novel approach to memory protection and compartmentalization, offering enhanced security guarantees against a spectrum of cyber threats. In addition to the conceptual framework, this work will outline potential applications and attack mitigations by CHERI within smart grid style systems.

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