UNIVERSITY OF SOUTH FLORIDA

Defense of a Doctoral Dissertation

A Secure Computing Platform for Building Automation Using Microkernel-based Operating Systems

by

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For the Ph.D. degree in Computer Science & Engineering

Through increasing industrial and technological advances, the control components of BAS are becoming increasingly interconnected. Along with potential benefits, the integration also introduces new attack vectors, which tremendous increase safety and security risks in the control system. This work focuses on the system level in the effort to provide a reliable computing foundation for the devices and controllers. Leverage on the preferred security features such as, robust modular design, small privilege code, and formal verifiability of microkernel architecture, this work describes a security enhanced operating system with built-in mandatory access control and proxy-based communication framework for building automation controllers.

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