

SCADA Resilience via Autonomous Cyber-Physical Agents

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There are two architectural vulnerabilities inherent in a SCADA/EMS, even with redundant control centers in hot-standby: (1) only one pathway in which to verify the correctness of data and telemetered commands, and (2) a unique, centralized process by which the physics of the operating power grid are verified and validated with respect to the accumulated data. This presentation introduces an autonomous multi-agent architecture that strengthens a SCADA/EMS system with respect to the above two vulnerabilities by applying a layer of distributed, autonomous agents, that can locally verify the cyber-physical properties of the power grid. They do this by leveraging existing information in the power system – information that can also originate from other non-transmission components of the grid – and by engaging in model-driven verification of the local physical properties of the grid.

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