Software Defined Networking for Smart Grid Resilience

Hui Lin¹, Xinshu Dong², Rui Tan²,³, Ravishankar K. Iyer²,³, Zbigniew Kalbarczyk¹,²
¹ Coordinated Science Laboratory, University of Illinois at Urbana Champaign, IL, USA;
² Advanced Digital Sciences Center, Illinois at Singapore;
³ School of Computer Science and Engineering, Nanyang Technological University, Singapore

**Software Defined Networking**

- Unprecedented flexibility, visibility, and QoS compared to "vertically-integrated black boxes" of old networking devices
- Enables various applications, e.g., optimize QoS, enhance network resilience, etc.

**SDN for the Grid: Opportunities & Risks**

- Example 1: detecting malicious command forwarding behaviors
- Example 2: filtering out flooded responses from control and field devices caused by spoofed requests

**Cyber-Physical Simulation & Testbed**

**Fault Injection on SDN-Enabled Grid**

**SDN with Synchronized Clock**

[Ongoing work] Investigating the practical benefits of having time-synchronized network updates

- Preventing varying degrees of packet loss
- Eliminating ambiguous states when access control policy is integrated into SDN switches
- Requiring less changes compared to packet versioning

**References**


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