

PROJECT NAME: DER Cybersecurity Standards Development

Last five digits of project number: 34216

Principal Investigator (PI): Jay Johnson

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BACKGROUND / INDUSTRY IMPACT

- This team is working directly with industry to develop consensus distributed energy resource (DER) cybersecurity recommendations and best practices that act as a basis for new/revised DER cybersecurity standards.

PROJECT OVERVIEW / OBJECTIVES

- The DER Cybersecurity Workgroup brings together interoperability and cybersecurity experts to discuss improvements to DER devices, gateways, aggregators, utilities and the US power system.

METHODS

- The group convenes subgroups to facilitate discussions between stakeholders and establish cybersecurity recommendations in the areas of device security, reference network architectures, data-in-flight requirements, access controls, etc.

KEY OUTCOMES / MILESTONES

- NREL report with recommendations for DER certification protocols.
- EPRI report on a DER communication reference architecture.
- Sandia report on improvements to trust and encryption in IEEE 2030.5.

CONCLUSION / REMAINING RISK

- Please join the subgroups to develop the next-generation of cybersecurity requirements for robust, secure DER interoperability!
- It is a challenge to find appropriate standards development organizations to codify the recommendations.

SYSTEMS INTEGRATION TRACK (DER Cybersecurity Topic????)

Creating DER cybersecurity recommendations and best practices to secure solar assets and act as the basis for future standards.

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SunSpec/Sandia DER Cybersecurity Workgroup



DER Devices & Servers

- Defined standardized procedure for DER vulnerability assessments.
- Leads: Danish Saleem (NREL) and Cedric Carter (MITRE)
- Publication: "Certification Procedures for Data and Communications Security of Distributed Energy Resources"
- Future work: Development within UL 2900-2-4 STP

Complete



Secure Network Architecture

- Created DER reference architecture best practice.
- Lead: Candace Suh-Lee (EPRI)
- Publication: "EPRI Security Architecture for the Distributed Energy Resources Integration Network: Risk-based Approach for Network Design"
- Future work: TBD

Complete



Data-in-Flight Requirements

- Defining encryption, authentication, and key management requirements.
- Lead: Ifeoma Onunkwo (Sandia)
- Publication: "Recommendations for Trust and Encryption in DER Interoperability Standards", another forthcoming.
- Future work: IEEE 1547.3 update, IEEE 2030.5 revisions.

Wrapping Up



Access Controls

- Establishing role-based access control recommendations for IEEE 1547-2018 protocols.
- Lead: Jay Johnson (Sandia)
- Topics: Access control taxonomy, password control
- Planned Publication: "Recommendations for DER Access Controls" and IEEE 2030.5, IEEE 1815, and Modbus implementation recommendations.

Active Subgroup



Patching Requirements

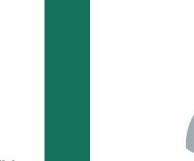
- Establishing patching guidelines for DER devices and communication equipment.
- Starting April 2020. Lead: TBD
- Topics: Patching update rates, maintenance guidelines, etc.

Q3 FY20

FY21

Utility/Aggregator Auditing Procedure

- Creating recommended auditing practices for DER networks.
- Planned for Oct 2020. Lead: TBD
- Topics: Step-by-step auditing procedure for internal or external compliance review. Recommend data for attack forensics.



Additional project contributors: NREL

Workgroup information: <https://sunspec.org/cybersecurity-work-group/>
Email: support@sunspec.org to participate!