

UUDEX: Universal Utility Data Exchange



Pacific Northwest
NATIONAL LABORATORY

Updating the standard for communication of data and information between organizations

The standard used for sharing power system measurement data between utilities in the electric power sector is the Inter-control Center Communications Protocol (ICCP). ICCP is over 20 years old and uses protocols and technology that were state-of-the-art in 1995 when ICCP was initially developed. As a result, ICCP is an inflexible, difficult-to-configure toolset that includes security as a rarely enabled add-on. This project replaces ICCP, taking advantage of current methods of security, data transport, information modeling, and configuration. This new information exchange paradigm provides a flexible, dynamic, and scalable platform that allows energy delivery systems (EDS) operators to more easily exchange measurement and operational data; replace the Reliability Coordinator Information System (RCIS) that is used to post and share operating information between control centers in real time; provide a mechanism to exchange disturbance reports; share structured threat information, including firewall rule updates and vulnerability and patch notifications; and support other information exchanges commonly found between control centers. The information modeling flexibility enables the system to rapidly adapt and respond to changing information exchange needs and can be easily extended to other energy sub-sectors or uses. The open and flexible information transport protocols enable the rapid reconfiguration or addition of new information exchange partners.

KEY TAKEAWAYS

- Develops a secure, scalable, and flexible information exchange approach to replace communication between control centers
- Includes cybersecurity as an inherent capability instead of an add-on
- Designs a transport-agnostic information exchange



OUTCOME

This project replaces the existing ICCP information exchange protocol and outdated communication assumptions between EDS control centers with modern model-based information exchange architectures and protocols. This communications protocol can be dynamically extended or upgraded with new data elements, communication recipients, or underlying protocols with minimal application code change, configuration overhead, or resources. Most critically, the protocol's built-in security features enforce secure communication practices by design, including the ability for the data owner to control who receives the data.

PARTICIPANTS

ROLE



Leads the development effort of the specification and laboratory prototype of the UUDX protocol.



Provides technical expertise on communication protocols and methods used in EDS. Provides knowledge on use of power system model infrastructure for information exchange.



Provides technical expertise on cyber and physical security reporting requirements, and cybersecurity implementation recommendations.

CONTACT INFORMATION

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CYBERSECURITY FOR ENERGY DELIVERY SYSTEMS (CEDS)

CEDS projects are funded through DOE CESER, which aims to enhance the reliability and resilience of the nation's energy infrastructure by reducing the risk of energy disruptions due to cyberattacks.

Website: <https://www.energy.gov/ceser>

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