# A Modern IEEE 2030.5 Client Implementation

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# Abstract

IEEE 2030.5 is a standardised application-layer communications protocol between end-user energy devices, and electric utility management systems. This thesis will analyze how modern programming techniques have been used to produce a safe, secure, robust, reliable, and open-source implementation of an IEEE 2030.5 client library for use in end-user energy devices.

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# Abbreviations

**API**  Application Programming Interface

**ARENA**  Australian Renewable Energy Agency

**CPUC**  California Public Utilities Commission

**CPU**  Central Processing Unit

**CSE**  Computer Science and Engineering

**CVE**  Common Vulnerabilities and Exposures

**DER**  Distributed Energy Resources

**DNS**  Domain Name System

**DNSP**  Distribution Network Service Provider

**DNS-SD**  Domain Name System - Service Discovery

**ECC**  Electric Curve Cryptography

**EPRI**  Electric Power Research Institute

**EXI**  Efficient XML Interchange

**FS**  Function Set

**HAN**  Home Area Network

**HTTP**  Hypertext Transfer Protocol

**IEEE**  Institute of Electrical and Electronics Engineers

**I/O**  Input / Output

**IoT**  Internet of Things

**IP**  Internet Protocol

**OOP**  Object-Oriented Programming

**OS**  Operating System

**REST**  Representational State Transfer

**RSA**  Rivest-Shamir-Adleman

**SEP**  Smart Energy Profile

**SIP**  Smart Inverter Profile

**TCP**  Transmission Control Protocol

**TLS**  Transport Layer Security

**UDP**  User Datagram Protocol

**UNSW**  University of New South Wales

**XML**  Extensible Markup Language

**XSD**  XML Schema Definition

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