



# DERSync Aggregator

## Executive Summary

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The CSIP-Certified DERSync IEEE 2030.5 CSIP Aggregator is a production-grade, highly extensible software platform designed to manage **Distributed Energy Resources (DERs)** and **Electric Vehicle Supply Equipment (EVSE)** at scale. By implementing the full **IEEE 2030.5 Common Smart Inverter Profile (CSIP)** and CSIP-AUS, our aggregator bridges the gap between utility grid operators and modern energy fleets. Whether you require a source-code license to run within your own secure cloud environment or a fully hosted aggregation service managed by DERSec, our solution provides the security, scalability, and protocol compliance necessary for today's energy markets.

## Key Capabilities

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### 1. Full IEEE 2030.5 Protocol Compliance

Our aggregator provides a complete client-side implementation of the **IEEE 2030.5 standard**. This ensures seamless interoperability with **utility servers (DERMS)** for time synchronization, telemetry posting, and event-based control.

### 2. Multi-Protocol Architecture

The software features a modular driver system that allows it to communicate with a diverse range of hardware via various southbound interfaces:

- ▶ **EVSE Support** — OCPP and MQTT connectors for vehicle charging fleets
- ▶ **DER Equipment** — SunSpec Modbus and legacy DER support for existing inverter assets
- ▶ **Smart Loads** — BACnet support for building automation
- ▶ **Site Controllers** — DNP3, OPC UA, and IEC 61850 protocols
- ▶ **Modern Backends** — High-throughput Kafka and SQL/NoSQL connectors

### 3. Advanced Disaggregation & Routing

The intelligent disaggregation layer allows you to treat a vast fleet of heterogeneous devices as a **single virtual resource** or a series of managed groups. It handles the complex **routing of utility commands** (e.g., Power Limits, Volt-Var, Volt-Watt, Power Factor) to the specific end devices capable of responding.

### 4. Cloud-Native & Production-Ready

- ▶ **Robust Threading** — High-concurrency polling for low-latency response
- ▶ **State Checkpointing** — Automatic serialization and crash recovery
- ▶ **Management API** — RESTful API with Swagger UI for monitoring
- ▶ **Web Management** — Dashboard for device status, telemetry, and logging

## Technical Highlights

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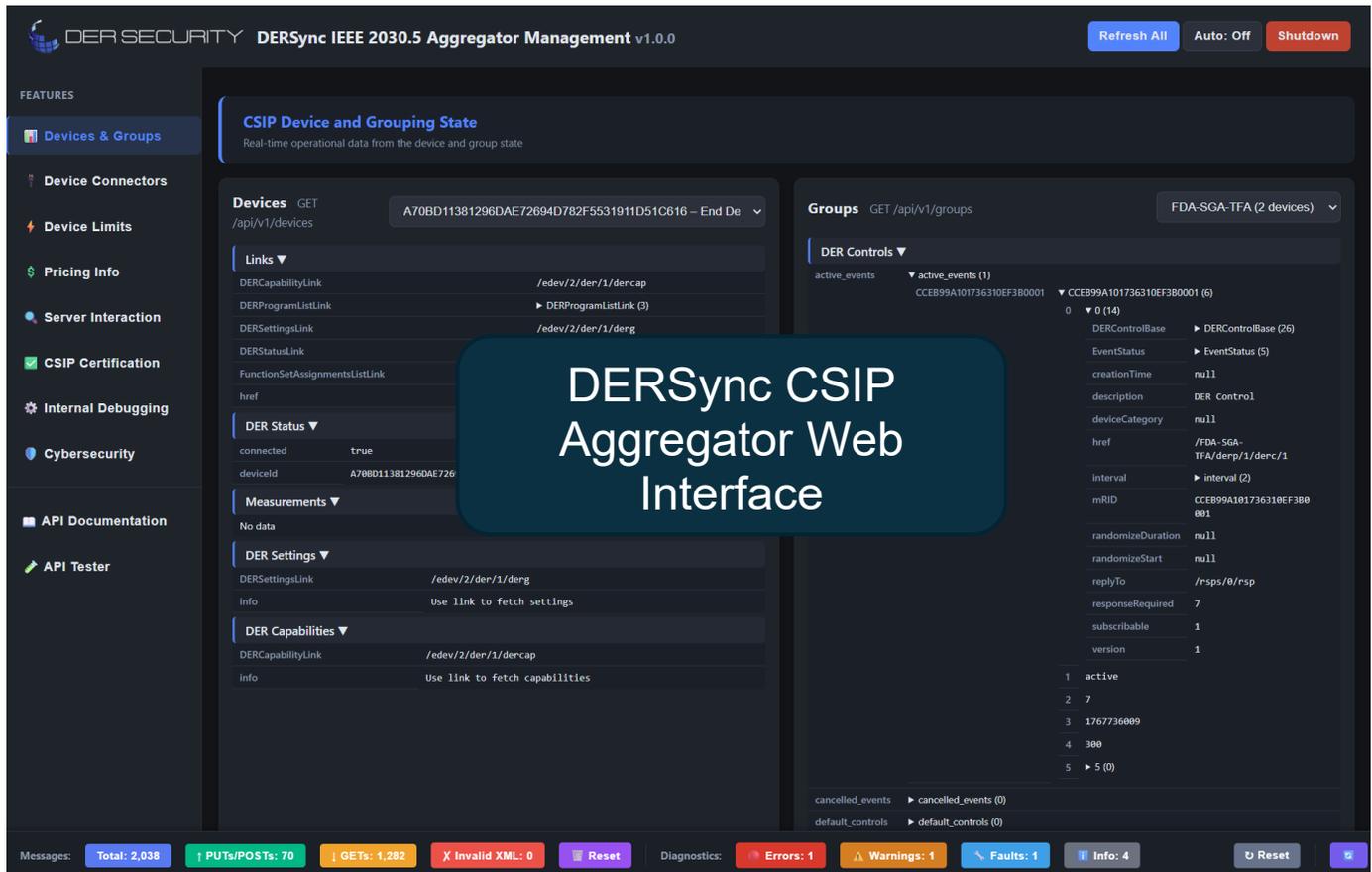
- ▶ **Utility-Ready** — CSIP-certified IEEE 2030.5 aggregator for direct utility integration
- ▶ **Security First** — Integrated PKI certificate management and TLS 1.2/1.3 encryption
- ▶ **Data Integrity** — Built-in XSD schema validation for all payloads
- ▶ **Fleet Scalability** — Support for hundreds of thousands of devices
- ▶ **Protocol Support** — IEEE 1547-2018 functions including frequency-droop, watt-var, active power limits
- ▶ **Cybersecurity** — Optional cyber-physical intrusion detection for CSIP server and end devices

## Flexible Deployment Models

Model	Best For	Key Benefit
Software License	Large Enterprises & Utilities	Complete control, no vendor lock-in, and private cloud security.
Managed Hosting	Fleet Operators & Aggregators	Fast time-to-market; DERSec handles infrastructure & updates.
Hybrid Integration	Custom Hardware OEMs	Use our core engine with your proprietary device connectors.

## UI Visibility, CI/CD Integration, and REST API

DERSync CSIP Aggregator includes a comprehensive REST API and a user-friendly website for visualizing end devices, grouping, controls, and other CSIP operations.



## Why DERSec?

In a rapidly evolving regulatory landscape, the DERSync CSIP Aggregator ensures your fleet remains compliant and market-ready. Our “developer-first” approach means the code is clean, documented, and ready to be integrated into your existing energy management ecosystem. DER Security was founded in 2022 as a spin-off of the SunSpec Alliance, a communication standards developer for the distributed energy industry. With leadership from the SunSpec Alliance, U.S. National Laboratories, and the power systems industry, the DERSec team is delivering the world’s most capable DER tools.

**Contact DER Security today to schedule a technical demo**  
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