Product Brief: DERSync IEEE 2030.5 CSIP Aggregator
High-Performance Cloud Aggregation for DER & EVSE Fleets

Executive Summary

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

1. Full IEEE 2030.5 Protocol Compliance for CSIP and CSIP-AUS
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:** Built-in 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 for enterprise-level interfaces.

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. Device-level routing links each end device to a specific connector to get measurement data and push grid-support controls.

4. Cloud-Native & Production-Ready
Designed for the modern cloud (AWS, Azure, GCP), the aggregator includes:
- **Robust Threading:** High-concurrency polling and posting for low-latency response.
- **State Checkpointing:** Automatic serialization and crash recovery to ensure zero data loss.
- **Management API:** A RESTful API with Swagger UI for real-time monitoring and fleet diagnostics.
- **Web Management:** Detailed dashboard for device status, telemetry, and logging configuration.

Flexible Deployment Models

Model	Best For	Key Benefit
Source Code 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 the infrastructure and updates.
Hybrid Integration	Custom Hardware OEMs	Use our core engine with your proprietary device connectors.

Technical Highlights

- **Utility-Ready**: CSIP-certified IEEE 2030.5 aggregator is ready for direct integration with utility systems.
- **Security First:** Integrated PKI certificate management and TLS 1.2/1.3 encryption.
- **Data Integrity:** Built-in XSD schema validation for all incoming and outgoing payloads.
- **Fleet Scalability:** Support for hundreds of thousands of devices through modular disaggregation.
- **Protocol Support:** Covers IEEE 1547-2018 functions including freq-droop, watt-var, and active power limits.
- **Cybersecurity:** Optional cyber-physical intrusion detection protection for CSIP server and end devices.

DERSync CSIP Aggregator Web Interface
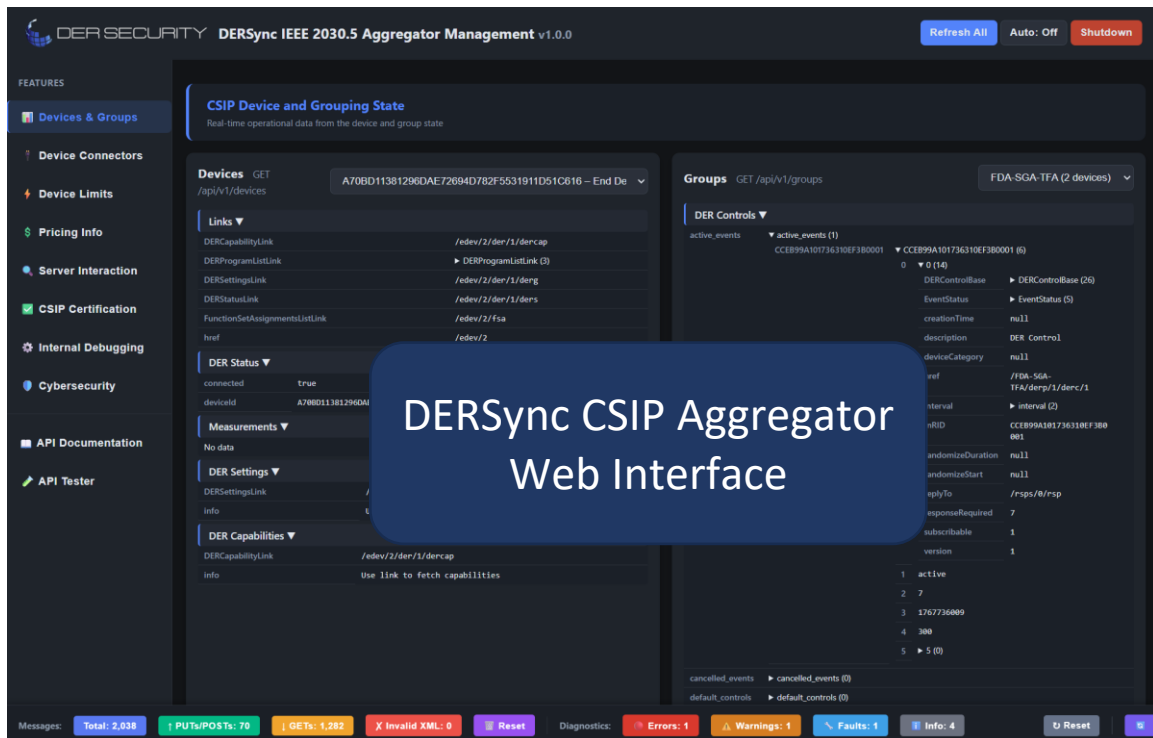
Why DERSec?

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 DERSec today to schedule a technical demo.