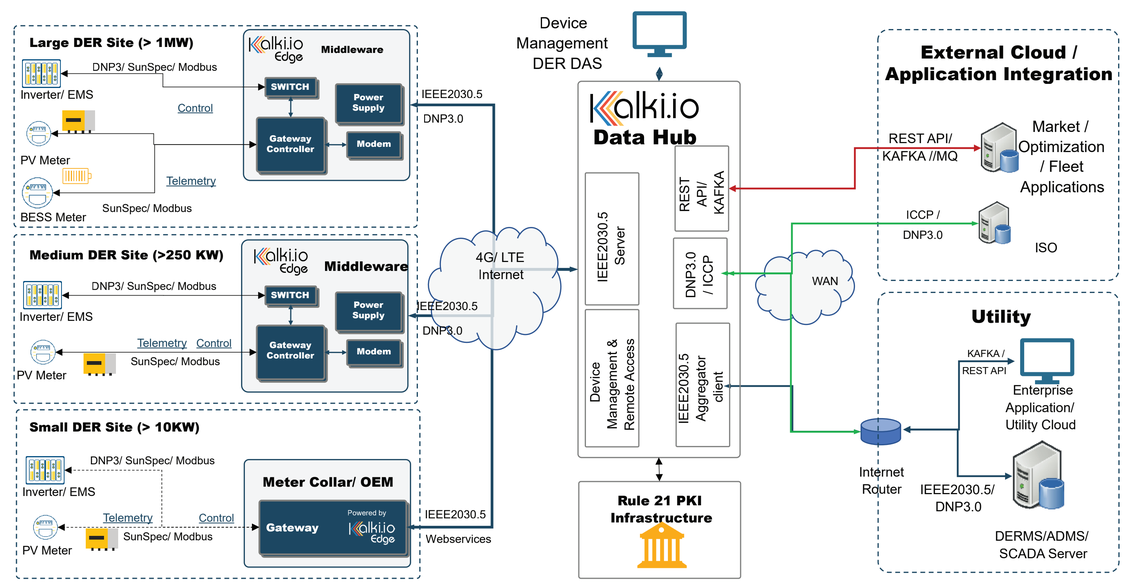
Experiences with DER Interconnection using **IEEE 2030.5** / CSIP Customer Owned Telemetry at PG&E

Rule 21 Customer Owned Telemetry Mandate

- Requirement by the California Public Utilities Commission (CPUC) for DERs above 1 MW to provide telemetry data to Utility SCADA systems.
- Adoption of the IEEE 2030.5 protocol, based on IEEE1547-2018, for data transmission, in alignment with CSIP (common smart inverter profile).

Methods:

- A Pilot site was selected for Customer Owned Telemetry deployment. The deployment consisted of DER Telemetry NEMA4 Panel with security hardened ASE DER gateway, GE MDS Cellular Modem, Power Supply, FAN, Network Switch, and accessories.
- The pilot helped validate interconnection requirement, SCADA data exchange, architecture, field deployment, interoperability, and cybersecurity expectations.
- Testing interoperability with PV Inverters, site Meters from various manufactures.
- Validated telemetry and control over IEEE 2030.5 from Utility to DER Telemetry Unit and from the Telemetry Unit to the Inverter / Meters over SunSpec Modbus
- Tested & Validated device and system level security
- Validated the capability of the DER Telemetry Gateway to prevent unauthorized software installation using Manufacture PKI and TPM 2.0
- Validated Role Based Access Control using IEC62351-8 for remote management and secure device access
- Validated secure communication over TLS 1.2 and X.509 PKI certificates for utility server communication over IEEE2030.5
- ASE demonstrated pre-engineering, delivery, and remote commissioning of Customer Owned Telemetry.



Key Takeaways

- This paper presents a comprehensive overview of complying with Rule 21 and integrating DERs with Utility systems.
- Discussion of the journey, lessons learned, and insights gained from the implementation of Customer Owned Telemetry.
- ASE's successful deployments and the introduction of the DER Aggregator solution.
- Emphasis on design considerations, security expectations, and effective resolution of integration and operational challenges.