COMPAS CLEANS UP IEC 61850 DATA MODEL

LF ENERGY CoMPAS

SUMMARY

This case study focuses on the implementation of the CoMPAS software tool developed by LF Energy for the Real Time Interface (RTI) project initiated by Dutch Grid Operators and market parties. The RTI aims to enable grid operators to limit power generation by customers in order to address capacity constraints on the electricity grid. The RTI specifically caters to customers in category B (1 - 50 MW) as defined in the European Code Requirements for Generators (RfG). The initial challenge faced by the project team was the presence of unnecessary data objects and information in the IEC 61850 data model, which was being used to define the signals exchanged between grid operators and customers. CoMPAS was utilized to validate and clean up the data model, resulting in accelerated development of the RTI.
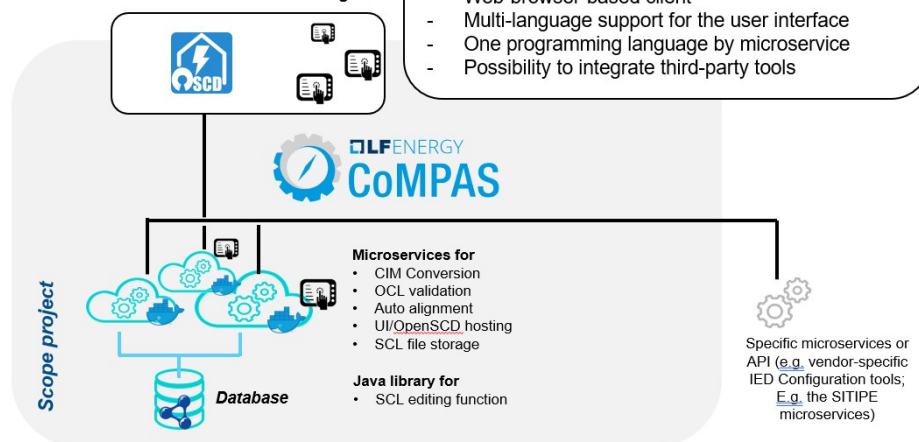
CHALLENGE

The development of the RTI encountered a significant challenge in the form of an IEC 61850 data model that contained a substantial amount of unnecessary data objects and information. This complexity hindered efficient implementation and utilization of the model, requiring a solution that could validate and clean up the data model effectively.

SOLUTION

CoMPAS was employed to address the challenges associated with the IEC 61850 data model. CoMPAS offers built-in functions that facilitate the validation and cleanup of data models, making it accessible even to users without extensive knowledge of the IEC 61850 protocol. The tool also enables the representation of the XML-based data model in a user-friendly and easily readable format. By leveraging CoMPAS, the project team was able to streamline the data model, removing unnecessary elements and optimizing its structure.

RESULTS

The implementation of CoMPAS had a significant impact on the development of the RTI project. The tool's intuitive interface and built-in validation functions allowed for efficient data model cleanup, expediting the overall development process. The accessibility of CoMPAS, even to users with limited expertise in the IEC 61850 protocol, simplified the validation and optimization tasks, resulting in faster progress. The impact of CoMPAS on the project's efficiency and progress can be quantified by measuring the time saved in data model cleanup and optimization, as well as the reduction in errors and inefficiencies resulting from a streamlined data model.

FUTURE PLANS

The RTI project is currently in its beta phase, and lab and field tests are being conducted to refine the technical specification and finalize the interface. During these tests, new findings are expected to arise that will impact the IEC 61850 data model of the RTI. CoMPAS will continue to play a crucial role in analyzing these findings and facilitating necessary changes to the data model. The goal is to incorporate the improvements identified during the testing phase and publish the final version of the technical specification in the third quarter of 2023. As the RTI progresses towards large-scale rollout, CoMPAS will likely be utilized further to support the ongoing development, implementation, and optimization of the interface.

In conclusion, the utilization of LF Energy's CoMPAS software tool for cleaning up the IEC 61850 data model in the RTI project provided significant benefits, including enhanced efficiency, streamlined development, and improved accuracy. CoMPAS proved to be a valuable asset in the project's journey towards creating a robust and effective real-time interface for grid operators and customers.

"As utilities/integrators struggle with implementing the IEC 61850 data model to ensure interoperability between equipment, open source solutions like CoMPAS are providing tooling to reduce complexity and speed time to market for the benefit of the utilities and their customers."

Sander Jansen
Product Owner, Virtual Substations at Alliander and Contributor to CoMPAS

Learn more about CoMPAS, access the GitHub repository and subscribe to the mailing list at https://lfenergy.org/projects/compas/

Architecture overview

Principles
- Microservices front-end/backend
- Cross-platform
- Database for storage
- Web-browser-based client
- Multi-language support for the user interface
- One programming language by microservice
- Possibility to integrate third-party tools

User interface and manual front-end editing

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Scope project

Microservices for
- CIM Conversion
- OCL validation
- Auto alignment
- UI/OpenSCD hosting
- SCL file storage

Java library for
- SCL editing function

Database

Specific microservices or API (e.g. vendor-specific IED Configuration tools; E.g. the SITIPE microservices)