Background

IEC 61850- Overview

![Information Model Hierarchy](image)

CONCEPTUAL SERVICE MODEL OF THE ACSI

IPsec Secured Substation Architecture

![IPsec Tunnels](image)

Research Plan

To merge components of IEC 61850 with the above substation architecture and achieve a better model for substation communication

Goals

- Develop client and server interface to achieve interaction between service and data models
- Implement IPsec security on top of it

Research Results

- Use of structure arrays to build information model hierarchy
- Implementation of service functions operating on various models

ACSI services 7-2
- LogicalDeviceDirectory
- GetAllDataValues
- GetDataValues
- SetDataValues
- GetDataDefinition
- GetDatasetvalues
- SetDatasetvalues
- CreateDataset
- DeleteDataset

- Modeling of report and log models
- Interaction between server and client interface via stream sockets

Fundamental Questions/Challenges

- Study the latency challenges involved at application level
- Implement access control feature of IEC 61850
- Explore the possibilities of attacks on this architecture
- Improve the existing code to counter these challenges

Related Work/Interaction with Other Projects

- Detailed study of IEC 61850 protocol developed at SISCO, Inc.
- Study of security hub architecture