D
USE CASE 7 – PROTECTION ENGINEER VERIFIES PROTECTION MODELS FROM IEC 61850 CONFIGURATION

Use Case Title

Protection Engineer verifies protection models from IEC 61850 configuration

Use Case Summary

The application reads back the configuration from an implemented 61850 substation and reverse engineers the protection schemes including overlapping protection zones. This enables the protection engineer to verify whether the implementation is what it should be

Use Case Detailed Narrative

Read back the configuration from an implemented 61850 substation and reverse engineer the protection schemes including overlapping zones to verify whether the implementation is what the protection engineer thinks it is...

- The protection engineer uses network management application to read the configuration files from IEC 61850 Based IEDs.
- Network Management application then uses CIM capabilities to reverse engineer the protection schemes
- Application draws a picture of the protection zones that have been commissioned.
- Protection engineer reviews the protection zones to validate that they have been implemented as designed.

Business Rules and Assumptions

ACTORS

Actor Name	Actor Type (person, device, system etc.)	Actor Description
Network Protection Application	System	System uses CIM and IEC 61850 data to read, create and verify protection settings files.
Protection Engineer	Person	Designs, tests, verifies, and analyses protection schemes (could be a team)
Field Device Communication Interface	System	Generic architectural component that communicates with substation and field devices using IEC 61850. This system can translate IEC 61850 services to GID services.
CIM Model Server	System	

STEP BY STEP ANALYSIS OF EACH SCENARIO

Scenario Description

Triggering Event	Primary Actor	Pre-Condition	Post-Condition
(Identify the name of the event that start the scenario)	*(Identify the actor whose point-of-view is primarily used to describe the steps)*	*(Identify any pre-conditions or actor states necessary for the scenario to start)*	*(Identify the post-conditions or significant results required to consider the scenario complete)*
Need to verify protection settings or update model	Protection Engineer	Existing CIM Protection Model	Protection Model is updated

Steps for this scenario

Step #	Actor	Description of the Step	Additional Notes
#	*What actor, either primary or secondary is responsible for the activity in this step?*	*Describe the actions that take place in this step including the information to be exchanged. The step should be described in active, present tense.*	*Elaborate on any additional description or value of the step to help support the descriptions. Short notes on architecture challenges, etc. may also be noted in this column.*
1	Network Protection Application	Network Protection Application reads configuration data from IEC 61850 based devices.	Data could be retrieved by an Enterprise Communication Gateway and made available to the Network Protection Application.
2	Network Protection Application	Network Protection Application updates existing CIM representation with IEC 61850 based configuration data.	Harmonization – 61850 to CIM

Step #	Actor	Description of the Step	Additional Notes
3	Network Protection Application	Network Protection Application displays protection zones based on device settings.	
4	Protection Engineer	Protection Engineer reviews the protection settings.	
5	Protection Engineer	Protection Engineer validates the protection settings are implemented as designed.	

REQUIREMENTS

Functional Requirements

Functional Requirements	Associated Scenario # (if applicable)	Associated Step # (if applicable)

Non-functional Requirements

Non-Functional Requirements	Associated Scenario # (if applicable)	Associated Step # (if applicable)

Business Requirements

Business Requirement	Associated Scenario # (if applicable)	Associated Step # (if applicable)
The protection function is essential to the safe and reliable operation of the electrical utility grid. With the increased number of IEDs, the ability to manage these IEDs and verify their correction operation is vital to electric utility operation.	1	5