IEC 61850 SCL Editor

Datasheet– Rev. 3

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CP_R2_019 F

straton



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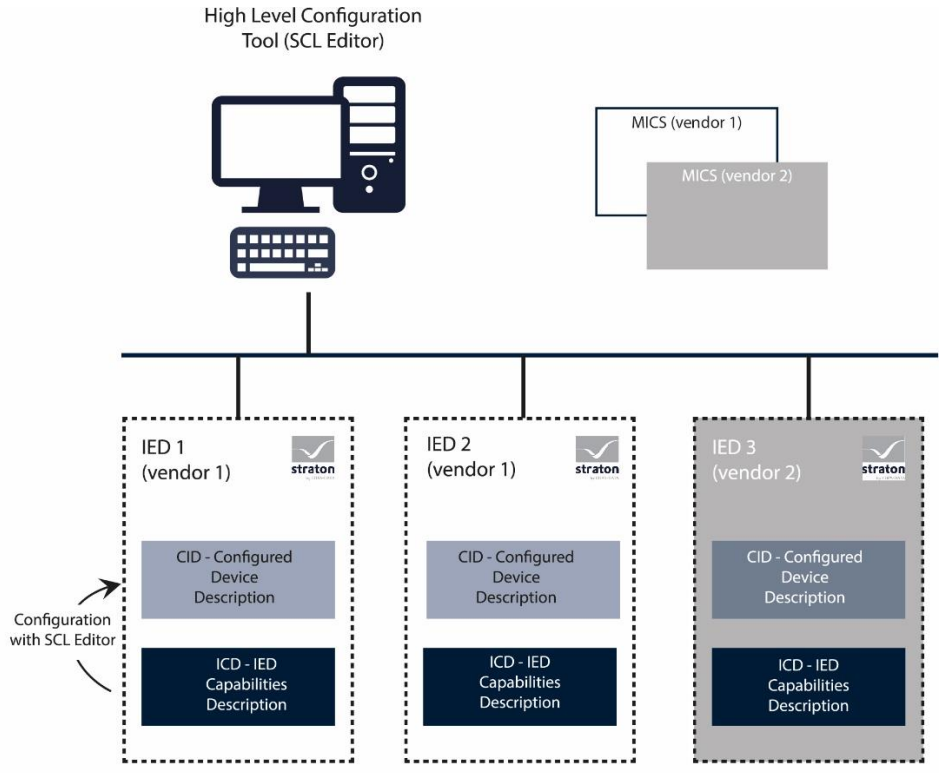
1. Overview

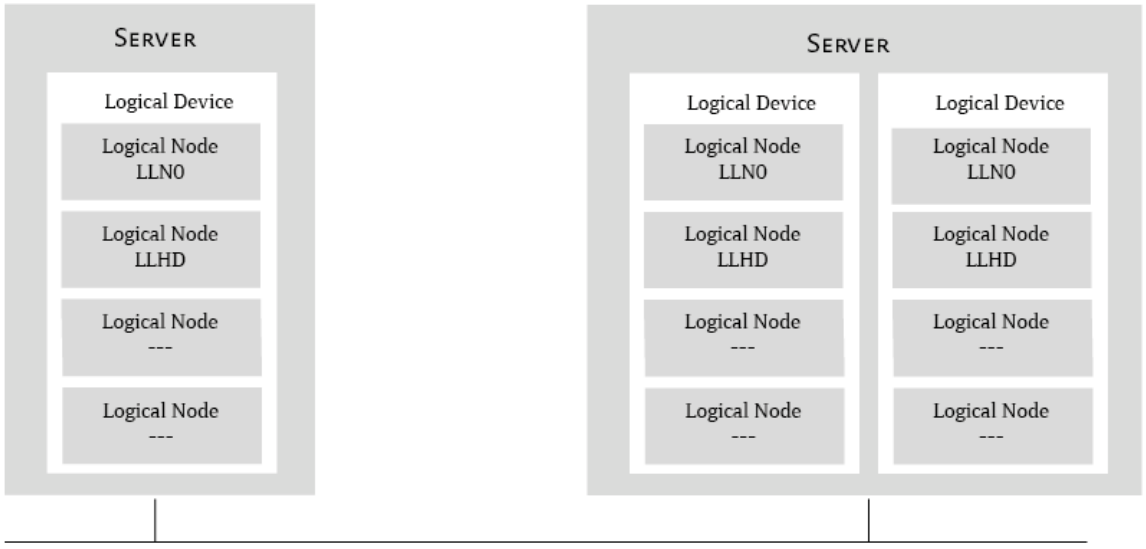
COPA-DATA provides a configuration tool for the Substation Configuration Language (SCL) defined by the IEC61850-6 standard. The SCL editor is integrated in the straton Integrated Development Environment (IDE) or can be integrated in any framework using the controls/widgets provided by COPA-DATA.

- Modern IEDs are adaptable to a lot of different tasks, this means that several capability subsets for the same device must be defined, each allowing to instantiate/use all of the contained capabilities.
- To be able to exchange the device descriptions and system parameters between tools of different manufacturers in a compatible way, IEC 61850-6 defines a substation configuration language (SCL).
- These capabilities are described in the ICD
- The MICS (Model Implementation Conformance Statement) document contains the detail of the device capabilities



1.1. Architecture

- A logical Device describes an IED (Intelligent Electrical Device)
- A logical Node describes an IEC61850 Object



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1.2. ICD file (.icd)

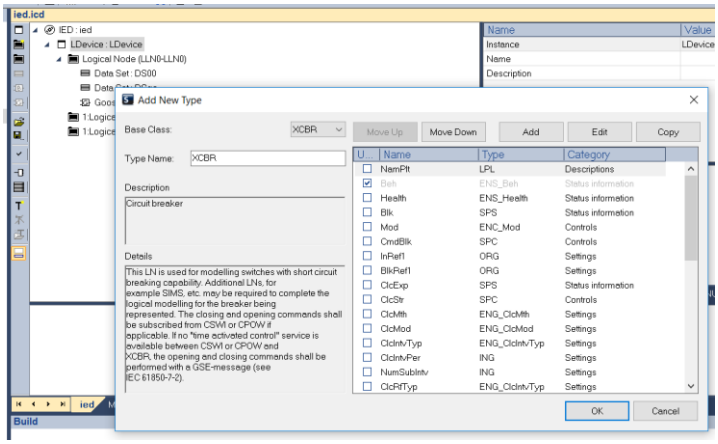
The ICD file contains description of the object supported by the device with the following architecture:

- Logical device description
  - Logical Nodes 1
    - LLN0: Logical Node Zero (Mandatory)
    - LPHD: Logical Node Physical Device (Mandatory)
    - …. any Logical Node required for the device from the list of standard Logical Node defined by the IEC61850 for Energy and IEC61400 for Windmill.
  - …
  - Logical Nodes n
- Data sets:
  - Groups of data objects and/or data attributes.
    - Create Report Control Block (UCBR/RCBR)
    - Create GOOSE communication
- GOOSE
  - Communication with other IED
  - A fast communication protocol between servers.
  - The Ethernet frames can be tagged with a priority to allow some switches process higher priority frames faster.
- URCB (unbuffered report control blocks)
  - The unbuffered are sent to the client and destroyed immediately by the server after sending without any acknowledgment.
  - The server sends a block immediately after value or quality change.
- BRCB (buffered report control blocks)
  - The buffered are sent to the client till the reception of the acknowledgment from the client.
  - They are resent as long as the client accepts them.
  - They are stored in case the communication between server and client fails.
  - The client asks for the buffered reports since a given number only if he detects a connection failure or (some) lost reports, otherwise the BRCBs act like URCBs and the server sends a block immediately after value or quality change.

2. straton SCL Editor

straton Substation Configuration Language editor (SCL editor) is a performing and easy to use assistant to create ICD and CID files. It contains all the capabilities and description of configuration predefined for an IED (Intelligent Electronic Device) or a BCU (Bay Control Unit).

- Save time with integrated SCL editor
- Create IED Capabilities Description files (ICD)
- Create Instantiated IED Description files (IID,CID)
- Logical node library for IEC61850-7-4 / IEC61400-25
- Create and configure Datasets
- Create and configure GOOSE
- Create and Configure Buffered and Unbuffered Report Control Blocks (RCBs)

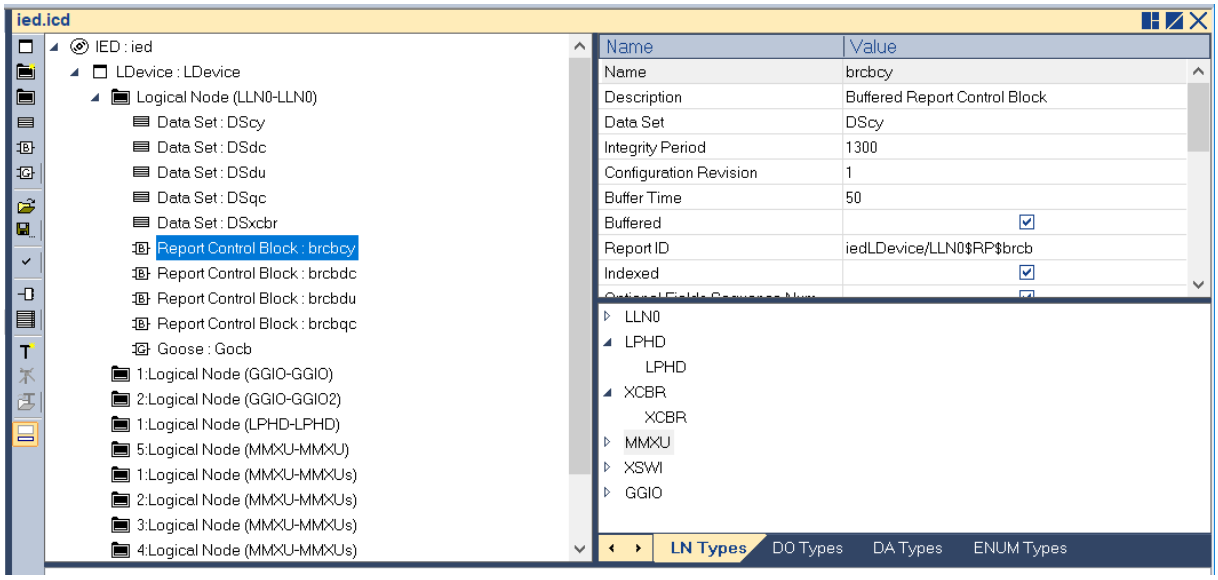


xml configuration file

```
- <DOType id="INS_1_PhyHealth" cdc="INS">
    <DA name="stVal" fc="ST" bType="INT32" dchg="true" />
    <DA name="q" fc="ST" bType="Quality" qchg="true" />
    <DA name="t" fc="ST" bType="Timestamp" />
  </DOType>
- <DOType id="SPS_1_Proxy" cdc="SPS">
    <DA name="stVal" fc="ST" bType="BOOLEAN" dchg="true" />
    <DA name="q" fc="ST" bType="Quality" qchg="true" />
    <DA name="t" fc="ST" bType="Timestamp" />
  </DOType>
- <LNodeType id="LPHD1" lnClass="LPHD">
    <DO name="PhyNam" type="DPL_1_PhyNam" />
    <DO name="PhyHealth" type="INS_1_PhyHealth" />
    <DO name="Proxy" type="SPS_1_Proxy" />
  </LNodeType>
- <DAType id="INCSelectWithValue_2">
    <BDA name="ctlVal" bType="INT32" />
    <BDA name="origin" bType="Struct" type="Originator_1" />
    <BDA name="ctlNum" bType="INT8U" />
    <BDA name="T" bType="EntryTime" />
    <BDA name="Test" bType="BOOLEAN" />
    <BDA name="Check" bType="Dbpos" />
  </DAType>
- <DAType id="INCOperate_2">
```

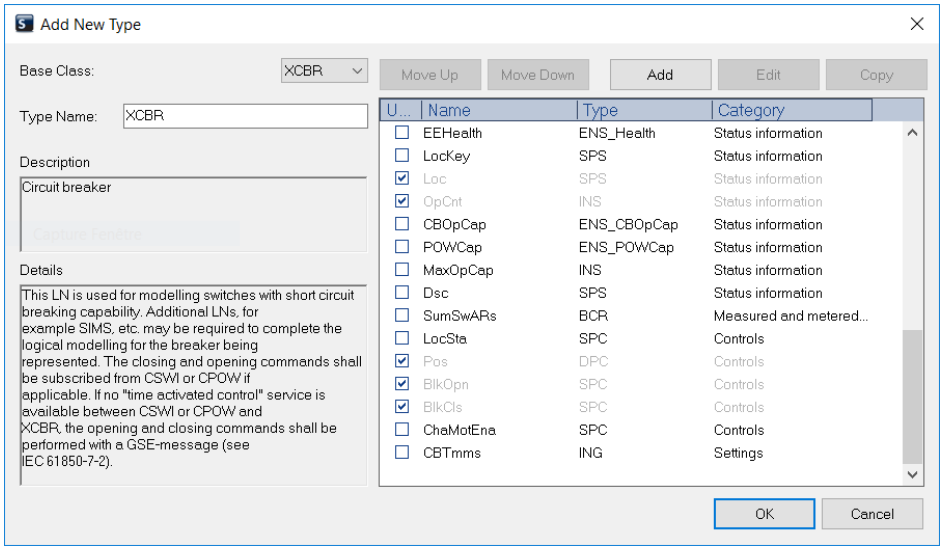
2.1. Create ICD and CID files

Create IED Capabilities Description files (ICD) in few click and define the configuration setting



2.2. Create Logical Nodes according to your requirements

Each Logical node contains all mandatories attributes and optional can be added by a simple click.



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3. Controls/Widgets

The SCL editor can be integrated in an existing framework as well as other tool from COPA-DATA.

