

# What is a Logical Node?

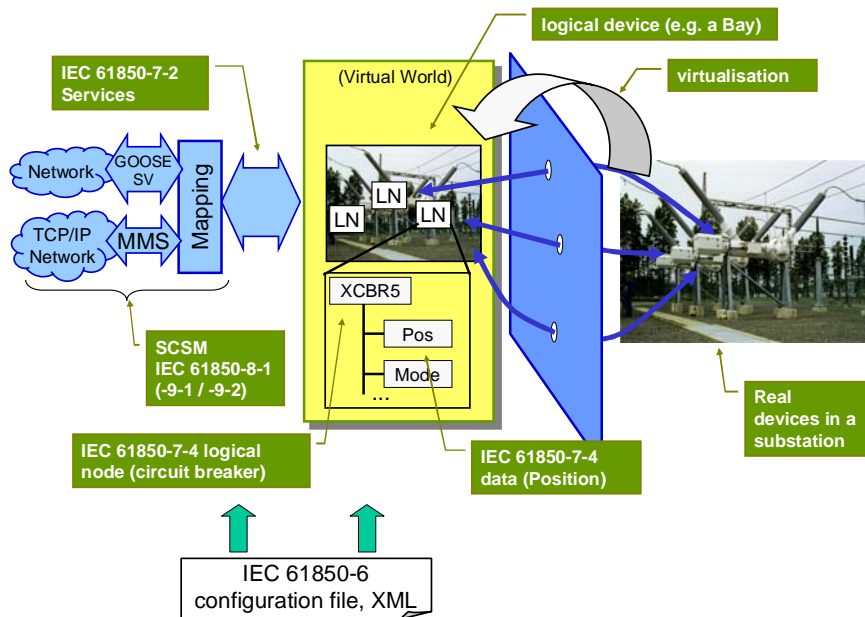
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## Motivation

The standard IEC 61850 „Communication networks and systems in substations” and the coming standard IEC 61400-25 „Communications for monitoring and control of wind power plants” use the concept of **Logical Nodes (LN)** as a key element to define the information of a device to be communicated. This paper introduces the concept of LNs.

## Modeling concept

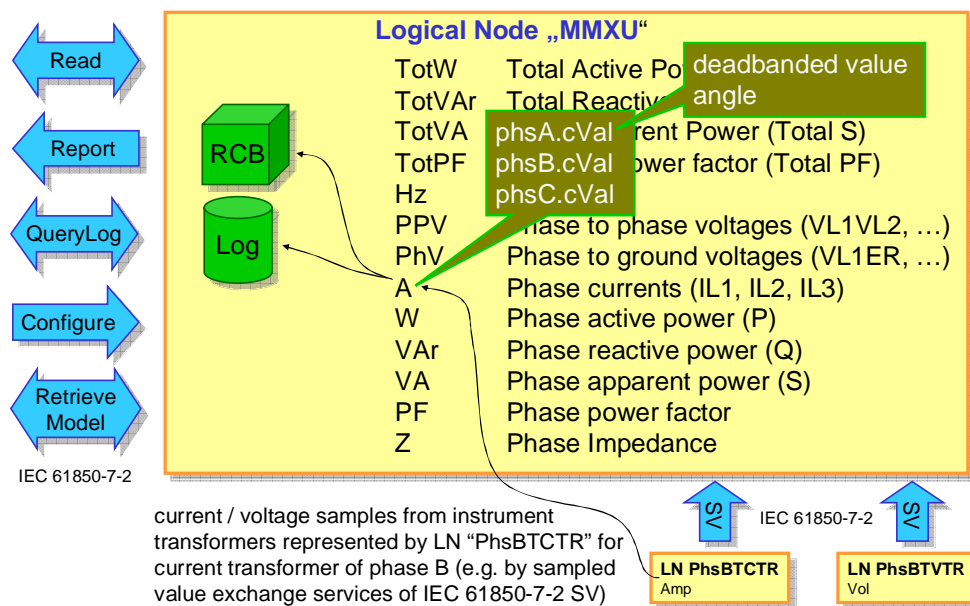
Key issues are the LNs **representing functions or equipment** used in power systems. Each LN provides a list of **well organized and named information**. The LN **“XCBR5”** represents the “circuit breaker” number 5 with the data **“Pos”** (Position) and **“Mode”**. Services defined in IEC 61850-7-2 allow the exchange of this information (Client/Server, GOOSE, SV, ...).



The substation configuration language in part 6 supports the engineering process.

## Example LN “MMXU”

The measurement LN “MMXU” represents power, voltages, currents, and impedances in a three-phase system. The values can be communicated by various services



The “MMXU” LN offers hundreds of values: measured (process) values, configuration values, description, and substitution values. These values can be communicated by various services like read (polling), notification (publish/subscribe), logging and query.

**IEC 61850**  
models substation  
equipment and functions  
(focus is on  
protection)

**IEC 61400-25**  
models components  
of wind power plants

**IEC 62344**  
models components  
of hydro power  
plants

**IEC 62350**  
models components  
of decentralized energy  
resources (DER)

**IEC 61850**  
extensions model  
more monitoring  
data

**IEC 61850-7-4**  
defines some  
90 LNs  
500 Data  
100 Attributes  
10 Service models

**IEC 61400-25**  
adds some  
10 LNs  
200 Data  
100 Attributes