



CEEE - State Company for Electric Power of Rio Grande do Sul

Implementation of a Revolutionary Architecture II

Context

CEEE is a state-owned distribution company responsible for the south-southeast region of Rio Grande do Sul, covering the entire metropolitan region, South, Coast and the Campanha Gaucha.

In 1997, Spin began operating in CEEE deploying automation of the first three substations with digital relays of CEEE and Alstom Brazil. The substations were Quinta, Marmeleiro and Santa Vitória do Palmar. At that time, all substations had local team operation.

With the success of the enterprise, Spin continued deploying automation systems in CEEE, initially making the COR Pelotas, which would be transferred then to the metropolitan area of Porto Alegre, becoming its COS-D.

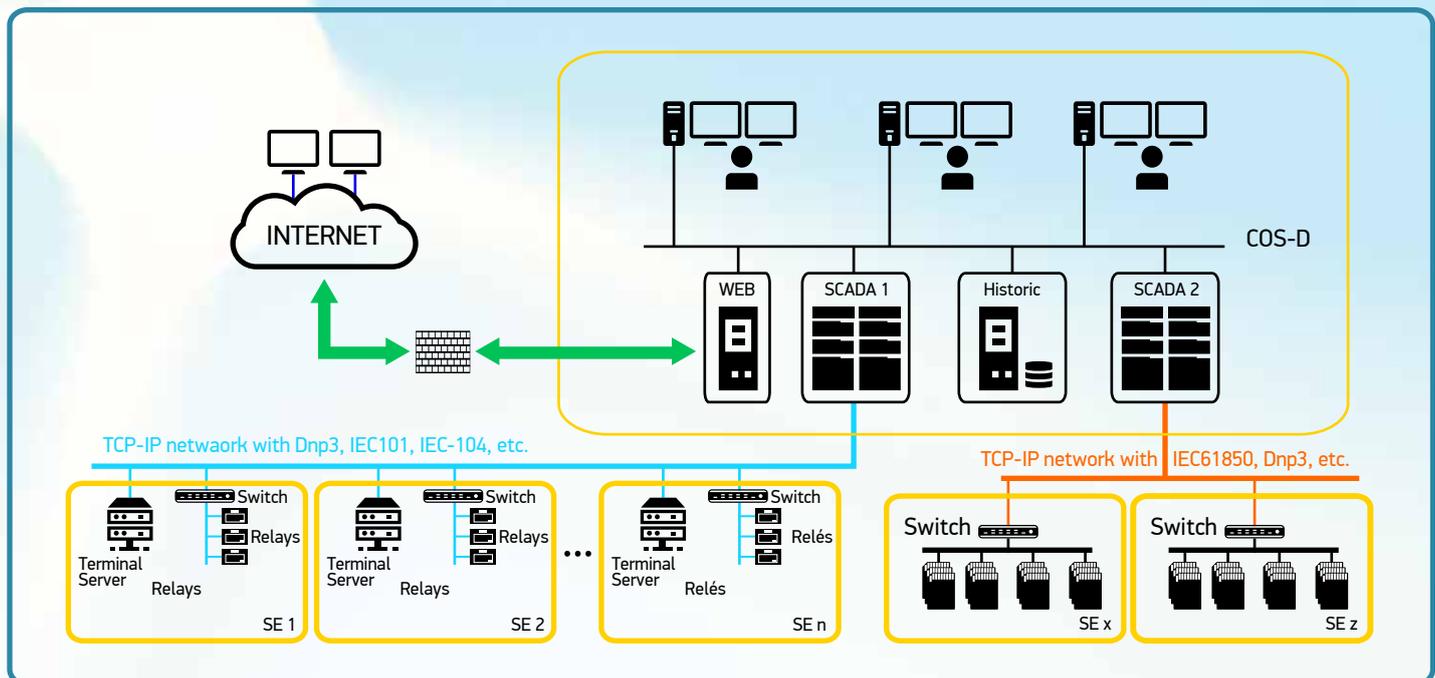
Challenges

Since we implemented the COS-D in Porto Alegre, the software has undergone several technological upgrades. Among them, due to customer's request, was implemented a unique solution regarding the COS-D. Since most of the communication links between the COS and substations are in fiber and most substations are already equipped with digital relays, it was requested that the COS SCADA servers were to communicate directly with the relay substation without any hub.

In addition to the requirement above, also due to technological change, a new need from strategic orientations of the company was established. Thus, all new substations as well as all new bays of a substation would be implanted using IEC61850 protocol. CEEE, through these deployments, began to use the protocol with all its advantages, that is, all the protection has to be made by Goose, without conventional system, minimizing cables, services, etc.

Implanted Solution

The figure below shows the existing solution in CEEE, where there are 58 substations.



In old substations with remote and digital relays with serial ports (RS-232/RS-485) there is a terminal server that functions as a gateway, converting the TCP-IP communication to serial and vice versa. The new bays of these substations, with digital relays communicating over TCP-IP, connect directly to the COS-D.

In this solution, the COS-D has more than 500 channels of communication and to ensure the performance of communication, a multiserver architecture with two servers SCADA hot-standby were implemented. Each hot-standby server communicates with hundreds of channels and the dispatch islands communicate with one or more SCADA Spin servers, depending on the operator's profile.

Results

The solution, deployed initially in the 90s, remains technologically updated today.

The COS-D was the first in Brazil to implement the IEC 61850 protocol for communication with remote sites.

From the COS-D, maintenance crews have access to all information of the relays connected to SCADA Spin and can even debug your communication without moving to the substation.

Today all CEEE substations are unattended and operated from the COS-D.

