COPADATA do it your way R & D PROJECTS

IPEN

IP Infrastructure for Energy Networks

INITIAL POINT

The transmission of measured values over wide transport area networks partly sets very high requirements on the communication network. While in the intra-substation domain with optical Ethernet LAN, are not experiencing transmission problems, for applications such as tele-protection or monitoring of the dynamic system state (“Smart Grid Metrology”) over routed wide area IP networks, problems with data loss and overrunning of the allowed transmission times are arising.

The reason for this is the lack of the transmission requirements notifying signaling components between the energy protocols and the Internet Protocol (IP). The IP network cannot be configured without adequate knowledge of these requirements. Previously used transmissions are therefore not based on packet networks over long distances. The future use of IP technology is, however, essential, because only this way the demands for a cost-effective (“main-stream technology”), decentralized smart grid communication infrastructure can be met. The scientific basis of the project work is the study of interactions between artifacts of the communication network (delay, loss) and the energy sector applications (safety, stability, reliability, etc.).

SHORT DESCRIPTION

IPEN is a research project at the interface between the electric power and communications network. It examines the impact of the (low) quality of the communication network on energy applications. Based on these findings, models are explored for the best possible picture of formally specified communication requirements of the resources of a communication network.

AIMS

1. Generation of new scientific evidence relating to the IP transmission performance with the management of active distribution networks. What is the impact of data loss and high transmission times for the active control of distribution networks in realistic application scenarios.

2. To make recommendations regarding the requirements and the design of an interface between the components of the electric power system and a QoS-based IP network.

3. Development of IPEN resource mapper that maps the basis of the extended SCL specified requirements perfectly on the existing resources of the IP network. It is implicitly checked as to whether the sum of the requirements of the given network resources are ever fulfilled.

4. The validation results of the fourth goal are an analysis of the measurement results in the testbed compared to the configuration of the underlying theoretically derived hypotheses. The validation is performed both in the laboratory and in a real testbed with integrated PMUs.

PROJECT OVERVIEW

INSTITUTION
Salzburg Research
AIT Austrian Institute of Technology GmbH
Research project in the framework of the BRIDGE program, supported by the Austrian Research Promotion Agency
Ing. Punzenberger COPA-DATA GmbH
Partner: Salzburg AG
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