Antarctica smart grid communication protocols

This repository is used to store the experimental setup of the paper "A Modular Framework for Evaluating Smart Grid Communication Protocols over Mobile Networks". It deals with IEC 61850 and IEC 60870-5-104 from the energy ...

design, analysis and optimization of wireless/mobile communications networks, smart grid communications, and cognitive and green radio systems. He has received several awards including the University of Manitoba Merit Award in 2010 (for Research and Scholarly ...

The IEEE Guide for Smart Grid Interoperability, National Institute of Standards and Technology, and U.S. Department of Energy provide recommendations for communication and networking requirements such as payload (size and frequency), physical (PHY) and media ...

The emergence of the smart grid has led to the development of a diverse set of standards and protocols for achieving interoperability among smart devices. These smart grid related standards and protocols cover a wide variety of power system components and functionalities. In this paper, a comprehensive review of commonly used standards and protocols in the smart grid ...

Nowadays, several smart grid solutions have been proposed to improve electrical power systems. These solutions are based on a stronger, faster and more reliable network communication. Analyzing communication requirements is one of the first step in deploying a smart grid solutions, such as new applications and systems. However, this is normally not taken into account as ...

For 100 years, there has been no change in the basic structure of the electrical power grid. Experiences have shown that the hierarchical, centrally controlled grid of the 20th Century is ill-suited to the needs of the 21st Century. To address the challenges of the existing power grid, the new concept of smart grid has emerged. The smart grid can be considered as a modern ...

Smart Home Area Networks Protocols within the Smart Grid Context . Ayesha Hafeez, Nourhan H. Kandil, Ban Al-Omar, T. Landolsi, and A. R. Al-Ali ... Fig. 1 shows the smart grid communication networks that are mapped with the aforementioned electrical power grid domains [l]-[3]. The wide area network consists of the following sub ...

Currently, the Smart Grid faces challenges in terms of reliability and security in both wired and wireless communication environments. The most important challenge is a lack of communication network infrastructure, which is a key factor in supporting the grid monitoring system. In the absence of an

aspect in the smart grid environment, some studies also focus on cyber security standards. Authors in [15, 16] discuss security requirements, network vulnerabilities, attack countermeasures, secure communication protocols and architectures in the smart grid environment and analyze smart grid security standards.

It is evident that the Smart Grid communication network is similar to the Internet in terms of the complexity and hierarchical structure. However, there are fundamental differences between these two complex systems in many aspects. 1. Performance metric. The basic function of the Internet is to provide data services (e.g., web surfing and music downloading, etc.) for users.

We next discuss the medium access control (MAC) and network layer protocols of the smart-grid communication technologies. In the end, we present a case study for the implementation and performance evaluation of various smart-grid algorithms and communication infrastructure. Chapter Contents: 3.1 Introduction ; 3.2 Smart-grid communication network

The present traditional power grid system is slowly migrating to an interactive, intelligent power grid system (smart grid or future grid) driven by information and communication technology.

In smart grid, efficient and reliable communication is incorporated to improve the efficiency, sustainability, and stability of the whole system. This paper presents a review on the different types of available communication methods and protocols, which are used for data ...

The objective of this chapter is to briefly review and discuss major standards, protocols, and challenges in the smart grid domain. This chapter first discusses major standards organizations, alliances and user groups, and open source groups dealing with smart grid standards in Section 3.1.Section 3.2 presents a comprehensive review of commonly used ...

This article presents a mapping of smart grid functionalities to the data communication models, followed by a survey on smart grid communication standards relevant to NANs. It clarifies the standards in use and the associated protocols suitable for NAN ...

The key characteristics of smart grid technology are full duplex communication, advanced metering infrastructure, integration of renewable and alternative energy resources, distribution automation and absolute monitoring, and control of the entire power grid. Smart grid ...

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Smart Grid Communications 1. Bi-directional flow of information (along with electricity) -for effective

control of generation and consumption 2. Real-time information: Paves way for active consumer participation ... Communication protocols must account for specific needs of the power system applications. Smart Grid Communication Requirements 1.

Smart Grid Communications Symposium Chair Kun Yang, University of Essex, UK <kunyang@essex.ac.uk> ... from smart grid system architecture, communication protocols, resource allocation algorithms, networking, testbeds ...

Since the smart grid deals with a large mass of data and critical missions, it requires ubiquitous, reliable, and real-time communication. The Internet of Things (IoT) technology, which has the ...

illustrates the protocols. Keywords: Load networks, smart grid, demand response, direct load control, communication and control protocol 1. INTRODUCTION The realization of the full potential of the Smart Grid heavily relies on information exchange between distributed nodes in this electric networked control system. These

This article complements and extends other surveys carried out by various authors. Ramírez and Umaña (2015) presented communication technologies and routing protocols deployed in a neighbourhood area network for AMI. Fang et al. (2012) divided the entire smart grid into: the smart infrastructure system, smart management system and smart ...

Smart grid communication protocol is the basis for realizing smart grid interconnection and information sharing. In recent years, with the expansion of the scale of the electric power system, the deepening of the electric power market reform, the rapid development of the electric power industry production technology, a variety of new technologies, new ...

Smart grid networks, and Operational Technology (OT) networks in general, utilize a variety of communication protocols for low-latency control, data monitoring, and reporting at every level.

4 · Gao Y. Performance and Applicability of Candidate Routing Protocols for Smart Grid"s Wireless Mesh Neighbor Area Networks. McGill University; 2014. Google Scholar. 86. ... A Survey of Routing Protocols for Smart Grid Communications. Computer Networks. ...