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A survey on communication networks for electric system automation

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Abstract

In todayâ€™s competitive electric utility marketplace, reliable and real-time information become the key factor for reliable delivery of power to the end-users, profitability of the electric utility and customer satisfaction. The operational and commercial demands of electric utilities require a high-performance data communication network that supports both existing functionalities and future operational requirements. In this respect, since such a communication network constitutes the core of the electric system automation applications, the design of a cost-effective and reliable network architecture is crucial. In this paper, the opportunities and challenges of a hybrid network architecture are discussed for electric system automation. More specifically, Internet based Virtual Private Networks, power line communications, satellite communications and wireless communications (wireless sensor networks, WiMAX and wireless mesh networks) are described in detail. The motivation of this paper is to provide a better understanding of

the hybrid network architecture that can provide heterogeneous electric system automation application requirements. In this regard, our aim is to present a structured framework for electric utilities who plan to utilize new communication technologies for automation and hence, to make the decision-making process more effective and direct.

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Keywords

Electric system automation; Internet based Virtual Private Network; Power line communication; Satellite communication; Wireless sensor networks; Wireless mesh networks; WiMAX

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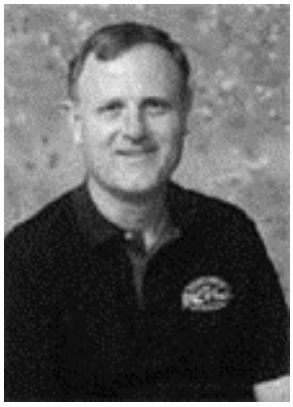

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