ABSTRACT

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Topic

Analysis of security and privacy issues for smart grid applications on cloud computing: survey

Power infrastructures are increasingly driven as consumer devices connect with service providers. While there are tremendous advantages being enabled by the aggregation and analysis of these data, the ever-increasing granularity and personal nature of the data imply that smart grid application platforms deployed in the cloud inherit the security and privacy challenges of huge Data. The electric grid is a term used for an electric grid that is divided into three interconnected sectors, generating, transmission and distribution networks. It is delivered to consumers through well-connected current overhead and underground cables, transformers for voltage potential leveling, protective switching and power balancing equipment. With the emergence of alternative means of generating electricity from renewable sources such as wind and solar, on-site and distributed small generators forced them into the grid. To provide high flexibility in accommodating distributed energy resources, the grid operator needs more information on resource availability and how the grid handles injected power. With increased data flowing online, grid managers would have more warning when demand spikes and more opportunities to channel electricity to tied feeders before a blackout. On the other hand, Cloud computing has emerged in recent years and is still developing rapidly, a model for allowing ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources i.e. networks, servers, storage, applications, and services that can be quickly provided and released with minimal management or service interaction. It enables end-users to easily acquire important analytics and complex applications to IT infrastructure and platform services, including applications, virtual resources and storage. It can also deliver significant economies of scale, while speeding up the pace of innovation. Integrating cloud computing with smart grids shall provide high scalability, elasticity and reliability for the smart grid. However, this integration and the sensitivity of information exchanged could carry safety threats that threaten the entire country, not just the Electric Grid. This article will highlight key features of smart grid integration with cloud computing and address security threats and privacy in smart grid applications.