

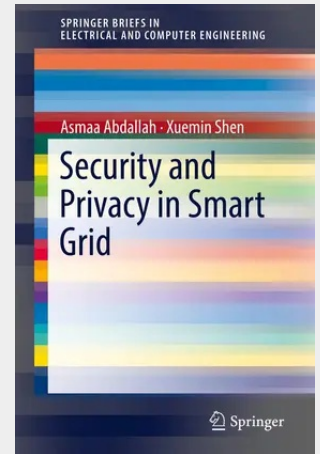
Security and Privacy in Smart Grid

This SpringerBrief addresses the main security concerns for smart grid, e.g., the privacy of electricity consumers, the exchanged messages integrity and confidentiality, the authenticity of participated parties, and the false data injection attacks. Moreover, the authors demonstrate in detail the various proposed techniques to secure the smart grid's different communication networks and preserve the privacy of the involved.

Over many years, power grid has generated electricity from central generators and distributed it in one direction from the generation stations to end-users; also, information is one directional so that the grid's control center doesn't get enough information about customers' requirements and consequently can't prevent electricity losses. So, the electricity grid is merged with information and communication technology to form smart grid. The main target of this incorporation is to connect different parties of power grid to exchange information about grid conditions and customers' requirements, and consequently, improve the reliability and efficiency of electricity generation and distribution.

That upgrade of the power grid exposes it to the cyber security threats that the communication networks suffer from, such as malicious attacks to forge the electricity consumption readings or price, extract personal information for residential consumers, such as daily habits and life style, or attack some grid's resources and equipment availability using denial-of-service attacks. Also, novel threats are introduced in smart grid due to the power grid nature, such as false data injection attack, in which the adversary compromises several measurement units and injects false information about the grid conditions that mislead the grid's control center to make wrong decisions for the grid and consequently impact on its stability and efficiency.

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