

自动化

基于业务风险均衡度的电力通信网可靠性评估算法

赵子岩,刘建明

1. 中国电力科学研究院, 北京市 海淀区 100192; 2. 国网信息通信有限公司, 北京市 宣武区 100761

摘要:

根据智能电网电力通信网业务的特点及电力通信网的典型结构, 对电力通信网业务进行了分析, 提出了业务重要度的概念, 确定了业务重要度量值; 在此基础上, 提出了业务风险度、通道段业务风险度、全网业务风险均衡度的概念, 建立了基于全网业务风险均衡度的电力通信网可靠性的评估测度指标、评估模型及求解方法。以一个6节点、8边的网络为算例, 阐述了网络矩阵、业务矩阵、业务重要度矩阵及业务风险均衡度的求解和计算过程。计算结果表明文中提出的指标测度、模型及求解方法具有良好的实用性和可操作性, 可对从业务层面实施电力通信网可靠性评估、优化业务网络、科学安排业务通道及通信网运行方式提供参考。

关键词: 电力通信网 可靠性 通信业务 风险均衡度

A New Service Risk Balancing Based Method to Evaluate Reliability of Electric Power Communication Network

ZHAO Ziyan ,LIU Jianming

1. China Electric Power Research Institute, Haidian District, Beijing 100192, China; 2. State Grid Information & Telecommunication Co., Ltd., Xuanwu District, Beijing 100761, China

Abstract:

According to the features of electric power communication service for smart power grid and typical structure of electric power communication network, the service of electric power communication network is analyzed and a concept of service importance degree is proposed and then its metric is determined. On this basis the concepts of degree of service risk, channel segment's degree of service risk and degree of service risk balancing of whole communication network are put forward; based on the degree of service risk balancing of whole communication network, the index to evaluate and measure the reliability of electric power communication network is established as well as the evaluation model are established and the way to solve the established model is given. Taking an electric power communication network with 6- communication nodes and 8-edges as calculation example, the solution and calculation processes of network matrix, service matrix, the matrix of service importance degree and degree of service risk balancing are expounded. Calculation results show that the proposed measurement and evaluation index, evaluation model and solution method possess satisfied practicality and operability, so they are available for reference to the implementation of reliability evaluation of electric power communication network and optimization of service network as well as reasonable arrangement of service channels and operation modes of communication network.

Keywords: electric power communication network reliability communication service degree of risk balancing

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通讯作者: 赵子岩

作者简介:

作者Email: ziyang-zhao@sgcc.com.cn

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