

## 通信网网络管理控制系统可靠性及其评价研究

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**摘要** 通信网网络管理控制系统是典型的软件硬件结合的综合复杂系统, 其可靠性对通信网起着至关重要的影响. 提出了一种新的通信网网络管理控制系统可靠性分析和评价方法. 采用层次分析法的思想把系统分解成分系统、中心、软/硬件系统和软/硬件模块等层次, 根据失效判据分析情况建立相应串联、权联或n中取k表决冗余等可靠性模型. 利用模块分析法得出软件系统可靠性并与硬件系统可靠性相综合得出中心的可靠性, 自下而上, 最终得到全系统软硬件综合可靠性. 给出了系统可靠性综合分析与评价流程, 最后通过实例仿真验证了可靠性分析和评价方法的正确性.

**关键词** [网络管理控制系统](#) [可靠性](#) [模块分析法](#) [层次分析法](#)

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## Research on and evaluation of the reliability of a communication network management and control system

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### Abstract

The reliability of a communication network management and control system, typically a complicated integrated system of software and hardware, has a significant effect on the communication network. A new approach to analyzing and evaluating the reliability of the system of a communication network is proposed. The whole system is divided into some layers such as subsystems, centers, software/hardware system and modules. The corresponding reliability models like series, parallel-in-weight, "n from k" vote and redundant model, etc. are established according to the failure criteria. The reliability of the software system can be obtained by the module analysis method and the reliability of a center can be obtained by integrating software and hardware system reliabilities. From bottom to top, the integrated reliability of the whole system can be found in the end. We also give the processing of integrated analysis and evaluation. The efficiency of our approach is validated through a real example simulation. <BR>

**Key words** [network management and control system](#) [reliability](#) [module analysis method](#) [hierarchical analysis method](#)

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