实现数据存储、数据计算和资源管理的分离

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Abstract

It's impossible for traditional operating systems to separate the abstracts for data storage (process virtual address space), for data computation (thread), and for resource management (process itself). This paper first analyzes the problems due to not able to separat these three abstracts. On the base of the analysis, the idea that the three abstracts should be separated is proposed, and then, the operating systems based on virtual address spaces on files (OS-BVASF) is developed. Then, OS-BVASF's architecture model thread migration and instruction accessing file that implement separation of the three abstracts is investigated. Finally, its implementation, test, and performance evaluation are discussed. The work in this paper shows it is feasible to separate data storage, data computation, and resource management in operating systems.

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摘要

在传统操作系统中,数据存储的抽象(进程虚拟地址空间)、数据计算的抽象(线程)和资源管理的抽象(进程)是不可分离的.首先分析了在操作系统中由于3类抽象不可分离而存在的问题,根据分析提出了数据存储抽象、数据计算抽象和资源管理抽象互相分离的思想,进而根据这一思想提出了虚拟地址空间基于文件操作系统,分析该操作系统的体系结构模型,研究了实现3类抽象分离的线程迁移技术和指令对文件寻址技术,最后讨论了系统的实现、测试和性能评价.此项研究说明了在操作系统中实现数据存储、数据计算和资源管理的分离是可行的.

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