

研发、设计、测试

## 温度感知的Linux多核调度算法研究

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**摘要** 摘要: 多核处理器温度升高会影响芯片的稳定性和性能的发挥, 硬件层面的DTM (Dynamic Thermal Management) 方法以牺牲处理器性能为代价来降低功耗, 提出了在一种软件层面的温度感知调度算法, 它可以在线实时获取处理器性能计数器的值并计算各个执行核温度, 根据各执行核的温度状况在各个核上合理分配进程, 给出了温度感知的启发式方法。基于ATMI温度仿真器的仿真表明, 温度感知调度算法较无温度感知的算法可以创建更均匀的功率密度图, 且带MST启发式方法的温度感知调度算法能明显减少进程的迁移次数。

**关键词** [温度感知](#) [多核](#) [Linux调度算法](#) [动态优先级](#) [进程迁移](#)

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## Research of thermal aware multi-core Linux scheduling algorithm

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### Abstract

Temperature rise of the multi-core processor is harmful for the processor's performance. DTM (Dynamic Thermal Management) mechanism is a hardware level thermal management method with a great loss of processor's performance. Thermal dynamic management in the operating system level called thermal aware scheduling is proposed. It can get the value of performance counter online and then calculate the core's temperature which can be used to decide which core to run a new process. Also, a heuristic method called MST is proposed. Based on ATMI, the simulation results show that the algorithm can create a uniform power density map than the algorithm without thermal awareness, and reduce the number of process migration by using MST heuristic.

**Key words** [thermal-aware](#) [multi-core](#) [Linux scheduling algorithm](#) [dynamic priority](#) [thread migration](#)

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