Abstract

To support the hard real-time requirement for mission critical applications, we enhance the real-time ability in Linux kernel through some kernel mechanisms. First, we focus on new technique called normal task delayed locking technique can be used to reduce the OS latency. Second, because of the coarse-grained timer mechanism can not satisfy the microsecond-level timer resolution required by real-time tasks, we present a new microsecond-level timer mechanism, which is based on UTIME technique. The simulation and analysis shows that the design can improve the real-time performance of the Linux system efficiently, which could be used to most of the embedded hard real-time systems.

References

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Index Terms

Computer Science
Operating Systems

Keywords
Real-time systems UTIME technique OS latency coarse-grained timer mission critical applications