

Most of the current operating systems implement virtual memory management and provide only a virtual layer for the user land. It is known that the performance of some applications (especially memory intensive) is influenced by the current use of physical addresses specified by virtual memory mapping performed by the operating system and is not fully deterministic. The problem results in both sub-optimal and non-deterministic performance.

This thesis focuses on the user space approach to virtual memory tuning for an application with special requirements. The Linux kernel was modified to provide a simple interface for the user space, which enables a process specific physical memory layout manipulation on strategies implemented as kernel modules. We have implemented CPU cache sensitive strategies and shown that this can improve both the optimality and determinism of performance for some applications.