File Management

From OSDev Wiki

This has been contributed to the Pro-POS Wiki by "Beyond Infinity". He agreed to have it forwarded here due to its catch-all nature. -- MartinBaute

A monolithic kernel handles everything in one monolithic (hence the name) process. A Microkernel consists of several processes which are responsible for all the grunt work: allocating memory, managing processes - and housekeeping permanent data storage like hard disks or floppies. Yes, about filesystems the talk is.

Say, we have a file system service. It is responsible for keeping the File System on a Floppy/HD what so ever up to date (and eventually handle pipes and so forth...) The very basic -- the uttermost basic task of the file system service is to keep track of allocated/deallocated blocks and (in case of ext2) inodes - files, to which blocks are allocated - you also need blocks for the file/block management. Another task a file system service usually performs, is keeping blocks in memory for quick access. They are slow to retrieve from disk storage - compared to a simple memory access. So the file system service keeps the so called block cache. Now, think about it: you use paging, you have the file system service as a process of its own. It fetches blocks and keeps them in its address space.

You'll have to do lots of work to transfer the data of a retrieved block to a user process which performs the read() call - or vice versa a write().

Check out, how it would be to have a task in kernel space keep the block cache and performing the actual reading/writing.

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