Rio file cache: enable memory to survive OS crashes without writing data to disk.

preliminaries: not the problem for losing the battery, but on the operating systems crashing.

## design and implementation of a reliable file cache

### protection

control accesses to the file cache.

implemented on the write-bit for authorizing to modify the file cache and disabling the ability of processor to bypass the TLB(code patching).

###warm reboot

at rebooting, the OS must read the file cache contents and update teh file system with the data.