

Key-Value Storage System on a Kernel Level

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Introduction

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What is a Key-Value Storage System?

A key-value storage system is a storage based system where variable sized keys are used to access variable sized data from the disk. An example of this type of storage is LevelDB.

Problems with Current Key-Value Systems:

Key-Value systems currently reside on top of the regular file system, therefore they have to deal with the overhead and complexity of a file system and a Key-Value system.

Goal of this Project:

The goal of this project is to design a minimal light weight Key-Value storage system at a kernel level to see if the performance results are better.

Materials & Methods

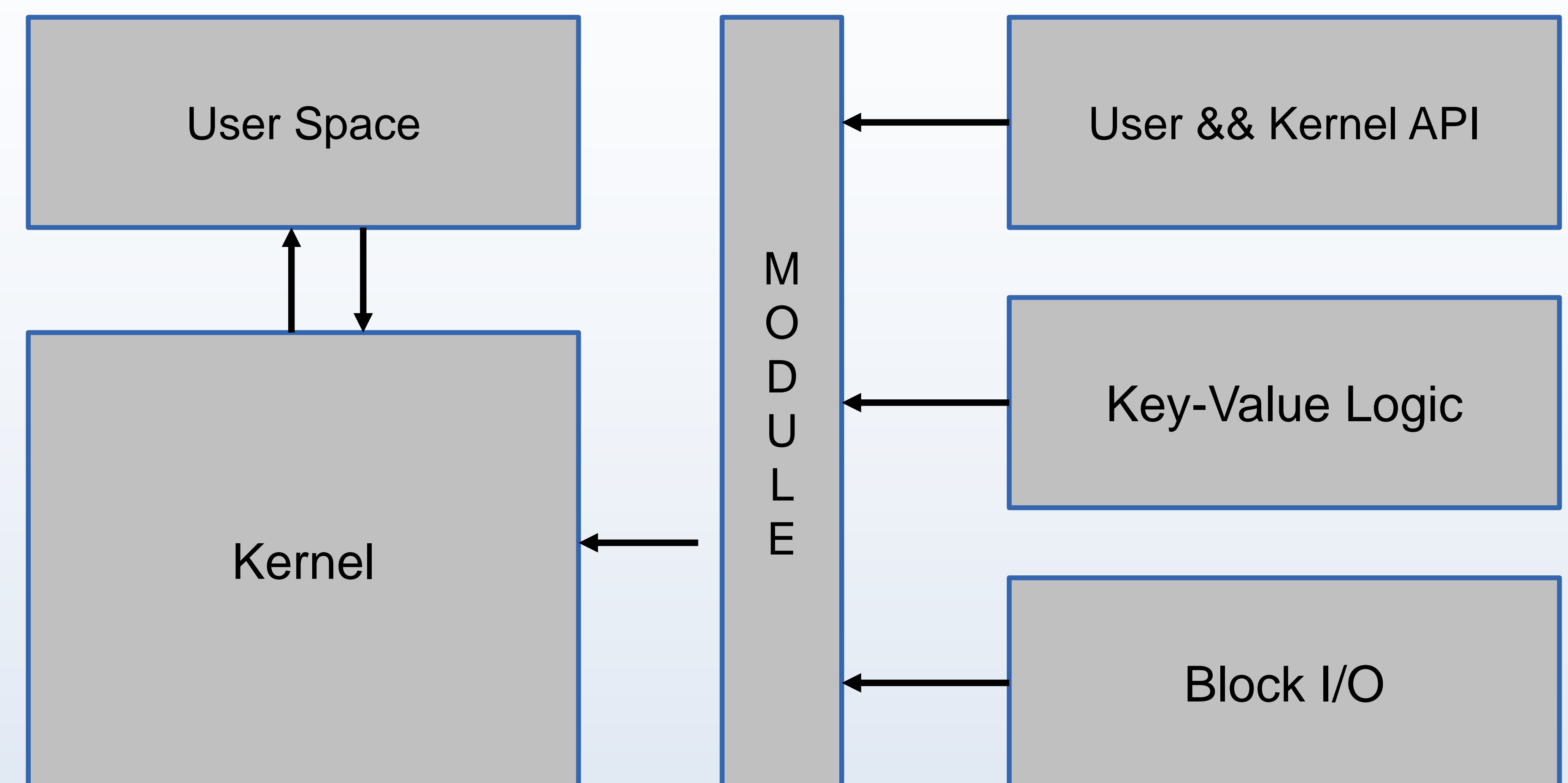
We wrote a key-value storage system kernel module which uses hashing for lookups and a custom bucket style disk "file system". This is not a final or optimal filesystem, it is just something quick we used to get basic results. It then had a simple user API built on top of it which we then used against the LevelDB API in our testing.

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Structures

KernelModule Structure



Disk Structure

