A Fast File System for UNIX*

Marshall Kirk McKusick, William N. Joy†,
Samuel J. Leffler‡, Robert S. Fabry

Computer Systems Research Group
Computer Science Division
Department of Electrical Engineering and Computer Science
University of California, Berkeley
Berkeley, CA 94720

ABSTRACT

A reimplementation of the UNIX file system is described. The reimplementation provides substantially higher throughput rates by using more flexible allocation policies that allow better locality of reference and can be adapted to a wide range of peripheral and processor characteristics. The new file system clusters data that is sequentially accessed and provides two block sizes to allow fast access to large files while not wasting large amounts of space for small files. File access rates of up to ten times faster than the traditional UNIX file system are experienced. Long needed enhancements to the programmers' interface are discussed. These include a mechanism to place advisory locks on files, extension of the name space across file systems, the ability to use long file names, and provisions for administrative control of resource usage.

Revised February 18, 1984