

## ABSTRACT

SQUASH FILESYSTEM COMPRESSION USING LEMPEL ZIV MARKOV CHAIN ALGORITHM (LZMA)

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LZMA is one of the best compression algorithms and Squashfs is one of the best compressed filesystems available nowadays. LZMA can compress much better than gzip, which is used in squashfs now. Compressing to LZMA format is very slow, but this is not a problem as the squashfs filesystem needs to be compressed only once, then it can be read many times. This study combined the characteristic of Squashfs and LZMA Compression to improve Squashfs for live linux system with directory priority compression.

In this study squashfs-lzma was improved with five directory priority compression. These five directory layouts was selected based on the dependencies among files. The result of this study obtained better compression ratios, time taken, and the memory usage. Those variables were tested using tools available in linux distribution called *free* and *vmstat*. Vmstat was inserted to the initial ramdisk (*initrd*) to collect the virtual memory statistic when booting process.

**Keywords:** Operating System, Linux, SquashFS, LZMA Compression.