Cameleonica
safe cryptographic steganographic advanced filesystem
Conceptual Design

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Abstract

This paper describes a conceptual design of the project, that is the functionality, the semantics, the characteristics, and the quality that will be offered to end users. Rationale for some fundamental decisions is explained. Operational scenarios are presented, followed with acceptance tests to establish a basic measure of usability.

Introduction

Cameleonica project is an innovative filesystem design. Both new commands and well established commands with new semantics are given into hands of end users. Both are highly specialized and broad in application. Consider following operations.

Commiting and reverting history of changes is typical of version control systems, with Git for example. Encrypting entire disks is quite common, with TrueCrypt. Hiding files and even entire systems on disk is possible, again with TrueCrypt. Compressing and hashing files is a standard operation, with built-in utilities. They are all available separately, and furthermore, they are all implemented outside of any filesystem. This approach is good for simplicity, as underlying filesystems need to implement only very basic operations. However, an opportunity is missed this way. Filesystem is put into a position where it can provide guarantees that are not achievable to unprivileged programs having no access to underlying storage device, or pre-compute data in advance, or cache said data for repeated use. This project aims to offer exactly that.