OREGON STATE UNIVERSITY

OPERATING SYSTEMS II

CS444

Project 3 Writeup

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Abstract

This project involved the use of a block device driver. Specifically, a block device driver was developed that acted as a RAMdisk. This device would read and write data. A filesystem was mounted on the device. The device was encrypted using Linux crypto.

I. Design

The structure of the rdcrypto block device was very similar to the sbd block device that Kevin told us to use as a base. The only function that was changed was the transfer function. This is the function that handles reads and writes. The changes that I made where to add encryption when writing to the device and to add decryption when reading from the device. Otherwise, the device is essentially the same as the sbd device; it stores data.

II. Questions

A. What do you think the main point of this assignment is?

I think the main point of the assignment was to become familiar with the idea of patching the Linux kernel and to take a look at how modules are loaded into the kernel. Also, it obviously was meant to teach us about block devices and Linux crypto.

B. How did you personally approach the problem? Design decisions, algorithm, etc.

I approached the problem by researching how to use the Linux crypto library. Once I had a solid base of knowledge, there were only really 20 - 30 lines of code that needed to be written. The main problem I had was initializing the crypto. Using the crypto was just two functions or so, so it was relativily easy.

C. How did you ensure your solution was correct? Testing details, for instance.

I ensured my solution was correct by using print statements to show when my device was reading or writing, and to show the data before and after encryption/decryption. What did you learn? I learned how to make Linux patch files, how to configure a module in Linux, and how to write a Linux block device with encryption.

III. Work Log

Date	Hours	Detail
5/15	4	I researched the Linux crypto library and worked on the code
5/16	10	I struggled to get the module to copy to the VM

Fig. 1. Dates and number of hours spent working on project 2