UMEÅ UNIVERSITET
Institutionen för Datavetenskap
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Lab Report

Operating Systems
5DV171

Assignment 3

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Contents

1 Introduction

The task is to test three different linux io schedulers. the program should benchmark the performance of each scheduler and run in user space. Think on what can be improved and optimize for each scheduler.

2 User Guide

The code can be found on GitHub: For the benchmark to work you need root access otherwise it can't change the io scheduler and program must be on the disc that testing on. The name of the disc to be tested should be send as an argument to the program(`sudo ./bench.sh disc_name`). The test should be runs some times to get a better results since there may some background process affecting the test.

3 Conclusion

The test that has been done is a Writes-Starving-Reads where many writes is done and one smaller read is done to see how long time it takes.

The noop scheduler seems to have the must unstable write and read times and deadline have a more stable times but don't handle the Writes-Starving-Reads problem as good which cfq can handle better and lets the reads through faster. noop seems to have the same Writes-Starving-Reads problem as deadline and have similar read times.

4 Improvments

One improvement in noop and deadline is to let the reads though faster so the writes to starves the reads as much.

5 Problems and Reflections

It was somewhat hard to know how to perform the tests on the io schedulers without any lectures or reading suggestions. And it was also hard to find any different between the io schedulers.

I think that cfq and deadline could improve the performance with solid state drives since this are design for rotating drives which work in a different way then solid state drives.

6 Test runs

below are the result form the test program on the three io schedulers. the times are in seconds.

```
[noop] deadline cfq
12,8238
10,8553
13,6785
13,6857
13,2695
13,679
13,6855
12,8638
13,2522
10,5927
Writes-Starving-Reads:
14,2073
noop [deadline] cfq
8,62639
9,04097
8,10984
8,11382
7,9415
8,39659
8,73745
7,31582
8,84549
6,43045
Writes-Starving-Reads:
9,4528
noop deadline [cfq]
10,138
11,2462
11,0936
10,9681
11,4548
10,9574
11,6462
10,7446
11,4418
11,5505
Writes-Starving-Reads:
1,3081
```