

Inode Investigations

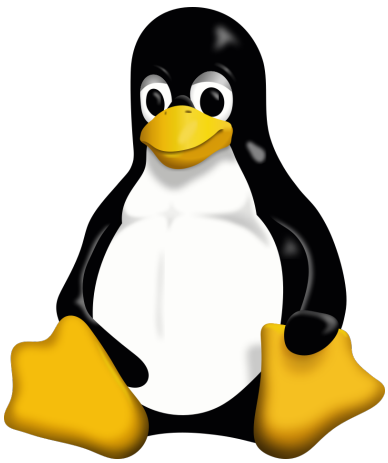
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Motivation

Containers (*e.g.*, Docker, LXC) are supposed to be isolated from each other. But they all run on the same Linux kernel and share its memory. When two containers open the same file, the kernel keeps only one copy in the page cache. Because the copy is shared, one container can notice when another container touches the same file, for example by timing how fast a read to a page is [1]. Earlier work showed this can leak information across containers [2]. This project looks at what a container can learn about its neighbours through these shared inodes.

Goals and Tasks

- Learn how Linux shares files (inodes, page cache) between containers
- Write small programs that measure this sharing across containers
- Build a simple demo and think about how to prevent it



Literature

- D. Gruss et al.
  Page Cache Attacks
  CCS
- S. R. Neela et al.
  Eviction Notice: Reviving and Advancing Page Cache Attacks
  NDSS

Courses & Deliverables

- ☑ **Introduction to Scientific Working**
  Short report on background
  Short presentation
- ☑ **Bachelor Project**
  Project code and documentation
- ☑ **Bachelor's Thesis**
  Project code
  Thesis
  Final presentation

Recommended if you're studying

☑ CS ☑ ICE ☑ SEM

Prerequisites

- Completed operating systems, and you liked it :) — especially paging
- Programming in C (or C++)
- Interest in system security, want to learn Linux kernel workings (you don't need to already know how it works)

Advisor Contact

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