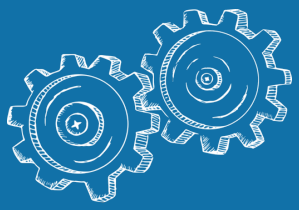


IPC Side-channel Attacks

Advisor: **Roland Czerny**

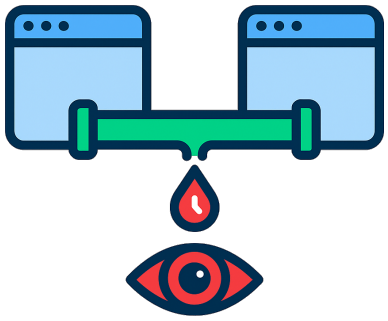
Motivation

Inter-process communication (IPC) on Unix/Linux systems happens through sockets and message buses such as D-Bus. These channels are essential for programs to work together, but they also create side effects in timing and queues. Even if the content of messages is hidden, such effects may still reveal information. The question is: can an attacker learn something simply by observing IPC behavior?

The topic is open — you can look at different IPC mechanisms and decide the direction together with your advisor.

Goals and Tasks

- Learn about IPC on Unix/Linux and read related research.
- Come up with simple experiments to test if timing or queue effects leak information.
- Write small test programs to measure and analyze possible leaks.



Literature

- A. Silberschatz, P. B. Galvin, and G. Gagne
  Operating System Concepts, Chapter 20.9 Interprocess Communication
  2018
- L. Maar et al.
  KernelSnitch: Side-Channel Attacks on Kernel Data Structures
  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

- Basic operating system knowledge (processes, IPC)
- Some programming experience (Python or C)
- Interest in system security

Advisor Contact

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