ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

TIK
Institut für Technische Informatik
und Kommunikationsnetze
Computer Engineering and
Networks Laboratory

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Semester Thesis:

You also want to explore other security leaks?

Building an easy extendable application library for security leak research

Today's Laptops, Servers and mobile devices (smartphones, tablets, ...) are often used for sensitive applications (bank, health, ...) as well as non-sensitive applications (games) or are even shared among multiple users at the same time.

While various sandboxing and segregation techniques exist to ensure the security of sensitive application and information, the applications still share the system. The coexistence on the same system allows the leak information, for example through covert or side channels. In recent time, covert and side channels have been a very popular research topic, but the classification of their threat potential and a comparison of different covert channels are still very hard. In this thesis, we are building tools which allow researchers and application developers to extend an existing experimental framework, to evaluate the covert or side channel of their interest. This will help to ensure comparability of existing and new covert and side channel analyses.

Tasks

The student will extend our work on the evaluation of covert and side channels. It mainly focuses on data leakage through physical characteristics of the CPU cores. The main tasks to complete the thesis will be:

- Get to know and evaluate the reusability of the existing measurement framework for known covert and side channels.
- Develop a structure and interface definition for the libraries and software packages which will be used to develop sending and receiving applications for covert or side channel implementations.
- Implement the developed structure and the needed libraries.
- Port existing covert and side channel applications to the new framework.
- Show the usability by implementing a new side or covert channel evaluation. (Optional)

Requirements / Skills

- Knowledge in ...
  - Application development (C / C++ / Java)
  - UNIX Shell (Scripting) and Python
  - Software Development Paradigms and Versioning (GIT)
  - System Security
- Curiosity, ability to work independently and interest in security and in systems research

Interested? Please have a look at ttps://www.tec.ee.ethz.ch/education/student-theses.html and contact us for more details!

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