

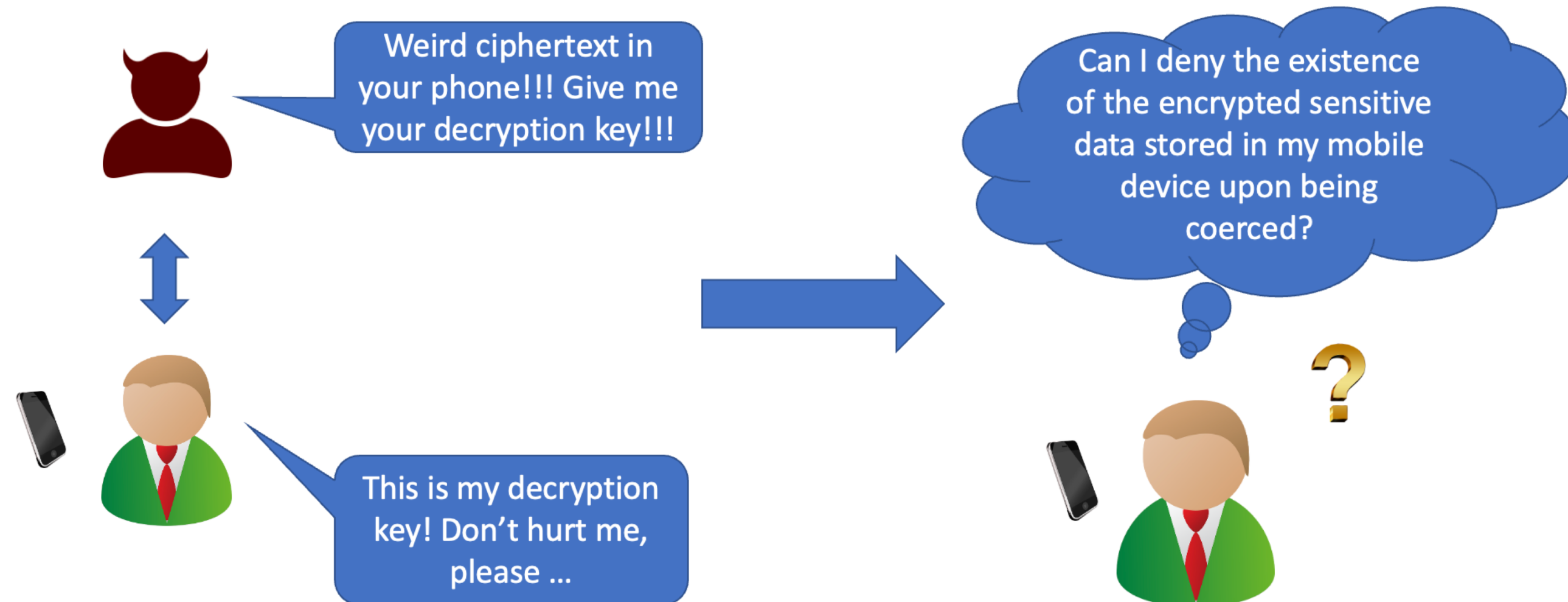
SaTC: CORE: Small: Collaborative: Hardware-assisted Plausibly Deniable System for Mobile Devices

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<https://snp.cs.mtu.edu/research/hpds.html>

<https://stealthmode.live/>



Challenge

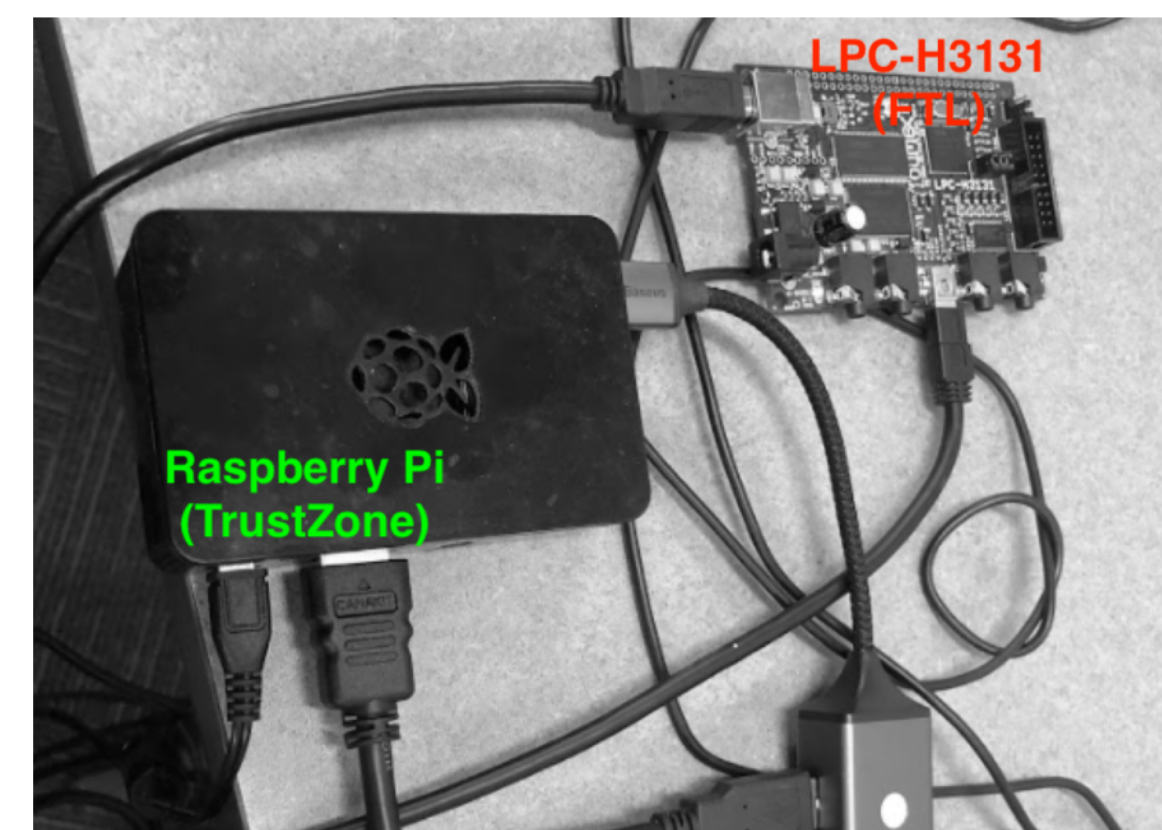
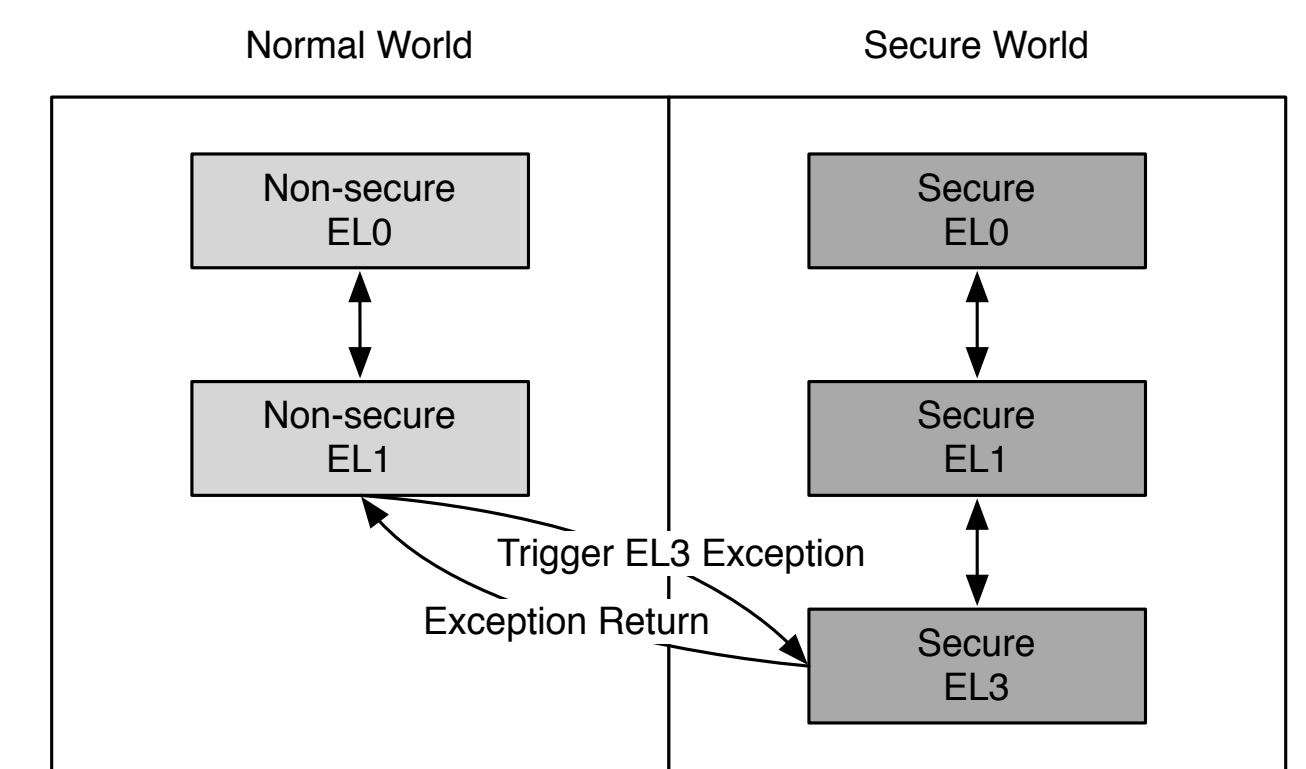
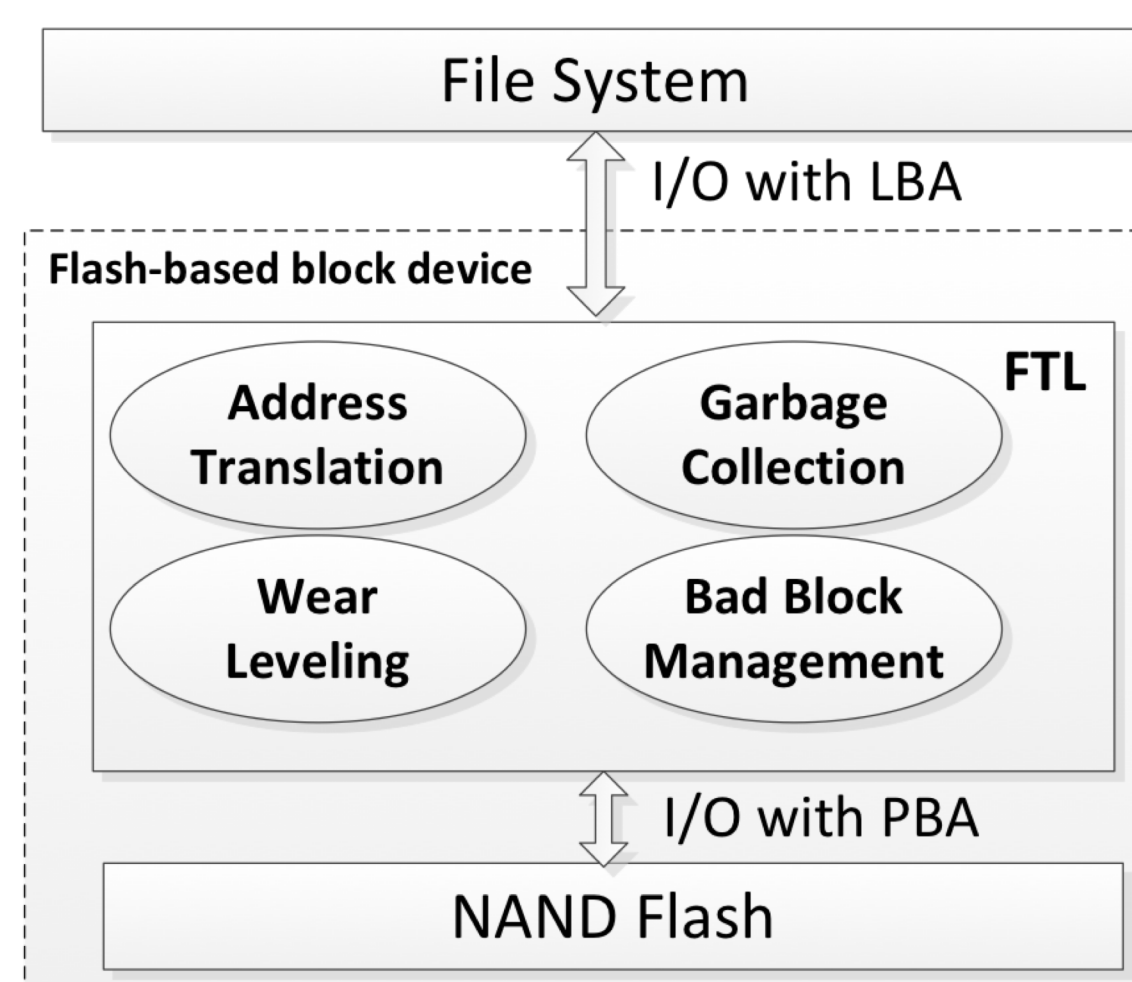
- The existing PDE systems for mobile devices are built at the block layer and suffer from raw flash snapshot attacks and side-channel leakages leading to deniability compromises

Scientific Impact

- Efficient (low-overhead) and effective (high deniability) hardware-assisted solution that leverages existing hardware features such as flash translation layer (FTL) firmware and ARM TrustZone

Solution

- Discovered various deniability compromises in the FTL and designed novel techniques to eliminate them
- Strong isolation and fast mode switching via ARM TrustZone
- Integrated FTL and TrustZone in a unique platform



Broader Impact – Society

- The developed system can allow the users of mobile devices to deny the existence of their sensitive data
- Our research results on PDE systems have been disseminated broadly via CCS, ACSAC, DSN, ISC, EAI AC3, Elsevier Computers & Security, etc.

Broader Impact – Education & Outreach

- Involved multiple graduate/undergraduate students into the project in WSU and MTU
- WSU won 2022 Michigan Collegiate Cyber Defense Network (3rd Place)
- Incorporated the project into graduate courses, cybersecurity reading group, K12 summer program for females in MTU

Check out our project websites for more details:



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