License Locking

3/8 Project Meeting

CryptoFP Implementation

- Semi-stable implementation of CryptoFP;

- Fingerprint multiple runs of the
  std::hash<std::string>
  function, with inputs of various lengths and several trials/length;
- Measure the “difference” between the wall clock
  clock_gettime(CLOCK_REALTIME)
  and the CPU clock (RDTSC). **Attempt** to achieve frequency independence by taking the quotient of the clock deltas;

- So far, stable on a single machine running Linux; unstable on another machine running a Linux VM within Windows.

GCP Testing Environment

- Set up testing suite on Google Cloud Platform composed of a set of VMs for generating and testing fingerprints

- VM instances were created with a range of different regions, zones, CPU platforms, core types, and operating systems to test a wide variety of different conditions
  - Regions (us-central1/us-west1), zones (us-central1-a/us-central1-b), CPU platforms (Intel/AMD), and core types (shared-core/single-core/multi-core) provide testing across machines that are clearly distinct
  - Two VM instances are created for each specific configuration to ensure that the fingerprints are unique for different physical machines

- Note that stopping and starting the VM may allocate it on a new physical machine, so fingerprints are only stable while machines are running

Alternate Fingerprinting Schemes

Fingerprinting Features

- Device behavior
- Physical features
- Operational features
- Time analysis
- Noise based

Device Fingerprinting for Cyber-Physical Systems: A Survey
https://doi.org/10.1145/3584944