

## Nov 30, 2023 | 📅 RISC-V Perf Analysis SIG Meeting

Attendees: Beeman Strong tech.meetings@riscv.org Marc Casas

### Notes

- **Attendees:** Beeman, JohnS, Chun, DmitryR, Snehasish, MattT, RobertC, GuillemC
  - Matt: Samsung, HPC optimization, considering viability of RV for HPC
- **Slides/video** [here](#)
- Reviewed decisions to be made for sampling extension
  - RobertC: should define sampling clearly
    - Call out that this is non-interrupt-based
    - Event sampling may mean other things to others
    - Beeman: will make clear, and certainly will be in TG charter
  - Snehasish: make sure we consider sample bias in this process
- Discussing candidates for state to be captured per sample
  - PC, call-stack, time, context, CTR, ...
  - Dmitry: register values are useful to collect, especially SP. Used to distinguish between heap vs stack for data access (when have data addr)
    - Chun: Need this for tracing or sampling?
    - Ved: with PC tool can know if the inst is accessing via SP (based on reg)
    - Snehasish: some transformations will access the stack without using SP
    - Maybe be possible to get SP via other means, Vtune did
  - Dmitry: also, GPRs were nice to get function args
    - Snehasish: yes, there is published Google work on this, will share
  - RobertC: consider priv mode
- Discussed instruction sampling (ala ARM SPE or AMD IBS)
  - Selects inst in frontend, collects execution-time sample data as it executes
  - Ved: for inst sampling, do any implementations have any kind of predictor to pick the right kind of inst, or right PC? To make rare events more likely to be chosen?
    - Snehasish: it's easy to introduce bias when trying to improve sample population
  - Chun: if want to get LLC misses per 1000 insts, easier to sample on insts retired and snapshot LLC miss counter. Ratios easier with event sampling.
- Discussed event-based sampling (ala Intel PEBS)
  - More akin to interrupt-based sampling, but more expensive to get rich, precise sample data
- **Out of time**
- Guillem: when do we plan to start standardizing events?
  - Beeman: Dmitry volunteered to chair Events TG, will find a VC and make request to the committee

### Action items

- ☐ Beeman Strong - Jul 28, 2022 - Reach out about proprietary performance analysis tools
- ☐ Beeman Strong - Jul 28, 2022 - Reach out to VMware about PMU enabling