Mar 28, 2024 | RISC-V Performance Events TG

Attendees: Beeman Strong, Dmitriy Ryabtsev, tech.meetings@riscv.org

Notes

- **Attendees**: Beeman, Dmitriy, AnthonyH, BruceA, DaiH, JeffN, ShashankN, Snehasish, RobertC, RolfK, Ved
- **Slides/video** here
- Opens
  - Charter review with Tech Chairs postponed to next meeting
- Looking at Linux perf events file groupings
- Proposal: GENERAL, SPEC, CACHE, TLB, TMA, RVV, EXCEPTION
  - TMA = Topdown Methodology Analysis
- Should we split arch vs uarch events at top level?
- Want to make clear which events are speculative vs non-spec. Might be subclasses of the top-level groups.
  - But having a SPEC group that doesn't include all speculative events seems confusing
- Should have a way to count FLOPS
  - Often associated with vector, but not always
- TLB includes ITLB too
- Would events land in only one group? Wouldn't TLB events fall into TMA?
  - TMA would hold metrics that may include events from other categories
  - Don't want to separate metrics from events because some implementations may use metrics in place of some HW events. Want to keep that flexibility.
- This group is only looking at events counted within the hart
  - Though in some cases/implementations there is info from the outside, e.g. LLCmiss for an external LLC
- These are just logical groupings, perf will show them this way
- Looking at neoverse event files as an example
- May want to allow options to count insts/events either speculatively or non-spec
  - The former is cheaper/easier, the latter is more useful (generally)
  - Spec close to non-spec unless have high badspec, which you should fix first
    - But it can be hard to remedy all badspec
- Could we see a tree of all categories and events? Would help to settle on the right categories
  - Planning to go over one category per meeting
  - Maybe next time have some example events, or even a first draft list, so it's easier to reason about the categories
- Intel's TMA diagram is a tree structure, can do something similar
- Samsung paper on mobile characterization was interesting, uses ARM events
- Have PR on github for RV events that is very detailed, for a couple of groups. Please review!

Action items

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