

Sep 14, 2023 | 📅 RISC-V Control Transfer Records TG Meeting

Attendees: tech.meetings@riscv.org Beeman Strong Bruce Ableidinger

Notes

- **Attendees:** Beeman, Bruce, JohnS, Rajnesh, RobertC, Snehasish
- **Slides/video** [here](#)
- Updates
 - S*csrind ARC-approved this week
- CCV and priv mode
 - Bruce gave email feedback about CCV behavior on traps to an inhibited priv mode
 - CCV gets cleared on the next recorded transfer, due to the CC stopping in the other mode
 - But in this case no cycles in an enabled mode were lost, so clearing CCV seems inappropriate
 - Tools can't rely on anything in CC if CCV=0
 - Currently no way to differentiate between a trap & return case (as illustrated) and a trap + swap out (CTR disabled) + swap in (CTR enabled) + return
 - In the latter case, cycles between last record and trap are lost
 - Robert: Should CCV=0 require CC=0?
 - An implementation is free to do that, but not required
 - Snehasish: CC used by Google to measure software prefetching value. But could have large, noisy values, would be useful to know there was a trap.
 - Agreed that CCV should be cleared only for cases where cycles in an enabled mode are lost. So should be set for this trap case.
 - Beeman to revise the spec
- WRPTR behavior
 - Agreed with proposal that WRPTR should always wrap at depth, rather than when all implemented bits are set (+increment)
 - Beeman to revise the spec
- Reviewed spec changes since v0.1.3 (mostly not yet pushed)
 - Switch *ctrcontrol registers to WARL, remove per-field specs
 - Added CSR Listing table of all new CSRs, with CSR numbers
 - Missed some bits in vsctrcontrol that are in mctrcontrol
 - Beeman to fix
 - Call out need for ACPI register bit to indicate if CTR state is preserved across low-power states
 - Updated elapsed cycles formula
 - Beeman to switch to if/else format
 - Added non-normative text about RAS emulation limitations, include stack switching and stack unwinding
- Priv mode bits

- Bruce: request defining 3 bits for this
 - Beeman: don't want to commit the bits unless we have software/tools that need it
 - Longer discussion ensued
 - Agreed to add a comment in the spec, so reviewers can consider and add feedback
- Beeman to make updates and produce v0.1.4 release by early next week, aim for internal review after the group reviews

Action items

