Apr 27, 2023 | RISC-V Control Transfer Records TG Meeting

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

Notes

- **Attendees**: Beeman, Atish, BillM, JohnS, NicolasB, Snehasish, Bruce, RobertC
  - Bill: SAIL guy for RISC-V
  - Nicolas: HW designer for SiFIve, here to listen
- **Slides/video** here
- Review of S*csrind
  - Fast-track extension that extracts indirect CSR ifc from AIA, and extends it a bit, for general use
  - Used by S*aia, S*cdeleg, and CTR
  - Beeman will write the spec draft
- Robert: May want an autoincrement mechanism, like debug SBA has
  - Beeman: add to opens
- Reviewed basic block latency data Snehasish collected and sent to the list
  - Snehasish: correction, post-link pulls to the *right*, since more inlining
  - Charts record average latency for a given source/target pair
    - Collected from Google datacenter fleet
  - For call/return latency, will use xray bc expect counter to saturate too often
- Beeman: proposed fixed 4b exp and 12b mantissa, but implementations can implement any number of bits
  - Snehasish: concerned that implementations will choose too few bits
    - Believe should have at least 3b exponent
  - Beeman: Could specify minimum number of bits, say 12b counter
    - Sufficient for 99+% of cases when collecting all transfers, but low for function latency (call/ret only)
  - Bruce: think up to 4 exp bits is good, keep that width fixed
  - No consensus on this, **AI Beeman** to start a mailing list thread
- Covered CCV
  - Set for all records unless cycle counter may have stopped since the last record
  - Believe CCV should be required if implementing CC
- Latency rounding
  - Idea is to improve averages by over-counting half the time and under-counting half the time, rather than always under-counting
  - Could just be a recommended implementation, rather than a documented requirement
  - **AI Beeman** to start a thread, needs a more thorough explanation
- Out of time

Action items

- ☐ Beeman Strong Apr 27, 2023 start thread about CC requirements

- [ ] Beeman Strong Apr 27, 2023 start thread about latency rounding