CORES TG – August 2 2021

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OPENHW GROUP™
PROVEN PROCESSOR IP

Agenda

- core-v-xif
- CVA6 status
- CV32E40X status

Please let us know if you can contribute

- Status updates on
  - CV32E40P
  - CV32E20
  - Taiga
- Github issue handling on CV32E40P

core-v-xif

Arjan Bink

Extension interface

- Official version 0.1
  - https://github.com/openhwgroup/core-v-xif
- Silabs proposed (major) update
  - https://cv32e40x-user-manual.readthedocs.io/en/latest/x_ext.html
  - Please provide feedback!
  - Major changes
    - Limit specification to a point-2-point extension interface link (agreed)
      - No definition of interconnect, predecoder, etc.
      - (Analogy: AXI link protocol also does not define interconnect architecure)
    - Add support for offloading compressed instructions
    - Removed ‘external memory mode’ and ’probe mode’
    - Allow speculatively offloading instructions (requires kill support)
    - Proposing to remove all current content from https://github.com/openhwgroup/core-v-xif except 1 document
      - ~~Include, src, test, util, Bender.yml~~

CVA6 status

Jérôme Quévremont

CVA6

- Gates
  - PC (former PPL) passed
  - PL passed
  - PA (former PPA) to come: specification and detailed plan
- Project meetings
  - Every Friday 14:00 CEST
  - Alterning technical and progress meetings
  - https://calendar.google.com/calendar/u/0/embed?src=meetings@openhwgroup.org
- TWG : Cores : CVA6 Mattermost channel
  - Also spans on verification, SW topics…

CVA6: current activity

- Specification quite stable (link)
  - Close to a complete version
    - Few open points to address (unusual customers' requests…)
    - Need to request editor/commentor rights to view outstanding remarks
  - Working on OVPSim questionnaire
  - Plan to present it at August 23rd TWG meeting (partial PA)
- Cooperation on CV-X-IF specs
- Design:
  - How to merge Sv32 and Sv39 MMU in a common file
    - SV parameters not sufficient; will likely use Python and Mako templates
  - Upcoming: implementing configurable reset (sync/async…)
  - ETH working on optimizations (increase IPC…)
- Verification:
  - Rearranged CVA6 repo and CI; GitHub commit upcoming
  - FPU verification
- SW:
  - FreeRTOS: core-v-freertos repo to be deleted and CVA6 support to move to FreeRTOS.org
  - Linux 32b
    - Demo + port available (BuildRoot 2021.5.rc1, Linux kernel 5.10.7)
    - Working on a common repo to generate a Linux image for CV32A6 and CV64A6
    - Working on LLVM, the Holy Grail would be to compile a Linux image with LLVM.

CV32E40X status

Øystein Knauserud

CV32E40X

- Holiday season
- User manual updates, mainly X-interface
  - Will eventually be removed and merge into the official spec
- Marchid updated to 20
- Zba, Zbb and Zbs implemented
  - Zbc ongoing
- Bugfixes
- Area optimizations

CV32E40S

- Added enhanced PMP
- Marchid updated to 21
- Out of sync with 40X, need to merge common features
- User mode holding back verification
  - Will be prioritized in next sprint

Thank you!