

Date: 2022/01/04

Task Group: Fast Interrupts

Chair: Dan Smathers

Co-Chair: Kevin Chen

Number of Attendees: 8

Current issues on github: <https://github.com/riscv/riscv-fast-interrupt/issues>

Previous meeting minutes: <https://github.com/riscv/riscv-fast-interrupt/tree/master/minutes>

Fast Interrupt DoD (Definition of Done) Status:

<https://wiki.riscv.org/display/TECH/Fast+Interrupts+TG>

Next meeting agenda (01/18/22)

More open issue discussion? Discuss if pulls resolve discussed issues.

Add post-v1.0 label to issue #82, #100, #108?

Plan to discuss #96.

Meeting minutes

Discussing CLIC ratification schedule. try to pick a quarter. 2nd quarter a good target for ratification because 3rd quarter would be busy with other TGs.

Discussion of CLIC ratification and dependencies on EABI and UABI (unix ABI calling convention). EABI affects code-size. We have less coupling with EABI. Nothing in CLIC is really dependent on details of EABI but performance assumptions affected by EABI.

Ratification – push through things that everyone can agree on. E.g. hardware stacking pushed off. Easier to write a spec that covers fewer things.

Discuss #188 – closed.

Discuss #97 – proposal of a new shadow clic CSR. might be cleaner to not overwrite xcause and instead have a new csr name but only an issue if trying to reuse exception handlers that don't know about clic. But xtvec setting chooses clic mode or not. So can't be oblivious of clic mode. will discuss with John Hauser in arch review meeting.

Discuss #45/pull #173. accept pull #173. Then updated text and remove requirement that 5:2 need to be 0 in non-clic mode. #45 closed.

Github updates since last minutes:

Issue #188 created

Specification updates since last minutes:

Updates for issues #188, #45.

Open issue status:

Issues that can be closed?

Need spec updates:

#75 – move hw vectoring to separate section in spec - waiting until other issue spec updates before making this large text change.

#158 – change CLICCTRLBITS to CLICMLPBITS.

#160 - can rewrite to allow for but not assume n-extension is available.

Need more discussion:

#49 – reopened: prev spec had single control for multiple harts but current spec implies control per hart and implications. Closed by #183? Dependent on issue #96 discussion.

#96 – proposed reformat of cliccfg. bit spec change, small hw change. Tried to close with Pull #183. more discussion about xcliccfg.nmbits. change to a programmable boundary value? discuss more.

#97 – proposed reformat of xcause CSRs (bigger discussion). Think some assumptions might be wrong. to discuss with John Hauser.

#102 - preemptible interrupt handler code (for section 7.2)

#29/#155 – clarify intrttrig details. Entire meeting discussed CLIC trigger details with Tim from debug group. CLIC, trigger module, and hart need to be tightly integrated since these features need to be in the core to get sync behavior. discussion on where the details are written down. E.g. CLIC spec describes set of interrupts selected for interface to debug, debug specifies what happens on that event (enter debug mode, start trace, stop trace). For now, keeping abstract action in CLIC, debug takes concrete action. try do discuss more over email reflector.

#171 – CLICCFGLBITS parameter - related to #80, #158.

Issues need to be worked:

#91 – DTS entry – have linux group review DTS example.

#107 - heritage of features. keep researching and adding references to bibliography.

#185 – SAIL model implementation of CLIC

#186 – CLIC architecture tests

#187 – QEMU CLIC implementation update

Issues waiting on ratification (encoding/opcode consistency review needed)

#88 – CSR address mapping

Issues punted for rev1, keep open for future enhancements:

#82 – xcause register behavior with some modes in clic and some in clint.

#92/Pull #181 – hypervisor compatibility. Pull #181 with Initial hypervisor extension proposal for CLIC. Punted for rev1.

#99 – horizontal interrupt window. punted for rev1

#100 – reserve immediate bits

#101 - xnxti to trigger on equal level. punted for rev1

#106 – allow level change. Punted for rev1

#108 – pushint/popint?