6th Meeting of the seL4 Technical Steering Committee

Fri, 12 Sep 2023, 16:00-17:45 AEST, by Zoom

Attendance

TSC members present:

- June Andronick (JA)
- Matthew Brecknell (MB)
- Kevin Elphinstone (KE)
- Gernot Heiser (GH)
- Gerwin Klein (GK)
- Rafal Kolanski (RK)
- Ihor Kuz (IK)
- Corey Lewis (CL)
- Kent McLeod (KM)
- Yanyan Shen (YY)

TSC members absent:

- Anna Lyons (AL)

Reviewers/Committers present:

- Axel Heider
- Ivan Velickovic

Others present:

- Markku Ahvenjärvi
- Everton de Matos
- Nick Spinale

Minutes

0. **Welcome and roll call**
1. **Action items from last meeting**
    - IK, KM, AL: introduce a “new to seL4 section” on Discourse
        - Status: done.
    - BL: write guidelines for what should be considered a bug in Jira/issues
        - Status: not done. Gerwin is taking that action item.
    - GK: open discourse topic area for each SIG
        - Status: done
    - SIG chairs(EM,MB,YY): lead discussion on SIG purpose/summary and email to TSC chair; when ready to publish on seL4 website
        - Status: EM, MB: Done. YY: Not Done. Also not on website yet.
        - Decision: wait to see if continued interest at the summit.

  - Comments:
    * Gernot: on the driver topic, DFF is maturing, should help solve a lot of issues
    * June: at summit, SIG update can be just summary of last discussion and invitation to continue discussion in BoFs
- Former issue: Syncing mailing list and discourse so they can mirror each other.
  - Decision: Ihor and Gerwin to talk at the summit.

2. **RFC: The seL4 Core Platform**

   https://sel4.atlassian.net/browse/RFC-5

   - Update from Ivan: plan for transitioning the seL4CP to support the capDL sent to TSC; under implementation. This was the only remaining blocking issue.
   - Discussion on naming:
     - Gernot: proposing a name change to make it less exclusive; proposal is "the Microkit", if needing context "the seL4 Microkit", abbreviated in code "microkit" or "mukit".
     - **RESOLVED (unanimously):** name change to Microkit accepted.
   - Discussion:
     - IH: does the Microkit still require a branch/fork of kernel? Ivan: yes, one small patch to the boot code; more discussion needed with Nick on boot loader to know if it can be avoided or whether the patch should be upstreamed.
     - YY: will the Microkit work with any standard C library like muslC? Ivan: Doesn't depend on any libC, can work with any you bring as long as you can maintain it. GK: user-side documentation for this would help, eg "this is how you use muslC". Ivan: will do, just want to be careful not to steer towards a particular C library.
     - KM: general question on extending scope of project and how much capacity we have for user-level components, what are the principles of how much we want to extend in the future, and how to deprioritise other like CAmkES. GK: as long as enough capacity behind the contributors, should not add huge workload on TSC (or as long as Foundation is happy to pay for it) then increasing scope is fine. On Microkit vs CAmkES, cannot remove CAmkES currently, because plenty of systems are using it and feature set on MicroKit not complete enough to replace it. Scope of systems they address are slightly different. CAmkES currently doesn't require a lot of maintenance. In future: either convergence, or one get much more momentum and the other is deprecated, or we keep both if maintenance cost allows.
     - JA: thanks to Ivan for all the answers and clarifications by email to the TSC
   - **RESOLVED (unanimously):** RFC-5 on seL4CP (now seL4 Microkit) approved. This establishes that the work is of adequate quality for the foundation, and the design is in line with the technical direction the TSC wants for seL4.
   - **RESOLVED (unanimously):** to extend the project scope to cover the seL4CP repository at https://github.com/BreakawayConsulting/sel4cp, moving it under the control and management of the TSC. This means the RFC process will apply for significant changes to the design, as well as the foundation policies on tests, CI, and contributions. The day-to-day management of that specific repository will be mainly delegated to Ivan, but still go through the normal Pull Request process.

3. **Discussion and vote on adding Rust support repos to seL4 GitHub org**
    - Update/overview from Nick
    - Discussion:
        - Ivan: would you accept the examples or just the Rust repo? GK: would do it all, it is easier to remove things than to add them later.
    - **RESOLVED (unanimously):** that the technical quality of the Rust work in https://github.com/coliasgroup/rust-seL4 is adequate for the seL4 foundation
    - **RESOLVED (unanimously):** to extend the project scope of the seL4 foundation to include the Rust work above, moving the repository under the control and management of the TSC. This means the RFC process will apply for significant changes to the design, as well as the foundation policies on tests, CI, and contributions.
    - **RESOLVED (unanimously):** to delegate day-to-day management of that specific repository to Nick Spinale for 1 year, to be renewed if required. All Pull Requests to be posted, but Nick can accept them himself without review.
4. **Steps for next seL4 release**
    - Update from GK: Last release was in 2021. There have been a lot of improvements since then that people want to use. Propose next release in 2-3 months without Binary Verification (BV). BV is currently failing, likely issues in the tools, but can't exclude a compiler bug. Previous projects (two) to try to have it run and pass again, but not there yet. Last release (12.1) did not have Binary verification.
    - Discussion:
        - IK: should release to be honest about shortcomings
        - JA: will need to adjust the Foundation messaging, like for WCET. Issue is (a) funding and (b) lack of people with expertise/capacity/willingness. (b) is a bigger problem because can't event pitch for funding if we can't find people to do it.
        - KM: thinking about how much work would it be to rebase his work on last release where BV passed.
        - GK: we had decided not to support multiple releases, but we might change that to keep the last release with BV viable, back-porting fixes.
        - RK: yes, can't let BV block releases any more. Regarding back ports: issues used to be with CI. Potentially solved now with automatic branch updates. Suggestions on how to improve BV and to generalise it from seL4, building up a test suite of small C programs to keep the tool running. Has the advantage of making BV more applicable to other code.
        - GH: really bad if we lose BV, but no easy answer either
        - KE: not understanding how we lost it, how hard to re-establish. What changed? Compiler, C changes, Tom's magic? GK: a bit of all of that. MB: never had reliable CI to know what was failing.
        - KE: do we have 1 release in past where BV passed? Gerwin: 12.1 didn't have BV running, but 12.0 or 11 had BV. But never at same time for Arm and RISCV-V.
        - KE: would be bad to lose it esp. when we don't understand what do to do to get it back.

- (KE, CL had to leave meeting before next vote)
- **RESOLVED (unanimously):** TSC is willing to make releases without BV, explicitly marked as such (being clear it doesn't mean it has bugs but that the tool has not run). Simultaneously keep trying to find ways to re-establish it separately.
- **RESOLVED (unanimously):** we still don't support old releases by default, but will support last BV release with back port of fixes if there is specific demand.

5. **Any Other Business**
    - GH: need to discuss issue with boot time being too long; forces people to change the kernel. GK has an idea for that. To be discussed later.

Meeting closed 17:45 AEST

Summary of Actions

- **GK**: write guidelines for what should be considered a bug in Jira/issues
- **IH/GK**: discourse + mailing list sync
- **Ivan/GK**: move Microkit repository to seL4 foundation
- **Nick/GK**: move rust-sel4 repository to seL4 foundation

Acronyms

TSC Technical Steering Committee of the seL4 Foundation

Minutes prepared by JA and GK on 2023-09-17