- **Regan Robertson** Mod • 15 days ago
  Good Afternoon,
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Nick Spinale • 15 days ago

Hello all,

I'm happy to answer any questions now or throughout the remainder of the summit on this page, or anytime afterwards by email (nick.spinale@arm.com).

A note on the source code of the project described in this presentation:

The IceCap source will be moved to GitLab [1] in late November or early December, where its development will continue in the open. If you're interested in checking out the source of a particular component before then (including now), let me know and I will share it with you.

[1] https://gitlab.com/arm-rese...

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Jason H Li • 15 days ago

Hello Nick, look forward to chatting with you here.

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Renato Levy • 15 days ago

we will be starting momentarily

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Nathaniel Husted • 15 days ago

So this is Rust code running inside a *nix VM and not Rust code running natively in seL4, correct?

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Nick Spinale Nathaniel Husted • 15 days ago • edited

The Rust code runs natively on seL4, as the virtual machine monitor for the *nix VM.

This component's responsibilities are similar to that of https://github.com/seL4/cam...

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Nathaniel Husted Nick Spinale • 15 days ago

OK! Apologies -- I was a bit confused on where that was sitting. Very excited to see the Rust efforts running natively in seL4. I'm, personally, a huge fan of the language (have some personal projects in it), but I think it has a lot of properties that are a great fit for an seL4 userland environment.

I've seen a blog post from the Dorner Works folks on Rust in seL4, though excited to see how you all approached the engineering challenge.

1

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Nick Spinale Nathaniel Husted • 15 days ago

We've found Rust to be a good fit here.

Right now, we link Rust against libsel4, but someday we'd like to generate Rust bindings to the seL4 API directly using the same approach used by libsel4.

1

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Robbie VanVossen • 15 days ago • edited

To support MirageOS as a guest, did you port an existing backend, like Solo5, or did you write your own?

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Nick Spinale Robbie VanVossen • 15 days ago

We're written our own. In our case, all that entailed was writing an event loop for Lwt, and then a Rust shim which links against the OCaml unikernel and implements the backend of the event loop.

The existing muslc port for seL4 carries most of the weight here.

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Robbie VanVossen Nick Spinale • 15 days ago

This is really cool. I will be eagerly awaiting the open-source release.

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Nick Spinale Robbie VanVossen • 15 days ago • edited

Thanks, I'll let you know once it's released. We were hoping to have done that before this presentation, but ran into a 2-to-4 week delay.

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Jason H Li • 15 days ago

Nick - the communication between the two worlds can become heavy especially when switching and checking happen often. Do you see this as a potential problem in your architecting options?

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Nick Spinale Jason H Li • 15 days ago

I outline a few typical ways software is organized around TrustZone. Those typical approaches include that expensive world switch. However, the design of IceCap does not include a world switch. The worlds aren't separated using an EL3 monitor and the NS processor state bit, but rather using stage-2 translation tables alone. So, switching between a component running on secure resources and a component running on non-secure resources is just a normal seL4 context switch.

Have I understood your question correctly? Also, what do you mean by checking?

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Ihor Kuz Nick Spinale • 15 days ago

That's what I like about this design, it does away with the world switch.

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Jason H Li Ihor Kuz • 15 days ago

Indeed, very neat and makes sense for seL4.

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Jason H Li Nick Spinale • 15 days ago

This is a great answer, Nick. I will send you a separate email for a more detailed discussion. We looked into TZ and seL4 years ago but didn't go as deep or as many options you outlined today. Great work!

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Nick Spinale Jason H Li • 15 days ago

Great, thanks! I look forward to discussing all of this in more detail.

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Carl Nerup • 15 days ago

Well done.

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Nick Spinale Carl Nerup • 14 days ago

Thanks!

- Reply
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Ihor Kuz • 15 days ago

Great talk!

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Jason H Li Ihor Kuz • 15 days ago

Ihor - it must be really early your time. Thanks for supporting the Summit!

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Ihor Kuz Jason H Li • 15 days ago • edited

virtual jet lag! (I've been up all night - I feel like a student again ;-))

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Nick Spinale Jason H Li • 14 days ago

Indeed! Thanks for tuning in.

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Jason H Li • 15 days ago

Great talk!

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Todd Carpenter • 15 days ago

This was great. I'm thrilled to see progress at this level. Looking forward to when the code is released.

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Nick Spinale Todd Carpenter • 15 days ago • edited

Thanks! I'll let you know when it's released. Hopefully in two to four weeks.

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Gernot • 15 days ago

Nice job, Nick.

I'm looking forward to the RFC!

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Nick Spinale Gernot • 15 days ago

Thanks! I'll link the https://sel4.discourse.group pre-RFC thread here once it passes through moderator review.

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Curtis Millar Nick Spinale • 14 days ago • edited

The thread has been approved at Pre-RFC: TrustZone support on AArch64

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June Andronick • 15 days ago

Very nice talk!

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Nick Spinale June Andronick • 14 days ago

Thank you!

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Nick Spinale • 14 days ago

Thanks for tuning in!

Here's the new pre-RFC thread on sel4.discourse.group for discussing the possibility of adding TrustZone support to seL4 on AArch64.
https://sel4.discourse.grou...

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