



# EESSI meeting

7 July 2022

<https://github.com/EESSI/meetings/wiki>

# Agenda



1. Quick introduction by new people
2. EESSI-related meetings in last month
3. Progress update per EESSI layer (incl. bot for software layer)
4. 2021.12 version of pilot repository (+ next pilot version?)
5. AWS/Azure sponsorship update + OCRE funding opportunity
6. Google Summer-of-Code project: Gentoo Prefix on RISC-V
7. Update on EU project proposal involving EESSI
8. EESSI governance
9. Past & upcoming events
10. Q&A

# Quick introduction by new people



**New people on the call: feel free to introduce yourself!**

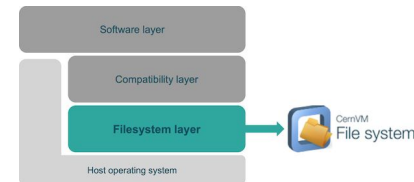
- Who are you, where do you work, on what?
- Why are you interested in the EESSI project?
- Are you planning to actively contribute,  
and if so, to which aspect(s) of the project?

# EESSI-related meetings



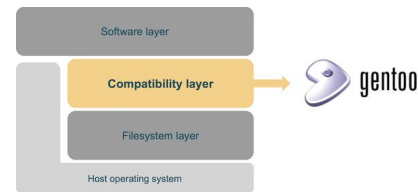
- Mon 13 Jun: CernVM-FS coordination meeting
  - No attendance from EESSI (?)
  - Corruption caused by in-place updating of files was discussed as “issue of the month”
  - See also <https://indico.cern.ch/event/1160461>
  - Shortly after we received an invite from Jakob Blomer to give a talk about EESSI (again) at CERN workshop (Sept'22 in Amsterdam) => Caspar (+ Kenneth + ...)
- Weekly sync meetings with Atharva on Google Summer-of-Code project on bootstrapping Gentoo Prefix on RISC-V (Atharva, Guilherme, Kenneth)
- Bob gave some EESSI presentations to a few Dutch universities: Twente, Maastricht, Radboud
- Fri 1 July: discussing on EESSI governance, should we look into setting up a steering committee?
  - Attended by Alan, Bob, Caspar, Kenneth, Terje, Thomas (Jaco could not join)

# Progress update: filesystem layer



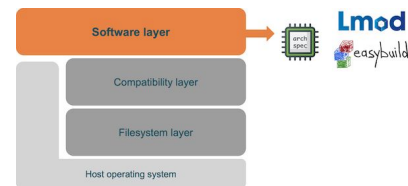
- No updates
- We should probably look into S3-backed Stratum servers again
  - Good use case for the sponsored credits
  - Also recommended by the AWS recently
  - May be possible to use AWS/Azure CDNs for caching?
- CVMFS 2.9.4 released today
  - <https://cvmfs.readthedocs.io/en/2.9/cpt-releasenotes.html>
  - Experimental support for Ubuntu 22.04 and EL 9

# Progress update: compatibility layer



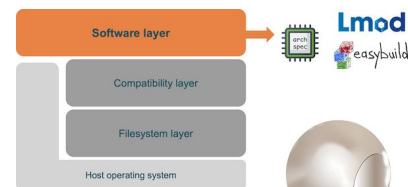
- No security updates required for 2021.06 and 2021.12 compat layers (as reported by Gentoo's `glsa-check` tool)
  - Very infrequent security advisories recently (cfr. <https://security.gentoo.org/glsa>)
  - Time to also start looking into other ways of keeping compat layer secure?
- Google Summer-of-Code (GSoC) project *“RISC-V support for Gentoo Prefix”*
  - Student wrote up a detailed project proposal, showed that he has necessary skills
  - **Project proposal was accepted lol**
  - See separate slides by Atharva

# Progress update: software layer



- Some progress on CUDA support, still work-in-progress ([PR #172](#)) [Michael, Alan]
  - **Testing & feedback welcome!**
- Progress on build-and-deploy bot by Thomas (see separate slides)

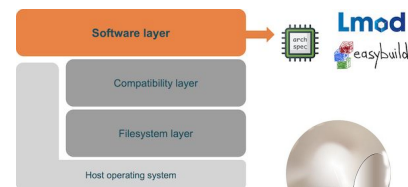
# Bot for building + deploying software layer (1/2)



- **Work resumed on implementing a bot to build + deploy software installations in software layer**
- Tue 10 May: meeting to discuss overall idea + development plan (see [slides](#) + [notes](#))
- Status:
  - Done: bot builds software stack (bot [PR #10](#)), docs to set up dev env (see [README](#) in bot repo)
  - [PR #24](#) (to review): monitor build jobs and report result back to PR in `software-layer` repo
  - Some experiments & thoughts about overview PR status and labels to trigger build & deploy steps: <https://github.com/trz42/software-layer/pull/3>
  - Preparation for deploy step: set up CVMFS infra (S0, S1, client), build compat layer; build with bot & manually ingested Java (from `EESSI-pilot-install-software.sh`)
    - Hit an issue to create tarball when repo only available via container



# Bot for building + deploying software layer (2/2)



- Next: run `eessi-bot-deploy.sh` script when label has been set in PR (or when comment has been added to PR)
  - Script could be configurable to work in different scenarios
- Wed 1 June: sync meeting (Thomas + Kenneth) to discuss status, PRs, next steps (see [notes](#))
- More NESSI project members looking into improvements:
  - Using `sacct` instead of `squeue` to monitor job status
  - Running bot on other resources than AWS cluster
- Also: more ideas for future improvements (more detailed status updates by bot, separation of monitoring)
- 1st goal: get procedure good enough to build next pilot release; expecting lots of needed improvements

# EESSI pilot repository

<https://eessi.github.io/docs/pilot>

**NOT FOR  
PRODUCTION USE!**



- 2021.06: considered “final”: no further changes, except security updates in compat layer if needed
- Current status for 2021.12 (default version)
  - Compatibility layer: in place for `aarch64` / `ppc64le` / `x86_64`
  - Software layer:
    - Software installations included in 2021.06 also in place for 2021.12, incl. GROMACS, OpenFOAM, TensorFlow + Horovod, R + Bioconductor, QuantumESPRESSO
    - Additional software (vs 2021.06): SciPy-bundle with foss/2021a (excl. `ppc64le`), WRF
    - Targets: `aarch64/generic`, `aarch64/graviton2`, `aarch64/graviton3`, `ppc64le/generic` (partial!), `ppc64le/power9le` (partial!), `x86_64/generic`, `x86_64/amd/zen2`, `x86_64/amd/zen3` (Milan), `x86_64/intel/haswell`, `x86_64/intel/skylake_avx512`
  - TODO:
    - Ensure that Lmod cache update is done correctly, includes \*all\* available modules (first step: [PR #168](#))
    - Bot to automate workflow of adding software to EESSI (to avoid losing time doing it manually)

# Time for the next pilot version?

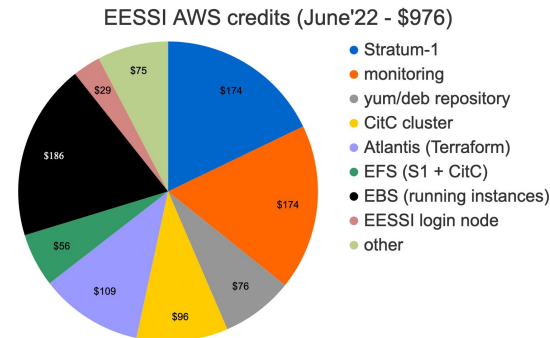
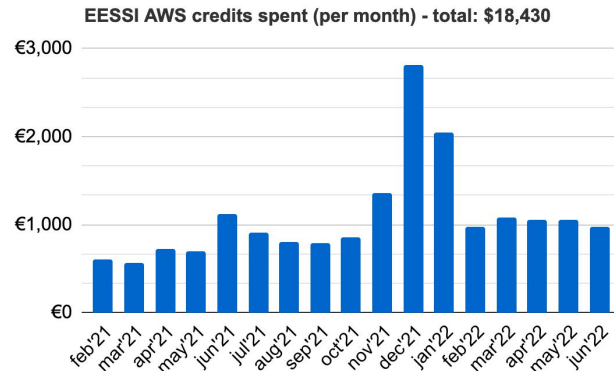


- Small changes to compatibility layer: updated Lmod, ...
- Include enhancements/changes that are necessary for CUDA GPU support
- Work towards getting rid of ugly install script, aim for easystack-only
- **Only add software installations via bot, no more manual deployments!**
- Initially include same software installations in software layer, then **gradually expand**
- Also install software with more recent toolchains + more applications
- Stop wasting time with supporting POWER (ppc64le), not used broadly enough
- Alpha/beta for production EESSI repository?

# Usage of sponsored AWS credits



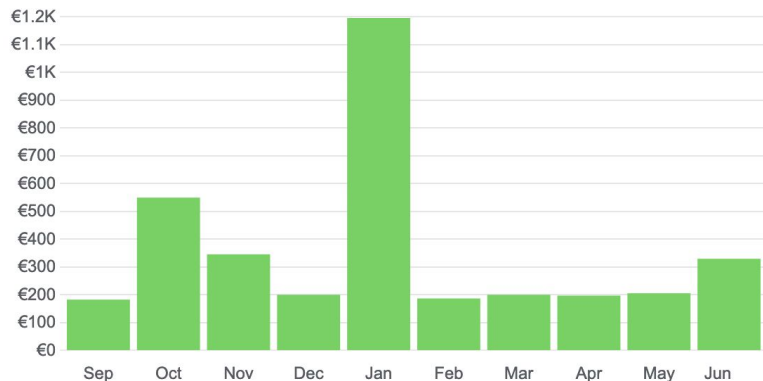
- **Ask in #aws-resources Slack channel to get access!**
- Original batch of \$25,000 worth of sponsored credits expired on Jan 31, 2022
- Request for new credits is WIP, extra \$10,000 worth of credits already received to bridge the gap
- **~\$4,860 worth of sponsored credits left** (should be sufficient until Oct'22 at current spending rate)
- **Shared document with outline of how sponsored credits can be leveraged was shared with AWS**
- In June '22: ~\$976 worth of credits spent on Stratum-1 server, monitoring node, CitC cluster, ...
- ~\$18,430 worth of credits spent in total so far (since Feb'21), all covered by sponsored credits



# Azure sponsorship



- Sponsored credits (€40,000) are being put to good use!
- **Ask in #azure-resources Slack channel to get access!**
- In June'22: ~€328 worth of credits spent: Stratum-1 + VM for GSoC RISC-V project
- ~€3,584 worth of credits spent in total (since Sept'21)
- We should look into setting up a CitC cluster in Azure as well... (using Hugo's PRs)



Overview of spent credits per month

Service name ▼



Resource group name ▼



June'22

# OCRE Funding call



- <https://www.ocre-project.eu>
- Proposal to be submitted with Bechtle/Azure focusing on
  - Resources for CI (EasyBuild, EESSI, and the EESSI bot)
  - Testing software installations (with ReFrame)
  - Training (and resources to deliver training)
- Resource estimate in proposal
  - Current spend is ~1,000 EUR per month (in AWS)
  - Requested budget: 300K EUR (over 3 years)
  - $\sim\frac{1}{3}$  on EasyBuild/EESSI CI/EESSI bot (testing recipes on multiple CPU arch's and OSes)
  - $\sim\frac{2}{3}$  on performance/scalability testing of key apps

# GSoC project Gentoo Prefix on



- Participation in Google Summer-of-Code (GSoC) via Gentoo
- Gentoo Prefix is a key component for the EESSI project (compatibility layer)
- RISC-V is one of the target CPU architectures in the EESSI project
- **Goals of GSoC project:**
  - New profile for Gentoo Prefix on RISC-V
  - Make it possible to bootstrap and use a Gentoo Prefix system on RISC-V
  - Test and keyword packages in Gentoo for RISC-V
  - Documentation to port Prefix on new architecture
- Atharva was selected as student to work on this, with Guilherme + Kenneth as mentors

# GSoC project Gentoo Prefix on RISC-V



## Current status:

- Added RISC-V Profile and symlink in `bootstrap-prefix.sh` script
- Fixing some bugs, adding Prefix support to packages helped in bootstrapping stage 1 and stage 2
- Made a new profile for `no-multilib` in `lp64d` for RISC-V
- There are some library bugs in `freedom-u-sdk`
- Have done quick fixes to bugs which helped us get done with `stage-3`
- Next task is to fix these bugs and push upstream
- Testing on different RISC-V machines after bug fixes
- As we proceed further everything is documented in [prefix\\_on\\_riscv](#) repository



# GSoC project Gentoo Prefix on RISC-V



## References:

- [Description of the GSoC Project on Gentoo wiki](#)
- GitHub repositories I am working on:
  - [Documentation of the issues encountered during the process](#)
  - [Prefix Profile for RISC-V](#)
  - [Fork of Gentoo Prefix](#)
- [Gentoo bug on adding ppc64le support to Prefix](#)
- [Gentoo Prefix as Physics Software Manager](#)
- [freedom-u-sdk](#) and [Chroot environment](#)

# EU project proposal



**EuroHPC**  
Joint Undertaking



- Status: **FUNDED!!!** (see [EuroHPC JU Governing Board decision](#))
- Funding call: “Centres of Excellence for supporting supercomputing applications for Science and Innovation”
- MultiXscale project: Increasing performance, productivity and portability in the domain of multiscale simulations
- 16 partners in 8 countries
- Total budget: ~6M EUR (of which ~50% for WPs related to EESSI)
- 4 year project (~2023-2027), ~5 FTE for WPs related to EESSI
- More details (WP description, planning, ...) will be shared “soon”

# EESSI Governance



- Funding (and its obligations) means we need to start thinking about this
- Initial discussion held among EESSI maintainers to help start the process
- Proposal:
  - Advisory Committee
    - Long term strategy (including governance)
    - Outreach/Networking
    - Funding advice
  - Technical Committee
    - Technical decision making
    - Likely influenced by funded project requirements

# Upcoming events: BioHackathon Europe 2022



- Near Paris (7-11 Nov'22)
- Our project proposal is accepted:  
***“Make your own or favourite software available on your cluster with EasyBuild/EESSI”***
- Registration is open
  - All on-site seats taken for now (but there's a waiting list)
  - Remote participation also possible
- Biology-oriented hackathon **but potentially** a good place to:
  - Reach new users and developers
  - Meet Galaxy users and community
- More information via [https://easybuild.io/biohackathon\\_eu\\_2022.html](https://easybuild.io/biohackathon_eu_2022.html)

# Upcoming events: CernVM workshop



CernVM-FS



E E S S I

- Mon-Tue 12-13 Sept 2022 @ Nikhef (Amsterdam)
- Invited talk on EESSI status & plans (by Caspar/Kenneth/...)
- More info, incl. program and registration via <https://indico.cern.ch/event/1079490>
- Attending: Caspar, Kenneth (not 100% sure yet); anyone else?
- May be a nice opportunity to hold an EESSI community meeting...
  - 14-16 Sept 2022 in Amsterdam?
  - **Let us know if you're interested to attend on site!**