



EESSI meeting

6 Jan 2022

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

Agenda



1. Quick introduction by new people
2. EESSI-related meetings in last month [Kenneth]
3. EESSI hackathon report [Thomas]
4. Progress update per EESSI layer [Kenneth]
5. 2021.12 version of pilot repository [Kenneth]
6. AWS/Azure sponsorship update [Kenneth]
7. Upcoming events: EasyBuild User Meeting [Kenneth]
8. 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



- Dec 14th: monthly CernVM-FS coordination meeting
 - Geo API broken in EL8, fix for Python 3 compatibility included in CernVM-FS 2.9.1 (see also <https://github.com/EESSI/filesystem-layer/issues/109>)
 - Trouble with copying files from `/cvmfs` to filesystem that doesn't support extra attributes (see also <https://github.com/easybuilders/easybuild-framework/issues/3910>)
=> clients should configure CernVM-FS with `CVMFS_HIDE_MAGIC_XATTRS`
 - Fellowship opportunity to work on CernVM-FS (6-36 months),
submission deadline Jan 16th 2022
(see <https://jobs.smartrecruiters.com/CERN/743999791664360-senior-fellowship-software-engineer>)

EESSI hackathon report (1/3) - intro



<https://github.com/EESSI/meetings/wiki/EESSI-hackathon-Dec'21>

- 1st EESSI hackathon: Dec 13-17, 2021
- **Main goal: focused effort on various tasks in EESSI**
- About 15 participants, working in small teams on 7 topics (out of ~16 proposed)
- Using prepared infrastructure with EESSI pilot on AWS & FENIX
 - Magic Castle clusters (https://github.com/EESSI/hackathons/tree/main/2021-12/magic_castle)
 - one on AWS with fast interconnect (EFA) + GPU (G4 instances - NVIDIA T4)
 - one with GPUs on FENIX resources at JUSUF @ JSC (AMD EPYC + NVIDIA V100)
 - CitC cluster on AWS: Intel Haswell + Skylake + Cascade Lake, AMD Rome, Graviton2 (<https://github.com/EESSI/hackathons/tree/main/2021-12/citc>)
- Dedicated GitHub repository: <https://github.com/EESSI/hackathons>
- Live notes via HackMD documents (one per hackathon task)

EESSI hackathon report (2/3) - topics & results



<https://github.com/EESSI/meetings/wiki/EESSI-hackathon-Dec'21>

Task 02: Installing software on top of EESSI ([video](#), [notes](#))

- building with EB works fine (at least ReFrame (3.9.2) and WRF were built)
- manually building requires RPATH wrapper scripts
=> draft PR for GCCcore easyblock in EasyBuild
<https://github.com/easybuilders/easybuild-easyblocks/pull/2638>

Task 03: Workflow to propose additions to EESSI software stack ([video](#), [notes](#))

- GitHub app that reacts to PR events, basic structure available, logging (replay), auth, ...
- SLURM job script to build software stack, run sanity checks, keep log and create tar file

Task 05: GPU support ([video](#), [notes](#))

- GPU support is working, initial scripts made

Task 06: EESSI test suite ([video](#), [notes](#))

- list of required tests, labels for test selection, GROMACS, TensorFlow & WRF tests

Task 07: Monitoring ([video](#), [notes](#))

- Deployment of Grafana, Prometheus, node_exporter on Stratum servers; set up with Ansible; reuse Cloud Alchemy roles

Task 08: Setting up a private Stratum 1 ([video](#), [notes](#))

- fixed outdated documentation; added doc on snapshot in non-default location; tested private Stratum 1 from a client

Task 16: Exporting EESSI to a tar/container ([video](#), [notes](#))

- I/O performance was limiting; variant symlinks not yet in place; script to containerize a subset of modules; container seems to work independently of EESSI

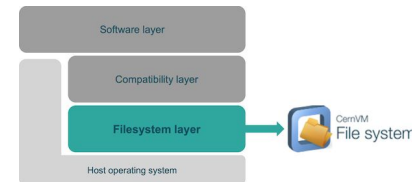
EESSI hackathon report (3/3) - lessons

<https://github.com/EESSI/meetings/wiki/EESSI-hackathon-Dec'21>



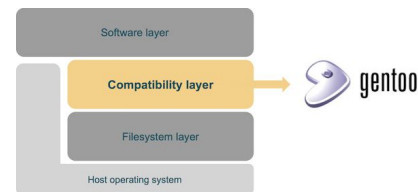
- Overall very well received by participants
- Strong motivation to set aside some time during the week, focused effort
- Spreading hackathon across a full week worked well => able to mix hackathon with other tasks
- Expected chaos was mostly absent, hackathon was well prepared
- ~~Good~~ **impressive** progress in several areas
- Some areas of improvement
 - Some tasks are more complex, particularly for beginners => need clearly defined sub-tasks
 - Start from a working environment (for each task)

Progress update: filesystem layer



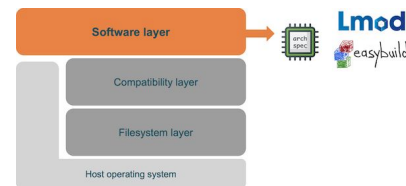
- Some of our Stratum 1 servers are running EL8 and are affected by the broken GEO API issue
 - Compatibility problem with Python 3
 - Fixed in CernVM-FS 2.9.1, see also [issue #109](#)
- Playbook for ingesting files and (variant) symlinks to the CernVM-FS repository ([PR #105](#))
- Update tarball ingestion script, use new `versions` directory as base dir for ingestion ([PR #104](#))
- Update README.md w.r.t. paths to pilot config + config package repository ([PR #106](#))
- Client configuration should be updated to hide extra attributes in CernVM-FS? ([issue #110](#))
- TODO: make data repository, and add the data files from Hugo's PR ([PR #112](#))

Progress update: compatibility layer



- No security updates required for 2021.06 or 2021.12 compat layers
(as reported by Gentoo's `glsa-check` tool)
 - No updates in Gentoo security database since July 2021... (see <https://glsa.gentoo.org>)
 - Rework of GLSA is a work-in-progress by Gentoo security team
- 2021.12 compat layer was ingested into EESSI pilot repository on 8 Dec 2021
 - Prefix bootstrap procedure is now more strictly controlled
 - Using specific commit in `gentoo` repository (rather than a snapshot we don't control)
 - Installed packages (incl. versions) pretty much identical for `aarch64` / `ppc64le` / `x86_64`
 - Deliberately sticking to `glibc 2.33.x` and `GCC 9.x`
 - More recent versions cause trouble in software layer (building GCC, CUDA compatibility, etc.)

Progress update: software layer



- Software build script was updated for EasyBuild 4.5.0 and 2021.12 pilot
- Software that was included with 2021.06 pilot has been also been added to 2021.12 pilot
- Init script fixed to be compatible with archspec 0.1.3 (but could use some more love) ([PR #159](#))
- Init scripts for 2021.12 pilot are in place
- Additional software for 2021.12 EESSI pilot repository:
 - SciPy-bundle with `foss/2021a` ([PR #160](#))
 - Motivated by GPU task in EESSI hackathon, need for more recent toolchain than `foss/2020a`
 - Already in place for `x86_64/amd/zen2` and `x86_64/intel/haswell`
 - Built for `x86_64/generic` - to be ingested; other CPU targets: TODO
 - WRF ([PR #162](#)): TODO (build + ingest, main targets `amd/zen2` and `intel/skylake_avx512`)
- GROMACS test for EESSI on top of GROMACS test in ReFrame library by CSCS ([PR #156](#))
 - Outcome of EESSI hackathon, **testing + feedback welcome!**

EESSI pilot repository

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

**NOT FOR
PRODUCTION USE!**

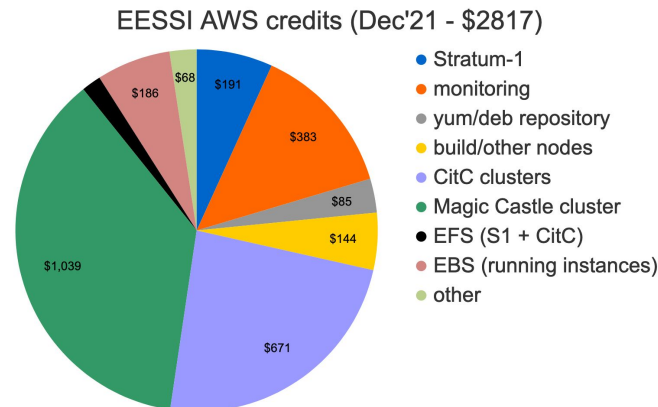
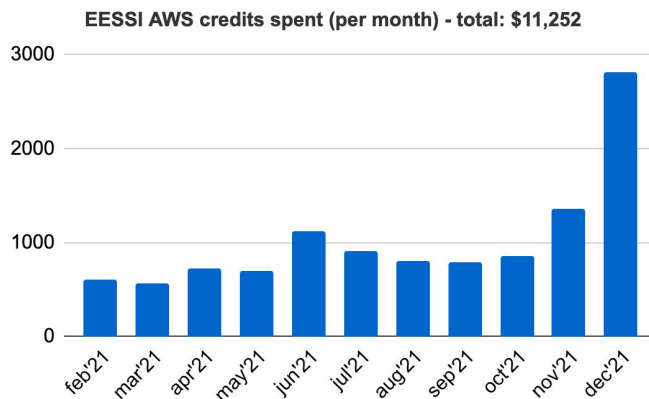


- 2021.06: considered “final” (no further changes, except security updates in compat layer if needed)
- Current status for 2021.12:
 - New path: `/cvmfs/pilot.eessi-hpc.org/versions/2021.12`
 - Compatibility layer: in place for `aarch64` / `ppc64le` / `x86_64`
 - List of installed packages is pretty much identical \o/
 - Software layer:
 - Software installations included in 2021.06 also in place for 2021.12, incl.
GROMACS, OpenFOAM, TensorFlow + Horovod, R + Bioconductor, QuantumESPRESSO
 - Additional software being added: SciPy-bundle with foss/2021a, WRF
 - Documentation at <https://eessi.github.io/docs/pilot> needs to be updated!

Usage of sponsored AWS credits



- Sponsored credits (\$25,000) are being put to good use!
- **Ask in #aws-resources Slack channel to get access!**
- In December '21: ~\$2,817 worth of credits spent on Stratum-1 server, monitoring node, repository node, EESSI hackathon cluster (CitC, Magic Castle)
- ~\$11,252 worth of credits spent in total
- **Credits will expire on Jan 31, 2022!** (new sponsored credits will be requested ASAP)

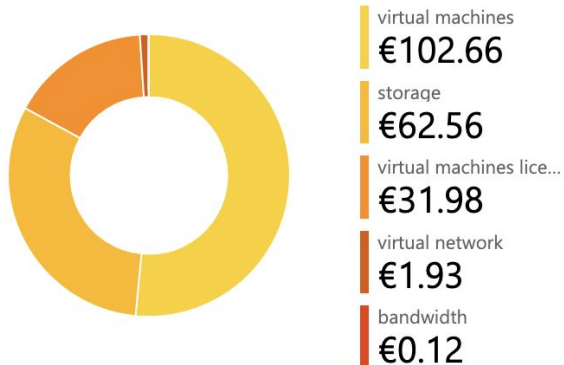


Azure sponsorship

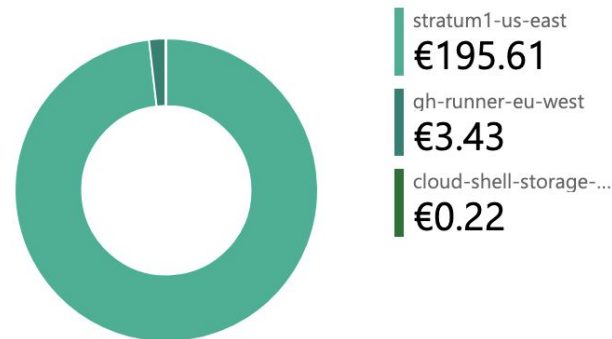


- Sponsored credits (€40,000) are being put to good use!
- **Ask in #azure-resources Slack channel to get access!**
- In Dec'21: ~€ 200 worth of credits spent
- On Stratum 1 + (stopped) GitHub Runners
- ~€1,274 worth of credits spent in total (since Sept'21)

Service name ▼



Resource group name ▼



Next EESSI hackathon: 17-21 Jan 2022



<https://github.com/EESSI/meetings/wiki/EESSI-hackathon-Jan'22>

- Focused effort (part time) on making good progress on various tasks
 - Self-organising small groups (2-5 people) working on a (single) specific task
 - With support from “experienced” EESSI contributors
 - 3 Zoom sessions each week: kickoff on Mon, sync on Wed, show & tell on Fri
- Make some good use of our remaining AWS (and Azure) credits
 - Current AWS credits expire end of Jan'22, still ~\$13.5k left!
- Dedicated channel in EESSI Slack: [#hackathon](#)
- **If you plan to participate, please register (doodle will be set up soon)**

EESSI hackathon (Jan'22): selected tasks



<https://github.com/EESSI/meetings/wiki/EESSI-hackathon-Jan'22>

Continue work on tasks of previous hackathon (Dec'21):

- Installing software on top of EESSI
- Workflow to propose additions to EESSI software stack (GitHub app)
- GPU support
- EESSI test suite
- Export a version of the EESSI stack to a tarball and/or container image
- Monitoring
- Setting up a (private) Stratum-1

Upcoming events

- 7th EasyBuid User Meeting (EUM'22)



- 24-28 Jan 2022
- Fully virtual via Zoom/YouTube/Slack (all talks will be recorded)
- Program (almost) complete: <https://easybuild.io/eum22/#program>
- Attendance is free of cost
- **Please register if you plan to attend!** <https://easybuild.io/eum22/#registration>
- Talks related to EESSI:
 - Getting started with EESSI (Bob, Kenneth, ...)
 - Semi-automated workflow for adding software to EESSI (Bob, Kenneth, ...)
 - Leveraging EESSI for WRF simulations at scale on Azure HPC (Hugo, Davide)
 - ReFrame update (Vasileios), Lmod update (Robert McLay), ...