EESSI meeting

4 August 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 + outlook to 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 MultiXscale EU project proposal
8. Past & upcoming events
9. 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?

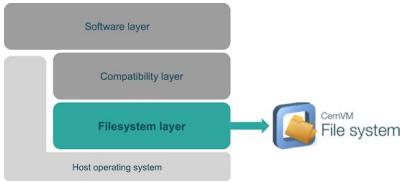
EESSI-related meetings

- Mon 11 July: CernVM-FS coordination meeting
  - No attendance from EESSI (?)
  - Corruption caused by in-place updating of files (CVM-2001) still seems to be “issue of the month”
  - Commit history in dedicated branch for this issue looks promising (working towards a fix?)
    - See https://github.com/cvmfs/cvmfs/commits/CVM-2001

- Fri 15 July: Azure/EESSI sync (Alan)
  - Informed Azure about acceptance of MultiXscale EU project
  - Discussion around submission of OCRE project proposal

[Kenneth, Alan]

Progress update: filesystem layer

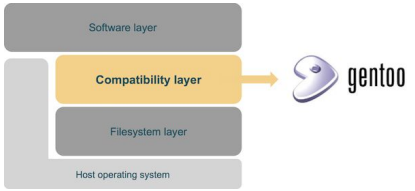


- PR to hide magic attributes in CernVM-FS configuration of EESSI containers (see PR #125)
  - + update to CernVM-FS v2.9.4
  - Applies to both client container to access EESSI pilot repo + our build container
  - Enables `CVMFS_HIDE_MAGIC_XATTRS` in CernVM-FS configuration
  - Needed to avoid trouble when files are being copied from EESSI (see issue #110)
  - May also be fixed by new version of `fuse-overlayfs` (relevant for our build container)
    - See https://github.com/containers/fuse-overlayfs/releases/tag/v1.5.0

      ```
      fix copyup of xattrs longer than 256 bytes
      ```

[Bob, Kenneth]

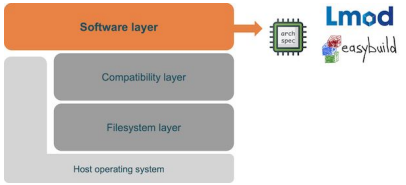
Progress update: compatibility layer



- 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"*
  - Currently ongoing, Atharva will report on progress (see later slides)
- p7zip should be made available in EESSI repository
  - To unpack RPMs in context of GPU support
  - Install in compat layer, or in software layer (via module)?

[Kenneth]

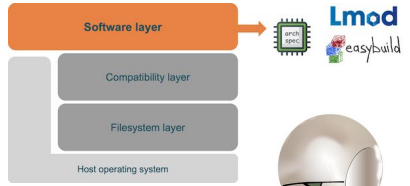
Progress update: software layer



- Some progress on CUDA support, still work-in-progress (PR #172) [Michael, Alan]
  - Open PRs in EasyBuild for CUDA compat libraries (see PRs #2765 + #15892)
    - May not be useful for our use case
    - Helpful to discover libraries are identical across distros!
      - Can focus on RHEL8 rpms, has “all” CPU archs and will be supported for many years
  - **Testing & feedback welcome!**
    - See `gpu_support/README.md` in PR #172 for basic instructions
- Work on extending support for easystack files in EasyBuild [Caspar, Kenneth]
  - See PRs #4021 + #4052
- Progress on build-and-deploy bot by Thomas (see separate slide)

[Alan, Michael, Caspar, Thomas, Kenneth]

Bot for building + deploying software layer



- **Work resumed on implementing a bot to build + deploy software installations in software layer**
- Goal: get procedure good enough to build next pilot release; expecting lots of needed improvements
- Status:
  - Done: bot builds software stack (bot PR #10), docs to set up dev env (see README in bot repo)
  - PR #24 (WIP): monitor build jobs and report result back to PR in `software-layer` repo
  - Preparation for deploy step: set up local 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
- Next:
  - 1) PR#24 (WIP) - implement improvements before it gets merged (see PR for ideas)
  - 2) implement `eessi-bot-deploy.sh` script that runs when label (bot:deploy) has been set in PR (or when comment has been added to PR)

[Thomas, Kenneth]

EESSI pilot repository

NOT FOR PRODUCTION USE!

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

- 2021.06: considered “final”: no further changes, except security updates in compat layer if needed
- Current status for 2021.12 (default version) - **no changes since last EESSI update meeting (June’22)**
  - 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)

[Kenneth]

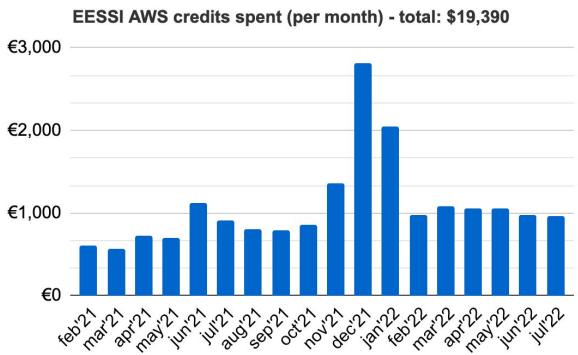
Time for the next pilot version?

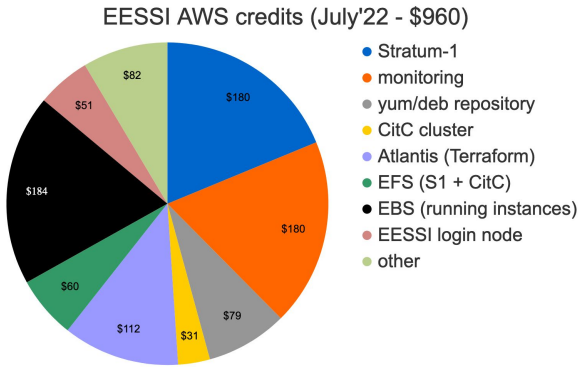
- Small changes to compatibility layer: updated Lmod, …
- Include enhancements/changes that are necessary for CUDA GPU support
- Work towards getting rid of ugly install script, aim for easystack-only
- **Only add software installations via bot, no more manual deployments!**
- Initially include same 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?

[Kenneth]

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
- ~$3,900 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 July '22: ~$960 worth of credits spent on Stratum-1 server, monitoring node, CitC cluster, …
- ~$19,390 worth of credits spent in total so far (since Feb'21), all covered by sponsored credits

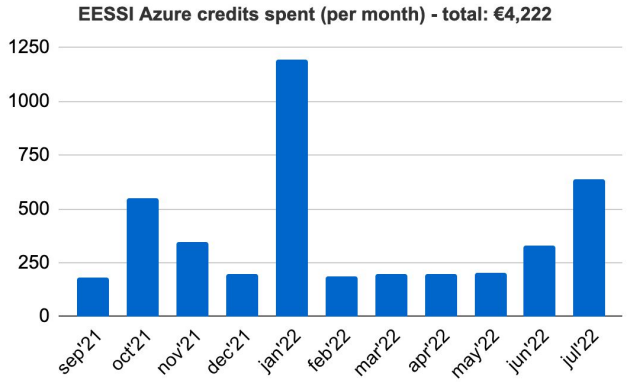




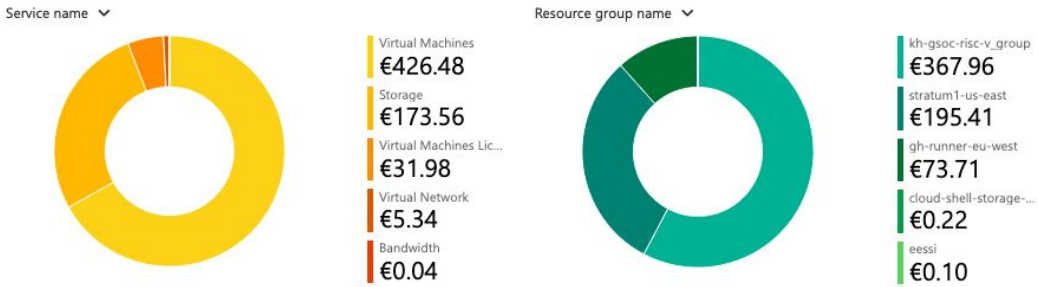
[Kenneth]

Azure sponsorship

- Sponsored credits (€40,000) are being put to good use!
- **Ask in #azure-resources Slack channel to get access!**
- In June'22: ~€637 worth of credits spent: Stratum-1 + VM for GSoC RISC-V project
- ~€4,222 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



July'22

[Kenneth]

OCRE Funding call

- https://www.ocre-project.eu
- Proposal 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
  - Requested budget: 300K EUR (over 3 years)
  - ~⅓ on EasyBuild/EESSI CI/EESSI bot (testing recipes on multiple CPU arch's and OSes)
  - ~⅔ on performance/scalability testing of key apps
- Result in September

[Alan, Bob, Kenneth]

GSoC project Gentoo Prefix on RISC-V

- 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

[Atharva, Kenneth, Guilherme]

GSoC project Gentoo Prefix on RISC-V

Current status:

- **We finally have a working RISC-V Profile for Gentoo Prefix**
- Added RISC-V Profile and symlink in `bootstrap-prefix.sh` script
- Made a new profile for `no-multilib` in `lp64d` for RISC-V and all 3 stages compile on it.
- Tested packages in the EESSI Overlay.
- Testing Packages on Gentoo ebuild repository
- Testing on different RISC-V machines after bug fixes
- Working on Documenting “Porting Prefix to New Architecture”
- As we proceed further everything is documented in prefix_on_riscv repository

[Atharva, Kenneth, Guilherme]

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

[Atharva, Kenneth, Guilherme]

EU project: MultiXscale

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
- Still waiting for official notification from EU (should be September)
- We will share more detailed info later about the project & its goals

[Alan, Bob, Kenneth]

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

[Sebastien, Kenneth]

Upcoming events: CernVM workshop + EESSI meeting?

- 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 that same week…
  - Wed-Fri 14-16 Sept 2022 in Amsterdam (@ SURF)
  - **Let us know if you're interested to attend physically!**
  - Remote participation will be possible too

[Kenneth]