EESSI meeting

1 Sept 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 8 August: CernVM-FS coordination meeting

  - No attendance from EESSI (?)

- Several calls to prepare EESSI community meeting

  - See notes at https://hackmd.io/WJz9RJA6RpOcgMWc4Oym1g

[Kenneth]

Progress update: filesystem layer
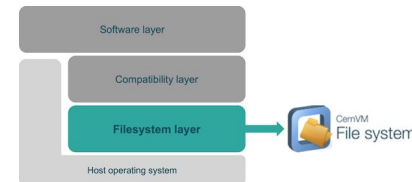
- Progress on CernVM-FS bug ([CVM-2001](CVM-2001))

  - More commits in Aug'22 towards fixing corruption caused by in-place updating of files

  - See https://github.com/cvmfs/cvmfs/commits/CVM-2001

  - Kenneth hopes to learn more on this at CernVM workshop (12-13 Sept)

- PR to hide magic attributes in CernVM-FS configuration of EESSI containers (see [PR #125](PR%20#125))

  - + update to CernVM-FS v2.9.4

  - Applies to both client container to access EESSI pilot repo + our build container

  - Needed to avoid trouble when files are being copied from EESSI (see [issue #110](issue%20#110))

[Bob, Kenneth]

Progress update: compatibility layer
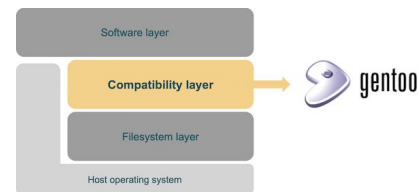
- Several security updates required for 2021.06 and 2021.12 compat layers (these were reported by Gentoo's `glsa-check` tool)

  - Installation of these updates is a bit tricky, and will bring in lots of other updates

  - Still figuring out the best way to do this (and keep control over what gets installed)

  - See script in [WIP PR #155](#)

- 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
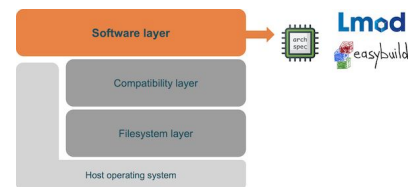
- Support for NVIDIA GPUs still WIP (see PR #172)

  - **Testing & feedback welcome!**

  - See `gpu_support/README.md` in PR #172 for basic instructions

  - Presentation + hands-on planned at EESSI Community Meeting in Amsterdam

- Work on extending support for easystack files in EasyBuild [Caspar, Kenneth]

  - See PRs #4021 + #4052 => still needs to be reviewed/merged

- Progress on build-and-deploy bot by Thomas (see separate slide)

[Kenneth, Thomas]

Bot for building + deploying software layer
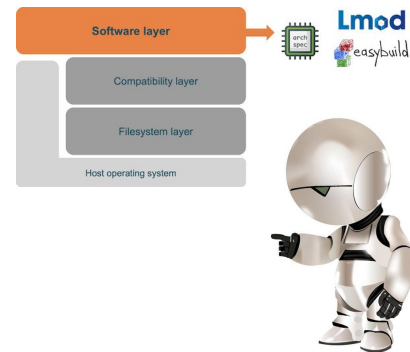
- **Goal: get procedure good enough to build next pilot release; expecting lots of needed improvements**

- Status:
  - [PR #24](#) (WIP): monitor build jobs and report result back to PR in `software-layer` repo
  - Extensive testing of PR#24 on 5+ clusters (5 in Norway + CitC-AWS), lots of improvements

- Next:
  - 1) [PR#24](#) (WIP) - implement improvements before it gets merged - ETA: before F2F in Amsterdam
    - Complete testing of PR#24 for `pilot.nessi.uiocloud.no` and `pilot.eessi-hpc.org`
    - Polish code (README.md is almost up-to-date)
    - Add collected issues for future improvements
  - 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) - ETA: PR#24 + 1 month

- EESSI F2F meeting: planned presentation and hands-on (*get the bot installed on your resource*)

[Thomas, Kenneth]

EESSI pilot repository

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 (Aug'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)
    - **Build the stack for Azure's Ampere Altra (Arm) CPUs (generally available since today!)**
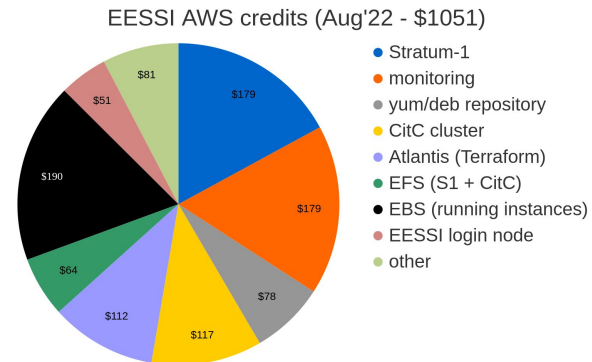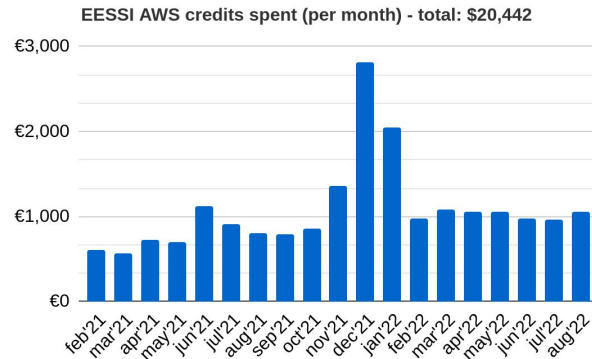
[Kenneth]

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?

- Switch to `eessi.io` domain?
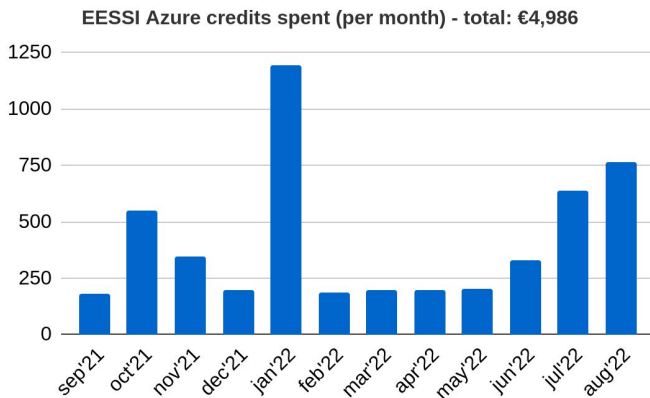
[Kenneth]

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 + $5,000 worth of credits received to bridge the gap

- ~$7,800 worth of sponsored credits left (should be sufficient until Mar'23 at current spending rate)

- Shared document with outline of how sponsored credits can be leveraged was shared with AWS

- In Aug '22: ~$1,051 worth of credits spent on Stratum-1 server, monitoring node, CitC cluster, …

- ~$20,442 worth of credits spent in total so far (since Feb'21), all covered by sponsored credits

EESSI AWS credits spent (per month) - total: $20,442

EESSI AWS credits (Aug'22 - $1051)

- Stratum-1
- monitoring
- yum/deb repository
- CitC cluster
- Atlantis (Terraform)
- EFS (S1 + CitC)
- EBS (running instances)
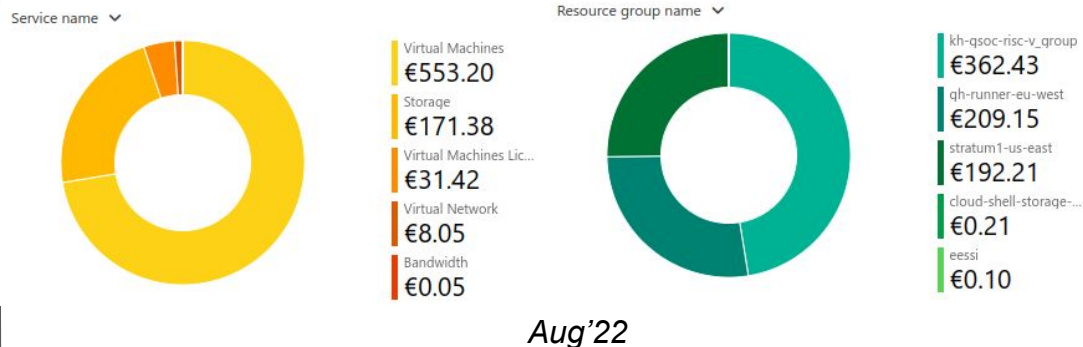- EESSI login node
- other

[Kenneth]

Azure sponsorship

- Sponsored credits (€40,000) are being put to good use!

- **Ask in #azure-resources Slack channel to get access!**

- In Aug'22: ~€764 worth of credits spent: Stratum-1 + VM for GSoC RISC-V project + GH Runners

- ~€4,986 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 #118 + #68)

EESSI Azure credits spent (per month) - total: €4,986

Overview of spent credits per month

Service name ∨

Virtual Machines
€553.20

Storage
€171.38

Virtual Machines Lic...
€31.42

Virtual Network
€8.05

Bandwidth
€0.05

Resource group name ∨

kh-qsoc-risc-v_group
€362.43

qh-runner-eu-west
€209.15

stratum1-us-east
€192.21

cloud-shell-storage-...
€0.21

eessi
€0.10

Aug'22

[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

- We 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

- Working on Documenting "Porting Prefix to New Architecture"

- **Working on bootstrapping the EESSI compat layer for RISC-V**

- Testing RISC-V images of various distros for bootstrapping the EESSI compat layer

- Officially the project finishes on 4th September 2022.

[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

- Status: **FUNDED!!!** (see [EuroHPC JU Governing Board decision](#))

- 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

- **Currently working through red tape towards grant agreement (due mid Sept'22)**

- Expected project start: Feb'23 (may still change)

- **Presentation on MultiXscale project & relation to EESSI at EESSI Community Meeting**

[Alan, Bob, Kenneth]

Upcoming events: CernVM workshop

- Mon-Tue 12-13 Sept 2022 @ Nikhef (Amsterdam)

- Invited talk on EESSI (by Kenneth)

  - Quick introduction to EESSI, incl. scope & goals

  - High-level overview + use cases

  - Overview of recent developments, current status, future plans

- More info, incl. program and registration via https://indico.cern.ch/event/1079490

- Attending: Kenneth - anyone else?

- Remote attendance possible!

[Kenneth]

Upcoming events: EESSI community meeting

- Wed-Fri 14-16 Sept 2022 in Amsterdam - hosted by SURF

- Venue: Polderzaal at Cafe-Restaurant Polder ([location](#))

- Attendance is free of charge, sponsored by SURF

- Sponsored (?) group dinners

- **Please register as soon as possible!** (registration closes Fri 9 Sept'22)
    - In-person: https://events.surf.nl/kort14/open/b53c4d85-65a7-4ed7-a2cf-8a2d1d3556ea?culture=en-US
    - Remote: https://events.surf.nl/kort4/open/d80bb791-2a2c-4745-a9dc-d0ed4f05117c?culture=en-US

- Preliminary agenda: https://hackmd.io/WJz9RJA6RpOcgMWc4Oym1g?view

[Caspar, Kenneth]

Upcoming events: EESSI community meeting

Agenda (preliminary, subject to minor changes): **Wed 14 Sept 2022**

[10:00-12:00] Welcome + round table (who is who, interest in EESSI, …)

[12-:00-13:00] Lunch

[13:00-16:00] Talks on EESSI (+ coffee break)

- ○ Introduction to EESSI + hands-on (using EESSI if it's already available)

- ○ EESSI use cases

- ○ EESSI for sysadmins (how to make it available), incl. hands-on

[16:00-17:00] Remote presentation by Bart Oldeman (Compute Canada) **[to be confirmed]**

[18:00-...] Group dinner

[Caspar, Kenneth]

Upcoming events: EESSI community meeting

Agenda (preliminary, subject to minor changes): **Thu 15 Sept 2022**

[09:30-10:30] EESSI behind the scenes: compat layer + software layer

[10:30-11:00] Coffee break

[11:00-11:30] EESSI behind the scenes: infrastructure

[11:30-12:00] Status on RISC-V support

[12:00-13:00] Lunch

[13:00-13:30] Status on GPU support

[13:30-14:00] Status on build-and-deploy bot

[14:00-17:00] Discussions - hands-on sessions - hackathon: GPU support, bot, …

[18:00-...] Group dinner

[Caspar, Kenneth]

Upcoming events: EESSI community meeting

Agenda (preliminary, subject to minor changes): **Fri 16 Sept 2022**

[09:30-10:30] Testing in software layer + MultiXscale project

[10:30-11:00] Coffee break

[11:00-11:30] Discussion on short-term future work

[11:30-12:00] Discussion on management structure for EESSI: steering/technical committee, …

[12:00-13:00] Lunch

[13:00-14:00] Site reports: NESSI, NLPL (?), HPCNow (?), Elixir (?), Azure (?)

[14:00-14:30] Discussion: What would make or break EESSI for your site?

[14:30-15:45] Discussions - hands-on sessions - hackathon: GPU support, bot, testing software, …

[16:00] Hard stop (time for a beer?)

[Caspar, 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]