EESSI Happy Hour

Mondays at 14:00 CE(S)T

Topic Series: EESSI dashboard and ReFrame tests

https://www.eessi.io/docs/training/2025/happy-hours-sessions

www.multixscale.eu

Current session: ReFrame tests

https://www.eessi.io/docs/training/2025/happy-hours-sessions

Streaming Optimised Scientific Software

EESSI

EUROPEAN ENVIRONMENT FOR SCIENTIFIC SOFTWARE INSTALLATIONS

Website: eessi.io

EESSI support portal:

gitlab.com/eessi/support

24-11-2025

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Session Highlights:

- Goals of the EESSI test suite
- Demo: writing a portable ReFrame test
  https://www.eessi.io/docs/test-suite/writing-portable-tests/
- Currently available tests
- Current limitations

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Primary goal

- Test the functionality and performance of EESSI software on wide range of systems in a standardized way

Challenge

- Every system is different: how to make it portable

Solution

- Separate test-specific logic from site-specific info
  - Test-specific: test classes
  - Site-specific: site configuration file
  - Linking test with site: helper class, hooks, utility functions

Additional goals

Should work for both EESSI software stack and local modules

Running a test should be flexible
- Custom cmd-line options (system-partition, module, scale, executable options, threads, processes, ...)

Should run on different execution environments: HPC, CI, cloud, laptop
- Include small test variants, skip variants that are too big

Writing a test should be easy (and fun)
- Minimize boilerplate, focus on test itself
- Easily extendible (adding test variants)

Writing a portable ReFrame test

Demo: mpi4py (MPI for Python)
https://www.eessi.io/docs/test-suite/writing-portable-tests/#step-by-step-tutorial-for-writing-a-portable-reframe-test

```
# preparation
git clone https://github.com/EESSI/test-suite.git
unset MODULEPATH
source /cvmfs/software.eessi.io/versions/2023.06/init/bash
module load ReFrame/4.6.2

export RFM_CONFIG_FILES=$PWD/config_demo.py
export RFM_PREFIX=$PWD/reframe_runs
export PYTHONPATH=$PYTHONPATH:$PWD/test-suite
```

Currently included tests

1. BLAS (OpenBLAS, BLIS, AOCL-BLAS, MKL)
2. CP2K
3. ESPResSo
4. GROMACS (CPU, GPU)
5. LAMMPS (CPU, GPU)
6. MetalWalls
7. Numpy
8. OpenFOAM
9. OSU Micro-Benchmarks (CPU, GPU)
10. PyTorch-torchvision (CPU, GPU)
11. QuantumESPRESSO
12. TensorFlow (CPU, GPU)

Current limitations

- Flat (EasyBuild) module naming scheme
- NVIDIA GPUs (CUDA)
- Only tested with Slurm scheduler

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Next topic series: Scaling Software Builds Across Architectures with Automation
https://www.eessi.io/docs/training/2025/happy-hours-sessions

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