# EESSI Happy Hour

*Topic Series: EESSI Fundamentals Refresher*

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

*Mondays at* 14:00 CEST

www.multixscale.eu

*Current session: From x86 to RISC-V: Expanding EESSI's Reach*

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Streaming Optimised Scientific Software

EESSI

EUROPEAN ENVIRONMENT FOR SCIENTIFIC SOFTWARE INSTALLATIONS

Website: eessi.io

EESSI support portal:

gitlab.com/eessi/support

16-03-2026

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## ***Highlights:***

- 11th EasyBuild User Meeting (EUM' 26) https://easybuild.io/eum26
  Tue-Thu 21-23 April 2026 @ Guimarães, Portugal (home of Deucalion)
- EESSI Webinar Series 2026
  Starting Mon 27 Apr'26: Introduction to EESSI
- Webinar 4 of 5 EFP Authentication & Authorization Infrastructure (AAI) *(registration will be opened soon)*
  Wed 29 April 2026 14:00-15:00 CET https://my-eurohpc.eu/training/
- ISC'26 conference
  22-26 June 2026 @ Hamburg

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## *Ways to access EESSI:*

- CernVM-FS – **RECOMMENDED**
- The `eessi_container.sh` script
- Using cvmfsexec
- Using cernvm-fs-shrinkwrap-utility
- EESSI Command-Line Interface (CLI)
- EESSI on macOS
- Yet another way to run EESSI: Docker Extensions
- **From x86 to RISC-V: Expanding EESSI's Reach**

https://www.eessi.io/docs/training-events/2026/happy-hours-previous-sessions/

# RISC-V

- **Open standard Instruction Set (ISA)** based on **Reduced Instruction Set Computing (RISC)** principles.
- Unlike proprietary ISAs (e.g., x86 or ARM), **RISC-V is open and royalty-free**, allowing anyone to design processors implementing it.
- It uses a **modular design**: a small base instruction set with optional extensions (e.g. vector, floating-point, atomic operations).
- This flexibility makes it attractive for **research, HPC, embedded systems, and custom accelerators**.
- The open ecosystem encourages **innovation, portability, and hardware diversity**.

## Motivation

- RISC-V adoption is rapidly growing in HPC, research, and industry
- EESSI's mission is portability – supporting RISC-V aligns with architecture diversity
- Early ecosystem support helps researchers evaluate RISC-V systems with familiar software stacks
- Lower barrier for communities experimenting with open hardware platforms
- Future-proof EESSI by enabling emerging architectures beyond x86 and ARM

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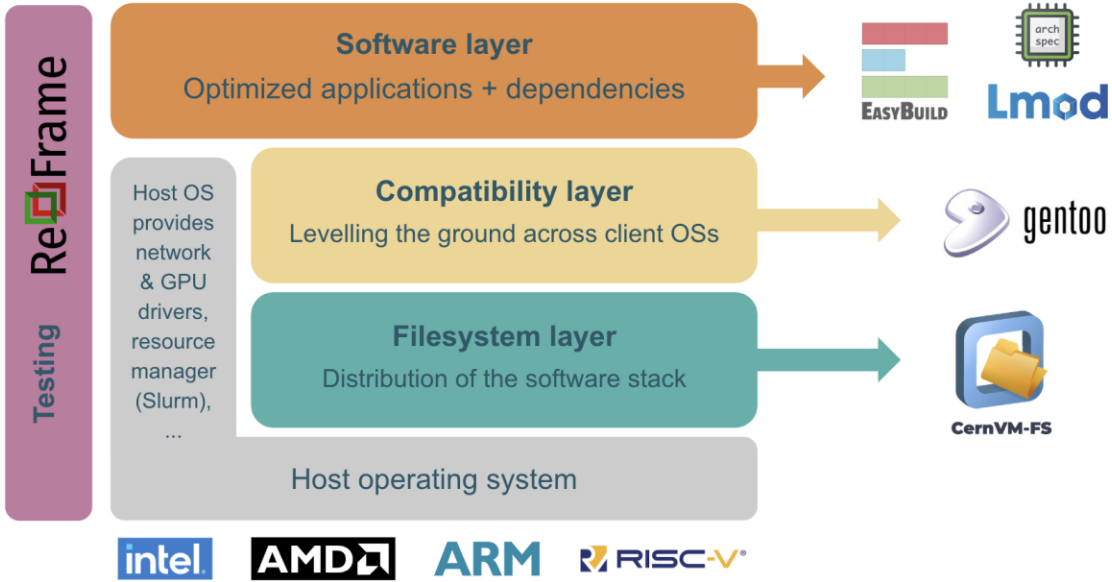
## RISC-V support



# Using EESSI on a RISC-V system…

```
jmorillo@premier-4:~$ uname -a
Linux premier-4 6.6.77-2-premier #2 SMP PREEMPT_DYNAMIC Tue Jul  8 17:47:24 UTC 2025 riscv64 riscv64 riscv64 GNU/Linux
jmorillo@premier-4:~$ source /cvmfs/software.eessi.io/versions/2025.06/init/bash
This EESSI production version only provides a RISC-V compatibility layer,
software installations are provided by the EESSI development repository at /cvmfs/dev.eessi.io/riscv.
ERROR: EESSI repository at /cvmfs/dev.eessi.io/riscv/versions/2025.06 not found!
jmorillo@premier-4:~$ export EESSI_VERSION_OVERRIDE=2025.06-001
jmorillo@premier-4:~$ source /cvmfs/software.eessi.io/versions/2025.06/init/bash
This EESSI production version only provides a RISC-V compatibility layer,
software installations are provided by the EESSI development repository at /cvmfs/dev.eessi.io/riscv.
Found EESSI repo @ /cvmfs/dev.eessi.io/riscv/versions/2025.06-001!
archdetect says riscv64/generic
archdetect could not detect any accelerators
Using riscv64/generic as software subdirectory.
Found Lmod configuration file at /cvmfs/dev.eessi.io/riscv/versions/2025.06-001/software/linux/riscv64/generic/.lmod/lmodrc.lua
Found Lmod SitePackage.lua file at /cvmfs/dev.eessi.io/riscv/versions/2025.06-001/software/linux/riscv64/generic/.lmod/SitePackage.lua
Using /cvmfs/dev.eessi.io/riscv/host_injections/2025.06-001/software/linux/riscv64/generic as the site extension directory for installations.
Using  as the site extension directory for accelerated installations.
Using /cvmfs/dev.eessi.io/riscv/versions/2025.06-001/software/linux/riscv64/generic/modules/all as the directory to be added to MODULEPATH.
Using /cvmfs/dev.eessi.io/riscv/host_injections/2025.06-001/software/linux/riscv64/generic/modules/all as the site extension directory to be
Initializing Lmod...
Prepending /cvmfs/dev.eessi.io/riscv/versions/2025.06-001/software/linux/riscv64/generic/modules/all to $MODULEPATH...
Prepending site path /cvmfs/dev.eessi.io/riscv/host_injections/2025.06-001/software/linux/riscv64/generic/modules/all to $MODULEPATH...
Environment set up to use EESSI (2025.06), have fun!
{EESSI 2025.06} jmorillo@premier-4:~$
```

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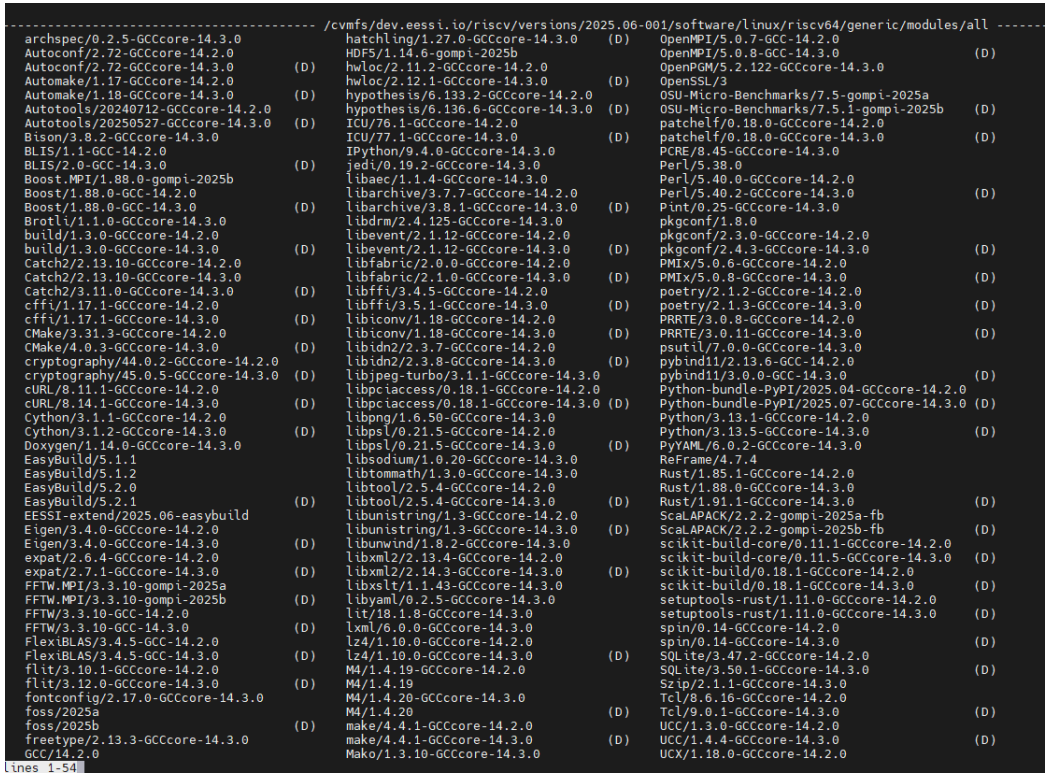

```
---------------------------------------- /cvmfs/dev.eessi.io/riscv/versions/2025.06-001/software/linux/riscv64/generic/modules/all -------
  archspec/0.2.5-GCCcore-14.3.0              hatchling/1.27.0-GCCcore-14.3.0    (D)    OpenMPI/5.0.7-GCC-14.2.0
  Autoconf/2.72-GCCcore-14.2.0               HDF5/1.14.6-gompi-2025b                   OpenMPI/5.0.8-GCC-14.3.0                   (D)
  Autoconf/2.72-GCCcore-14.3.0        (D)    hwloc/2.11.2-GCCcore-14.2.0               OpenPGM/5.2.122-GCCcore-14.3.0
  Automake/1.17-GCCcore-14.2.0               hwloc/2.12.1-GCCcore-14.3.0        (D)    OpenSSL/3
  Automake/1.18-GCCcore-14.3.0        (D)    hypothesis/6.133.2-GCCcore-14.2.0         OSU-Micro-Benchmarks/7.5-gompi-2025a
  Autotools/20240712-GCCcore-14.2.0          hypothesis/6.136.6-GCCcore-14.3.0  (D)    OSU-Micro-Benchmarks/7.5.1-gompi-2025b     (D)
  Autotools/20250527-GCCcore-14.3.0   (D)    ICU/76.1-GCCcore-14.2.0                   patchelf/0.18.0-GCCcore-14.2.0
  Bison/3.8.2-GCCcore-14.3.0                 ICU/77.1-GCCcore-14.3.0            (D)    patchelf/0.18.0-GCCcore-14.3.0             (D)
  BLIS/1.1-GCC-14.2.0                        IPython/9.4.0-GCCcore-14.3.0              PCRE/8.45-GCCcore-14.3.0
  BLIS/2.0-GCC-14.3.0                 (D)    jedi/0.19.2-GCCcore-14.3.0                Perl/5.38.0
  Boost.MPI/1.88.0-gompi-2025b               libaec/1.1.4-GCCcore-14.3.0               Perl/5.40.0-GCCcore-14.2.0
  Boost/1.88.0-GCC-14.2.0                    libarchive/3.7.7-GCCcore-14.2.0           Perl/5.40.2-GCCcore-14.3.0                 (D)
  Boost/1.88.0-GCC-14.3.0             (D)    libarchive/3.8.1-GCCcore-14.3.0    (D)    Pint/0.25-GCCcore-14.3.0
  Brotli/1.1.0-GCCcore-14.3.0                libdrm/2.4.125-GCCcore-14.3.0             pkgconf/1.8.0
  build/1.3.0-GCCcore-14.2.0                 libevent/2.1.12-GCCcore-14.2.0            pkgconf/2.3.0-GCCcore-14.2.0
  build/1.3.0-GCCcore-14.3.0          (D)    libevent/2.1.12-GCCcore-14.3.0     (D)    pkgconf/2.4.3-GCCcore-14.3.0               (D)
  Catch2/2.13.10-GCCcore-14.2.0              libfabric/2.0.0-GCCcore-14.2.0            PMIx/5.0.6-GCCcore-14.2.0
  Catch2/2.13.10-GCCcore-14.3.0              libfabric/2.1.0-GCCcore-14.3.0     (D)    PMIx/5.0.8-GCCcore-14.3.0                  (D)
  Catch2/3.11.0-GCCcore-14.3.0        (D)    libffi/3.4.5-GCCcore-14.2.0               poetry/2.1.2-GCCcore-14.2.0
  cffi/1.17.1-GCCcore-14.2.0                 libffi/3.5.1-GCCcore-14.3.0        (D)    poetry/2.1.3-GCCcore-14.3.0                (D)
  cffi/1.17.1-GCCcore-14.3.0          (D)    libiconv/1.18-GCCcore-14.2.0              PRRTE/3.0.8-GCCcore-14.2.0
  CMake/3.31.3-GCCcore-14.2.0                libiconv/1.18-GCCcore-14.3.0       (D)    PRRTE/3.0.11-GCCcore-14.3.0                (D)
  CMake/4.0.3-GCCcore-14.3.0          (D)    libidn2/2.3.7-GCCcore-14.2.0              psutil/7.0.0-GCCcore-14.3.0
  cryptography/44.0.2-GCCcore-14.2.0         libidn2/2.3.8-GCCcore-14.3.0       (D)    pybind11/2.13.6-GCC-14.2.0
  cryptography/45.0.5-GCCcore-14.3.0  (D)    libjpeg-turbo/3.1.1-GCCcore-14.3.0        pybind11/3.0.0-GCC-14.3.0                  (D)
  cURL/8.11.1-GCCcore-14.2.0                 libpciaccess/0.18.1-GCCcore-14.2.0        Python-bundle-PyPI/2025.04-GCCcore-14.2.0
  cURL/8.14.1-GCCcore-14.3.0          (D)    libpciaccess/0.18.1-GCCcore-14.3.0 (D)    Python-bundle-PyPI/2025.07-GCCcore-14.3.0  (D)
  Cython/3.1.1-GCCcore-14.2.0                libpng/1.6.50-GCCcore-14.3.0              Python/3.13.1-GCCcore-14.2.0
  Cython/3.1.2-GCCcore-14.3.0         (D)    libpsl/0.21.5-GCCcore-14.2.0              Python/3.13.5-GCCcore-14.3.0               (D)
  Doxygen/1.14.0-GCCcore-14.3.0              libpsl/0.21.5-GCCcore-14.3.0       (D)    PyYAML/6.0.2-GCCcore-14.3.0
  EasyBuild/5.1.1                            libsodium/1.0.20-GCCcore-14.3.0           ReFrame/4.7.4
  EasyBuild/5.1.2                            libtommath/1.3.0-GCCcore-14.3.0           Rust/1.85.1-GCCcore-14.2.0
  EasyBuild/5.2.0                            libtool/2.5.4-GCCcore-14.2.0              Rust/1.88.0-GCCcore-14.3.0
  EasyBuild/5.2.1                     (D)    libtool/2.5.4-GCCcore-14.3.0       (D)    Rust/1.91.1-GCCcore-14.3.0                 (D)
  EESSI-extend/2025.06-easybuild             libunistring/1.3-GCCcore-14.2.0           ScaLAPACK/2.2.2-gompi-2025a-fb
  Eigen/3.4.0-GCCcore-14.2.0                 libunistring/1.3-GCCcore-14.3.0    (D)    ScaLAPACK/2.2.2-gompi-2025b-fb             (D)
  Eigen/3.4.0-GCCcore-14.3.0          (D)    libunwind/1.8.2-GCCcore-14.3.0            scikit-build-core/0.11.1-GCCcore-14.2.0
  expat/2.6.4-GCCcore-14.2.0                 libxml2/2.13.4-GCCcore-14.2.0             scikit-build-core/0.11.5-GCCcore-14.3.0    (D)
  expat/2.7.1-GCCcore-14.3.0          (D)    libxml2/2.14.3-GCCcore-14.3.0      (D)    scikit-build/0.18.1-GCCcore-14.2.0
  FFTW.MPI/3.3.10-gompi-2025a                libxslt/1.1.43-GCCcore-14.3.0             scikit-build/0.18.1-GCCcore-14.3.0         (D)
  FFTW.MPI/3.3.10-gompi-2025b         (D)    libyaml/0.2.5-GCCcore-14.3.0              setuptools-rust/1.11.0-GCCcore-14.2.0
  FFTW/3.3.10-GCC-14.2.0                     lit/18.1.8-GCCcore-14.3.0                 setuptools-rust/1.11.0-GCCcore-14.3.0      (D)
  FFTW/3.3.10-GCC-14.3.0              (D)    lxml/6.0.0-GCCcore-14.3.0                 spin/0.14-GCCcore-14.2.0
  FlexiBLAS/3.4.5-GCC-14.2.0                 lz4/1.10.0-GCCcore-14.2.0                 spin/0.14-GCCcore-14.3.0                   (D)
  FlexiBLAS/3.4.5-GCC-14.3.0          (D)    lz4/1.10.0-GCCcore-14.3.0          (D)    SQLite/3.47.2-GCCcore-14.2.0
  flit/3.10.1-GCCcore-14.2.0                 M4/1.4.19-GCCcore-14.2.0                  SQLite/3.50.1-GCCcore-14.3.0               (D)
  flit/3.12.0-GCCcore-14.3.0          (D)    M4/1.4.19                                 Szip/2.1.1-GCCcore-14.3.0
  fontconfig/2.17.0-GCCcore-14.3.0           M4/1.4.20-GCCcore-14.3.0                  Tcl/8.6.16-GCCcore-14.2.0
  foss/2025a                                 M4/1.4.20                          (D)    Tcl/9.0.1-GCCcore-14.3.0                   (D)
  foss/2025b                          (D)    make/4.4.1-GCCcore-14.2.0                 UCC/1.3.0-GCCcore-14.2.0
  freetype/2.13.3-GCCcore-14.3.0             make/4.4.1-GCCcore-14.3.0          (D)    UCC/1.4.4-GCCcore-14.3.0                   (D)
  GCC/14.2.0                                 Mako/1.3.10-GCCcore-14.3.0                UCX/1.18.0-GCCcore-14.2.0
lines 1-54
```

From x86 to RISC-V: Expanding EESSI's Reach

## Demo Showcase…

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*Next topic series: What's New in EESSI 2025.06 ?*
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