



easybuild



EasyBuild tutorial

Part 1: Introduction

For the LUMI User Support Team

Tue March 9th 2021

Quick introductions (~1 min each!)

- Who are you, what is your profile?
- How much do you know about EasyBuild already?
- Have you used EasyBuild before?
- What do you hope to learn in this tutorial?

EasyBuild tutorial for LUST

- Part I: **Introduction to EasyBuild** *(Tue March 9th 2021, 9am-12 CET)*
- Part II: **Using EasyBuild** *(Tue March 23rd 2021, 9am-12 CET)*
- Part III: **Advanced topics** *(Wed March 24th 2021, 9am-12 CET)*
- Part IV: **EasyBuild on Cray systems** *(to be planned)*

Practical information



- Tutorial website: <https://easybuilders.github.io/easybuild-tutorial>
 - Use LUMI version (see menu on the left)
- For hands-on demos and exercises, we will use **Puhti @ CSC**
 - `ssh username@puhti.csc.fi`
 - Start with a *clean* environment: `module purge; module unuse $MODULEPATH`
 - Use `pip3` to install EasyBuild, `python3` to run EasyBuild
 - Small software stack installed with EasyBuild available in project space:
`module use /projappl/project_2003866/easybuild/modules/all`

Part I: Introduction to EasyBuild



- [09:10-09:25 CET] What is EasyBuild?
- [09:25-09:40 CET] Terminology
- [09:40-10:00 CET] Installation (incl. hands-on)
- [10:00-10:15 CET] Configuration (incl. hands-on)
- [10:15-10:30 CET] *(coffee break)*
- [10:30-11:30 CET] Basic usage (incl. hands-on)
- [11:30-12:00 CET] Q&A

Part I: Introduction to EasyBuild - What is

- Elevator pitch
- Key features
- Focus points: performance, reproducibility, community
- What EasyBuild is **not**
- Requirements
- Development
- A worldwide community
- Getting help: GitHub, mailing list, Slack, conference calls

Part I: Introduction to EasyBuild - Terminology



- Framework
- Easyblocks
- Easyconfig parameters
- Easyconfig files
- Extensions
- Dependencies
- Toolchains
- Modules
- Bringing it all together

Part I: Introduction to EasyBuild - Installation



- Requirements
- EasyBuild as a Python package
- Installing EasyBuild
 - Using pip
 - Using EasyBuild
 - Development setup
- Verifying the installation
- Updating EasyBuild

Part I: Introduction to EasyBuild - Installation



- **Step 1: Install EasyBuild in /tmp/\$USER**

```
pip3 install --prefix /tmp/$USER easybuild  
  
export PATH=/tmp/$USER/bin:$PATH  
  
export PYTHONPATH=/tmp/$USER/lib/python3.6/site-packages:$PYTHONPATH  
  
export EB_PYTHON=python3
```

- **Step 2: Use EasyBuild to install EasyBuild in \$HOME/easybuild**

```
eb --install-latest-eb-release --prefix $HOME/easybuild
```

- **Step 3: Load EasyBuild module**

```
module use $HOME/easybuild/modules/all  
  
module load EasyBuild/4.3.3
```

Part I: Introduction to EasyBuild - Configuration



- Available configuration settings (selection)
- Configuration levels
 - Configuration files
 - Environment variables
 - Command line options
- Inspecting the current configuration

Part I: Introduction to EasyBuild - Configuration



- **Configure EasyBuild**

```
export EASYBUILD_PREFIX=$HOME/easybuild
```

```
export EASYBUILD_BUILDPATH=/tmp/$USER
```

- **Ensure clean environment (probably not strictly necessary)**

```
module purge
```

```
module unuse $MODULEPATH
```

- **Pick up prepared software stack**

```
module use /projappl/project_2003866/easybuild/modules/all
```

Part I: Introduction to EasyBuild - Basic usage



- Overall workflow
- Specifying easyconfigs (easyconfig file names, `--search/-S`)
- Inspecting easyconfigs (`--show-ec`)
- Checking dependencies (`--dry-run/-D`, `--missing/-M`)
- Inspecting installation procedure (`--extended-dry-run/-x`, `--trace`)
- Installing software (`--robot`)
- Using installed software
- Stacking software