

easybuild



EasyBuild tutorial

Part 3: Advanced topics

For the LUMI User Support Team

Tue March 30th 2021

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** *(Tue March 30th 2021, 9am-12 CET)*
today!
- 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`
 - Small software stack installed with EasyBuild available in project space:
`module use /projapp1/project_2003866/easybuild/modules/all`
 - Load EasyBuild module: `module load EasyBuild/4.3.3`
 - Configure EasyBuild to use your home directory, except for build directories:
`export EASYBUILD_PREFIX=$HOME/easybuild`
`export EASYBUILD_BUILDPATH=/tmp/$USER`

Part III: Advanced topics



- [09:00-09:25 CET] Using EasyBuild as a library
- [09:25-09:50 CET] Using hooks to customise EasyBuild
- [09:50-10:15 CET] Submitting installations as Slurm jobs
- [10:15-10:30 CET] *(short break)*
- [10:30-11:10 CET] Module naming schemes (incl. hierarchical)
- [11:10-12:00 CET] GitHub integration to facilitate contributing to EasyBuild

Part III: Advanced topics - EasyBuild as a library



Required configuration on Puhti:

```
module use /projapp1/project_2003866/easybuild/modules/all
module load EasyBuild/4.3.3
```

Part III: Advanced topics - Using hooks



Required configuration on Puhti:

```
module use /projapp1/project_2003866/easybuild/modules/all
module load EasyBuild/4.3.3
```

Part III: Advanced topics - Submitting jobs



Required configuration to let EasyBuild submit jobs on Puhti:

```
module use /projappl/project_2003866/easybuild/modules/all
module load EasyBuild/4.3.3
export EASYBUILD_PREFIX=$HOME/easybuild
export EASYBUILD_BUILDPATH=/dev/shm/$USER
export EASYBUILD_JOB_BACKEND='Slurm'
export SBATCH_ACCOUNT=project_2003866
```

Part III: Advanced topics - **Module naming schemes**



Use EasyBuild installed via `pip3` to play with HierarchicalMNS:

```
pip3 install --user easybuild
```

```
export PATH=$HOME/.local/bin:$PATH
```

```
export EB_PYTHON=python3
```


Part III: Advanced topics - Module naming schemes



Start with clean environment, then configure EasyBuild:

```
module purge
```

```
module unuse $MODULEPATH
```

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

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

```
export
```

```
EASYBUILD_INSTALLPATH_SOFTWARE=/projappl/project_2003866/easybuild/software
```

```
export EASYBUILD_MODULE_NAMING_SCHEME=HierarchicalMNS
```

```
export EASYBUILD_INSTALLPATH_MODULES=$HOME/hmns/modules
```

Part III: Advanced topics - **GitHub integration**



Install additional required Python packages:

```
pip3 install --user 'cryptography<3.4'
```

```
pip3 install --user GitPython keyring keyrings.cryptfile
```

Part III: Advanced topics - GitHub integration



Add the SSH public key to your GitHub account,
via <https://github.com/settings/keys>

```
cat ~/.ssh/id_rsa_puhti.pub
```

Symlink ~/.ssh/id_rsa to ~/.ssh/id_rsa_puhti :

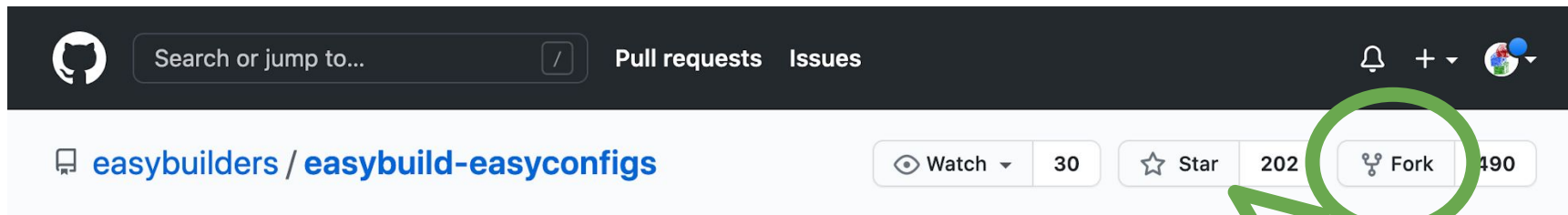
```
cd $HOME/.ssh
```

```
ln -s id_rsa_puhti id_rsa
```

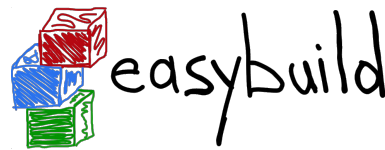
Part III: Advanced topics - GitHub integration



Fork the easybuild-easyconfigs repository in your GitHub account, via <https://github.com/easybuilders/easybuild-easyconfigs>



Part III: Advanced topics - GitHub integration



Create a GitHub token (via <https://github.com/settings/tokens>),
configure EasyBuild + install token via `eb --install-github-token :`

```
export EASYBUILD_GITHUB_TOKEN=your_github_account  
eb --install-github-token
```

Part III: Advanced topics - GitHub integration



Verify configuration w.r.t. the GitHub integration with **eb --check-github**:

```
$ eb --check-github
```

```
All checks PASSEd!
```

```
Status of GitHub integration:
```

```
* --from-pr: OK
```

```
* --new-pr: OK
```

```
* --review-pr: OK
```

```
* --update-pr: OK
```

```
* --upload-test-report: OK
```

Part III: Advanced topics - GitHub integration



Target ebtutorial GitHub account when creating PRs,
to avoid “polluting” the central easyconfigs repository:

```
export EASYBUILD_PR_TARGET_ACCOUNT=ebtutorial  
eb --new-pr ...
```