WEAVE Environment & WEAVE Badging Program

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Prepared by LLNL under Contract DE-AC52-07NA27344.

WEAVE environment

Spack-based Python virtual environment:

- WEAVE tools – open source:
  - Orchestration: Maestro, Merlin
  - Simulation and data management: Sina, Kosh
  - Simulation evaluation: Trata, Ibis
  - Visualization: Pydv
- Commonly used Python packages (PyTorch, Matplotlib, Scikit-learn, etc)
- Read-only and available to everyone on LC (in CZ, RZ and SCF)

WEAVE environment

- Users activate the environment by running one of the following commands:
  - For production/stable version of WEAVE:
    - On toss4 (no AMD GPU):
      - source /usr/apps/weave/weave-prod-cpu/bin/activate
    - On blueos:
      - source /usr/apps/weave/weave-prod-gpu/bin/activate
  - For develop version of WEAVE: (toss4 (all) & blueos)
    - On toss4:
      - source /usr/apps/weave/weave-develop-cpu/bin/activate
    - On blueos or cray:
      - source /usr/apps/weave/weave-develop-gpu/bin/activate

Create a local virtual environment based on WEAVE environment.

```
[muryanto@lassen708:~]$ /usr/apps/weave/tools/create_venv.sh -h

Create a virtual environment based on a spack view.

Usage:
/usr/apps/weave/tools/create_venv.sh -p <processor_type> -e <venv>
-h                  : display help messages.
-p <processor_type>: specify processor type 'cpu' or 'gpu'
-e <venv>           : specify virtual environment name to be created.
-v <version>        : 'latest-stable' - based on latest released spack env/view
                      'latest-develop' - based on latest develop spack env/view
                                         which can change or get updated or removed
                      '1.0' - specify a specific version of spack env/view
                      To see available versions, run:
                          ls -l /usr/apps/weave/weave-cpu/
                       or
                          ls -l /usr/apps/weave/weave-gpu/

Example:
   /usr/apps/weave/tools/create_venv.sh -p cpu -e my_venv -v latest-develop

   /usr/apps/weave/tools/create_venv.sh -p cpu -e my_venv -v latest-stable

   /usr/apps/weave/tools/create_venv.sh -p cpu -e my_venv -v 1.0
```

What does create_venv.sh / create_venv.csh do?

- Creates a self-contained virtual environment based on WEAVE environment:
  - Renames ~/.local temporarily
  - It saves away PYTHONPATH to _OLD_VIRTUAL_PYTHONPATH and unset PYTHONPATH
  - Creates the virtual environment
  - Updates PATH, PYTHONPATH, JUPYTERPATH
  - Restores ~/.local
- Pip installing more packages in the activated virtual environment will be installed in the virtual environment – nothing will get installed outside the virtual environment.

WEAVE Badging Program – integrate your tools into WEAVE

- Expose your tools to the community – may promote community contributions for improvements, bug fixes and new features.
- Ensure your tools are compatible with other packages in WEAVE environment.
- Make it easier to get your tools to be available on platforms on all zones – where WEAVE is deployed.
- Badged tools' owner(s) keep full control of features support and release cycle. WEAVE team only test and deploy the badged tools.

WEAVE Badging Request

Where the tool is?
LC GitLab, WCI-GitLab or GitHub.

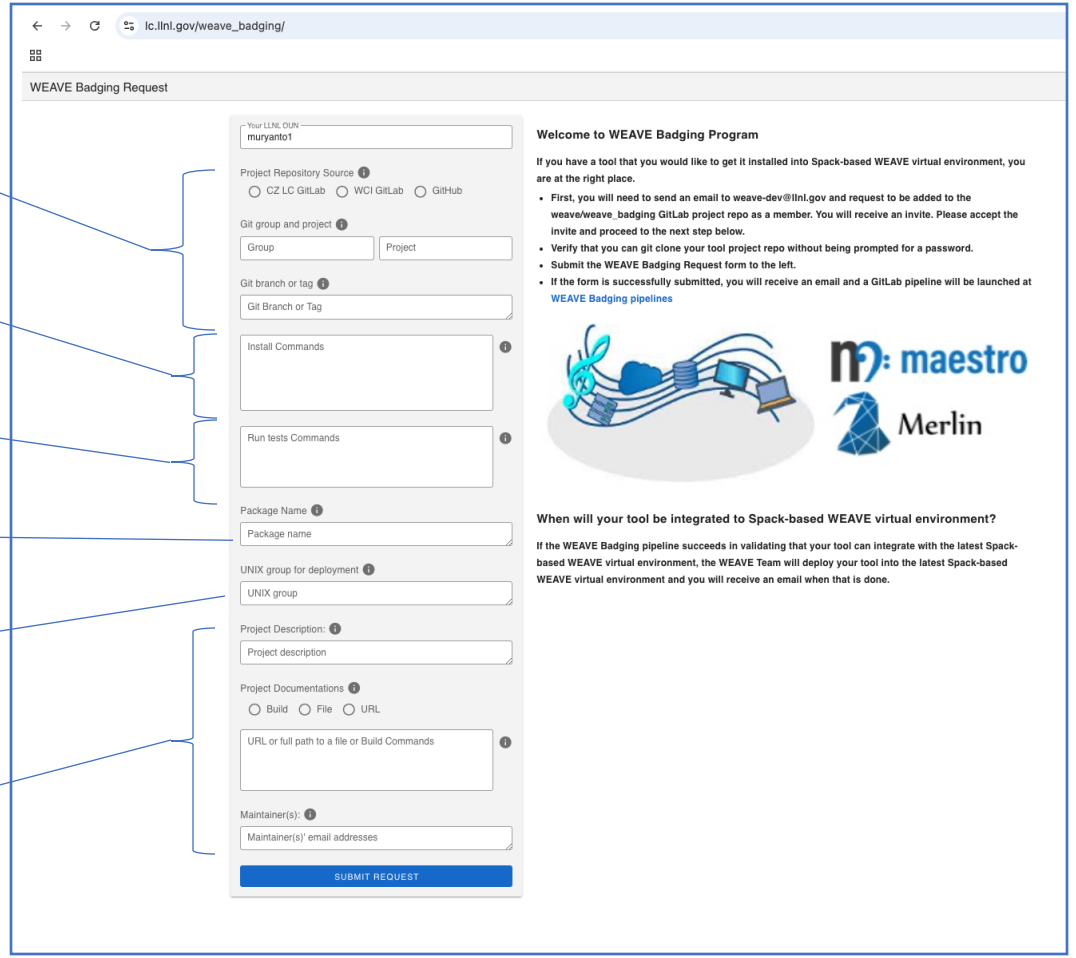
List of command(s) to install the tool.

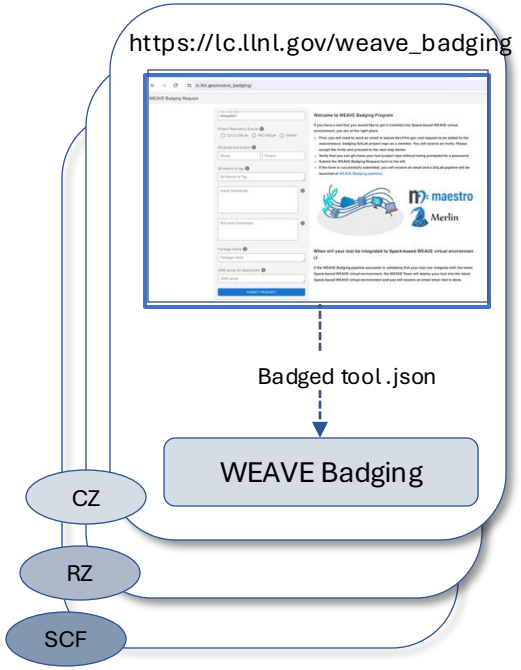
List of commands to run tests to validate the tool installation.

Package name as listed in ‘pip list’ output.

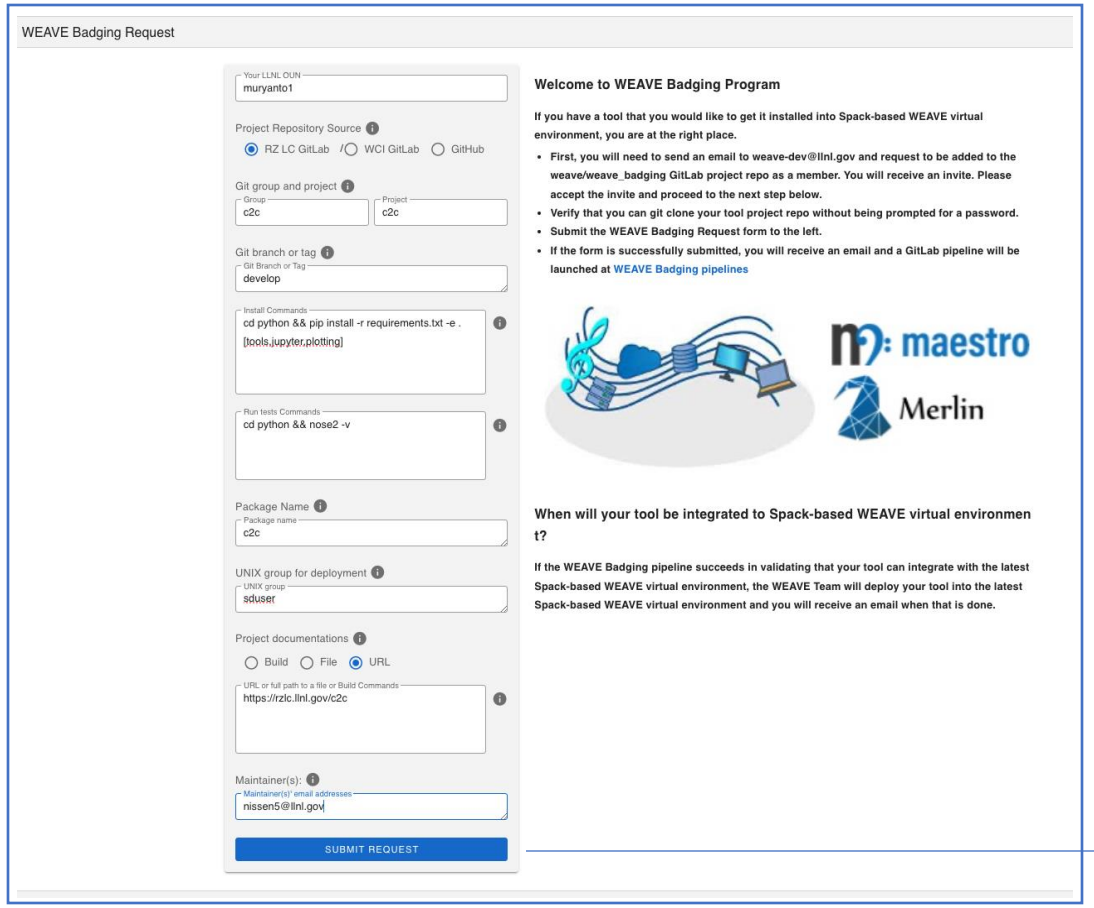
UNIX-group for the tool to be deployed under.

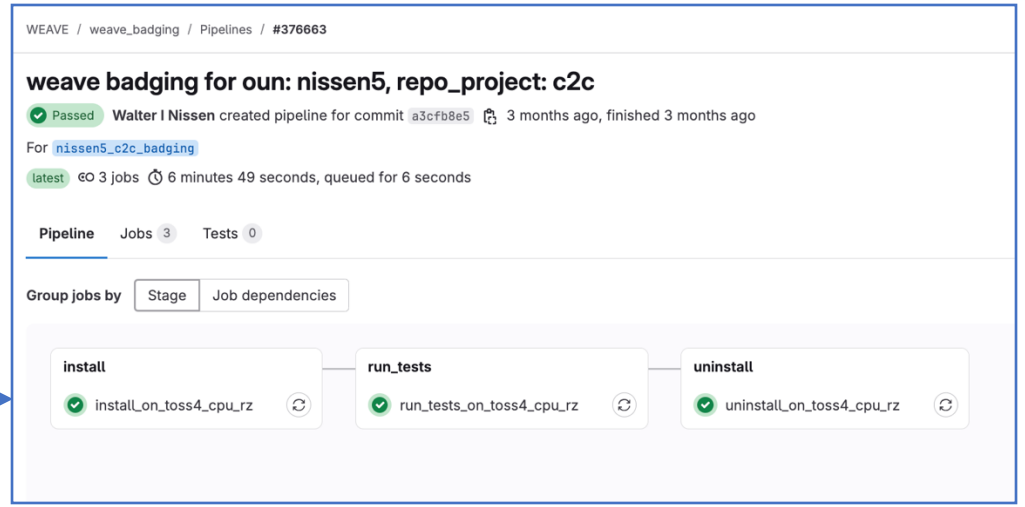
More info on the tool:
Link to documentation.
Maintainer(s).
This info wil be included in WEAVE documentation.

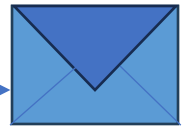




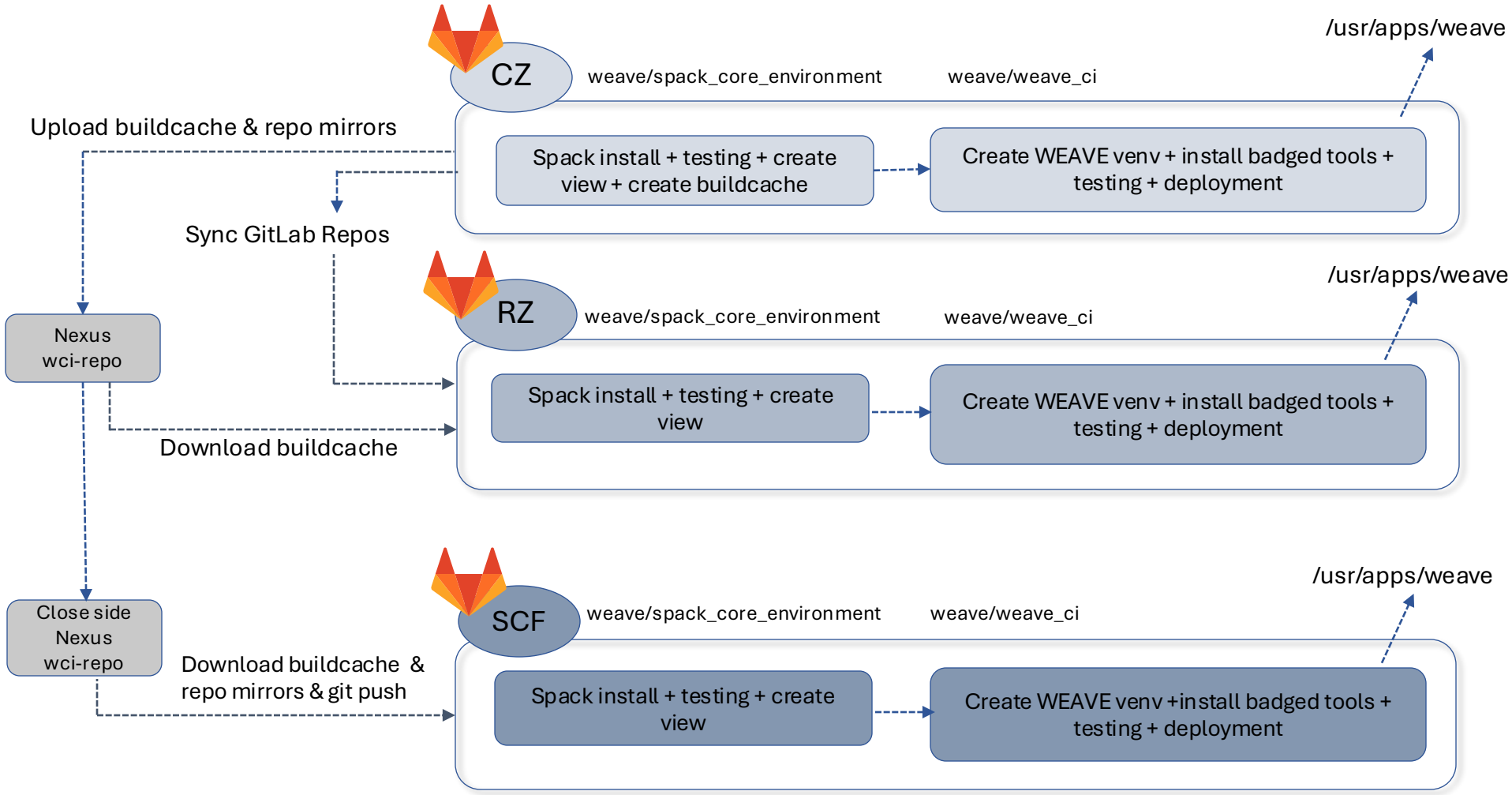
WEAVE Badging Request







WEAVE CI/CD

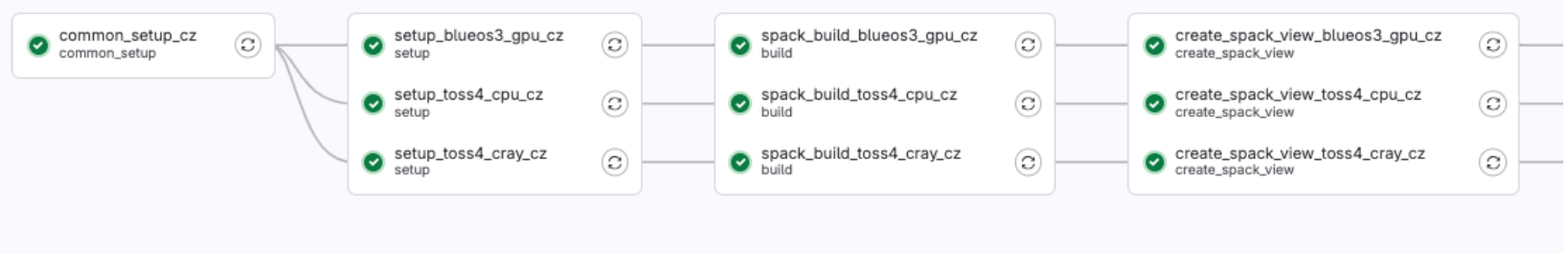

CZ
weave/spack_core_environment
weave/weave_ci
/usr/apps/weave
Upload buildcache & repo mirrors
Spack install + testing + create view + create buildcache
Create WEAVE venv + install badged tools + testing + deployment
Sync GitLab Repos
RZ
weave/spack_core_environment
weave/weave_ci
/usr/apps/weave
Nexus wci-repo
Spack install + testing + create view
Create WEAVE venv + install badged tools + testing + deployment
Download buildcache
SCF
weave/spack_core_environment
weave/weave_ci
/usr/apps/weave
Close side Nexus wci-repo
Download buildcache & repo mirrors & git push
Spack install + testing + create view
Create WEAVE venv +install badged tools + testing + deployment

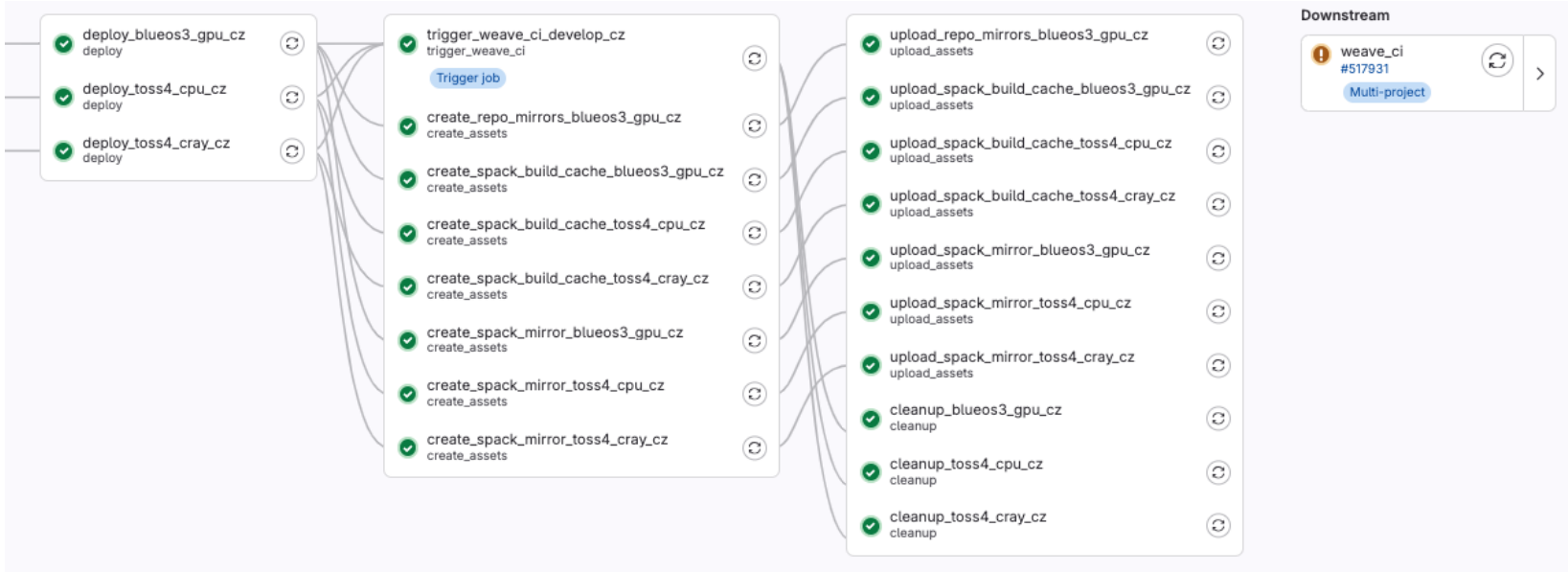
Badged tools with restrictive group permissions

- Badged tools that are deployed with restrictive group permissions will be deployed in a separate directory with permission set to be accessible by the specified unix group.

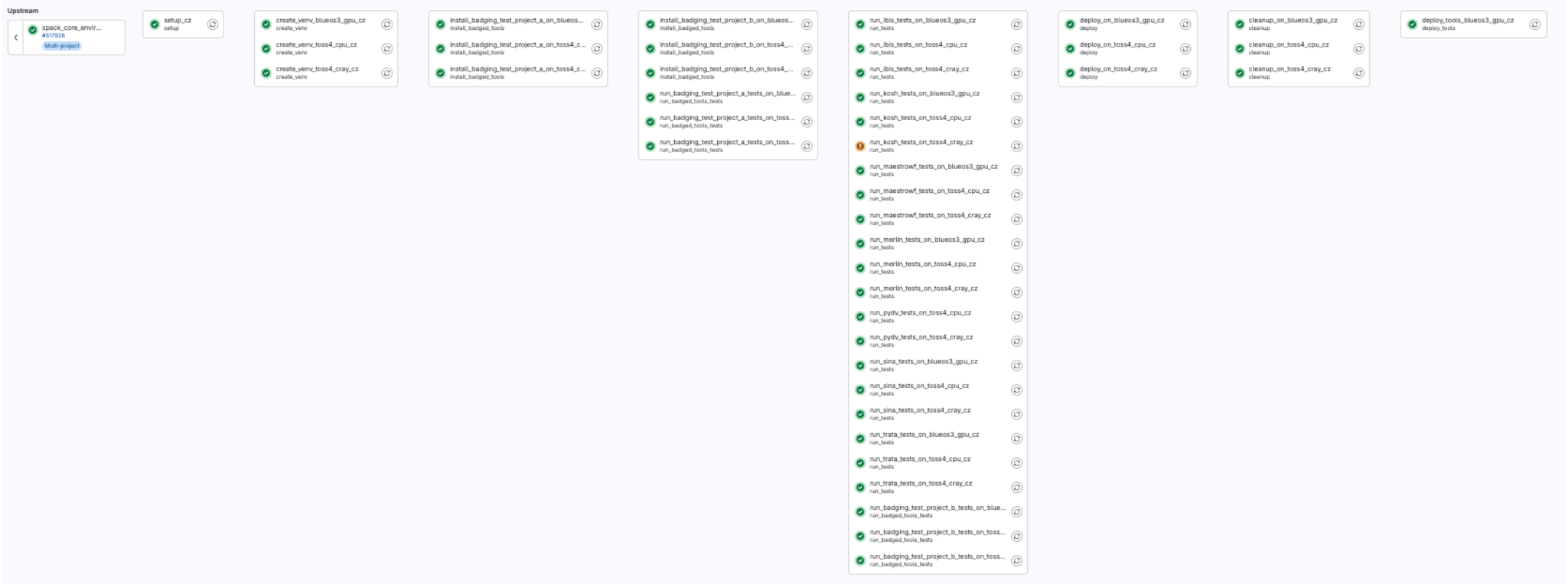
```
bash-4.4$ cd /usr/apps/weave/weave-develop-cpu/
bash-4.4$ ls -l
total 36
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:24 badged_tools
drwxr-xr-x 2 weaveci weaveci 8192 Mar  5 08:24 bin
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:20 etc
drwxr-xr-x 2 weaveci weaveci 4096 Mar  5 08:19 include
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:19 lib
lrwxrwxrwx 1 weaveci weaveci    3 Mar  5 08:19 lib64 -> lib
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:20 man
-rw-r--r-- 1 weaveci weaveci  138 Mar  5 08:19 pyvenv.cfg
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:20 share
bash-4.4$ ls -l badged_tools
total 4
drwxr-x--- 4 weaveci sduser 4096 Mar  5 08:24 sduser
bash-4.4$ ls -l badged_tools/sduser/
total 8
drwxr-x--- 2 weaveci sduser 4096 Mar  5 08:24 bin
drwxr-x--- 3 weaveci sduser 4096 Mar  5 08:24 lib
```

WEAVE CI/CD – weave/spack_core_environment

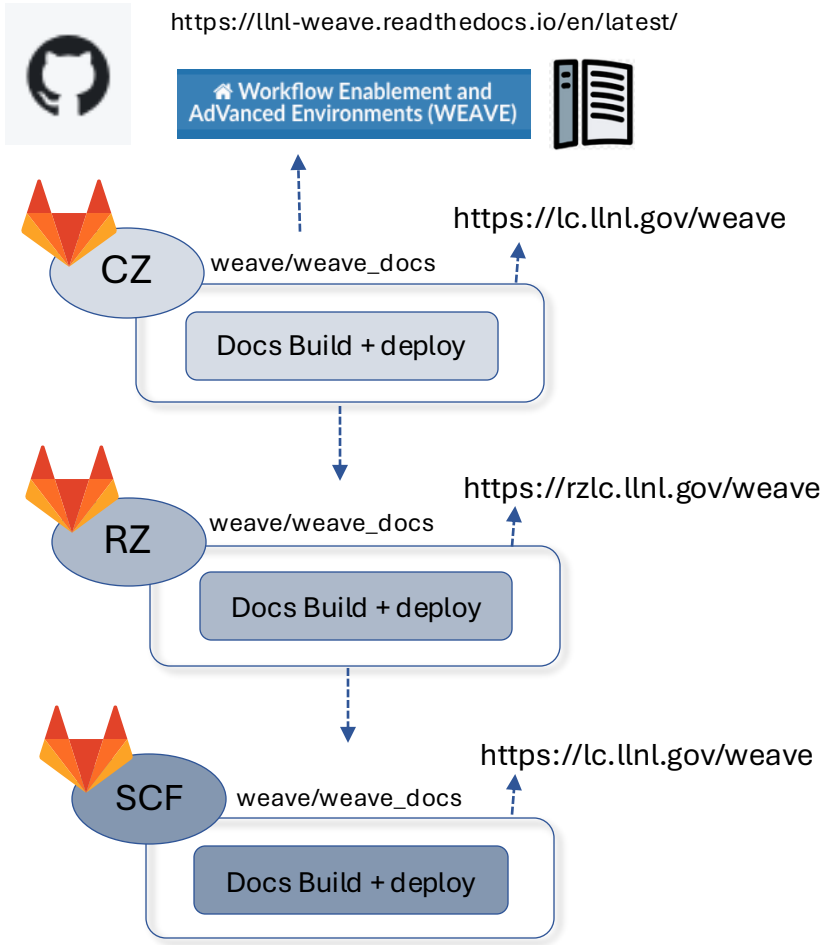


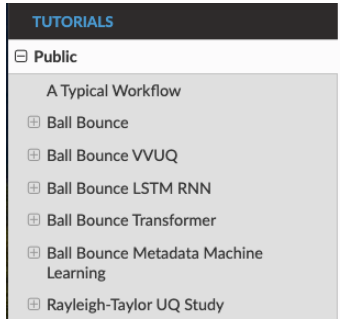


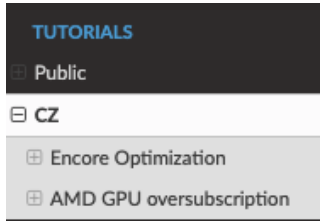
WEAVE CI/CD – weave/weave_ci

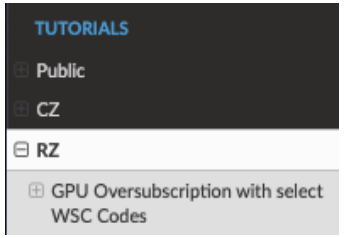


WEAVE Documentations









Summary

- Contact us at:
  - weave-support@llnl.gov
  - MS Team WEAVE | General | Microsoft Teams
- Documentations:
  - https://lc.llnl.gov/weave (CZ & SCF)
  - https://rzlc.llnl.gov/weave (RZ)
- WEAVE Badging Request:
  - https://lc.llnl.gov/weave_badging (CZ & SCF)
  - https://rzlc.llnl.gov/weave_badging (RZ)

Teamwork - Thanks!

- WEAVE Team
- Robert Blake, Nicholas Sly and Loic Pottier
- Spack team
- LC GitLab: Neil J. O'Neil
- LC
- SD Platform: Kevin Athey, Kevin Gardner
- Jeff Long, Stephanie Choate