Code Quality Assurance and Monitoring

GitHub, GitLab, or Jenkins offer continuous integration for pull requests or repeated checks of software.

GitHub/Travis/Coverity

Even though it is entirely free for open source software one still has enough possibilities to test complex software.

Compile/Test/Check

- GitHub and Travis are most easy to use as they do not require any in-house deployments
- Configured with `yaml` file
- Compilers and dependencies can be provided with CVMFS (e.g., `sft.cern.ch`) mounted in to a docker container (e.g., `clcdp/clcd-build`) hosted on docker hub

Static Analysis

The Coverty static code analysis can be run via Travis


Python

Travis running unit tests, documentation, pylint, format check

- Different python versions available
- Dependencies installed with `pip install`

Jenkins

Plugins for quality monitoring: compiler warnings, clang-analyzer, valgrind memcheck

GitLab

- Multi stage pipelines easily configurable with `yaml` file
- https://gitlab.cern.ch/CLICdp/ILCDIRAC/ILCDIRAC/blob/Rel-v28r0/docs/GetReleaseNotes.py
- https://indico.cern.ch/event/608592/contributions/2830109/
- Configure `ls / cvmfs / clicdp.cern.ch`
- `git clone` to CVMFS deploy machine

Automation

Automatic Deployment

- Automatic deployment to CVMFS when tagging
  - Configure gitlab-runner to add to CVMFS deploy machine
  - https://indico.cern.ch/event/608592/contributions/2830109/
- Publish documentation to a webserver
- Create a docker image
- ...

Git(Hub/Lab) APIs

Collate ReleaseNotes

Parse comments for the pull/merge requests of given branch and, for example, automatically publish in ReleaseNotes.md when making tags.

- Turn comments for Pull Request into release notes

http://clicdp.cern.ch

Releases

Collate Release Notes, commit release notes, commit version increment, and tag in one go via the API

Many more things are possible with the APIs

Conclusions

- GitHub and related integrations offer many powerful tools
  - Sufficient even for large libraries (e.g., `DIRAC`)
  - Very low maintenance
- There are many existing solutions to significantly simplify DevOps
  - APIs for repositories
  - Plugins for analysis of performance checkers or compiler warnings
  - Most repetitive things that are done by hand can be automated

Ship It!