



# iLCDirac

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# Table Of Contents



1 Introduction: What is (iLC)Dirac

2 Current Status of iLCDirac

- Continuous Integration

3 New Webportal Demo

# Section 1:



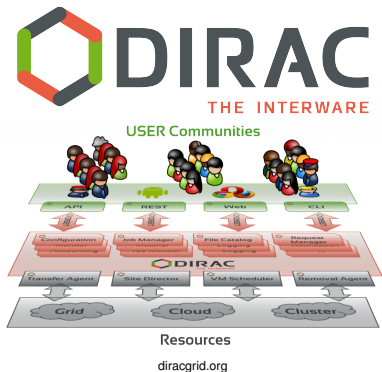
## 1 Introduction: What is (iLC)Dirac

# What is Dirac



A software framework for distributed computing

- Dirac (Distributed Infrastructure with Remote Agent Control): High level interface between users and distributed resources
- Adopted by more than 20 virtual organisations (VO)
- Developed mostly by LHCb plus support from a wider community
- Written in Python 2 (225k lines of code)
- Has multiple extensions, e.g. Web(App)DIRAC,...
- Rapid release cycle, 2 or 3 releases per year





- iLCDirac is an extension of the DIRAC system for the ILC VO
- ILC VO: virtual organisation for linear collider detectors (SiD, ILD and CLICdp)
- Code comprised of 33k lines
  - ▶ Workflow Modules for LC Software, Overlay System
  - ▶ Centralized MC Production (Event Generation, Geant4 Simulation, Reconstruction)
  - ▶ User jobs (Generation, Simulation, Reconstruction, Analyses)
- Trying to keep up with DIRAC release cycles. . .
- [J. Phys.: Conf. Ser. ILCDirac, a DIRAC extension for the Linear Collider community. Proceedings of CHEP2013. 513 CLICdp-Conf-2013-003](#)

# Example Job



```
from DIRAC.Core.Base import Script
Script.parseCommandLine()
import UserJob
import Marlin
import DiracILC
d = DiracILC()
j = UserJob()
j.setOutputSandbox("recEvents.slcio")
m = Marlin()
m.setVersion("ILCSOFT-01-17-09")
m.setSteeringFile("Steering.xml")
m.setInputFile("SimEvents.slcio")
j.append(m)
j.submit(d)
```

# Section 2:



- 2 Current Status of iLCDirac
  - Continuous Integration

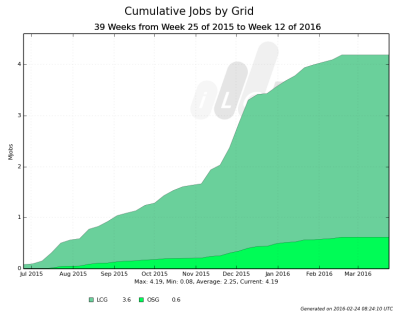


- Updated to be based in DIRAC v6r14 (current DIRAC production release)
  - ▶ Long time to validate, test, and fix things
- Some new features, mostly in the server back-end
- For users:
  - ▶ Recursive actions in filecatalog possible
  - ▶ New “WebApp” webportal (see later)
- New features in iLCDirac
  - ▶ ddsim interfaces
  - ▶ Send jobs to sites where requested software is available (e.g., cvmfs, gcc48)
  - ▶ Better, more complete, automatic resubmission of failed production jobs: re-implemented “DataRecoveryAgent”



- Increased the number of CPUs (50 → 100) in last year
  - ▶ Hypervisor incident at CERN (loss of machine for weeks)
  - ▶ Had to move some services to a development-machine
- Established a redundancy layer
  - ▶ Each Service and Executor hosted on two machines
  - ▶ Establish spare machines to replace SE or Logging (no duplication possible) if needed
  - ▶ Redundant machines always at different availability zone
- List of Servers:
  - ▶ 6 Servers: 8 Cores, 16 GB RAM; Split by DIRAC-System
  - ▶ 3 DIRAC SEs: 4 Cores, 8 GB Ram, 1 TB Volume
  - ▶ 2 Web Server 2 Cores, 4 GB RAM ( Prod / Dev )
  - ▶ 3 Dev/Test instances 8/4 Cores, 16/8 GB RAM
  - ▶ 4 Spare machines of different types
  - ▶ Databases hosted on additional CERN service
- Now better prepared for black-outs

- Over the last months increase of usable sites
  - ▶ CREAM, ARC, Globus, HTCondorCE computing elements are being used
  - ▶ Globus and HTCondorCE DIRAC modules provided by us



- Running on *all* sites that support ILC VO
- Reached a peak of 20 000 jobs in parallel

## Software installation:

- CVMFS support for installations on CVMFS
  - ▶ sources `init_ilcsoft.sh` from CVMFS
  - ▶ Use the same definition of applications in the ConfigurationSystem
  - ▶ Some special variables, e.g., for Mokka DB Slice
- Also use CVMFS as shared area for pre-installed tarballs
  - ▶ if there is no CVMFS fall back to using tarballs
  - ▶ if tarball not on CVMFS, fall back to downloading tarballs, still allows fast turn around for validating and debugging on the grid with large sample sizes
  - ▶ Can mix applications from CVMFS and working directory
- When software is not cached, the jobs can time-out
  - ▶ Should be solved once we get CVMFS on OSG (3 stratum 1 / mirror servers)

# Continuous integration 1/2



- Run tests every time code is pushed to the repository:
  - ▶ Unit test, static code analysis, dirac installation
  - ▶ Different platforms: SLC5, SLC6 and CC7

<https://gitlab.cern.ch/CLICdp/ILCDIRAC>

The screenshot shows the top section of a GitLab repository page for 'ILCDIRAC'. At the top center is the 'ILC DIRAC' logo. Below it, the repository name 'ILCDIRAC' is displayed. To the left of the repository name are two buttons: a star icon with the number '2' and a 'FORK 2' button. To the right are buttons for 'SSH' and 'HTTPS', followed by the SSH URL 'ssh://git@gitlab.cern.ch:7999/'. Further right are icons for cloning and a plus sign. Below these is a 'GLOBAL' dropdown menu. At the bottom of this section are statistics: '3,879 COMMITS', '10 BRANCHES', '427 TAGS', and '16.37 MB'. To the right of these are buttons for 'ADD CHANGELOG' and 'ADD LICENSE'. Below the statistics is a button for 'ADD CONTRIBUTION GUIDE'.

## ILCDirac

Dirac for the ILC VO

Documentation can be found [here](#)

build success

# Continuous integration 2/2



## Build overview

Status	Build ID	Commit	Ref	Runner	Name	Duration	Finished at
✓ success	Build #2437	13151647	master	voilcdircru...#59	nosetest6	3 minutes 10 seconds	about 7 hours ago
✓ success	Build #2436	13151647	master	voilcdircru...#58	pylint6	3 minutes 10 seconds	about 7 hours ago
✓ success	Build #2435	aae9d1e8	Rel-v25r0	voilcdircru...#58	nosetest7	3 minutes 38 seconds	about 7 hours ago
✓ success	Build #2434	aae9d1e8	Rel-v25r0	voilcdircru...#57	pylint7	5 minutes 33 seconds	about 7 hours ago
✓ success	Build #2433	aae9d1e8	Rel-v25r0	voilcdircru...#58	nosetest6	3 minutes 41 seconds	about 7 hours ago
✓ success	Build #2432	aae9d1e8	Rel-v25r0	voilcdircru...#57	pylint6	6 minutes 25 seconds	about 7 hours ago
✓ success	Build #2431	aae9d1e8	Rel-v25r0	voilcdircru...#58	nosetest5	3 minutes 9 seconds	about 7 hours ago
✓ success	Build #2430	aae9d1e8	Rel-v25r0	voilcdircru...#57	pylint5	6 minutes 8 seconds	about 7 hours ago

## Individual build

▼ nosetest6   ▼ nosetest7   ▼ pylint6   ▼ pylint7   ▼ nosetest5   ▼ pylint5

✓ success 3 minutes 38 seconds 10:52 Jan 18

```
gitlab-ci-multi-runner 8.7.2 (998cf5d)
Using Docker executor with image ilcdircac/cc7-base ...
Pulling docker image gitlab/gitlab-runner:build ...
Pulling docker image ilcdircac/cc7-base:latest ...

Running on runner-08Sec631b-project-10-concurrent-2 via voilcdircrunner02.cern.ch...
Fetching changes...
Removing .coverage
Removing Core/Utilities/CheckAndGetProdProxy.pyo
Removing Core/Utilities/CheckOmlValidity.pyo
Removing Core/Utilities/CombinedSoftwareInstallation.pyo
Removing Core/Utilities/DetectOS.pyo
Removing Core/Utilities/FindSteeringFileDir.pyo
Removing Core/Utilities/GeneratorModels.pyo
Removing Core/Utilities/GetOverlayFiles.pyo
Removing Core/Utilities/InputFilesUtilities.pyo
Removing Core/Utilities/InstalledFiles.pyo
Removing Core/Utilities/LNPathUtilities.pyo
Removing Core/Utilities/PrepareLibs.pyo
```

Test coverage

28.0%

Build

[RETRY](#)

Duration: 3 minutes 38 seconds

Created: about 7 hours ago

Finished: about 7 hours ago

Runner: #58

Working on increased test coverage

■ If case of fire:

- 1 [twiki.cern.ch/twiki/bin/view/CLIC/DiracForUsers](http://twiki.cern.ch/twiki/bin/view/CLIC/DiracForUsers)
- 2 Consult documentation: <http://lcd-data.web.cern.ch/lcd-data/doc/ilcdiracdoc/>
- 3 Submit a ticket to the issue tracker  
<https://its.cern.ch/jira/browse/ILCDIRAC>
- 4 Email: [ilcdirac-support@cern.ch](mailto:ilcdirac-support@cern.ch)

# Section 3:



## 3 New Webportal Demo

# New WebApp Demo



- <http://voilcdiracwebapp.cern.ch>
  - ▶ Forced forward to https, you need a certificate in your browser
  - ▶ will replace ilcdirac.cern.ch soon
- JobMonitoring: statistics
- FileCatalog
- Changing group or other settings
- Help pages

