

iLCDirac: DIRAC for ILC/CLIC/FCC/Calice

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DIRAC User Workshop
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- DIRAC Version: Client: v7r2p34, Server v7r2p43+X (hot FiXes)
- Servers running on CentOS7 with DiracOS v1r27
- There is a Python3 client, but server and pilot still running python2
 - Migrate Server, Pilots to Python3 this year
- Using: CS, DMS, FS, RMS, SMS, TS, WMS, Monitoring/Accounting, Workflow, RSS (passive), WebApp
- Not Using: Production System

What is your biggest frustration with DIRAC?

- The worst one was bad documentation (typo in option name) during the update to v7r2
- RMS+FTS is a bit fragile with requests getting stuck

Magically add one feature to DIRAC?

-

Notable incidents from the last year

- N/A

Other Systems Outside of DIRAC

- CEs, SEs, FTS3, VOMS, BDII, mysql databases, opensearch, Jira, puppet, git

How would you rate the communication?

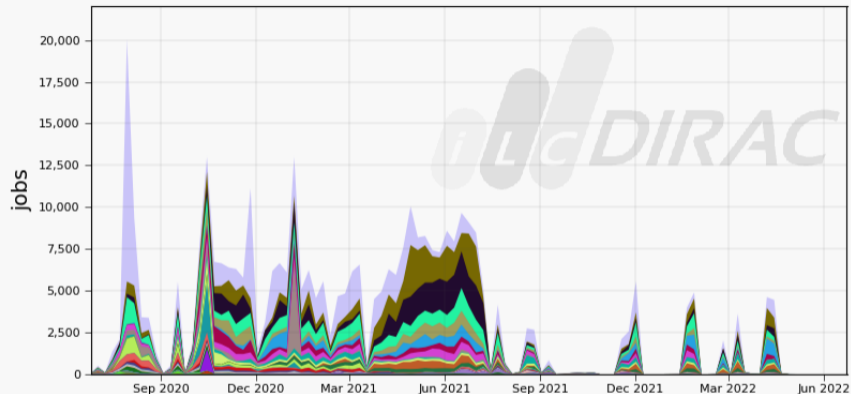
- Five by four (it could be clearer sometimes, that also refers to user questions)

- Interfaces/Workflow modules for software, “Overlay” System [[J.Phys.Conf.Ser. 513 \(2014\) 032077](#)]
- “Calibration System” for the Pandora particle flow reconstruction software [[EPJ Web of Conf. 245, 03003 \(2020\)](#)]
- Transformation Plugins
- Framework / WMS / RMS: some agents solving operational issues
- Incorporated the FCC VO
- Introduction of CTA(Antares) Storage Element at CERN(RAL)
- Sourcecode: <https://gitlab.cern.ch/CLICdp/iLCDirac/ILCDIRAC/>

Usage in the last 2 Years



Monitoring: Running Jobs by Site
104 Weeks from Week 25 of 2020 to Week 25 of 2022



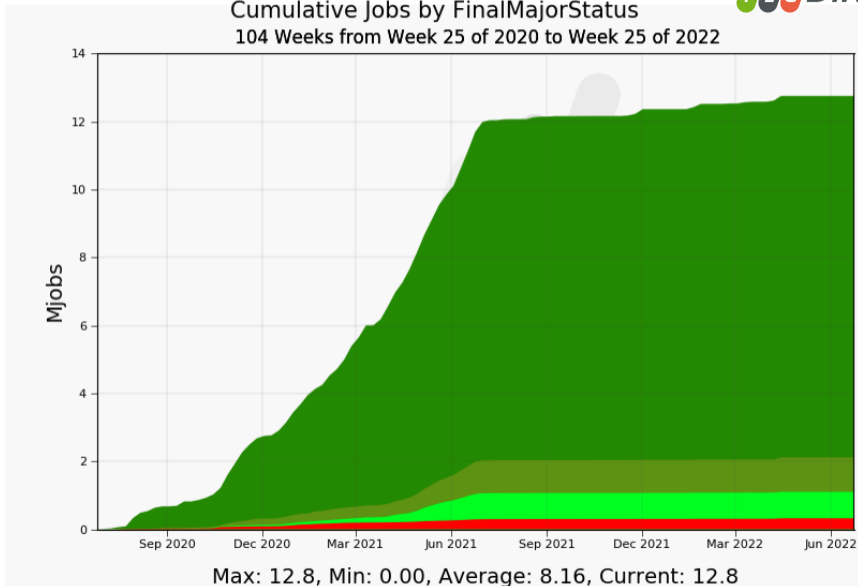
Max: 20,011, Average: 3,431

LCG.CERN.ch	24.6%	LCG.Brunel.uk	2.6%
LCG.Manchester.uk	12.1%	LCG.DESYZN.de	2.5%
LCG.SCOTGRIDDURHAM.uk	11.7%	LCG.KEK.jp	2.4%
LCG.DESY-HH.de	10.1%	LCG.IN2P3-CC.fr	2.2%
LCG.UKI-LT2-RHUL.uk	5.5%	LCG.UKI-SOUTHGRID-RALPP.uk	2.1%
LCG.GRIF.fr	5.0%	LCG.UKI-LT2-IC-HEP.uk	1.3%
LCG.UKI-NORTHGRID-LIV-HEP.uk	4.4%	LCG.LAPP.fr	1.3%

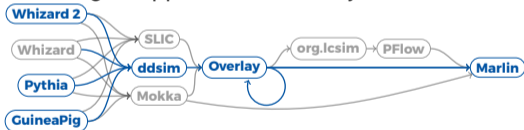
Usage in the last 2 Years



Cumulative Jobs by FinalMajorStatus
104 Weeks from Week 25 of 2020 to Week 25 of 2022



- Interfaces/Workflow Modules for our applications
- Chaining of applications inside jobs



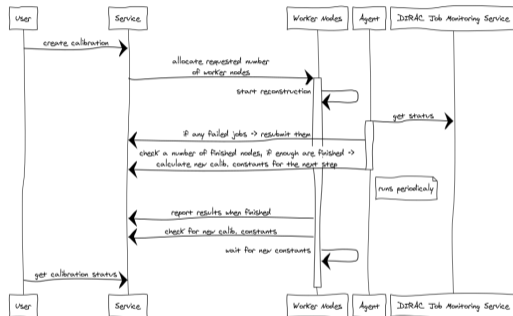
```
from DIRAC.Core.Base import Script
Script.parseCommandLine()
import UserJob, Marlin, DiracILC
d = DiracILC(); j = UserJob()
j.setInputData("/ilc/user/i/initial/simEvents.slcio")
j.setOutputData("recEvents.slcio", SE='FOO-BAR')
m = Marlin()
m.setVersion("ILCSoft-01-17-09")
m.setSteeringFile("Steering.xml")
m.setNumberOfEvents(100)
m.setInputFile("SimEvents.slcio")
m.setOutputFile("recEvents.slcio")
j.append(m); j.submit(d)
```


iLCDirac: Overlay System



- Provide randomized “background” files for jobs
- Limit number of parallel downloads
- Agent occasionally resetting counters

- System to iteratively update steering file for an application based on parallel running jobs at grid sites and central service on one of the iLCDirac servers
- Reduce overhead from job launches, speed up calibration turn around



- Limited: Limit Tasks by “MaxNumberOfTasks”
- Sliced
- SlicedLimited
- BroadcastProcessed: create Task one file have descendants

- Finds jobs stuck in staging status and reschedules them if associated files are already staged
- Finds production jobs in completed status:
 - ▶ Marks a Job Done if request status is Done
 - ▶ Marks a Job Done if no request is found
 - ▶ Marks a Job Done if ReplicateAndRegister operation has an error “No such file”
 - ▶ Marks a Job Done if RemoveReplica cannot be completed. Let DataRecoveryAgent take over
 - ▶ Resets Failed requests with ReplicateAndRegister operations if error is other than “No such file”
- Finds production jobs in failed status with minor status “Pending Requests”
 - ▶ Marks a Job Failed with minor status “Requests Done” if request status is Done
 - ▶ Marks a Job Failed with minor status “Requests Done” if no request is found
 - ▶ Resets Failed RemoveFile requests
- Finds user jobs in completed status:
 - ▶ Marks a Job Done if there is no request and minorStatus and appStatus are in final states
 - ▶ Marks a Job Done if request status is Done
 - ▶ Resets requests if the request status is other than Done
 - ▶ Unregister files if a new file is supposed to be registered

Agent checking consistency of DMS/RMS transformations

Transformation Type	Request Status	Transformation File Status	Source	Target	Action
Moving	Any	Problematic / Processed	Available	Available	Retry
Replication / Moving	Any	Problematic / Processed	Available	Not Available	Retry
Moving	Failed	Assigned	Available	Available	Retry
Replication / Moving	Failed	Assigned	Available	Not Available	Retry
Replication	Failed	Assigned	Available	Available	Set PROCESSED
Replication / Moving	Any	Other than Processed	Not Available	Available	Set PROCESSED
Replication / Moving	Any	Any	Not Available	Not Available	Set DELETED

- Users easily picked up via VOMS2CS agent
- Resources: CERN CE and SE, CNAF SEs
- Adding applications with help from FCC
- Adapting `dirac-fcc-make-transformations`

- iLCDirac continues to be highly used in the High Energy Lepton Collider Community
- Small improvements continue to be made in iLCDirac, integrating FCC and Key4hep applications
- Work on the backend to keep resources available and servers up and running and users happy