



iLCDirac Status and Plans

CLIC Workshop 2018

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Geneva, 23 January 2018

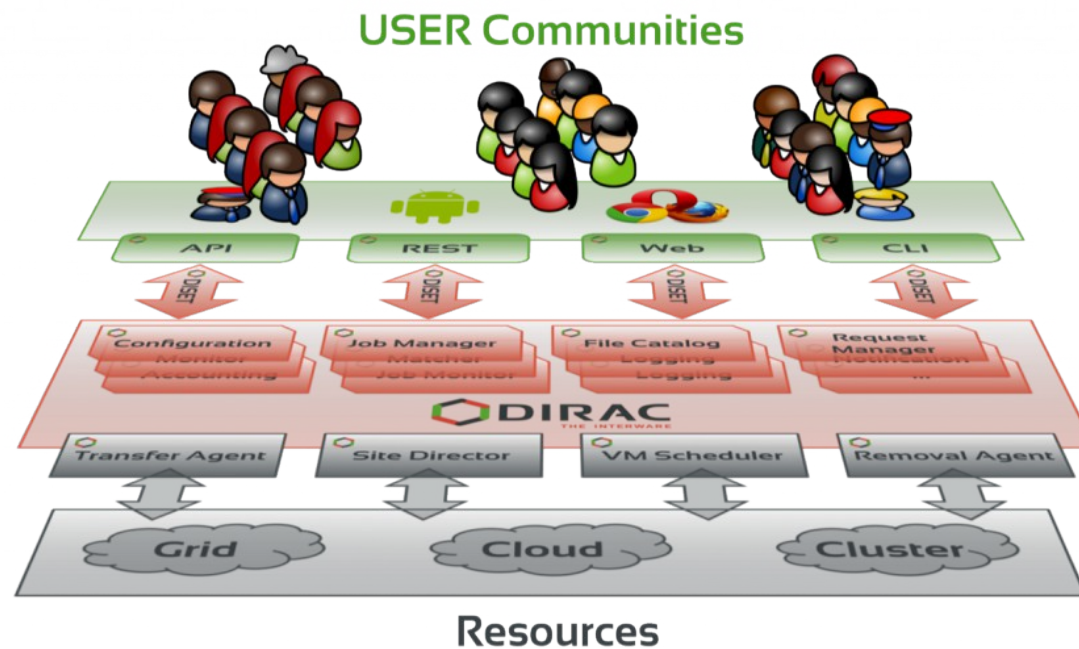
Outline

- DIRAC overview
- iLCDirac use case
- iLCDirac resource usage
- Developments
 - Automation of Data Management Tasks in iLCDirac
 - iLCDirac and File Transfer Service (FTS3)
- Support
- Conclusion and future plans



DIRAC Overview

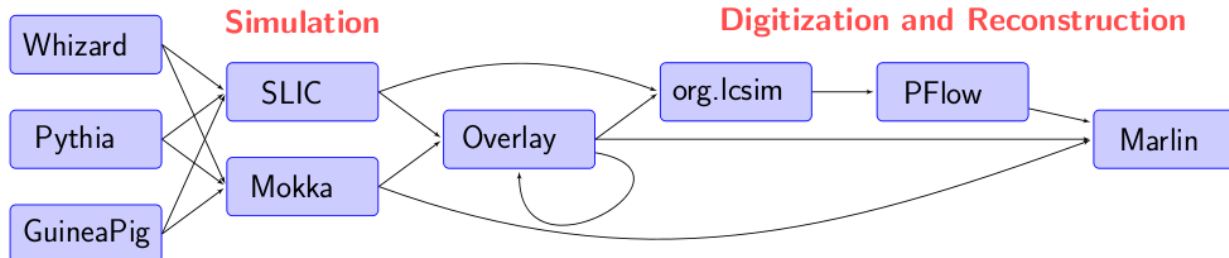
- **D**istributed **I**nfrastructure with **R**emote **A**gent **C**ontrol
- Software framework for distributed computing
- Provides access to **C**ompute, **S**torage and **C**atalog resources



iLCDirac Use Case

- ILC VO: virtual organization for linear colliders (CLIC and ILC)
- iLCDirac is an extension of the DIRAC system for the ILC VO:
 - Workflow modules for LC system to simplify job submission
 - Overlay System

Event Generation



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



iLCDirac Resource Usage

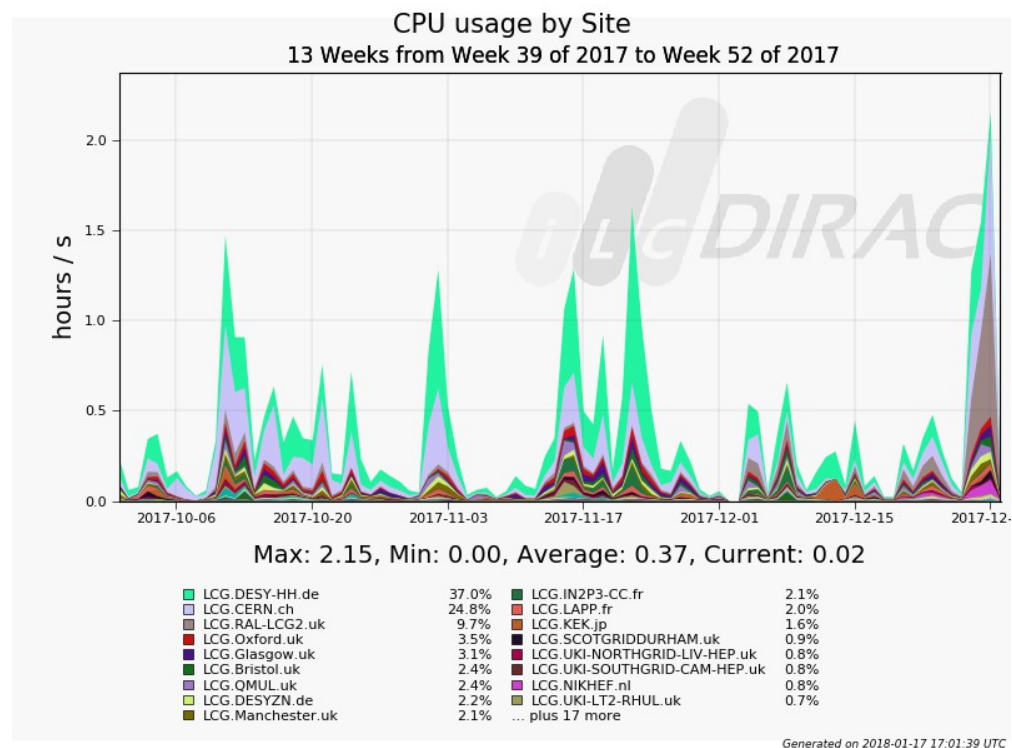
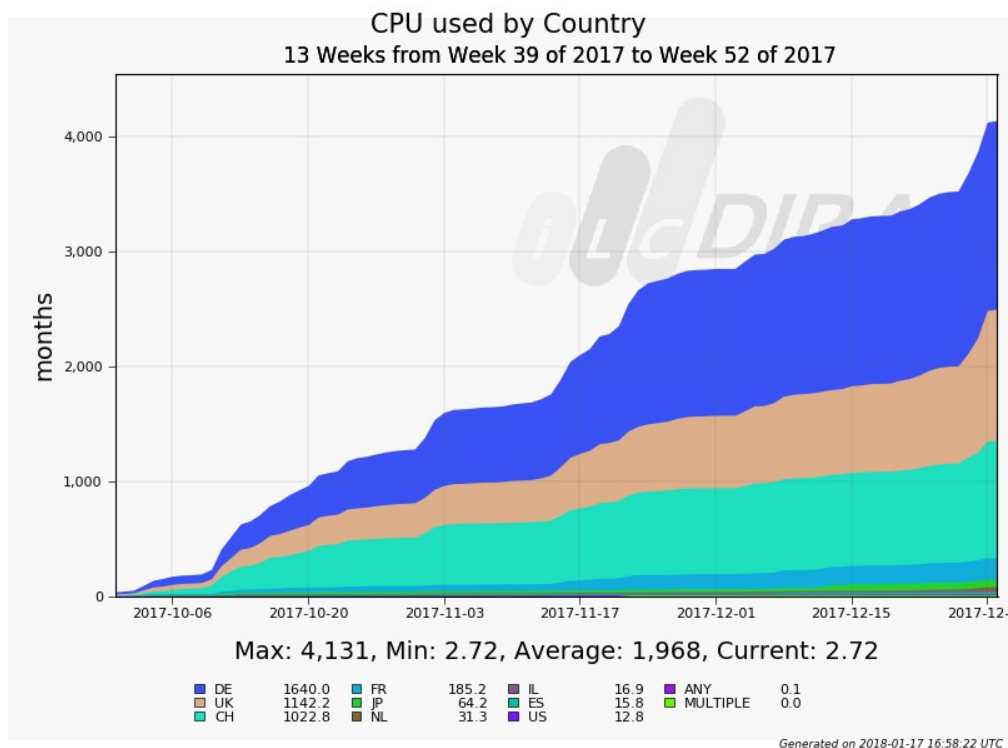
- Using **WLCG** and **OSG** resources – mostly opportunistic, some dedicated



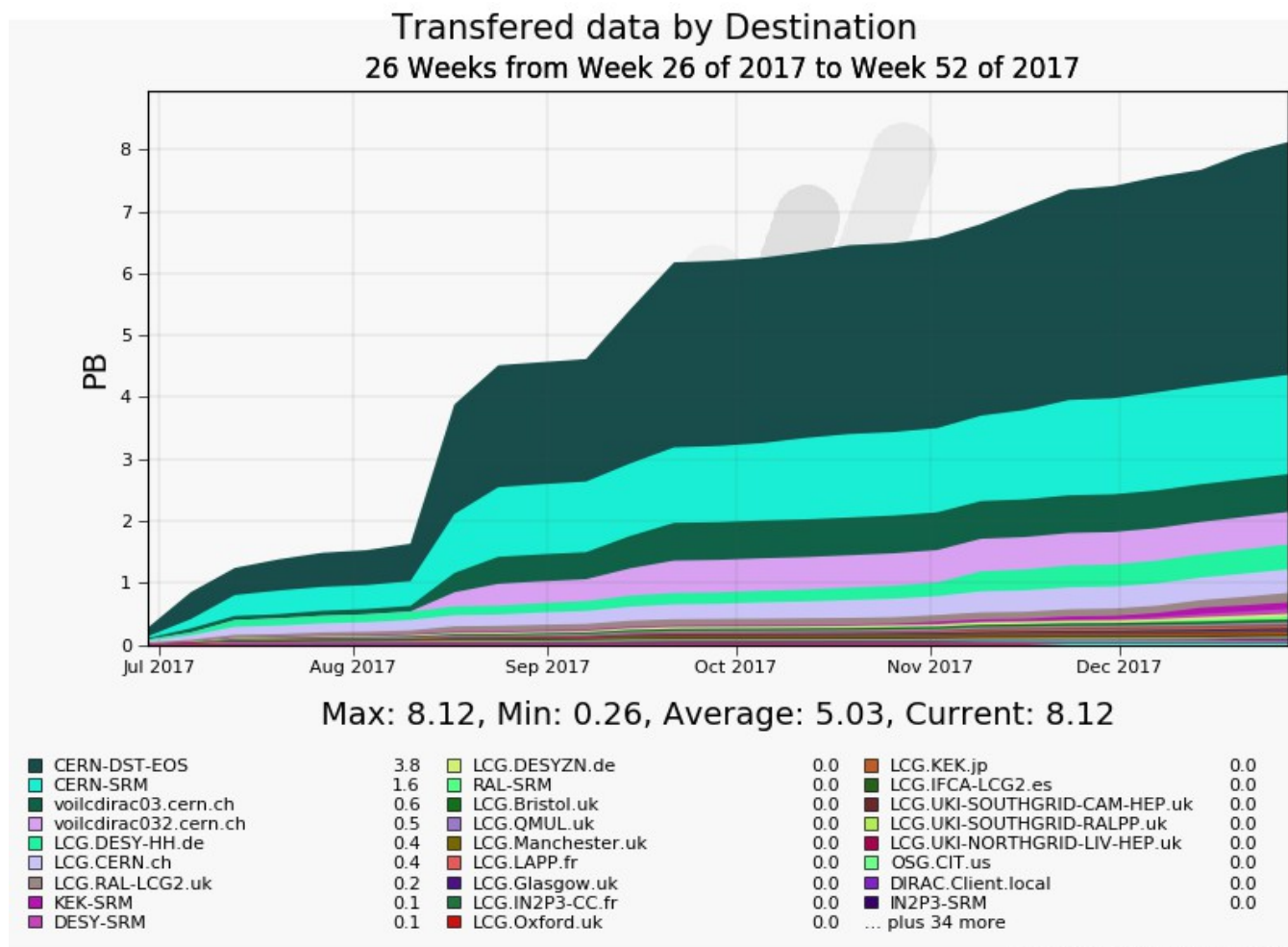
- Around 15k to 20k job slots available at best of times
- New site *Nikhef*
- **iLCDirac Infrastructure:**
 - SLC6 Virtual Machines, total: 100 Cores and 200 GB of RAM
 - 2x3 Servers running Agents and Services (one set for redundancy)
 - Dedicated web server, DBs hosted on *CERN DB on Demand*



CPU Usage



Network Usage



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Automation of Data Management Tasks in iLCDirac

- Data Manipulation Transformations: **Move**, **Remove**, **Replicate** data
- **Problems:**
 - Disk or Tape drives crash leading to inconsistent file statuses in DIRAC
 - Manual intervention: Scripts used to reset data manipulation operations
- **Solution:** FileStatusTransformation Agent
 - Periodically checks file availability in *DIRAC File Catalog* and on physical *Storage Elements*
 - Sets correct file statuses
 - Resets failed data manipulation tasks
 - Sends email to notify administrators about all the actions taken



Automation of Data Management Tasks in iLCDirac (cont.)

FileStatusTransformationAgent: 8736

ilcdirac-admin@cern.ch

To:  Hamza Zafar

Transformation ID: 8736
Transformation Type: Moving
Source SE: CERN-DST-EOS
Target SE: CERN-SRM

Total number of files with action Deleted: 33
LFN

	Source	Target	Old Status	Action
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_52.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_190.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_193.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_221.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_337.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_422.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_632.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_791.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/001/qq_nunu_sim_8730_1024.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/000/qq_nunu_sim_8730_942.slcio	False	False	Processed	Deleted
/ilc/prod/clic/3tev/qq_nunu/ILD/SIM/00008730/001/qq_nunu_sim_8730_1098.slcio	False	False	Processed	Deleted



Automation of Data Management Tasks in iLCDirac (cont.)

FileStatusTransformationAgent: 9482

ilcdirac-admin@cern.ch

To:  Hamza Zafar

Transformation ID: 9482
Transformation Type: Replication
Source SE: CERN-SRM
Target SE: CERN-DST-EOS

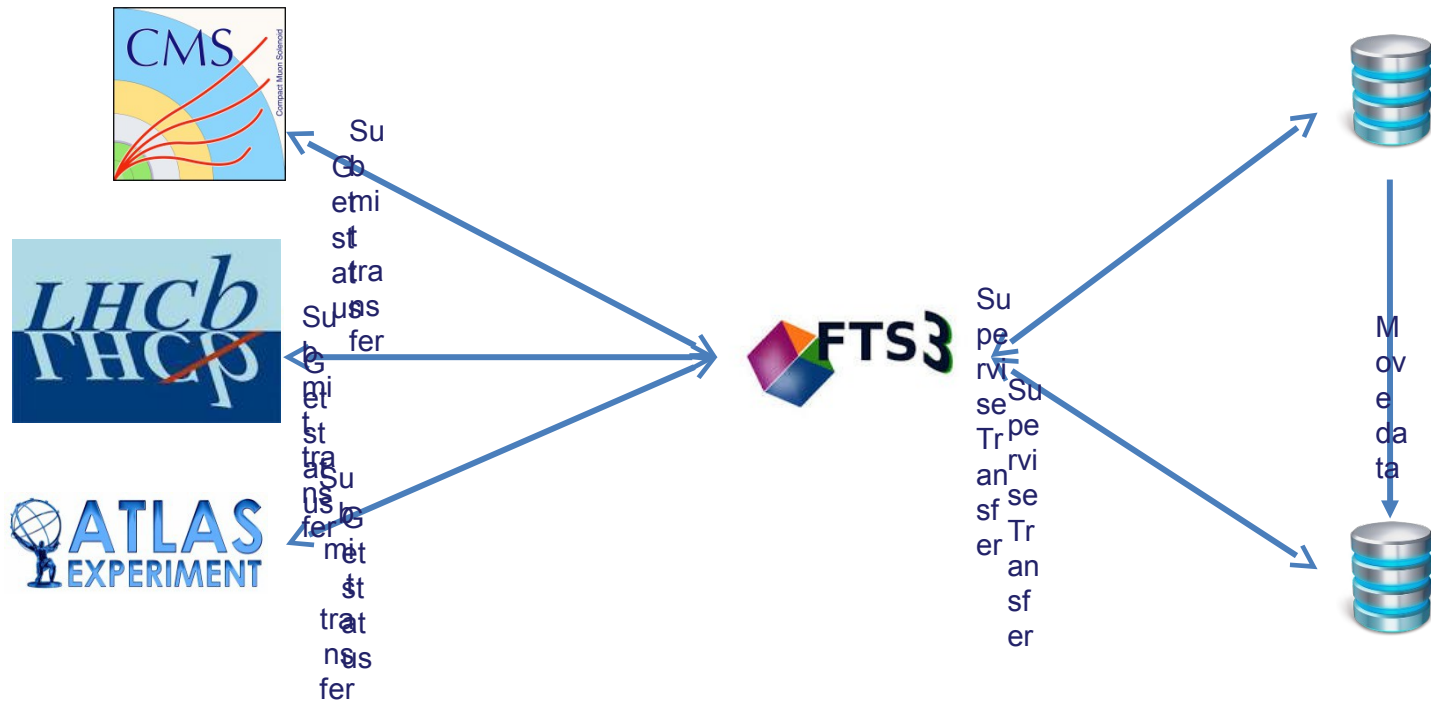
Total number of files with action RESET_REQUEST: 6
LFN

LFN	Source	Target	Old Status	Action
/ilc/prod/clic/500gev/Z_uds/CLIC_o3_v14/REC/00009414/000/Z_uds_rec_9414_652.slcio	True	False	Problematic	RESET_REQUEST
/ilc/prod/clic/500gev/Z_uds/CLIC_o3_v14/REC/00009414/001/Z_uds_rec_9414_1125.slcio	True	False	Problematic	RESET_REQUEST
/ilc/prod/clic/500gev/Z_uds/CLIC_o3_v14/REC/00009414/001/Z_uds_rec_9414_1427.slcio	True	False	Problematic	RESET_REQUEST
/ilc/prod/clic/500gev/Z_uds/CLIC_o3_v14/REC/00009414/001/Z_uds_rec_9414_1719.slcio	True	False	Problematic	RESET_REQUEST
/ilc/prod/clic/500gev/Z_uds/CLIC_o3_v14/REC/00009414/001/Z_uds_rec_9414_1954.slcio	True	False	Problematic	RESET_REQUEST
/ilc/prod/clic/500gev/Z_uds/CLIC_o3_v14/REC/00009414/002/Z_uds_rec_9414_2475.slcio	True	False	Problematic	RESET_REQUEST



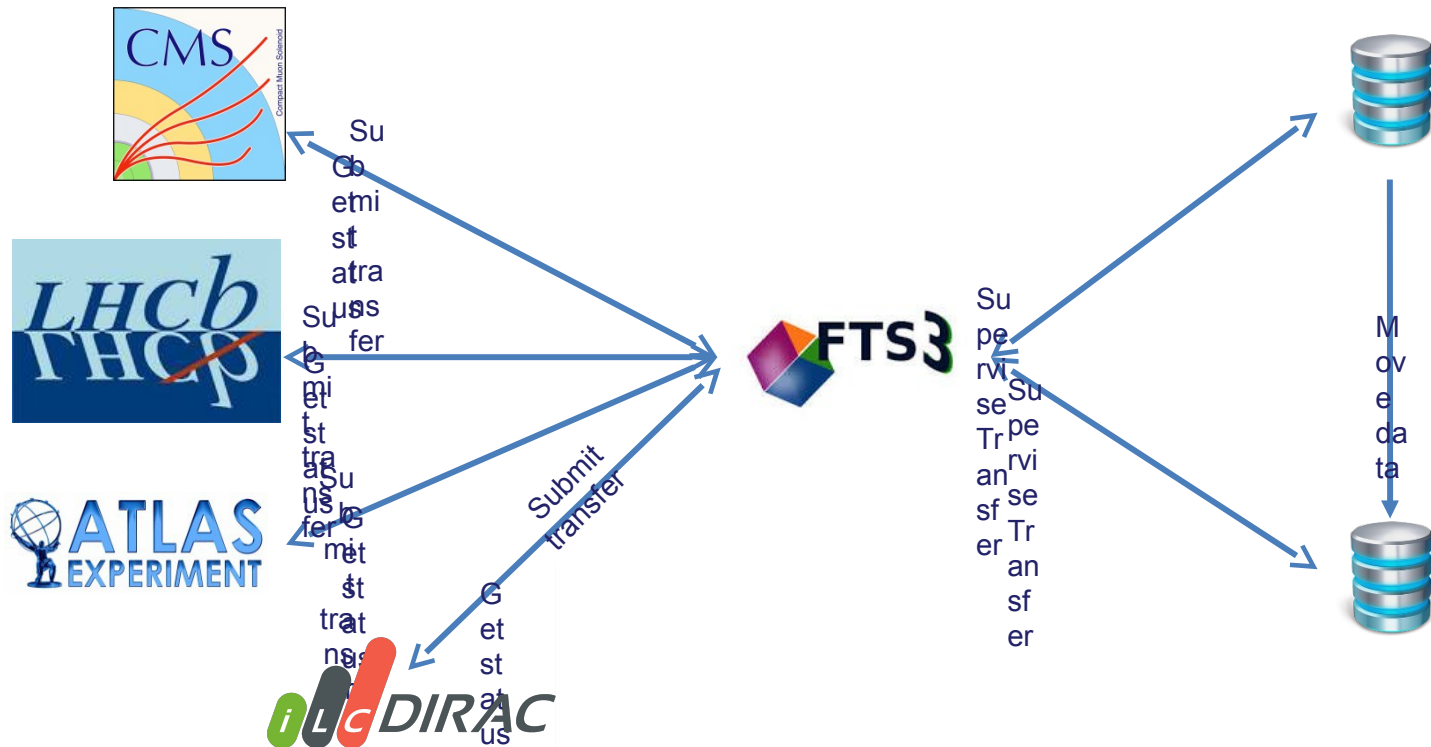
iLCDirac and File Transfer Service

- The service responsible for distributing the majority of LHC data across WLCG infrastructure



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iLCDirac and File Transfer Service (cont.)

- FTS3 features:
 - Bulk file transfers
 - Automatically adjusts the load
 - Dedicated bandwidth
 - Fair-share between VOs
 - Web interface to monitor the file transfers
- Contributed to bug fixes and testing of the new FTS3 system in DIRAC
- To be deployed with next iLCDirac release

Overview

Showing 1 to 1 out of 1 from the last 12 hours

First Previous 1 Next Last

Source	Destination	VO	Submitte	Activ	Staging	S.Activ	Finishe	Faile	Cance	Rate (last 1h)	Thr.
+ srm://srm-iloc.gridpp.rl.ac.uk	srm://srm-public.cern.ch	iloc	-	-	-	-	193	-	-	100.00 %	0.31 MB/s
			0	0	0	0	193	0	0	100.00 %	-



Support

- In case of fire:

- Consult documentation:

- <http://lcd-data.web.cern.ch/lcd-data/doc/ilcdiracdoc/>

- Before submitting a ticket, see:

- <http://lcd-data.web.cern.ch/lcd-data/doc/ilcdiracdoc/DOC/Files/UserGuide/support>

- Submit a ticket to the issue tracker

- <https://its.cern.ch/jira/browse/ILCDIRAC>

- Or send an email: ilcdirac-support@cern.ch



Conclusion and Future Work

- **iLCDirac running stable**
- **FileStatusTransformation agent is deployed in production environment**
- **Plans to use FTS3 from the next iLCDirac release**
- **Plans to minimize manual intervention**
- Continuing effort for **high availability, usability** and **efficiency**



Thank You!

