

GRID Production Tools for ILD

Motivation

Tools used in the Past and Future with their

Pros and Cons

Transition roadmap

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GRID Production Tools for ILD

ILD Cracow 2013, Sep 26

Large-scale computing needs

- > In the past few years $O(10^{10})$ events generated
(e.g. studies for DBD, LOI and various test-beams)
- > Never possible without large scale computing infrastructure
 - Huge computing resources
 - Pbytes of available space
 - Fast network connections

GRID

- > Future needs estimated factor 10-100 more!
 - Data production and management efforts clearly non-negligible!
 - ... also data **availability** becomes crucial (e.g. replication, reliable description, up-to-dateness)



> ILCProd used for **DBD** productions

- DESY-grown system with a set of python scripts to setup and run the productions
- Direct submission system (e.g. 1 prod job = 1 **GRID** job)
- Metadata database running locally (decoupled from **LFC**)
- Well tailored to ILD production needs
- Django web interface for easy search and access of data
 - Values for meta tags directly available



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Search 1 result (1598 total)

2012 August 9

Filter	Process id	Process name	Process type	Cm energy in gev	Polarization1	Polarization2	Luminosity	Cross section in pb	Output	Gtag
By last update Any date Today Past 7 days	106404	tth-6q-hnonbb	tth-6q-hnonbb	1000.0	R	L	108970.0	0.467956		superseededby: 106454;



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> Con's:

- Difficult to add any productions made elsewhere (KEK, Dirac ...)
- Not easily scalable
- Currently unmaintained (developer left)



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Will be kept online as long as possible, but no new data added



> DIRAC: used by CLIC, LHCb etc

- Pilot job submission and monitoring system (e.g. 1 GRID job = many prod jobs)
- Command-line, web interface, python API – free choice!



DIRAC Job monitor

System ▾ Jobs ▾ Data ▾ Views ▾ Tools ▾

JobMonitoring <<

Select All Select None

Selections -

Site: All ▾

Status: All ▾

Minor status: All ▾

Application status: All ▾

Owner: All ▾

JobGroup: All ▾

JobType: All ▾

JobID:

Time Span: Select time span ▾

Start: YYYY-mm-dd 00:00 ▾

End: **Now**

YYYY-mm-dd 00:00 ▾

<input type="checkbox"/>	JobId ▾	<input type="checkbox"/>	Status	MinorStatus	ApplicationStatus	Site	JobName	LastUpdate [UTC]	LastSig
<input type="checkbox"/>	8650543	<input type="checkbox"/>	Checking	JobScheduling	Unknown	Multiple	00002700_0000...	2013-09-09 14:58	2013-0
<input type="checkbox"/>	8650542	<input type="checkbox"/>	Checking	JobScheduling	Unknown	Multiple	00002694_0000...	2013-09-09 14:58	2013-0
<input type="checkbox"/>	8650541	<input type="checkbox"/>	Checking	JobScheduling	Unknown	Multiple	00002691_0000...	2013-09-09 14:58	2013-0
<input type="checkbox"/>	8650540	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.CERN.ch	00002694_0000...	2013-09-09 14:15	2013-0
<input type="checkbox"/>	8650539	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.CERN.ch	00002691_0000...	2013-09-09 14:20	2013-0
<input type="checkbox"/>	8650538	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002712_0000...	2013-09-09 13:56	2013-0
<input type="checkbox"/>	8650537	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002712_0000...	2013-09-09 14:05	2013-0
<input type="checkbox"/>	8650536	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002709_0000...	2013-09-09 13:35	2013-0
<input type="checkbox"/>	8650535	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.CERN.ch	00002709_0000...	2013-09-09 13:18	2013-0
<input type="checkbox"/>	8650534	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.CERN.ch	00002709_0000...	2013-09-09 13:17	2013-0
<input type="checkbox"/>	8650533	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002709_0000...	2013-09-09 13:51	2013-0
<input type="checkbox"/>	8650532	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002709_0000...	2013-09-09 13:52	2013-0
<input type="checkbox"/>	8650531	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002709_0000...	2013-09-09 13:56	2013-0
<input type="checkbox"/>	8650530	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002706_0000...	2013-09-09 13:44	2013-0
<input type="checkbox"/>	8650529	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002706_0000...	2013-09-09 13:52	2013-0
<input type="checkbox"/>	8650528	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002706_0000...	2013-09-09 13:50	2013-0
<input type="checkbox"/>	8650527	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002706_0000...	2013-09-09 13:52	2013-0
<input type="checkbox"/>	8650526	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002706_0000...	2013-09-09 13:33	2013-0
<input type="checkbox"/>	8650525	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.CERN.ch	00002706_0000...	2013-09-09 13:20	2013-0
<input type="checkbox"/>	8650524	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002706_0000...	2013-09-09 13:39	2013-0
<input type="checkbox"/>	8650523	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002706_0000...	2013-09-09 14:10	2013-0
<input type="checkbox"/>	8650522	<input checked="" type="checkbox"/>	Running	Application	LCSIM CLIC_C...	LCG.DESY-HH.de	00002706_0000...	2013-09-09 14:03	2013-0

> DIRAC: used by CLIC, LHCb etc

- Pilot job submission and monitoring system (e.g. 1 GRID job = many prod jobs)
- Command-line, web interface, python API – free choice!
- Metadata catalog included as part of the package



DIRAC Metadata Catalog

System ▾ Jobs ▾ Data ▾ Views ▾ Tools ▾ Selected setup: ILC-Production ▾

MetadataCatalog <<

Metadata tags

- BXoverlaid
- BeamParticle1
- BeamParticle2
- Datatype
- DetectorModel
- DetectorType
- Energy
- EvtClass
- EvtType
- GenProcessID
- ILDConfig
- JobType
- Machine
- MachineParams
- NumberOfEvents
- Owner
- Polarisation
- PolarizationB1
- PolarizationB2
- ProcessID
- ProdID
- SoftwareTag

Refresh

Metadata Query

Path to start from: /

EvtType:

DetectorModel:

Datatype:

MachineParams:

Energy:

DetectorType:

Submit Reset

Select All Select None

Export ▾ Save

File Name	Size	Date	Metadata
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13930228	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	603592236	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13815836	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14141048	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	642851000	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	581111972	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13734848	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	627487056	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	611998172	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13880484	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	618631408	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	590671512	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14065876	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14758636	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	610481180	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13640744	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14064080	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	616624260	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	601338832	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13948664	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13720216	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	598726592	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14115052	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	616933600	2012-10-09 07:03	
<input type="checkbox"/> /ilc/prod/ilc/mc-dbd/ild/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13798736	2012-10-09 07:03	

Page 1 of 1 Refresh Auto: Disabled Updated: 2013-09-08 09:01 [UTC] Items per page: 25

Data > Metadata Catalog DIRAC: v6r8p28, ILC: v19r1p12 avetisyan@ ilc_user (C=DE/O=GermanGrid/OU=DESY/CN=Eduard Avetisyan)



DIRAC Metadata Catalog

The screenshot displays the DIRAC Metadata Catalog interface. On the left, a 'Metadata Query' panel allows filtering by various tags such as EvtType, DetectorModel, and Energy. The main area shows a list of files with columns for File Name, Size, Date, and Metadata. A large red banner is overlaid on the bottom half of the screen.

NEED A GRID CERTIFICATE TO ACCESS THE METADATA CATALOG!

Selected setup: ILC-Production

File Name	Size	Date	Metadata
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13930228	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	603592236	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13815836	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14141048	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	642851000	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	581111972	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13734848	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	627487056	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	611998172	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13880484	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	618631408	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	590671512	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14065876	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14758636	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	610481180	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13640744	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14064080	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	616624260	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	601338832	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13948664	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	13720216	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	598726592	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	14115052	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	33600	2012-10-09 07:03	
/ilc/prod/ilc/mc-dbd/lid/rec/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-15-p00/rv01-15-p00.mILD_o1_v05.E...	8736	2012-10-09 07:03	

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Data > Metadata Catalog DIRAC: v6r8p28, ILC: v19r1p12 | avetisyan@ ilc_user (IC=DE/O=GermanGrid/OU=DESY/CN=Eduard Avetisyan)



DIRAC Command Line Tools and Python API

```
$ dirac-ilc-find-in-FC /ilc Datatype=SIM Energy=1000 MachineParams=B1b_ws Machine=ilc DetectorType=ILD GenProcessID=36151 DetectorModel=ILD_o1_v05
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00453.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00522.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00052.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00038.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00299.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00442.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00721.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00361.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00583.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00057.slcio
...
```

```
$ dirac-dms-filecatalog-cli
Starting FileCatalog client
```

```
File Catalog Client $Revision: 1.17 $Date:
```

```
FC:> find /ilc Datatype=SIM Energy=1000 MachineParams=B1b_ws Machine=ilc DetectorType=ILD GenProcessID=36151 DetectorModel=ILD_o1_v05
```

```
...
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00139.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00626.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00151.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00037.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00047.slcio
QueryTime 4.60 sec
```

```
$ python
```

```
Python 2.6.6 (r266:84292, Mar 24 2011, 16:35:10)
```

```
[GCC 4.1.2 20080704 (Red Hat 4.1.2-50)] on linux2
```

```
Type "help", "copyright", "credits" or "license" for more information.
```

```
>>> from DIRAC.Resources.Catalog.FileCatalogClient import FileCatalogClient
```

```
>>> fc = FileCatalogClient()
```

```
>>> from DIRAC.Core.Base import Script
```

```
>>> Script.parseCommandLine()
```

```
True
```

```
>>> meta={}
```

```
>>> meta['Datatype']='SIM'
```

```
>>> meta['Energy']=1000
```

```
>>> meta['MachineParams']='B1b_ws'
```

```
>>> meta['Machine']='ilc'
```

```
>>> meta['DetectorType']='ILD'
```

```
>>> meta['GenProcessID']=36151
```

```
>>> meta['DetectorModel']='ILD_o1_v05'
```

```
>>> res = fc.findFilesByMetadata(meta, '/ilc')
```

```
>>> res
```

```
{'rpcStub': (('DataManagement/FileCatalog', {'skipCACheck': True, 'keepAliveLapse': 150, 'delegatedGroup': 'ilc_user', 'delegatedDN': '/C=DE/O=GermanGrid/OU=DESY/CN=Eduard Avetisyan', 'timeout': 120}),
'findFilesByMetadata': (('Datatype': 'SIM', 'Energy': 1000, 'MachineParams': 'B1b_ws', 'DetectorType': 'ILD', 'Machine': 'ilc', 'GenProcessID': 36151, 'DetectorModel': 'ILD_o1_v05'), '/ilc'), 'OK': True, 'Value':
['/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.l36151.Pvvh_nomu.eL.pR-00453.slcio',
```


DIRAC Command Line Tools and Python API

```
$ dirac-iloc-find-in-FC /ilc Datatype=SIM Energy=1000 MachineParams=B1b_ws Machine=ilc DetectorType=ILD GenProcessID=36151 DetectorModel=ILD_o1_v05
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00453.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00522.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00052.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00038.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00299.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00442.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00721.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00361.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00583.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00057.slcio
...
```

```
$ dirac-dms-filecatalog-cli
Starting FileCatalog client
```

```
File Catalog Client $Revision: 1.17 $Date:
```

```
FC:> find /ilc Datatype=SIM Energy=1000 MachineParams=B1b_ws Machine=ilc DetectorType=ILD GenProcessID=36151 DetectorModel=ILD_o1_v05
```

```
...
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00139.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00626.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00151.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00037.slcio
/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00047.slcio
QueryTime 4.60 sec
```

```
$ python
Python 2.6.6 (r266:84292, Mar 24 2011, 16:35:10)
[GCC 4.1.2 20080704 (Red Hat 4.1.2-50)] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> from DIRAC.Resources.Catalog.FileCatalogClient import FileCatalogClient
>>> fc = FileCatalogClient()
>>> from DIRAC.Core.Base import Script
>>> Script.parseCommandLine()
True
>>> meta={}
>>> meta['Datatype']='SIM'
>>> meta['Energy']=1000
>>> meta['MachineParams']='B1b_ws'
>>> meta['Machine']='ilc'
>>> meta['DetectorType']='ILD'
>>> meta['GenProcessID']=36151
>>> meta['DetectorModel']='ILD_o1_v05'
>>> res = fc.findFilesByMetadata(meta, '/ilc')
>>> res
{'rpcStub': (('DataManagement/FileCatalog', {'skipCACheck': True, 'keepAliveLapse': 150, 'delegatedGroup': 'ilc_user', 'delegatedDN': '/C=DE/O=GermanGrid/OU=DESY/CN=Eduard Avetisyan', 'timeout': 120}),
'findFilesByMetadata', ({'Datatype': 'SIM', 'Energy': 1000, 'MachineParams': 'B1b_ws', 'DetectorType': 'ILD', 'Machine': 'ilc', 'GenProcessID': 36151, 'DetectorModel': 'ILD_o1_v05'}, '/ilc/prod/ilc/mc-dbd/ild/sim/')), 'OK': True, 'Value': [],
'QueryTime': 0.83425211906399999},
'/ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/higgs_ffh/ILD_o1_v05/v01-14-01-p00/sv01-14-01-p00.mILD_o1_v05.E1000-B1b_ws.I36151.Pvvh_nomu.eL.pR-00453.slcio',
```

```
>>> res = fc.findFilesByMetadata(meta, '/ilc/prod/ilc/mc-dbd/ild/sim/')
>>> res
{'rpcStub': (('DataManagement/FileCatalog', {'skipCACheck': True,
'keepAliveLapse': 150, 'delegatedGroup': 'ilc_user', 'delegatedDN':
'/C=DE/O=GermanGrid/OU=DESY/CN=Eduard Avetisyan', 'timeout': 120}),
'findFilesByMetadata', ({'Datatype': 'SIM', 'Energy': 1000, 'MachineParams':
'B1b_ws', 'DetectorType': 'ILD', 'Machine': 'ilc', 'GenProcessID': 36151,
'DetectorModel': 'ILD_o1_v05'}, '/ilc/prod/ilc/mc-dbd/ild/sim/')), 'OK': True, 'Value': [],
'QueryTime': 0.83425211906399999}
```

DIRAC Production setups

> DIRAC: used by CLIC, LHCb etc

- Pilot job submission and monitoring system (e.g. 1 GRID job = many prod jobs)
- Metadata catalog included as part of the package
- Command-line, web interface, python API – free choice!
- Available as local installation – full code access, easy debugging, faster learning curve (also includes own python version to avoid incompatibility issues)
- Separate **User** and **Production** job submission systems!

```
$ python run_all_mokka.py
The size of bbudsc_3evt_zh_nnh_eLpR.steer is 2099
/ilc/user/avetisyan/productions/gen/zh_nnh/eLpR/E500-TDR_ws.Pzh_nnh.Gwhizard-1.95.eLpR.1.stdhep
Accessing run number 0
File name /ilc/user/avetisyan/productions/gen/zh_nnh/eLpR/E500-TDR_ws.Pzh_nnh.Gwhizard-1.95.eLpR.1.stdhep
['E500-TDR_ws.Pzh_nnh.Gwhizard-1.95.eLpR.1.SIM.001.slcio']
mokka 080003
Attribute list :
ProcessID: Not defined
mcRunNumber: Not defined
Version: 080003
StartFrom: 1
NbEvts: 200
RandomSeed: Not defined
SteeringFile: bbudsc_3evt_zh_nnh_eLpR.steer
InputFile: LFN:/ilc/user/avetisyan/productions/gen/zh_nnh/eLpR/E500-TDR_ws.Pzh_nnh.Gwhizard-1.95.eLpR.1.stdhep
OutputFile: E500-TDR_ws.Pzh_nnh.Gwhizard-1.95.eLpR.1.SIM.001.slcio
OutputSE: Not defined
MacFile: Not defined
Energy: 500.0
DetectorModel: ILD_o1_v05
```

```
Proceed and submit job(s)? y/[n] :
```



DIRAC vs ILCProd path naming:

> DIRAC: used by CLIC, LHCb etc

- Pilot job submission and monitoring system (e.g. 1 GRID job = many prod jobs)
- Metadata catalog included as part of the package
- Command-line, web interface, python API – free choice!
- Available as local installation – full code access, easy debugging, faster learning curve (also includes own python version to avoid incompatibility issues)
- Separate **User** and **Production** job submission systems!
 - **UserJob** production output stored in the user's GRID directory (not registered in LFC!)
 - **ProductionJob** output path can be defined freely, automatically registered in DFC and LFC
 - will get a ProdID appended to the path
 - Caveat: incompatible with older ILD productions



DIRAC vs ILCProd path naming:

```
FC:/> meta get /ilc/prod/clic/1tev/qq/ILD/SIM/00000130/000/qq_sim_130_995.slcio
EvtType : qq
NumberOfEvents : 10
Machine : clic
ProdID : 130
Datatype : SIM
Energy : 1000
DetectorType : ILD
```

No consistent mechanism of unique ProdID generation for older (non-DIRAC) productions migrated to Dirac File Catalog (DFC).

```
FC:/> meta get /ilc/prod/ilc/mc-dbd/ild/sim/1000-B1b_ws/aa_4f/ILD_o1_v05/v01-14-01-p00/
PhysicsList : QGSP_BERT
*Datatype : SIM
*Energy : 1000
*MachineParams : B1b_ws
*DetectorType : ILD
*Machine : ilc
*EvtClass : aa_4f
!SoftwareTag : v01-14-01-p00
*DetectorModel : ILD_o1_v05
```

- Not a big problem as the old and new productions will effectively be separated
- Make searching and cataloging of productions easier



> DIRAC: used by CLIC, LHCb etc

- Pilot job submission and monitoring system (e.g. 1 GRID job = many prod jobs)
- Metadata catalog included as part of the package
- Command-line, web interface, python API – free choice!
- Available as local installation – full code access, easy debugging, faster learning curve (also includes own python version to avoid incompatibility issues)
- Separate **User** and **Production** job submission systems!
- Aware of ILC software packages (e.g. Whizard, Mokka, Marlin etc)
 - but also capable to run **generic** applications if complete input is provided



ILCDIRAC – Production software

> DIRAC: used by CLIC, LHCb etc

- Pilot job submission and monitoring system (e.g. 1 GRID job = many prod jobs)
- Metadata catalog included as part of the package

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System Jobs Data Views Tools

Text actions

- View configuration as text
- Download configuration

None Configuration

- DIRAC
- Registry
- Systems
- Website
- Production
- Operations
- Defaults
- AvailableTarBalls
 - x86_64-slc5-gcc43-opt
 - marlin
 - v01-08
 - 0108afs
 - 0108p02
 - 0108p03
 - Marlin0108PandoraNew
 - 0109Pandora_V4
 - 0109Pandora_V5
 - 010902
 - 010902v2
 - 010902v3
 - 0110
 - TarBallURL copy = <http://www.cern.ch/lcd-data/software/>
 - TarBallURL = /ilc/prod/software/marlin/x86_64-slc5-gcc43-opt/

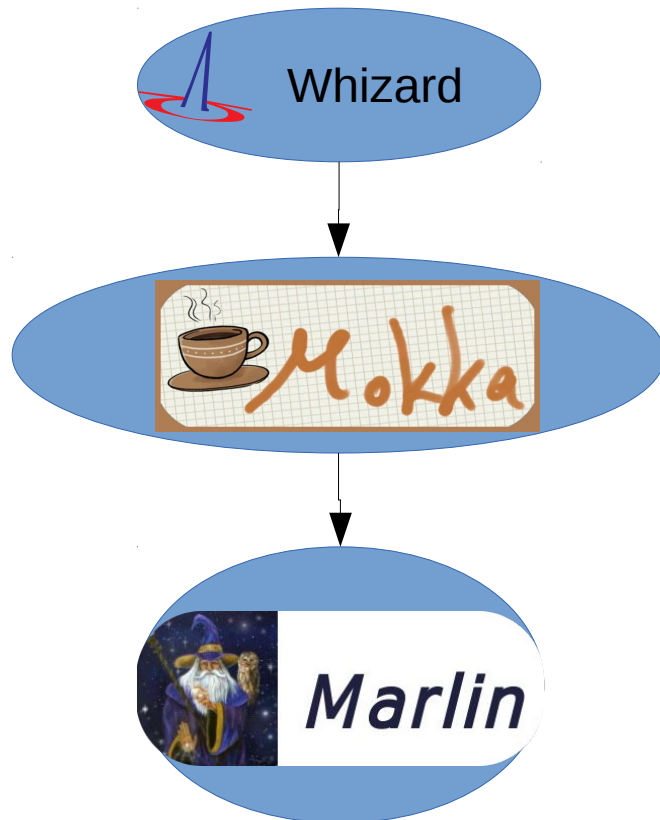
.rning



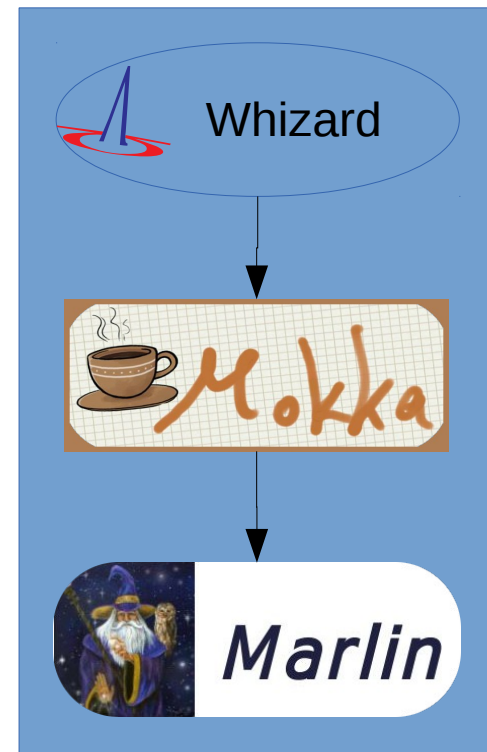
ILCDIRAC – Production software

- > Can run the production chains (generation, simulation, reconstruction) either as separate jobs, or as single job with output of one step fed to the input of the next:

Separate



Chained



Transition roadmap

> Caveats:

- Not trivial to maintain the consistency between DFC and LFC (currently incomplete)
 - Need to consolidate all productions made at DESY, KEK, SLAC into a single easily searchable consolidated (and up-to-date!) catalogue!
- Different concept of path naming for productions (ProdID)
 - Re-registration of existing files under new paths possible but risky
- No correspondence between generator/simulated/reconstructed files
 - maybe could add a meta tag in the future
- Minor caveats hit only by real use, e.g.
 - Non-trivial handling of Overlays
 - Not all meta keys indexed (included in the metatag search)
 - Minor bugs in the web interface (being worked on currently)



Summary

- > ILCDIRAC is an appropriate system for future ILD productions
 - Fast learning curve, flexible operations for data and job managements
 - Good integration of subcomponents (metadata, filecatalog, jobcontrol)
 - Supported by a large number of GRID sites
 - Active development/support team(s) (e.g. both for DIRAC and ILCDIRAC)

(maintained by CERN LCD group for LC community)

For general information:

<https://twiki.cern.ch/twiki/bin/view/CLIC/DiracUsage>

For bug reports: <https://its.cern.ch/jira/browse/ILCDIRAC>

For discussions: <http://forum.linearcollider.org/>

For support: ilcdirc-support@cernSPAMNOT.ch

