



Bundesministerium
für Bildung
und Forschung

AGIS / ATLAS Grid ジョブ管理

ATLAS ソフトウェア講習会 2016

Gen Kawamura

II. Physikalisches Institut, Universität Göttingen

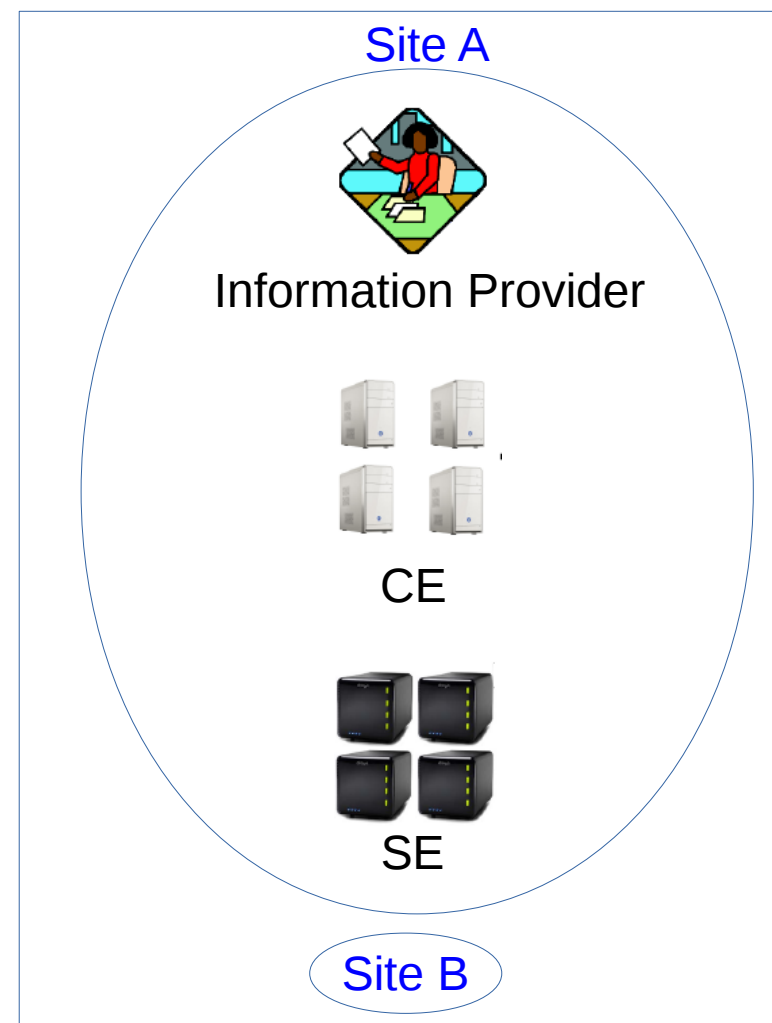
Overview

- Your Grid environments
 - Lxplus at CERN
 - VMs at Heidelberg
 - Grid UI with Docker in your Linux Box
- Introduction to Grid computing
 - Concepts
 - Certificate Authorities and VOMS
 - Setup CVMFS
 - ATLAS Grid computing & WLCG Resources
 - Grid job and data
 - ATLAS Resources
 - Grid user interface (CLI) and CVMFS
 - BigPanda Monitoring
- Rucio (ATLAS data management system)
 - Basic concept
 - SetupRucio
 - RSE expressions
- RucioUI (WebUI)
 - RucioUI
- Links and references

ATLAS ジョブとデータ



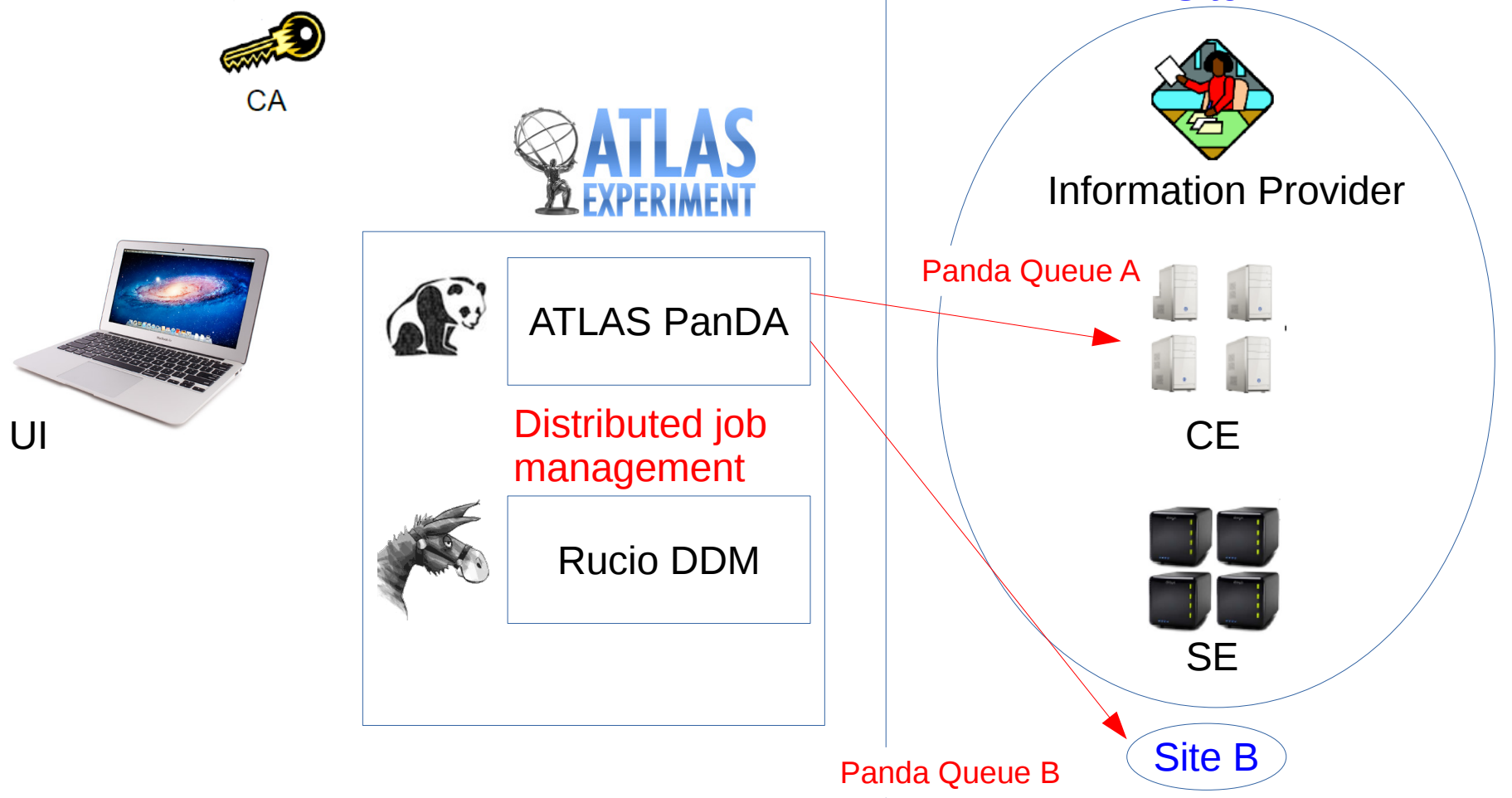
- あくまで概略



ATLAS ジョブとデータ



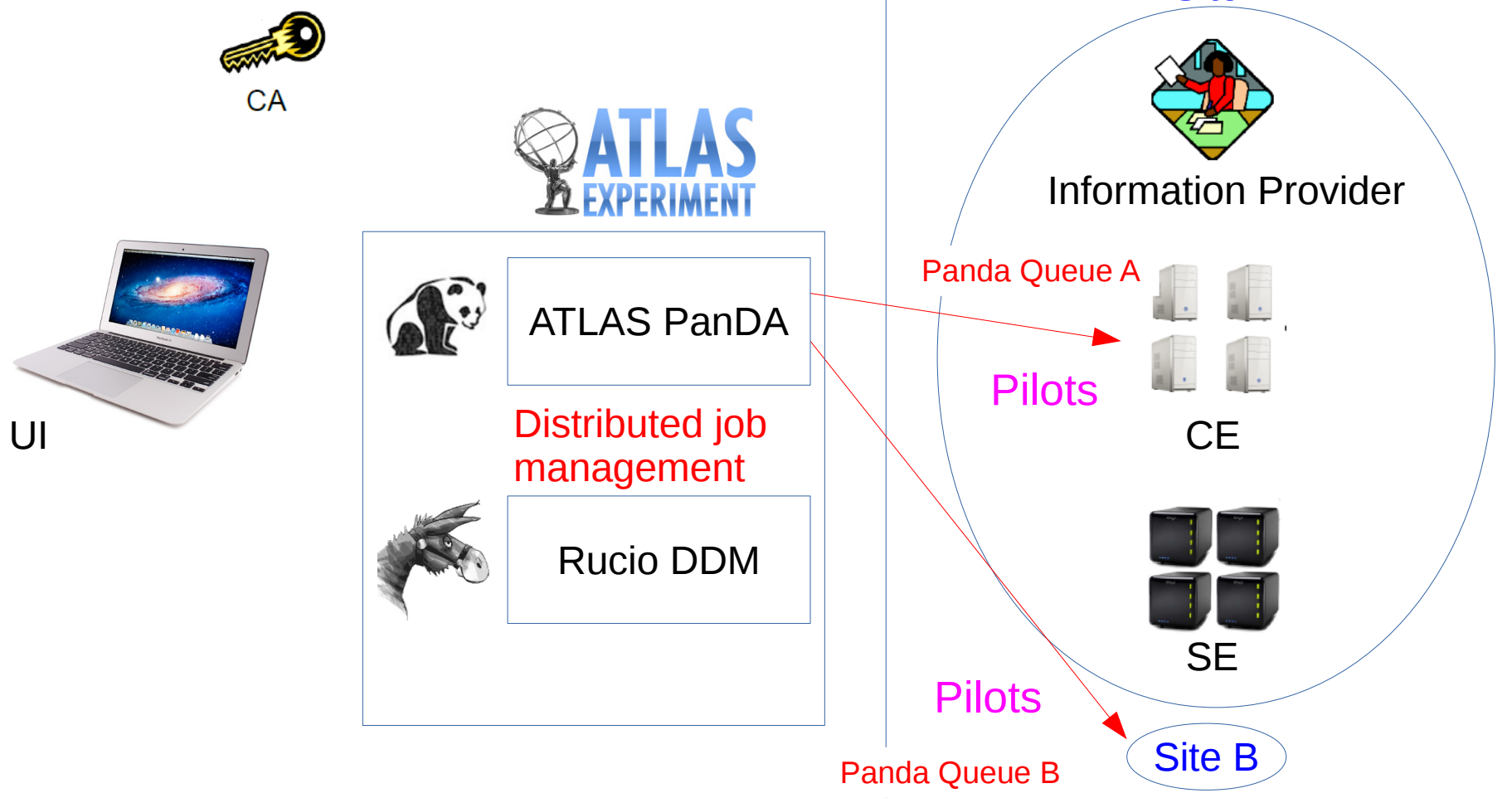
- あくまで概略



ATLAS ジョブとデータ



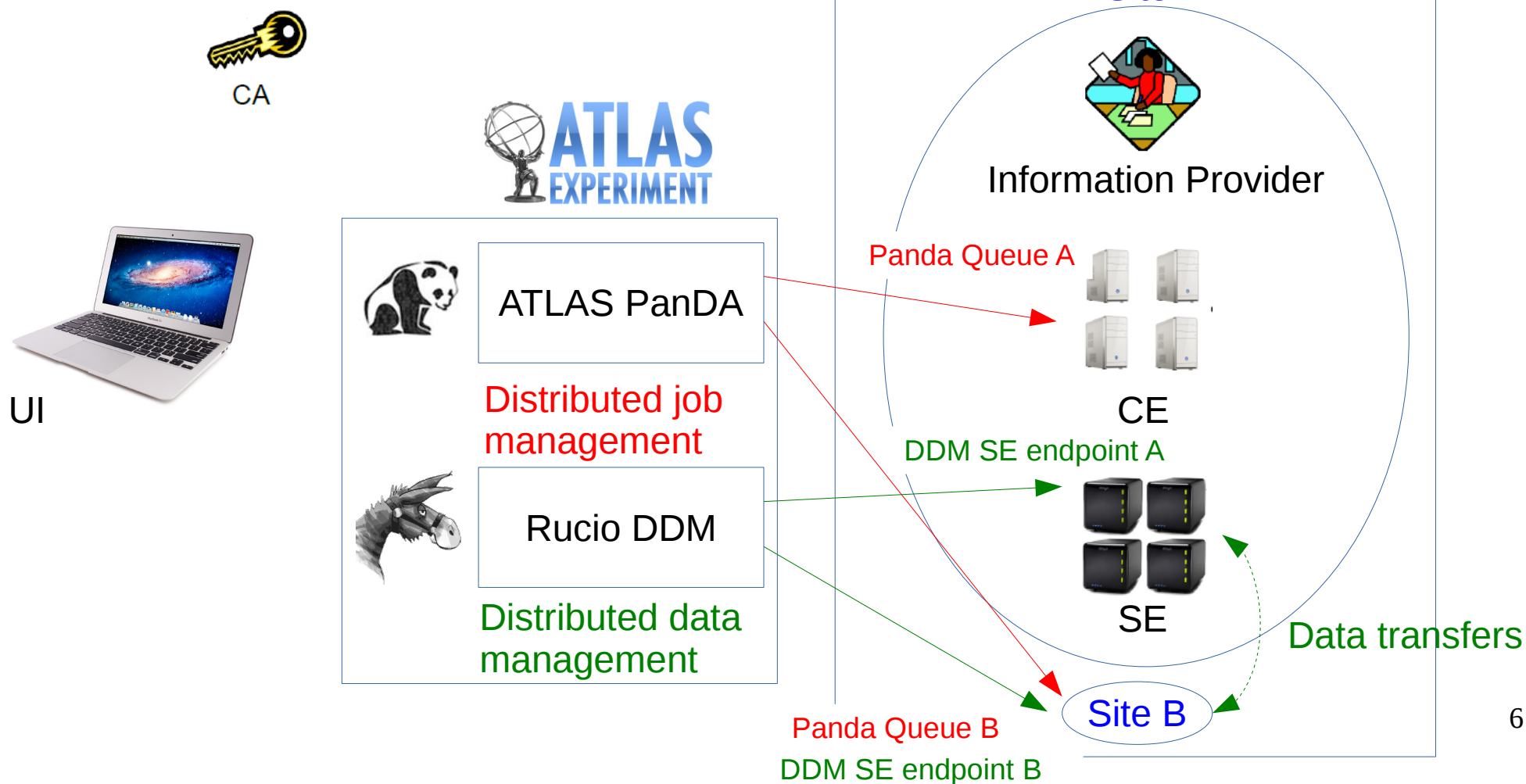
- あくまで概略



ATLAS ジョブとデータ



- あくまで概略



BigPanda Monitoring

- Next generation monitoring tool developed within the BigPanDA project
- Drop down menu with access to numerous views of job monitoring data
- Tool heavily used by ADC experts and shifters to track production activities
- Here we are more interested in monitoring our own jobs



BigPanda Search Options

Search	
PanDA job ID or name	<input type="text"/> <input type="button" value="Submit"/>
Batch ID	<input type="text"/> <input type="button" value="Submit"/>
Task ID	<input type="text"/> <input type="button" value="Submit"/>
Task name	<input type="text"/> <input type="button" value="Submit"/>
Request ID	<input type="text"/> <input type="button" value="Submit"/>
Tasks for Request IDs	from <input type="text"/> to <input type="text"/> <input type="button" value="Submit"/>
Jobs for Request IDs	from <input type="text"/> to <input type="text"/> <input type="button" value="Submit"/>
Tasks for campaign	<input type="text"/> <input type="button" value="Submit"/>
Tasks for project	<input type="text"/> <input type="button" value="Submit"/>
Tasks for tag	<input type="text"/> <input type="button" value="Submit"/>
Tasks for stream	<input type="text"/> <input type="button" value="Submit"/>
Site	<input type="text"/> <input type="button" value="Submit"/>
User	<input type="text"/> <input type="button" value="Submit"/>
Dataset	<input type="text"/> <input type="button" value="Submit"/>
File	<input type="text"/> <input type="button" value="Submit"/>

- Search boxes available on BigPanda front page to get specific information on tasks, jobs and user activities
- The range of displayed information can be changed by modifying or adding the URL parameters

Enter our example
job Task ID here

The load on the Panda
DB will increase with
high N

```
&limit=N  
&display_limit=N  
&hours=N  
&days=N  
&earlierthan=Nhours  
&earlierthandays=Ndays  
&date_from=2014-10-01  
&date_to=2014-10-03
```

Example URL Modifiers

- Advanced usage: monitoring data can be retrieved in *json* format to be able results to be processed programmatically

➤ <http://bigpanda.cern.ch/help/>

User View

- The user view displays your recent activities
- Useful starting point to check your jobs
- Links on this page lead to more information on an individual tasks and associated jobs

ATLAS PanDA Dash Tasks Jobs Errors Users Sites Incidents Search

PanDA user **andrew washbrook**, last 72 hours, limit 5000 per table. Params: limit=5000 user=washbrook

User page for **andrew washbrook** Please read (and keep an eye on) the **help section below** to familiarize yourself with using the monitor in JEDI based analysis.

Stats from the user DB (updated every few hours)

User	Jobs in last week	Latest job in the DB stats	Personal CPU-hrs - 1 day	Personal CPU-hrs - 7 days	Group CPU-hrs - 1 day	Group CPU-hrs - 7 days
andrew washbrook	87	2013-10-12 19:33	0.0	0.0	0.0	0.0

Jump to recent [tasks](#) [jobsets](#) [jobs](#)

Task attribute summary, 1 tasks

corecount (1)	1 (1)
processingtype (1)	panda-client-0.5.42-jedi-run (1)
reqid (1)	3 (1)
status (1)	done (1)
taskpriority (1)	1000 (1)
tasktype (1)	analy (1)
transpath (1)	runGen-00-00-02 (1)
username (1)	andrew washbrook (1)

Grid resources used

Task Summary

Replace with your username

➤ <http://bigpanda.cern.ch/user/?user=washbrook>

1 tasks, sorted by jedidtaskid Show in task list page

ID Parent	Jobset	Task name TaskType/ProcessingType Campaign Group User Logged status	Task status Nfiles	Input files finish% fail% Nfinish Nfail	Modified	State changed	Priority
4617520	3	user.wash.prntest/ anal/panda-client-0.5.42-jedi-run andrew washbrook	done 1	100% 1	2015-01-09 10:15	01-09 10:15	1000

Task Details

Recent jobsets Note that with JEDI you should pay more attention to tasks than jobsets! See the help section below.

Jobset ID	nJobs	Modification times	Priorities	defined	waiting	assigned	activated	sent	starting	running	holding	transferring	finished	failed	cancelled
1	2	2015-01-06 14:28 to 01-06 14:36	1000 to 2000	0	0	0	0	0	0	0	0	0	2	0	0

Example Job Monitoring

➤ <http://bigpanda.cern.ch/task/4617520/>

Task 4617520: user.wash.pruntest/											
Task ID	Jobset	Type	WorkingGroup	User	Task status	Ninputfiles finished failed	Created	Modified	Cores	Priority	Parent
4617520	3	analy		andrew washbrook	done	1 1 (100%)	2015-01-06 14:22	01-09 10:15	1	1000	

View:	job list (access to job details and logs)	child tasks	prodsys task page	brokerage logger	JEDI action logger	error summary
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➤ <http://bigpanda.cern.ch/job?pandaaid=2351340829>

Where the job was run



PandaID	Owner	Request Task ID	Status	Created	Time to start d:h:m:s	Duration d:h:m:s	Modified	Cloud Site	Priority
2351340829	andrew washbrook	1 4617520	finished	2015-01-06 14:23	0:0:05:05	0:0:01:13	01-06 14:36	IT ANALY_INFN-FRASCATI	1000

Job name: user.wash.pruntest/ **type:** panda-client-0.5.42-jedi-run **transformation:** runGen-00-00-02

Datasets: Out: user.wash.pruntest.log.14345588

Job information	logfiles	pilot job stdout, stderr, batch log	logger records	child jobs
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Jobset 1



Job Log Files

- http://bigpanda.cern.ch/filebrowser/?guid=b2c3305e-5581-4062-9676-92205d72018a&lfname=user.wash.prntest.log.4617520.000001.log.tgz&site=ANALY_INFN-FRASCATI&scope=user.wash
- Annotations:
- Globally Unique Identifier (points to `guid=b2c3305e-5581-4062-9676-92205d72018a`)
 - Logical File Name (points to `lfname=user.wash.prntest.log.4617520.000001.log.tgz`)

File listing

Modification time	Size [B]	File
Tue Jan 6 14:28:57 2015	0	athena_stderr.txt
Tue Jan 6 14:28:57 2015	23820	athena_stdout.txt
Tue Jan 6 14:28:57 2015	730	job_setup.sh
Tue Jan 6 14:28:52 2015	188	matched_replicas.json
Tue Jan 6 14:28:57 2015	527	metadata-2351340829.xml
Tue Jan 6 14:28:49 2015	1391	pandaJobData.out
Tue Jan 6 14:28:57 2015	0	pandatracerlog.txt
Tue Jan 6 14:28:49 2015	0	pilot.stderr
Tue Jan 6 14:28:50 2015	77	PILOT_INITDIR
Tue Jan 6 14:28:57 2015	97	Pilot_VmPeak.txt
Tue Jan 6 14:28:51 2015	280	pilotlog.out
Tue Jan 6 14:29:52 2015	83922	pilotlog.txt

- From an individual job view you can get access to log files for further diagnosis

Output and error of job payload

Pilot logs show the staging of the job at the site

Task Monitoring

- The new task is visible from my user view page in a *registered* state

2 tasks, sorted by jedidaskid Show in task list page									
ID Parent	Jobset	Task name TaskType/ProcessingType Campaign Group User Logged status	Task status Nfiles	Input files finish% fail% Nfinish Nfail	Modified	State changed	Priority		
4635475	6	user.wash.tutorial.dpd/ anal/panda-client-0.5.42-jedi-athena andrew washbrook	registered 29		2015-01-09 15:47	01-09 15:47	1000		
4617520	5	user.wash.pruntest/ anal/panda-client-0.5.42-jedi-run andrew washbrook	done 1	100% 1	2015-01-09 14:44	01-09 14:44	1000		

Task 4635475: user.wash.tutorial.dpd/									
Task ID	Jobset	Type	WorkingGroup	User	Task status	Detailed JEDI status	Ninputfiles finished failed	Created	Modified
4635475	6	analy		andrew washbrook	submitting	scouting	29 0 (0%)	2015-01-09 15:47	01-09 15:48

States of jobs in this task (merge jobs excluded) Show all jobs														
defined	waiting	pending	assigned	throttled	activated	sent	starting	running	holding	transferring	finished	failed	cancelled	merging
11														

Jump to [job parameters](#), [task parameters](#)

View:	job list (access to job details and logs)	child tasks	prodsys task page	brokerage logger	JEDI action logger	error summary
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Input containers
data11_7TeV.00189090.physics_Egamma.merge.AOD.f403_m975

Output containers
user.wash.tutorial.dpd_MyFirstD3PD/
user.wash.tutorial.dpd.log/

➤ <http://bigpanda.cern.ch/user/?user=washbrook>

Task Monitoring (2)

Job attribute summary Sort by count , alpha	
atlasrelease (1)	Atlas-17.2.7 (11)
attemptnr (1)	1 (10)
cloud (1)	DE (11)
computingsite (1)	ANALY_FMPHi-UNIBA (11)
destinationse (1)	ANALY_FMPHi-UNIBA (1)
homepackage (1)	AnalysisTransforms-AtlasPhysics_17.2.7.4.1 (11)
inputfileproject (1)	data11_7TeV (10)
inputfiletype (1)	AOD (10)
jeditaskid (1)	4635475 (11)
jobsetid (1)	6 (11)
jobstatus (2)	defined (10) running (1)
outputfiletype (1)	? (11)
priorityrange (3)	900:999 (6) 1000:1099 (4) 2000:2099 (1)
processingtype (1)	panda-client-0.5.42-jedi-athena (11)
prodsourcelabel (2)	panda (1) user (10)
produsername (1)	andrew washbrook (11)
reqid (1)	6 (11)
specialhandling (1)	ddm:rucio (11)
transformation (2)	buildJob-00-00-03 (1) runAthena-00-00-12 (10)

➤ <http://bigpanda.cern.ch/task/4635475/>

- Switching to the Task view we can now see one job is running at the computing site ANALY_FMPHi-UNIBA
- Can follow individual progression of running jobs by clicking on Job Status

Job list Sort by PandalID, ascending mod time, descending mod time, priority, attemptnr, duration										
PanDA ID Attempt#	Owner Group	Request Task ID	Transformation	Status	Created	Time to start d:h:m:s	Duration d:h:m:s	Mod	Cloud Site	Priority
2354305514 Attempt 0	andrew washbrook	6 4635475	buildJob-00-00-03	running	2015-01-09 15:48	0:0:01:16	0:0:01:19	01-09 15:49	DE ANALY_FMPHl-UNIBA	2000
	Job name: user.wash.tutorial.dpd/ #0									
	Datasets: Out: panda.0109154800.984205.lib_4635475									

Task Monitoring (3)

States of jobs in this task (merge jobs excluded) Show all jobs														
defined	waiting	pending	assigned	throttled	activated	sent	starting	running	holding	transferring	finished	failed	cancelled	merging
								10			1			

Job attribute summary	
Sort by count, alpha	
atlasrelease (1)	Atlas-17.2.7 (11)
attemptnr (1)	1 (10)
cloud (1)	DE (11)
computingsite (1)	ANALY_FMPHi-UNIBA (11)
destinationse (1)	ANALY_FMPHi-UNIBA (1)
homepackage (1)	AnalysisTransforms-AtlasPhysics_17.2.7.4.1 (11)
inputfileproject (1)	data11_7TeV (10)
inputfiletype (1)	AOD (10)
jeditaskid (1)	4635475 (11)
jobsetid (1)	6 (11)
jobstatus (2)	finished (1) running (10)
outputfiletype (1)	? (11)
priorityrange (3)	900:999 (4) 1000:1099 (6) 2000:2099 (1)
processingtype (1)	panda-client-0.5.42-jedi-athena (11)
prodsourcelabel (2)	panda (1) user (10)
produsername (1)	andrew washbrook (11)
reqid (1)	6 (11)
specialhandling (1)	ddm:rucio (11)
transformation (2)	buildJob-00-00-03 (1) runAthena-00-00-12 (10)

➤ <http://bigpanda.cern.ch/task/4635475/>

- Checking some time later there are 10 jobs in a *running* state with 1 job *finished*

Job list Sort by PanalID, ascending mod time, descending mod time, priority, attemptnr, duration										
PanDA ID Attempt#	Owner Group	Request Task ID	Transformation	Status	Created	Time to start d:h:m:s	Duration d:h:m:s	Mod	Cloud Site	Priority
2354305524 Attempt 1	andrew washbrook	6 4635475	runAthena-00-00-12	running	2015-01-09 15:48	0:0:15:42	0:0:05:08	01-09 16:03	DE ANALY_FMPHi-UNIBA	999
	Job name: user.wash.tutorial.dpd/ #1									
	Datasets: In: data11_7TeV:data11_7TeV.00189090.physics_Egamma.merge.AOD.f403_m975 Out: user.wash.tutorial.dpd_MyFirstD3PD.14603408									
2354305523 Attempt 1	andrew washbrook	6 4635475	runAthena-00-00-12	running	2015-01-09 15:48	0:0:15:42	0:0:05:08	01-09 16:03	DE ANALY_FMPHi-UNIBA	1000
	Job name: user.wash.tutorial.dpd/ #1									
	Datasets: In: data11_7TeV:data11_7TeV.00189090.physics_Egamma.merge.AOD.f403_m975 Out: user.wash.tutorial.dpd_MyFirstD3PD.14603408									
2354305522 Attempt 1	andrew washbrook	6 4635475	runAthena-00-00-12	running	2015-01-09 15:48	0:0:15:42	0:0:05:08	01-09 16:03	DE ANALY_FMPHi-UNIBA	1000
	Job name: user.wash.tutorial.dpd/ #1									
	Datasets: In: data11_7TeV:data11_7TeV.00189090.physics_Egamma.merge.AOD.f403_m975 Out: user.wash.tutorial.dpd_MyFirstD3PD.14603408									

Task Monitoring (4)

Task 4635475: user.wash.tutorial.dpd/

Task ID	Jobset	Type	WorkingGroup	User	Task status	Ninputfiles finished failed	Created	Modified	Cores	Priority	Parent
4635475	6	analy		andrew washbrook	done	29 29 (100%)	2015-01-09 15:47	01-09 17:49	1	1000	

States of jobs in this task (merge jobs excluded)

Show all jobs

defined	waiting	pending	assigned	throttled	activated	sent	starting	running	holding	transferring	finished	failed	cancelled	merging
											15			

Job attribute summary Sort by count, alpha	
atlasrelease (1)	Atlas-17.2.7 (15)
attemptnr (2)	1 (10) 2 (3)
cloud (2)	DE (11) UK (4)
computingsite (2)	ANALY_FMPH-UNIBA (11) ANALY_SHEF_SL6 (4)
destinationse (2)	ANALY_FMPH-UNIBA (1) ANALY_SHEF_SL6 (1)
homepackage (1)	AnalysisTransforms-AtlasPhysics_17.2.7.4.1 (15)
inputfileproject (1)	data11_7TeV (13)
inputfiletype (1)	AOD (13)
jeditaskid (1)	4635475 (15)
jobsetid (1)	6 (15)
jobstatus (1)	finished (15)
outputfiletype (1)	? (15)
priorityrange (3)	900:999 (4) 1000:1099 (9) 2000:2099 (2)
processingtype (1)	panda-client-0.5.42-jedi-athena (15)
prodsourcelabel (2)	panda (2) user (13)
produsername (1)	andrew washbrook (15)
reqid (1)	6 (15)
specialhandling (1)	ddm:rucio (15)
transformation (2)	buildJob-00-00-03 (2) runAthena-00-00-12 (13)

➤ <http://bigpanda.cern.ch/task/4635475/>

- And then later all the jobs have finished and the task status is *done*
- Note that 4 of the 15 jobs were sent to a computing site in a different cloud (UK)
- Do not expect all your jobs to run at the same computing site

ATLAS Resources - 1

- AGIS (ATLAS Grid Information Sysgtem)
 - <http://atlas-agis.cern.ch/agis/>

ATLAS Grid Information System

RC SiteATLASSiteDDMEndpointPANDA QueueServiceCentral ServicesDDM Groups

DocsTWikiOLD

TOPOLOGY MANAGEMENT	SERVICE MANAGEMENT	OPERATIONS	DOCUMENTATION
<ul style="list-style-type: none">▪ Define RC site▪ Define Experiment site▪ Define DDM endpoint▪ Define OS RSE endpoint (new implementation)▪ Define PANDA site▪ Define PANDA queue▪ RC pledges▪ Find DDM endpoints links▪ Find TransferMatrix links	<ul style="list-style-type: none">▪ Define OS service▪ Define LFC service▪ Define SE service▪ Define CE service▪ Define Redirector service▪ Define PerfSonar service▪ Define Frontier service▪ Define Squid service▪ Define Central service▪ SE protocols (DDM/Panda activities)	<ul style="list-style-type: none">▪ Crons list▪ ADMINs list▪ Changes log▪ Request ADMIN privileges	<ul style="list-style-type: none">▪ Main TWiki▪ TWiki WEBUI instructions▪ API Docs
DOWNTIMES	TOACACHE EXPORT	COMPARISON & VALIDATION TOOLS	
<ul style="list-style-type: none">▪ Downtime caledar▪ DDM Blacklisting data▪ PANDA Blacklisting data	<ul style="list-style-type: none">▪ dynamic ToACache (changes are immediately propagated): http://atlas-agis-api.cern.ch/request/toacache/TiersOfATLASCache.py▪ static ToACache: http://atlas-agis-api.cern.ch/ToACache/TiersOfATLASCache.py▪ previous caches: http://atlas-agis-api.cern.ch/ToACache/cache/▪ View/Modify ToACache ExtraData (RSE integration)<ul style="list-style-type: none">▪ ToACache with Extra data	<ul style="list-style-type: none">▪ Consistency checker▪ ToAComparator▪ AGIS-BDII CE comparison▪ AGIS-Schedconf-PF mon CE comparison▪ AGIS-OIMGOCDB sites+services comparison▪ AGIS-PANDA PandaResource+SWReleases comparison▪ AGIS-Schedconfig (topology) comparison▪ AGIS-Schedconfig JSON comparison▪ AGIS-GSR services comparison	

ATLAS Resources - 2

- PanDA queue end points

ATLAS Grid Information System

RC Site ATLASite DDMEndpoint **PANDA Queue** Service Central Services DDM Groups PandaQueue combined resources Docs TWiki OLD JSON

Show 200 entries First Previous 1 Next Last

give me url of this page hold shift + click column for Multi-column ordering

VO name	ATLAS Site	PanDA Site	Template object	PanDA Resource	PanDA Queue	state	(current) status	type	capability	CLOUD	TIER
atlas	FZK-LCG2	FZK-LCG2	FZK-LCG2_VIRTUAL	ANALY_FZK	Clone ANALY_FZK	ACTIVE	online	analysis	score	DE	T1
atlas	FZK-LCG2	FZK-LCG2	FZK-LCG2_VIRTUAL	ANALY_FZK_HI	Clone ANALY_FZK_HI	ACTIVE	online	analysis	score	DE	T1
atlas	FZK-LCG2	FZK-LCG2	FZK-LCG2_VIRTUAL	ANALY_FZK_SHORT	Clone ANALY_FZK_SHORT	ACTIVE	online	analysis	score	DE	T1
atlas	FZK-LCG2	FZK-LCG2	FZK-LCG2_VIRTUAL	FZK-LCG2	Clone FZK-LCG2-all-prod-CEs	ACTIVE	online	production	score	DE	T1
atlas	FZK-LCG2	FZK-LCG2	FZK-LCG2_VIRTUAL	FZK-LCG2_HIMEM	Clone FZK-LCG2_HIMEM	ACTIVE	online	production	himem	DE	T1
atlas	FZK-LCG2	FZK-LCG2	FZK-LCG2_VIRTUAL	FZK-LCG2_MCORE	Clone FZK-LCG2_MCORE	ACTIVE	online	production	mcore	DE	T1
atlas	FZK-LCG2	FZK-LCG2	FZK-LCG2_VIRTUAL	FZK-LCG2_MCORE_HI	Clone FZK-LCG2_MCORE_HI	ACTIVE	online	production	mcore	DE	T1
atlas	FZK-LCG2	FZK-LCG2	FZK-LCG2_VIRTUAL	FZK-LCG2_MCORE_LO	Clone FZK-LCG2_MCORE_LO	ACTIVE	online	production	mcore	DE	T1

Showing 1 to 8 of 8 entries

Active PanDA (job) queues
ANALY_ = Analysis queue

ATLAS Resources - 3

- DDM end points

ATLAS Grid Information System

RC SiteATLASSiteDDMEndpointPANDA QueueServiceCentral ServicesDDM GroupsDDM EndpointsDocsTWikiOLDJSON

Show 200 entries

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DDM EndpointStateDDM SiteATLAS SiteATLAS TIERCLOUDtypeFull EndpointTokenDomainLFC NameFTS MasterFTS Master2FTS

FirstPrevious1NextLast

DDM EndpointStateDDM SiteATLAS SiteATLAS TIERCLOUDtypeFull EndpointFTS MasterFTS Test

FZK-LCG2_DATADISKACTIVEFZK-LCG2FZK-LCG2T1DEDATADISKtoken:ATLASDATADISK:srm://atlassrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/disk-only/atlasdatadisk/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_DATATAPEACTIVEFZK-LCG2FZK-LCG2T1DEDATATAPEtoken:ATLASDATATAPE:srm://atlassrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/atlasdatatape/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_GROUPTAPE_PERF-EGAMMAACTIVEFZK-LCG2FZK-LCG2T1DEGROUPTAPEtoken:ATLASMCCTAPE:srm://atlassrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/atlasgrouptape/perf-egamma/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_LOCALGROUPDISKACTIVEFZK-LCG2FZK-LCG2T1DELOCALGROUPDISKtoken:ATLASLOCALGROUPDISK:srm://dgridsrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/atlaslocalgroupdisk/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_LOCALGROUPTAPEACTIVEFZK-LCG2FZK-LCG2T1DELOCALGROUPTAPEtoken:ATLASLOCALGROUPTAPE:srm://dgridsrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/atlaslocalgrouptape/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_MCTAPEACTIVEFZK-LCG2FZK-LCG2T1DEMCTAPEtoken:ATLASMCCTAPE:srm://atlassrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/atlasmcctape/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_PERF-EGAMMAACTIVEFZK-LCG2FZK-LCG2T1DEGROUPDISKtoken:ATLASDATADISK:srm://atlassrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/disk-only/atlasgroupdisk/perf-egamma/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_PERF-IDTRACKINGACTIVEFZK-LCG2FZK-LCG2T1DEGROUPDISKtoken:ATLASDATADISK:srm://atlassrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/disk-only/atlasgroupdisk/perf-idtracking/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_PERF-TAUACTIVEFZK-LCG2FZK-LCG2T1DEGROUPDISKtoken:ATLASDATADISK:srm://atlassrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/disk-only/atlasgroupdisk/perf-tau/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

FZK-LCG2_PPSSCRATCHDISKACTIVEFZK-LCG2FZK-LCG2T1DESPECIALtoken:ATLASPPSSCRATCHDISK:srm://ppssrm-kit.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/atlasppsscratchdisk/CERNFTS3_REST | https://fts3.cern.ch:8446

FZK-LCG2_SCRATCHDISKACTIVEFZK-LCG2FZK-LCG2T1DESCRATCHDISKtoken:ATLASSCRATCHDISK:srm://atlassrm-fzk.gridka.de:8443/srm/managerv2?SFN=/pnfs/gridka.de/atlas/disk-only/atlasscratchdisk/CERNFTS3_REST | https://fts3.cern.ch:8446CERNFTS3PILOT_REST | https://fts3-pilot.cern.ch:8446

Showing 1 to 11 of 11 entries

Active DDM storage

Showing 1 to 11 of 11 entries

Active DDM storage end points

ATLAS Resources - 4

- **SCRATCHDISK** (Tier1 + Tier2s in Germany)
 - FZK-LCG2_SCRATCHDISK
 - DESY-HH_SCRATCHDISK
 - DESY-ZN_SCRATCHDISK
 - LRZ-LMU_SCRATCHDISK
 - WUPPERTALPROD_SCRATCHDISK
 - UNI-FREIBURG_SCRATCHDISK
 - GOEGRID_SCRATCHDISK
- **LOCALGROUPDISK** (e.g. DESY-HH and UniGoettingen)
 - DESY-HH_LOCALGROUPDISK
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 - GOEGRID_LOCALGROUPDISK
 -_LOCALGROUPDISK

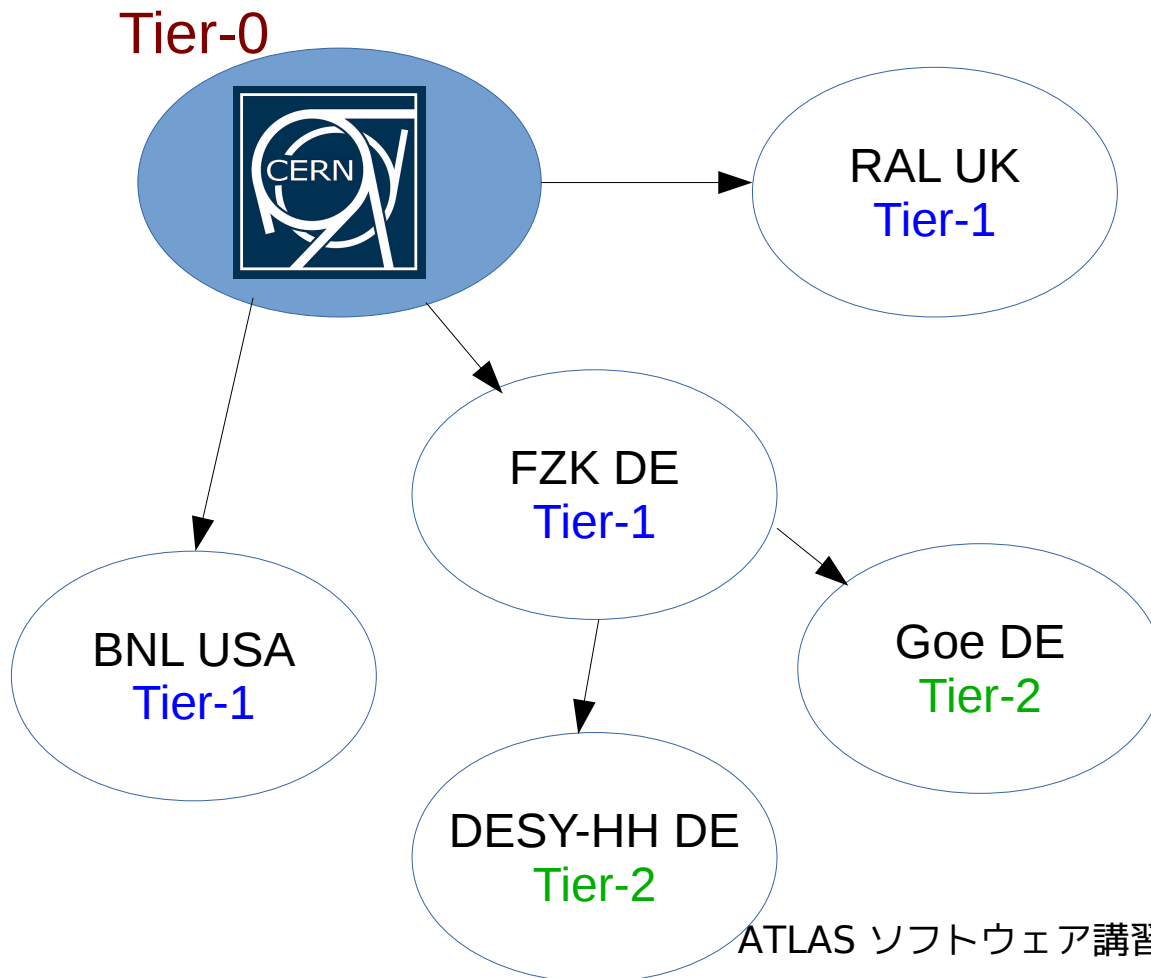
Storages for temporary data of PanDA jobs. Would be automatically REMOVED!

Permanently KEPT. Generally speaking, in total a few hundred TB in each site

ATLAS Grid computing and WLCG resources - 1

- LHC multi-tier structure

- WLCG = Worldwide LHC Computing Grid



Tier-0: Raw data, Data store (in tape), Pre-processing, Reconstruction

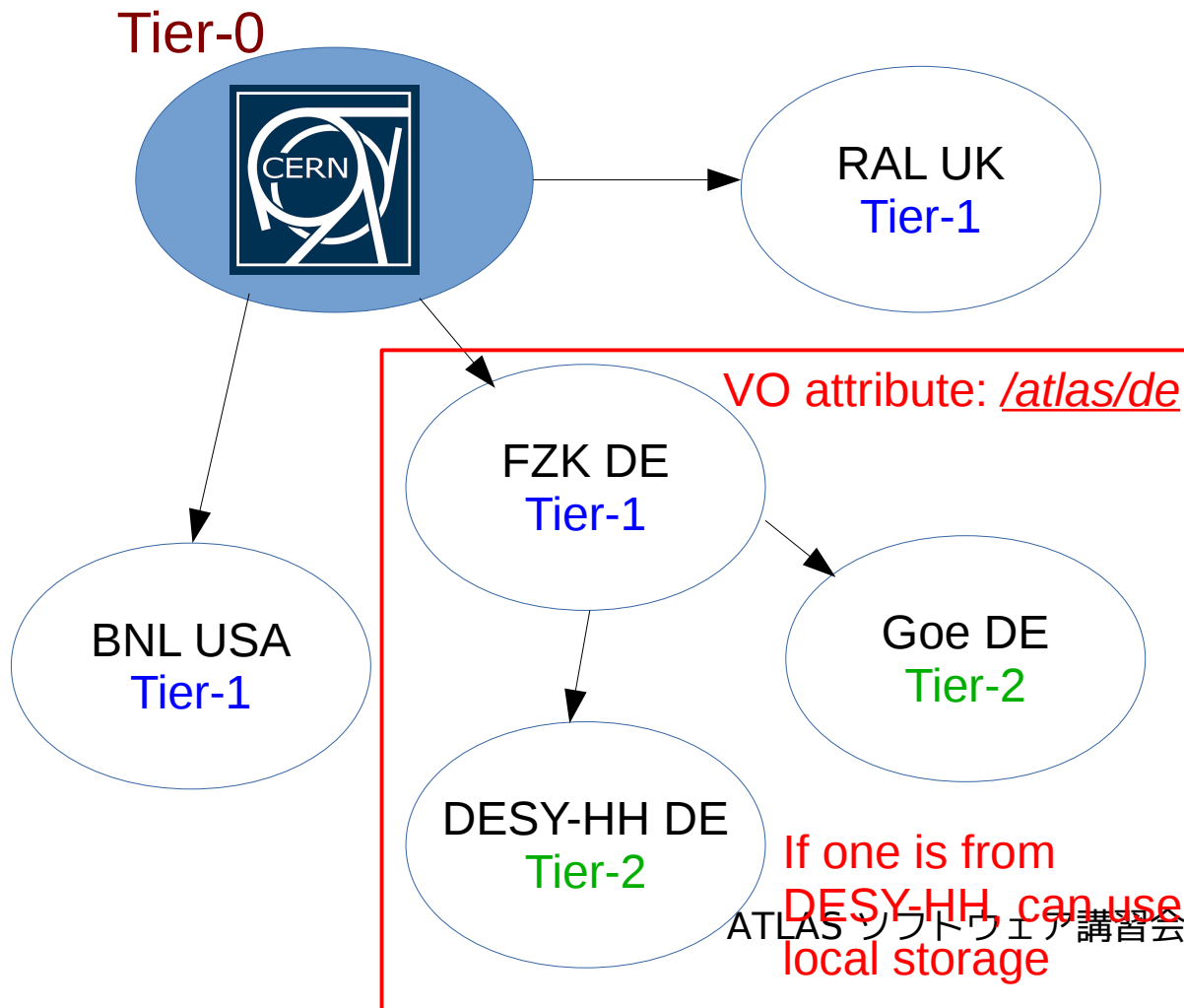
Tier-1: National LCG-Centre, faster network connections and larger storage spaces (e.g. Tape), MC production, user analysis, etc.

Tier-2: University or Facility level computing sites. MC production, user analysis, etc.

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Hands-on exercise

Using ATLAS client tools

- First “Hello world” job by PanDA client

PanDA client

```
lsetup panda
```

Make a Python script

```
cat hello_world.py
```

```
#!/usr/bin/python  
print "Hello world!"
```

```
chmod 755 hello_world.py  
./hello_world.py
```

```
Hello world!
```

Submitting a prun job

```
prun --outDS user.$USER.pruntest.$$ --exec hello_world.py
```

```
INFO : gathering files under /home/gen/tmp/for_new_comer  
INFO : upload source files  
INFO : submit  
INFO : succeeded. new jediTaskID=5107461
```

Submitting 5 prun jobs

```
prun --outDS user.$USER.pruntest.$$ --exec hello_world.py -nJobs=5
```

Hands-on exercise using ATLAS client tools

- Athena job by PanDA client
 - pathena
 - This topic would be explained in Athena session

```
## For example, you can seamlessly run Athena code on Grid
pathena DPD_topOptions.py
-inDS=data11_7TeV.00189090.physics_Egamma.merge.AOD.f403_m975
--outDS=user.wash.tutorial.dpd
```


Links and references

- RucioUI
 - <https://rucio-ui.cern.ch/>
- Rucio Documentation
 - <http://rucio.cern.ch/index.html>
- Software twiki tutorial
 - <https://twiki.cern.ch/twiki/bin/viewauth/AtlasComputing/SoftwareTutorialGettingDatasets>
- Athena Docker setup
 - <https://twiki.cern.ch/twiki/bin/viewauth/AtlasComputing/AthenaMacDockerSetup>
- Docker container for CVMFS
 - <https://github.com/sbinet/docker-containers/tree/master/cvmfs-atlas>
- Binet, Sébastien, and Ben Couturier. "*docker & HEP: Containerization of applications for development, distribution and preservation.*" Journal of Physics: Conference Series. Vol. 664. No. 2. IOP Publishing, 2015.
 - <http://iopscience.iop.org/article/10.1088/1742-6596/664/2/022007/meta>
- ATLAS-D meeting 2015 Rucio Tutorial, Thomas Beermann
- Monitoring Your Grid Jobs, Andrew Washbrook University of Edinburgh, ATLAS Software & Computing Tutorials 14th January 2015 PUC, Chile
- Athena Mac Docker
 - <https://twiki.cern.ch/twiki/bin/viewauth/AtlasComputing/AthenaMacDockerSetup>
- Software tutorial using Grid
 - <https://twiki.cern.ch/twiki/bin/viewauth/AtlasComputing/SoftwareTutorialUsingTheGrid>