

# Grid tools for Distributed Data Management

Desy contribution to ATLAS DDM operations

Kai Leffhalm

Deutsches Elektronen-Synchrotron  
Zeuthen

May 22, 2007  
Atlas Meeting HH

# Outline

## 1 DQ2 tools

- DQ2 version 0.2
- DQ2 version 0.3
- Getting Information

## 2 Desy contribution to ATLAS DDM

- Processing of savannah bug reports
- Monitoring of RDO-dataset transfer
- Deletion of old files
- Integrity checks of files in Cern-castor and Cern LFC
- Develop and extend monitoring tools for DDM operations

# DQ2 version 0.2

## Overview

- The DQ2 commands are tools for managing datasets
  - ▶ LCG-tools just for managing files and directories
  - ▶ LFC/LRC can just store files and paths
  - ▶ DQ2 catalog can organize files in datasets
- One central database (MySQL/Oracle)
- Collecting data from all LFC/LRC
- DQ2 can deliver files to clouds where files are not registered in the cloud wide LFC/LRC

# Examples

- User tools:

- ▶ `dq2_get`, `dq2_ls`, `dq2_cr`, `dq2_put`, ...
- ▶ `dq2_ls '*AOD*v120006*'`  will find all (to DQ2) known AOD datasets of version 12.0.6
- ▶ `dq2_ls -gl 'trig*AOD*v120006*'`  will list all files in the corresponding datasets with GUID and file size
- ▶ `dq2_get -r <datasetname>`  will download the complete dataset to the local directory
- ▶ `dq2_get -r <datasetname> <filename>`  will just retrieve the given file name

- Administration tools: ]

- ▶ `dq2` is a tool for subscribing datasets, getting metadata, registering datasets, changing datasets
- ▶ Not available for all users, depends on site configuration

# DQ2 version 0.2

## Getting information

- Information on the web

- ▶ A good starting point for information and complaining about missing datasets:

<https://savannah.cern.ch/projects/dq2-ddm-ops/>

- ▶ Dataset browser: a special dataset can be found on:

<http://gridui02.usatlas.bnl.gov:25880/server/pandamon/query?overview=dslist>

- ▶ Description of installing and using DQ2 end user tools:

<https://twiki.cern.ch/twiki/bin/view/Atlas/UsingDQ2>

# DQ2 version 0.3

## Overview - Improvements

- New database scheme which is optimized
- Oracle database because of better performance for this application (P. Salgado)
- Dividing database on different machines
- More metadata will be stored in the catalog, like checksums
- New features for cleaning up: up to now it has been really slow
- Independent of pycurl, therefore it can be used on SL3, SL4, SL5
- New features in connection with a new version of the ARDA dashboard

# DQ2 version 0.3

## Current status of the next version

- Already stable release
- In test at some sites (CERN, LYON)
- Tested with T0 tests
- End of testing phase in May
- Deployment planned for June

# DQ2 version 0.3

Command Line Interface, a few example commands

- List datasets:

- ▶ `dq2-list-dataset,`  
`dq2-list-dataset-by-creationdate,`  
`dq2-list-dataset-replicas, dq2-list-dataset-site,`  
`dq2-list-files,...`

- Register datasets:

- ▶ `dq2-register-dataset, dq2-register-files,`  
`dq2-register-location, dq2-register-version,...`

# Getting Information

## Websites for data monitoring

- **Dataset Browser:** look for datasets by physic-project

`http://gridui02.usatlas.bnl.gov:25880/server/pandamon/query?overview=dslist`

- **Dashboard:** look which Site has received a dataset, which errors occurred:

`http://dashb-atlas-data.cern.ch/dashboard/request.py/site`

- **Summary of disk occupancy in the german cloud:**

`http://www.etp.physik.uni-muenchen.de/ddm/DE/summary.html`

- **GridKa monitoring, status of FTS-channels:**

`http://grid.fzk.de/monitoring/main.html`

- **Production system monitoring:**

`http://atlas-php.web.cern.ch/atlas-php/DbAdmin/Ora/php-4.3.4/proddb/monitor/Datasets.php`



## DESY contribution to ATLAS DDM

# Processing of savannah bug reports

- Every user can report bugs in DQ2 tool to savannah.cern.ch under Atlas Computing Operations
- Failing to receive whole datasets or single files can be reported
- Every bug is tried to reproduce
- Filter information and inform responsible person (developer or site-admin)
- Give feedback to the reporting user

# Monitoring of RDO-dataset transfer

- Monitoring is divided between Jhiahang Zhong (AOD) and me
- Check with python script for newly transferred datasets
- Update database with current information of transfer status
- Try to find out why some datasets are not transferred
- Contact responsible persons if necessary

# Monitoring of RDO-dataset transfer

[Panda monitor](#)  
[Quick guide, help](#)

[Jobs - search](#)  
[Recent running](#)  
[activated, waiting](#)  
[assigned, defined](#)  
[finished, failed jobs](#)  
[Select analysis](#)  
[production test jobs](#)  
[Quick search](#)  
Job:   
Dataset:   
Task:   
File:   
Summaries  
Blocks:  days  
Errors:  days  
Nodes:  days  
[Daily usage](#)  
Tasks - [search](#)  
[Generic Task Req](#)  
[EvGen Task Req](#)  
[CTBsim Task Req](#)  
[Task list](#)  
[Task browser](#)  
Datasets - [search](#)  
[Dataset browser](#)  
[New datasets](#)  
[Panda subscriptions](#)  
[All subscriptions](#)  
Datasets Distribution  
[DQM Req](#)  
[Run list](#)  
[ACDs](#)  
[RDOs](#)  
[DB Release](#)  
[Validation Samples](#)

## RDO Replication Status

### RDO datasets replication status (Mon May 21 06:18:43 2007 CET)

- Datasets are automatically subscribed to CERNPROD
- Green** - site has a complete dataset replicas (data transfer is done)
- Cyan** - 90% files (or more) are replicated.
- Orange** - if site has an incomplete dataset replicas. It also means that subscription is processed
- Red** - Dataset has 0 files
- Magenta** - CERNPROD is the only registered location, but there are no files at CERN

[Comments](#)

```

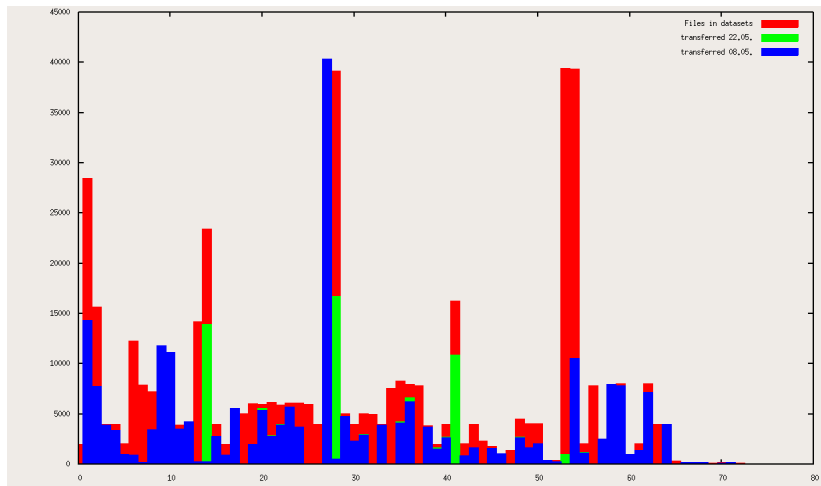
misal1%, "%RDO.v120031%_tid%
5001 5002 5009
5010 5011 5012 5013 5014 5015 5016 5017
5020 5031 5032 5033 5034 5035 5036 5037
5100 5101 5108 5117 5118
5144 5145
5200 5204
5802 5805
8078
8095 8096 8097 8098 8099

```

**Total Datasets : 73 . Files : 524K/254K (31.861 TB)**  
**Last Checked : Mon May 21 04:53:32 2007, Last Transfer : Mon May 21 04:49:57 2007**  
**RDO consolidation : 73 524K/254K 31.861TB.**

Dataset	Files	Copied	GBs	From
misal1_csc11.005002.pythia_diffractione.digit.RDO.v12003108_tid005902	1971	11	0	ASGCDISK,AUUNBELR,TWIPAS-T2
misal1_mc12.005802.JF17_pythia_jet_filter.digit.RDO.v12003105_tid005481	28429	14329	1810	BNLPANDA
misal1_mc12.005802.JF17_pythia_jet_filter.digit.RDO.v12003105_tid005015	15630	7758	979	BEIJING,CPPM,LALL,LAPP,LPLC,LPNHE,LYONDSK,SACLAY,TOKYO
misal1_csc11.006117.JimmyZeeLowM_onlap.digit.RDO.v12003105_tid04947	3993	3919	508	BEIJING,LPNHE,LYONDSK,SACLAY,TOKYO
misal1_mc12.008078.PythiaPhotonsJF6_FIXED.digit.RDO.v12003108_tid004847	3982	3363	434	IFAE,IFCDISK,PICDISK,PICTAP5,UAM
misal1_mc12.005204.TTbar_FullHad_McAino_Jimmy.digit.RDO.v12003108_tid004787	2016	977	145	BNLPANDA
misal1_mc12.005206.T1_McAino_Jimmy.digit.RDO.v12003108_tid004783	12259	887	127	BNLPANDA,LYONTAPE
misal1_csc11.005010.J11_pythia_jetjet.digit.RDO.v12003107_tid004668	7859	209	24	CNAFDISK,LNF,MILANO,NAPOLI,ROMA1

# Monitoring of RDO-dataset transfer



# Deletion of old files

- Biggest problem now is disk space
  - ▶ Deleting dispensable datasets is very important
- First find datasets to be deleted
  - ▶ ATLAS Production will inform about dispensable datasets
  - ▶ either per mailing list `DDM-Operations` or via website
  - ▶ [https://twiki.cern.ch/twiki/bin/view/Atlas/ComputingOperations#Data\\_Cleaning](https://twiki.cern.ch/twiki/bin/view/Atlas/ComputingOperations#Data_Cleaning)
- `dq2_cleanup.py` can delete files from LFC, from DQ2 catalog and from Storage Element
- But every step has to be verified to make sure, files are really deleted
  - ▶ Every error will create inconsistencies
- Deleting of files in DQ2 catalog and LFC catalog takes round about 1-2 seconds per file
  - ▶ Datasets with more than 40000 files already available
  - ▶ Deletion can take more than 10 hours

# Integrity checks of files in Cern-castor and Cern LFC

- Integrity problems due to:
  - ▶ broken transfers
  - ▶ lost files (dCache problem, general file loss on disks, CASTOR problems)
  - ▶ bugs in the software for transferring, registering and deleting files and datasets
- Consistency of files in SE and entries in LFC has to be checked
- Scripts exists for every site, but not one for all
- has to be done carefully, because not all users register files in their LFC
  - ▶ Computing model states which LFC is to be used
  - ▶ But there is no instrument to force a user to do it the right way

# Develop and extend monitoring tools for DDM operations

- There are many scripts for monitoring and many web pages to look at
  - ▶ Many scripts mean a high load on all catalogs
  - ▶ Many procedures are monitored with multiple scripts
  - ▶ Scripts exist at all sites, but not known to all other
- Where I should help
  - ▶ Improve scripts for monitoring transfers of RDO, AOD, ESD, HITS, . . . files:
    - ★ increase in speed
    - ★ decrease in load on catalogs
  - ▶ Extend scripts: monitoring transfers between T1 and T2 centers
  - ▶ Develop new scripts for monitoring the deletion of files
  - ▶ Develop and consolidate scripts for integrity checks

# Summary

- Many things will change in the next weeks (DQ2 0.3, SRM 2.2, monitoring websites)
- TO tests will be extended to T2 centers
- Final Dress Rehearsal will start soon
- There will be need for a lot of testing and debugging
- Communication is now very important for focusing manpower